# Fighting the War on File Sharing

*For other titles in the Series see p. 215*

Information Technology & Law Series 14

# Fighting the War on File Sharing

Aernout Schmidt
Wilfred Dolfsma
Wim Keuvelaar

T•M•C•Asser press
The Hague

The *Information Technology & Law Series* is published
by T·M·C·Asser press
P.O. Box 16163, 2500 BD The Hague, The Netherlands
<www.asserpress.nl>

T·M·C·Asser press English language books are distributed exclusively by:

Cambridge University Press, The Edinburgh Building, Shaftesbury Road,
Cambridge CB2 2RU, UK,
or
for customers in the USA, Canada and Mexico:
Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133, USA

<www.cambridge.org>

The *Information Technology & Law Series* is an initiative of IT*e*R, the National Programme for Information Technology and Law, which is a research programme set up by the Dutch government and the Netherlands Organisation for Scientific Research (NWO) in The Hague. Since 1995 IT*e*R has published all of its research results in its own book series. In 2002 IT*e*R launched the present internationally orientated and English language *Information Technology & Law Series*. This series deals with the implications of information technology for legal systems and institutions. It is not restricted to publishing IT*e*R's research results. Hence, authors are invited and encouraged to submit their manuscripts for inclusion. Manuscripts and related correspondence can be sent to the Series' Editorial Office, which will also gladly provide more information concerning editorial standards and procedures.

**Editorial Office**
eLaw@Leiden, Centre for Law in the Information Society
Leiden University
P.O. Box 9520
2300 RA Leiden, The Netherlands
Tel. +31(0)715277846
E-mail: <ital@law.leidenuniv.nl>
Web site: <www.nwo.nl/iter>

**Single copies or Standing Order**
The books in the *Information Technology & Law Series* can either be purchased as single copies or through a standing order. For ordering information see the information on top of this page or visit the publisher's web site at <www.asserpress.nl/cata/itlaw11/fra.htm>.

ISBN 13: 978-90-6704-238-3
ISBN 10: 90-6704-238-2
ISSN 1570-2782



Cover and lay-out: Oasis Productions, Nieuwerkerk a/d IJssel, The Netherlands
Printing and binding: Koninklijke Wöhrmann BV, Zutphen, The Netherlands

# PREFACE

When we started to work on this book it proved difficult to understand the war against music-file sharing as it emerged in the Napster's wake in 2000 and is still problematic in 2007. Combining our different disciplinary efforts in a coherent and intergrated analysis proved to be another hard nut which we only eventually succeeded in cracking in 2006. How we did that and on whose shoulders we chose to climb is reported in the book. Here, we acknowledge our appreciation for the support received from those who have been, on and off, involved in our team's efforts: Erwin Arkenbout, Rob van Biezen, Wilfred Dolfsma, Wim Keuvelaar, Laurens Mommers, Cyril van der Net, Peter van Schijndel and Sweder van Wijnbergen. Of course, responsibility rests with the individual authors.

*February 2007* Aernout SCHMIDT

# SUMMARY OF CONTENTS


| | | |
|---|---|---|
| **Preface** | | V |
| **Table of contents** | | IX |
| Part I | **Preliminaries** – *Aernout Schmidt* | 1 |
| 1. | Peer-to-Peer Problems | 3 |
| 2. | The World According to Lessig | 5 |
| 3. | Cultural and Institutional Theories | 6 |
| 4. | The Morality of Regulation by Architecture | 8 |
| 5. | Structure | 8 |
| Part II | **The Morality of Regulation by Architecture** – *Aernout Schmidt* | 11 |
| 1. | IT as a Relevant Discipline | 13 |
| 2. | Asking a Question | 15 |
| 3. | Regulation by Design and Deployment | 35 |
| 4. | The Morality of Regulation by Architecture | 48 |
| Part III | **The Economics of P2P in Music** – *Wilfred Dolfsma* | 63 |
| 1. | Introduction | 65 |
| 2. | Markets for Information Goods | 67 |
| 3. | Some Economics of Intellectual Property Rights | 71 |
| 4. | Market Standards, Business Models and Future Music | 77 |
| 5. | Three Models Assessed | 85 |
| 6. | Products & Prices: Welfare Implications | 88 |
| 7. | Conclusions | 92 |
| Part IV: | **Intellectual Property Rights for Music File Sharing** – *Wim Keuvelaar* | 93 |
| | Preface | 95 |
| 1. | Approach | 95 |
| 2. | The WIPO Treaties | 99 |
| 3. | The Application of Copyright and Neighbouring Rights | 103 |
| 4. | The Application of the Restriction of Private Copying | 108 |
| 5. | The Exercise of Copyright and Neighbouring Rights | 113 |
| 6. | The Enforcement of Copyright and Related Rights | 118 |
| 7. | Digital Rights Management | 126 |
| 8. | Summary | 129 |
| 9. | Postscript | 129 |
| Part V: | **Understanding the War** – *Aernout Schmidt* | 133 |
| 1. | Introduction | 135 |
| 2. | Framing for Multidisciplinary Analysis | 146 |
| 3. | Institutional Analysis of the War on Music-file Sharing | 168 |
| 4. | Recommendations and Conclusions | 190 |
| **References** | | 205 |
| **About the authors** | | 213 |

# TABLE OF CONTENTS


| | | |
|---|---|---|
| **Preface** | | V |
| **Summary of contents** | | VII |
| Part I | **Preliminaries –** *Aernout Schmidt* | 1 |
| 1. | Peer-to-Peer Problems | 3 |
| 2. | The World According to Lessig | 5 |
| 3. | Cultural and Institutional Theories | 6 |
| 4. | The Morality of Regulation by Architecture | 8 |
| 5. | Structure | 8 |
| Part II | **The Morality of Regulation by Architecture –** *Aernout Schmidt* | 11 |
| 1. | IT as a Relevant Discipline | 13 |
| 2. | Asking a Question | 15 |
| 2.1 | Roles in IT practice | 16 |
| 2.2 | The story | 17 |
| 2.3 | Booting | 18 |
| 2.3.1 | Some history: Moore's law, law, standards | 19 |
| 2.3.2 | The operating system | 22 |
| 2.3.3 | Handles for regulation during boot | 24 |
| 2.4 | The desktop | 25 |
| 2.4.1 | As a part to the operating system: policies | 26 |
| 2.4.2 | As a port to applications: stand-alone, client-server, peer-to-peer | 26 |
| 2.5 | Two application semantics, four efficiencies (intermezzo) | 27 |
| 2.5.1 | The reference approach | 28 |
| 2.5.2 | The convention approach | 30 |
| 2.5.3 | Application characteristics by convention | 31 |
| 2.6 | Asking a question (summing up) | 34 |
| 3. | Regulation by Design and Deployment | 35 |
| 3.1 | Application design methodology | 35 |
| 3.1.1 | The ITdesign framework Sections | 37 |
| 3.1.2 | The ITdesign framework Chapters | 37 |
| 3.1.3 | Remodelling Napster | 38 |
| 3.2 | Regulation by design and deployment (summing up) | 48 |
| 4. | The Morality of Regulation by Architecture | 48 |
| 4.1 | Eight conditions | 49 |
| 4.1.1 | Moral challenges for regulation by architecture | 52 |

| | | |
|---|---|---|
| 4.2 | Five questions | 53 |
| 4.2.1 | Is regulation by architecture a one-way projection of authority? | 53 |
| 4.2.2 | Who can make legitimate regulation by architecture? | 54 |
| 4.2.3 | What are the institutional roles? | 55 |
| 4.2.4 | What are the role moralities involved? | 56 |
| 4.2.5 | How is interaction placed in regulation by architecture and its administration? | 56 |
| 4.2.6 | Basic assumptions on the morality of regulators by architecture | 57 |
| 4.3 | The morality of regulation by architecture | 57 |
| 4.3.1 | Morality of duty (M1) | 58 |
| 4.3.2 | Morality of aspiration (M2) | 62 |
| Part III | **The Economics of P2P in Music** – *Wilfred Dolfsma* | 63 |
| 1. | Introduction | 65 |
| 2. | Markets for Information Goods | 67 |
| 3. | Some Economics of Intellectual Property Rights | 71 |
| 3.1 | The music industry: digitisation | 72 |
| 4. | Market Standards, Business Models and Future Music | 77 |
| 5. | Three Models Assessed | 85 |
| 6. | Products & Prices: Welfare Implications | 88 |
| 7. | Conclusions | 92 |
| Part IV | **Intellectual Property Rights for Music File Sharing** – *Wim Keuvelaar* | 93 |
| | Preface | 95 |
| 1. | Approach | 95 |
| 1.1 | Copyright, neighbouring rights and file sharing | 95 |
| 1.2 | Problem definition | 96 |
| 1.3 | Context | 97 |
| 1.4 | Restrictions to the research project | 98 |
| 1.5 | Research goal | 98 |
| 1.6 | Plan of work | 98 |
| 2. | The WIPO Treaties | 99 |
| 2.1 | Introduction | 99 |
| 2.2 | Exploitation rights | 99 |
| 2.2.1 | The right of reproduction | 99 |
| 2.2.2 | The right of distribution | 100 |
| 2.2.3 | The right of rental | 100 |
| 2.2.4 | The right of communication and making available to the public | 101 |
| 2.3 | Limitations | 102 |
| 2.4 | Exercise and enforcement | 102 |
| 2.5 | Technical protection measures | 102 |

| | | |
|---|---|---|
| 3. | The Application of Copyright and Neighbouring Rights | 103 |
| 3.1 | Introduction | 103 |
| 3.2 | The right of reproduction | 103 |
| 3.3 | The right of distribution | 105 |
| 3.4 | The right of rental | 106 |
| 3.5 | The right of communication and making available to the public | 106 |
| 3.6 | New questions and problems | 107 |
| 4. | The Application of the Restriction of Private Copying | 108 |
| 4.1 | Introduction | 108 |
| 4.2 | Private copying in Directive 2001/29/EC | 108 |
| 4.3 | Private copying according to current law | 109 |
| 4.4 | Private copying according to future law | 110 |
| 4.5 | New questions and problems | 111 |
| 4.5.1 | The non-commercial criterion | 111 |
| 4.5.2 | A home copying levy on other equipment | 112 |
| 4.5.3 | Determining the amounts of fair contribution and retribution | 112 |
| 4.5.4 | The need for collective administration | 113 |
| 5. | The Exercise of Copyright and Neighbouring Rights | 113 |
| 5.1 | Introduction | 113 |
| 5.2 | Individual or collective | 113 |
| 5.3 | Exercising musical copyright | 114 |
| 5.4 | Exercising neighbouring rights with respect to music | 115 |
| 5.5 | New questions and problems | 116 |
| 5.5.1 | Legitimacy of collective administration organizations | 116 |
| 5.5.2 | Increasing importance of competition law | 117 |
| 5.5.3 | Territorial boundaries and (national) collective administration | 117 |
| 6. | The Enforcement of Copyright and Related Rights | 118 |
| 6.1 | Introduction | 118 |
| 6.2 | Civil law enforcement | 118 |
| 6.3 | Penal law enforcement | 118 |
| 6.4 | Directive on measures and procedures to ensure enforcement | 119 |
| 6.5 | Liability of software providers | 120 |
| 6.5.1 | Napster | 120 |
| 6.5.2 | Grokster and Streamcast | 121 |
| 6.5.3 | KaZaA | 123 |
| 6.6 | New questions and problems | 124 |
| 6.6.1 | Mass infringement and privacy | 124 |
| 6.6.2 | Careful behaviour of software providers | 125 |
| 7. | Digital Rights Management | 126 |
| 7.1 | Introduction | 126 |
| 7.2 | The legal framework for digital rights management | 126 |
| 7.3 | New questions and problems | 128 |

| | | |
|---|---|---|
| 7.3.1 | Position of 'open information' initiatives | 128 |
| 7.3.2 | Accountability, individual normative choice | 128 |
| 8. | Summary | 129 |
| 9. | Postscript | 129 |
| | | |
| Part V | **Understanding the War –** *Aernout Schmidt* | 133 |
| 1. | Introduction | 135 |
| 1.1 | Mainstream IT, economic and legal analyses | 136 |
| 1.1.1 | IT | 136 |
| 1.1.2 | Economics | 137 |
| 1.1.3 | The law | 141 |
| 1.1.4 | Preliminary conclusions | 145 |
| 2. | Framing for Multidisciplinary Analysis | 146 |
| 2.1 | War | 148 |
| 2.1.1 | War and peace as a multilevel affair | 150 |
| 2.2 | Danger and dirt | 151 |
| 2.3 | Cultures | 152 |
| 2.4 | Monsters | 153 |
| 2.5 | Organizations | 155 |
| 2.6 | Domain and jurisdiction – organizations as normative systems | 156 |
| 2.6.1 | Intermezzo: an interpretation of law-system morality | 159 |
| 2.7 | Externalities | 161 |
| 2.8 | Markets | 162 |
| 2.9 | Institutions | 163 |
| 2.10 | Multidisciplinary institutional analysis | 166 |
| 3. | Institutional Analysis of the War on Music-file Sharing | 168 |
| 3.1 | Regularities in social behaviour | 169 |
| 3.1.1 | The music industry | 169 |
| 3.1.2 | Sharers | 169 |
| 3.1.3 | Providers | 169 |
| 3.1.4 | Courts | 170 |
| 3.1.5 | Two questions | 170 |
| 3.2 | Institutional analysis | 171 |
| 3.2.1 | Collective interests | 171 |
| 3.2.2 | Domains | 172 |
| 3.2.3 | Markets | 173 |
| 3.2.4 | Rule-sets | 174 |
| 3.2.5 | Policies | 176 |
| 3.2.6 | Norm-sets | 178 |
| 3.2.7 | Organizations | 179 |
| 3.2.8 | Individuals | 182 |
| 3.2.9 | (Market) feedback mechanisms | 184 |

| | | |
|---|---|---|
| 3.2.10 | Belief-sets | 187 |
| 3.3 | The war path | 188 |
| 4. | Recommendations and Conclusions | 190 |
| 4.1 | Institutional understanding | 190 |
| 4.1.1 | Monster, monster domains, monster markets | 190 |
| 4.1.2 | Monster-managements strategies | 193 |
| 4.2 | Institutional interpretation | 194 |
| 4.2.1 | The battles over hacked containers: piracy and private use | 195 |
| 4.2.2 | The battle over unprotected containers: sharing | 197 |
| 4.3 | Recommendations | 202 |
| 4.4 | Conclusions | 202 |
| 4.5 | Afterthought | 204 |

**References** 205

**About the authors** 213

# Part I
# PRELIMINARIES

# Part I
# PRELIMINARIES

**Aernout Schmidt***

## 1. Peer-to-Peer Problems

In January 1999, Shawn Fanning decided to spend some of his time in making a small program rather than pursuing his university education. Like its author, the program somehow acquired the name 'Napster'. It was designed to support Shawn and his computer pals in sharing their music through the Internet.[1] PCtools to rip music CDs into compressed-format (mp3) computer files were already there. Rip, mix, burn[2] was something of a slogan for computer addicts. However, Shawn considered burning mp3 CDs for his friends a waste of time, given the logistic possibilities of Internet. In a few months time, his Napster program was operational and solved the problem. In June 1999 he distributed the program to 30 of his friends for testing.

As a rule, computer users have their music CDs ripped to their PCs for personal use anyway. Shawn's friends only had to tell Napster where they were sitting on their hard disks to make them available to anyone connected and having Napster installed. The Napster programs told Shawn's server database what music files were available and where. Any Napster program could search the database on behalf of its user, fetch the directions to connect to the appropriate user's Napster program and download the target files from there.

Shawn's scheme to avoid the 'transaction' cost of CD-burning proved to be successful in more ways than one. His 30 pals soon realized that their collective PC-music library would be more effective when additional pals joined the club, making their music collections available too. If every computer addict in the world would take part, virtually all recorded music might be available to everyone at the cost of

* elaw@Leiden, Centre for Law in the Information Society (Leiden University).

[1] *Napster's Shawn Fanning: The Teen Who Woke UP Web Music*, Business Week online interview by Spencer E. Ante, April 12, 2000, <http://www.businessweek. com/ebiz/0004/em0412.htm>.

[2] Kathy Bowry and Matthew Rimmer, *Rip, Mix, Burn: The Politics of Peer-to-peer and Copyright Law*, First Monday, Vol. 7, No. 8 (August 2002), <http://www. firstmonday. org/ issues/issue7_8/bowrey>.

*A.H.J. Schmidt, W. Dolfsma and W. Keuvelaar, Fighting the War on File Sharing*

each individual's personal ripped music collection, hard disk space, computer capacity and Internet access. Only Shawn's index database was extra – and that could be taken care of financially by the occasional advertisement. Shawn's pals started to distribute copies of the Napster program to their own pals and thus Napster entered the world of ordinary PC users. With pandemic results. Within a year, at any particular moment in time, the accidental Napster user might see something like this: there are 5 million users on line, sharing 50 terabytes of music files. The second way in which the Napster service proved effective was its scalability. Only the central database showed sensitivity to the amount of Napster use (this central server is what Napster makes a semi- and not a pure peer-to-peer system.). The pure peer-to-peer part of Napster, where music files were actually transferred between users, was, due to its distributed point-to-point architecture, hardly touched by the overall amount of traffic generated.

On my first acquaintance with Napster, I searched for Dave Brubeck's 'Two Part Contention', a piece of music once heard and subsequently searched for during 20 years in regular and irregular music stores, but never found. Napster provided two versions as a powerful example of sharing content between peers. Napster almost instantly provided them as a convincing example of its power to share IT capacity between peers. Here, I thought, – here, we all thought –, is a real gem, an innovative Internet killer application.

A killer application indeed, thought the music industry and sued Napster (by then Napster Inc.) forthwith. Somehow, Fanning's scheme had not entered copyrights into the equation. And its scale of use made Napster an instant threat to the music industry. What followed can be, and has been, described as an escalating war on file sharing. Computer nerds started to redesign Napster into pure peer-to-peer programs (e.g., Grokster, KaZaA) without central index databases in order to prevent liability for making these programs available. After all, file sharing is a useful scheme for sharing any content, they argued. For instance, for content from the public domain. The music industry kept on suing – finally stooping to the level where their legal arrows are aimed at their own customers.

In this war, some able program designers like Ian Clarke saw trouble ahead for free speech on the Internet and designed peer-to-peer information-sharing mechanisms of a very defensive nature. Freenet, for instance, publishes content in a pure peer-to-peer way, but breaks down stored content in random snippets and uses strong cryptography to prevent direct access. Freenet also hides where these snippets are sitting – to any user, even to the owners of the PCs storing (parts of) the content. Thus, Freenet is not only useful for the exchange of criminal content in a way that has become awesomely difficult to trace, but also for the anonymous exchange of free speech in, e.g., Saudi Arabia, Iran, China, Indonesia, Nigeria, Haiti, the USA and the Netherlands. Seeing opportunities where they present themselves, the music industry is deploying the very same techniques in so-called digital rights management (DRM) schemes, controlling the use and multiplication of digitally delivered

content.[3] Apparently, digital protection techniques are deemed equally useful on both sides of the war on music-file sharing.

The escalating war on file sharing does not feel right. On the one hand, we have a whole gamut of really useful and innovative applications, generously supporting peer-to-peer content distribution in (virtual) communities, supporting commercial information distribution as well as anonymous free speech publication. On the other hand, we have a whole industry fighting these applications, defending their intellectual property rights. Both sides develop, use and deploy the same weapons. We need deescalating approaches that respect the interests of both sides. That is what we will be looking for in this volume.

## 2. The World According to Lessig

Of course, a lot has already been said on peer-to-peer file sharing and need not be repeated. Our project is somewhat different in taking a multidisciplinary approach, so different,[4] in fact, that we gratefully acknowledge the Dutch Research Programme on IT and Law (IT*e*R) for funding the publication of this book.[5] The approach was pretty clear when we started the project in 2002. Three disciplines were obviously involved: IT,[6] economics and the law. Chapters on peer-to-peer music-file sharing from these three perspectives were quickly drafted.[7] Then the project more or less stalled until it became clear that we could not finish our concluding chapter without addressing still another discipline. This should have been clear from the start, since we had all read Lessig's seminal *Code and Other Laws in Cyberspace,*[8] but it was not. In order to explain, I will need to delve somewhat further into the world according to Lessig. In this world, we first of all understand that all human, Internet-mediated behaviour is traceable, at least in principle. And, as a corollary, that all Internet mediation can, in principle, be used to control this type of behaviour. Moreover, human nature being what it is, we may expect that strong forces will support bending the Internet from a free information haven for academics towards a thoroughly controlled information and communication practice for all. The war on file sharing is just a symptom. And in the wake of the War on Terrorism, more of these symptoms are coming to light. In the world according to Lessig many puzzles are presented, most of them legal. Free speech, intellectual property law and privacy law are all testing their seams in cyberspace. In his second book, *The Future of*

[3] Notably in DRM via 'trusted computing'.

[4] At least in the Netherlands.

[5] IT*e*R project number 014-38-310.

[6] Information and Communication Technology.

[7] The IT chapter by Rob van Biezen, the Economics chapter by Wilfred Dolfsma and the Law chapter by Wim Keuvelaar.

[8] Lawrence Lessig, *Code and Other Laws in Cyberspace*, Basic Books 2000.

*Ideas,*[9] Lessig focuses on the risks for the public domain. A famous point in case is the 'licence' added to an e-book with Lewis Carroll's *Alice in Wonderland*, forbidding the buyer to read the content aloud to any audience.[10] What Lessig does really well is to make us understand that our initial belief in cyberspace as an inspirational area of co-operation and unrestricted freedom of expression is misplaced. He convincingly points out the dangers and shows that facing them is a multidisciplinary effort.[11]

However, multidisciplinary efforts are notoriously difficult to nurse. Consider any professional in any discipline. She is accustomed to gaining authority by convincing her peers in her own discipline, meticulously sticking to the subject-matter and the professional language that identify it. Consequently, our multidisciplinary approach to the war on music-file sharing initially tended to fall apart in three stories, respectively directed to computer scientists, economists and legal professionals. We either needed to find a bridging discipline, or the courage to enter the area where our respective specialisms no longer apply. After some deliberation, we did both.

## 3. Cultural and Institutiional Theories

When Lessig wrote his *Code and Other Laws in Cyberspace*, Napster was not yet there. The fact that, nonetheless, Napster and the subsequent war on file sharing lies at the heart of the book's subject-matter supports its relevance. How, we asked ourselves, did Lessig succeed in avoiding the multidisciplinary pitfall we had stumbled into ourselves? The answer we found is twofold. Apart from being uncommonly clever (and Lessig is a multidisciplinary individual into the bargain, combining a legal and economic education), he is acutely aware of the fact that control and regulation – be it of civilians, enterprises or administrations – is the combined result of several forces. He identifies four: architectural forces, market forces, legal forces and cultural forces. The first three of these are part of our own disciplines respectively (IT, economics and law), leaving us with three questions: What discipline studies cultural forces in regulation and control? Is this discipline fit to combine our results? If so, can we use it appropriately?

Let us first take a look at the battlefield. It shows a confrontation concerning Internet (ab)use, a phenomenon growing and spreading so rapidly that we can hardly imagine its near future or our dependence thereon. On the one hand, we have the music industry, apparently convinced that the growth of peer-to-peer file sharing

[9] Lawrence Lessig, *The Future of Ideas*, Random House 2002.

[10] Lewis Carroll is the pen-name of Charles Lutwidge Dodgson, who died on January 14, 1898. His work has – so we assumed – irrevocably entered into the public domain.

[11] Lawrence Lessig, *The New Chicago School* (1998).

will not only rob it of its existence, but will also rob composers and musicians of a reasonable income and thus of the incentive to be creative at all. Opposed to the music industry we find music consumers with the feeling that they can at last effectively join forces against what they consider to be obsolete distribution and pricing practices by a music industry they suspect is hardly operating in compliance with competition principles in these matters. These are the main sides. Both are joined by supporting forces from the software industry, partly driven by concern for the further fencing-in of privacy, free speech and the public domain. Interestingly, composers and musicians play a minor role in the fight itself and may, like software builders, be found to support either side. Anyway, the battle itself is a regulated one.[12] Courts are often asked for their opinions. Court decisions do have influence: Napster was effectively shut down by such a decision.[13] Industry and consumer lobby groups, non-governmental organizations and even courts[14] directly appeal to the legislator. The battle is clearly a political process, fuelled by emotions of expectation and aspiration, but also of duty, blame, risk and insecurity. Rational arguments need not be decisive. The fears involved concern real and substantive risks, urging action – even if our objective knowledge about the results to be expected is incomplete.

Douglas and Wildavski wrote on this very subject in 1982.[15] A few quotes from their introduction:

> 'Can we know the risks we face, now or in the future? No, we cannot; but yes, we must act as if we do … How, then, do people decide which risks to take and which to ignore? … whatever programs are enacted to reduce risks, they conspicuously fail to follow the principle of doing the most to prevent the worst damage.'

Douglas *cum suis* developed a (niche) discipline called 'Cultural Theory' on the subject, providing a few frameworks to rationally analyze irrational political processes,[16] applying them, before the Internet emerged, to historic and actual risk-oriented political processes. In 2002, Martijntje Smits published her *Monster Ethics: on the cultural domestication of new technology.*[17] Finally, in 2006, Avner Greif published his institutional approach to the analysis of social behaviour (from eco-

---

[12] Indeed, hardly a war in its traditional sense; 'war' is used rhetorically here – later the concept will be used for analogy.

[13] *A&M Records, Inc*. v. *Napster, Inc.*, 114 F. Supp. 2d 896, 912 (N.D. Cal. 2000).

[14] See, e.g., <http://www.eff.org/IP/P2P/MGM_v_Grokster/030425_order_on_motions.pdf>.

[15] Mary Douglas and Aaron Wildavski, *Risk and Culture*, University of California Press 1982.

[16] Mary Douglas, Risk and Blame, *Essays in Cultural Theory*, Routledge 1992.

[17] Title translated (AHJS). Martijntje Smits applied Mary Douglas' earlier work (especially: *Purity and Danger*) to the ethical disputes concerning new technology at large, see: M. Smits, *Monsterbezwering, de culturele domesticatie van nieuwe thechnologie*, Boom, 2002 (to be published in English in 2006).

nomic-historical perspectives)[18] which we adopted in a somewhat adapted form. Our analysis focuses on ways to get out of deadlocks common to public disputes about new technology and we will apply these frameworks to the discussed war on file sharing.

## 4. The Morality of Regulation by Architecture

Of the three Chapters initially drafted, the Chapter on information technology proved to be out of touch with multidisciplinary purposes. Unlike law, economics and cultural theory, the computer science discipline tends to consider political thought outside its domain. Computer science prepares academics to design hardware or applications – any application – at the whim of any entrepreneur's asking. The better, the more efficient, the more elegant the design fits the whim, the better the computer scientist's effort. The original Chapter on ITaspects of peer-to-peer only proved fruitful in concluding that the IT state of the art allows for any relevant peer-to-peer application that anyone might wish to actually be designed. For our book this conclusion was not at all fruitful: it somehow excludes the IT discipline not only from any responsibility, but also from the normative discussion at hand.

We agreed that this would not do. Computer science *is* a relevant discipline, even if computer scientists do not agree. This may be actually the very point of our effort: to show that if computer scientists restrict their awareness of morality to their servant-principal relationships, the notion of regulation by architecture shows that there is more to it. Shawn Fanning's efforts and his results made this clear. For our discussion we needed an articulated vision on the morality of regulation by architecture – which is intimately related to applied computer science or IT practice – and we decided to write one. Fuller's *Morality of Law* proved helpful.[19]

## 5. Structure

The structure of the book is simple. In its remaining four Parts we analyze aspects relevant to the regulation of file sharing from the four different disciplines we recognize in Lessig's four different regulators. Part II looks at the morality of regulation by architecture (or by information technology), Part III at regulation by the market and Part IV at regulation by the law. Finally, in Part V, we bring the cultural and institutional perspectives into play in order to provide rational conclusions and recommendations for what cannot be anything but a partly irrational, political pro-

[18] Avner Greif, *Institutions and the path to the modern economy*, Cambridge University Press 2006.

[19] Lon L. Fuller, *The Morality of Law*, Yale University Press 1969 (Revised Edition).

cess – albeit, presumably, of tremendous importance for the future of ideas and for our freedom to process information. Or, to put it bluntly, for our future in the information society.

# Part II
# THE MORALITY OF REGULATION BY ARCHITECTURE

# Part II
# THE MORALITY OF REGULATION BY ARCHITECTURE

**Aernout Schmidt***

## 1. IT as a Relevant Discipline

Google hooked us all some five years ago.[1] The IT discipline has proven exceptionally successful in a very short period of time. Urged on by abundant wartime funding, combined efforts in formal logic, number theory, mechanics, electronics and engineering gave birth to generic computing devices in the 1940s.[2] Long before that, communication technology was well under way, providing several *point-to-point* techniques like mail, telegraphy and telephone to the world as well as *one-to-many* techniques like the press and the wireless. The combination of communication and computing technology made good theoretical progress during the first four decades of its existence (1950-1990). In practice it made a slow start,[3] but recieved a second wind of globalization after 1993, when world wide web browsing complemented word processing as a 'killer application' for personal computing, opening the gates towards mass collective computing. The steady drop in hardware size and price, the reception of personal computing around 1983, the general availability of graphical user interfaces soon after and the suitability of the local loop of the telephone infrastructure for Internet access were some of the conditions.

But first things first. This is the IT part of a multidisciplinary approach to the war on file sharing. It is about the basic IT constructs that support regulation by architecture and about the moralities required for those who promulgate it. This Part is

* elaw@Leiden, Centre for Law in the Information Society (Leiden University).

[1] As seen in 2005.

[2] Depending on which computer-science historian you prefer, in 1937 (Turing's number-theoretical machine), 1941 (either Zuse or Anastasoff, or both), 1945 (Von Neumann's famous paper about Mauchly and Eckert's EDVAC) or 1948 (the Manchester Mark II, reportedly the first computer in operation). I disregard Babbage's mid 19th century model for an Analytical Engine, functionally a Von Neumann machine, which remained irrevocably stuck in the era's swamp of mechanical devices.

[3] IBM carried out a market analysis to estimate the worldwide need for computers in 1956 and ended up with a number well below one hundred.

*A.H.J. Schmidt, W. Dolfsma and W. Keuvelaar, Fighting the War on File Sharing*

written for a non computer science audience. It considers two points of view, the user's point of view and the designer's. The first perspective (in section 2) follows what regulation may occur when an average person starts up her PC to ask a question, using Google. The Google information service is strongly related to any peer-to-peer file sharing service, using central databases for searching, providing links to distributed sources for actual file transfer. The second perspective is in section 3 and considers how regulation may enter the stage when a party decides to create and deploy an – indeed any – ITservice. This prepares the ground for conclusions about regulation by architecture in peer-to-peer file sharing (section 4).

Your gut feeling may well prompt you to ask yourself why you should take the trouble to read this Part of the book. For driving a car, for boarding a flight to Seattle, you do not need to have any knowledge of any automobile- or aviation related science. Neither do you need to know anything about the law or the moralities concerning motor vehicle or aircraft production. Why bother about IT when using the Internet or when thinking about its regulation? Why not leave IT to the IT professionals? Accepting the analogies for the moment, I would begin by answering that in the early automobile and aviation days many questions arose concerning risk-reducing rule making, and that none of these questions have been faced in a technically naïve manner. Nor have they been left to be decided by the disciplines or industries involved.[4] The better answer lies, however, in not accepting the analogies. I have so often been confronted with them that I find them rather tiring by now.

New technology often results in the polarization of the public debate between enthusiasts and sceptics, fostering one-liner rhetoric on either side. Equalling 'theft' and 'infringement' is a point in case in the music-file sharing debate. Undoubtedly, gut-feeling conceptualizations must be taken seriously in any public debate. But we can hardly imagine any such conceptualization to foster sustainable regulation, without rational grounding. Today, we are in the early Internet days. These are the days to decide on risk-reducing rule making for the Internet. In any legal debate about risk, an important issue concerns balancing individual responsibility (or freedom, featuring corrective justice) and public responsibility (imposing constraints, featuring distributive justice). For regulation by architecture, this balancing act requires considering IT a relevant discipline. Otherwise, regulation by architecture – and here sits the pivotal crux – will never be allowed to gain any democratic legitimacy. That will become more of a problem when our lives are further regulated by IT architecture. For as soon as products of the IT discipline regulate, they become part of our legal system.[5]

---

[4] There is serious evidence that current intellectual property rights legislation processes are dominated by the established industries involved.

[5] See A.H.J. Schmidt, *Bedreigen Computers ons Rechtssysteem?* [Do Computers Threaten our Legal System?] Leiden University 2004 [In Dutch].

Looking at applied computer science in this way provides an insight into the ways in which regulation may enter a new area. The particular area, often referred to as cyberspace, is exclusively man-made. It will thus provide an insight into well-documented regulatory trends that may emerge in an initially rule-barren, 'free' area, while it becomes a globally colonizing force of some importance. It will also show that complete ITilliteracy is unaffordable to the legal profession if it wants to preserve (or regain) authority in the information society.

Some fundamental questions about our legal system in a democratic setting have been abundantly discussed in jurisprudence, for instance in the Fuller-Hart debate.[6] I would conclude from it that the answers to these questions are essential for our legal system's sustainability.

*For our legal system's sustainability?#!¿!@¡??* What swamp are we entering now? In my observation we have entered it already, a few years ago, with Internet becoming part of our everyday lives and regulation by architecture becoming part of Internet. Internet is changing our legal system right now. And guarding these changes towards bringing about an acceptable result equates keeping our legal system sustainable. That is, at least to me, an important point of interest in the war on file sharing. Fuller[7] specifies eight dangers for our legal system's sustainability, each providing a sufficient condition for losing it: (1) no rules at all, (2) the rules are unavailable, (3) the abuse of retroactive legislation, (4) the rules are not understandable, (5) the enactment of rules is contradictory, (6) rules require conduct beyond the powers of the affected party, (7) such frequent rule-changes that subjects cannot orient their actions and (8) incongruence between rules and their administration. Anyone interested in regulation by architecture will directly understand that these conditions, or at least some of them, are seriously affected by IT. One might even hope that these conditions, when applied to regulation by architecture, will reveal at least part of its morality. This will be discussed in section 4. For the moment it suffices to conclude that if regulation by architecture invades our legal system, we at least need to know so much about regulation by architecture as we need to answer these questions. That is how far we will look in the next two sections, no further and no less far.

## 2. Asking a Question

Looking for morality in regulation by architecture, we need to identify the spots where regulation by architecture may occur. In order to have a story-line supporting the identification of spots where IT-use is susceptible to regulation, I follow the

[6] See for instance Chapter 5 (A Reply ro Critics) in: Lon L. Fuller, *The Morality of Law*, Yale University Press 1969 (Revised Edition).

[7] Lon L. Fuller *o.c.*, Chapter 2 (The Morality that Makes Law Possible) p. 33-94.

usual steps to obtain an answer to a question from the Internet. So in this section, the guiding perspective is that of the service user's – of the one who gets regulated. Actually, I will employ two different user types: one individual 'consumer' user at home, accessing the Internet through a continuous, unrestricted ADSL connection and one 'corporate' user, using a corporation-provided desktop for his work – as such embedded in the rules and policies of a (presumably security aware) company. Using Google as a metaphor for Napster, the corporate user will experience regulatory forces directed towards protection against internet abuse and other dangers to the corporation, not completely unlike some regulatory forces employed by the music industry and as experienced by 'consumer' peer-to-peer users.

## 2.1 **Roles in IT practice**

Where relevant, I will have to address issues of IT practice. One of the characteristics of IT practice is that services tend to be fragmented and organizationally distributed.[8] This trend leads to new professions emerging in IT practice. There are eight distinct roles/professions I consider as established. These are:

1. of *hardware providers*, who design, build and assemble the hardware needed by the service – Intel is an example,
2. of *network providers*, who provide backbone cables and routing capacity – Level (3) is an example,
3. of *access providers*, who provide access to the Internet infrastructure, thus facilitating access to the service – your internet service provider is an example,
4. of the *hosting service providers*, who provide Internet accessible disk capacity for the service – most access providers are also hosting service providers, allowing you to publish web pages and collecting your email for you,
5. of *service entrepreneurs*, who decide on the functionality of the service – for the Google service this is Google Inc., for Napster it was initially Shawn Fanning and later Napster Inc. and finally Bertelsmann AG),
6. of *software providers*, who actually design, write, combine, deliver and maintain the programs necessary for the service – examples are Microsoft, Oracle, Sun and Grokster,
7. of *application service providers*, who actually deploy, configure and maintain a collection of programs as a service – in compliance with conditions set by a service entrepreneur – an example is a corporation providing desktop services to its employees,
8. of *content providers*, who decide to make content available to the service (this decision may be indirect: publishing a website may render it accessible via Google) – if you maintain a website, you are a content provider.

[8] An interesting example is shown by the largest Dutch Bank (ABN Amro), anno 2005 planning to outsource up to 95% of its internal and external IT services.

Each and every role requires its own expertise and brings its own responsibilities. They may be considered to be the specialized institutions of the trade, partly involved in regulation by architecture and may, in that capacity, be expected to behave morally. Each and every role plays a part in file sharing services, and may thus turn its practice towards either solutions to or escalation of the war on file sharing. Much of what follows below clarifies the risks and opportunities of what these often hidden role players may do in the area of regulation by architecture. And yes, of course, a single actor can play several roles. As a matter of fact, many important innovative services are conceived and realized by individuals, initially playing roles 4-8 simultaneously.

## 2.2 **The story**

Imagine yourself to be interested in a vaguely remembered piece of music called 'Two Part Contention' as once recorded by the Dave Brubeck Quartet. You have a PC at hand and start it up. After some time you see your desktop and log in. You start your Internet browser and visit http://google.com. You enter 'two part contention Brubeck' in the search form and hit the Enter key on your keyboard. I just did so myself. I see the first 10 of circa 1760 results, fetched within 0.29 seconds. The results shown are information snippets from the central Google database. They are ordered in an effort to estimate relevance. All of them have a title. When I point my mouse at any title and click the left button, I will get access to the information itself. It is published on some individual's website (if it is still there – if not, I can try the Google cache). Google gives me the location, I browse the results.

One of these results is by amazon.com. It reveals the fact that the original recording on April 18, 1956 was digitally remastered, was re-released as a CDROM on October 20, 1998 and can be bought for $ 11.98. So far, the *structure* of Google is not so very different from Napster. I recognize a searchable central server database, providing directions for direct access to individual files on individual web servers.[9] However, there is no music file in sight. Quite different from Napster in this respect, and much less controversial to the music industry.[10]

This story also reveals some real innovation of commerce. Between 1970 and 1990 I was consistently searching for the record, never finding it in a new or second-hand record shop nor in a record or CD library. In all, I may have spent 20 hours of fruitless searching before giving up. Anno 2006 the whole effort costs a few seconds – and succeeds. A spectacular reduction of consumer transaction cost.

I will use this story to point at IT concepts, relevant to regulation by architecture.

---

[9] Any website you see in your browser is also a file on a web server.

[10] In a recent suit filed against Google in their initiative to give access to university library content, the publishing industry may have a different view.

## 2.3 **Booting**

To start up my computer, I simply push the power button. Some lights flicker irregularly, some noises are heard. I wait. Things start happening on the screen. It eventually freezes and shows me a form to log in. A very common event indeed. Do I get regulated?

One way to describe what happens during start up is that the evolution of computer science has been replayed inside your computer, operating on the hardware at hand. The hardware itself represents the engineering evolution up to the time it was designed. Basic components are a processor and some memory, designed to communicate in rather quick cycles.[11] The processor can perform simple computations and comparisons concerning information in registers (with 32 or 64 bits).[12] The memory can store information in and supply information from memory words (often: bytes). Conceptually, information in memory is distinguished in instructions and data. The processor uses the instructions to compute the data. It stores the results in memory again. These results may be either data or instructions. This communication game is performed by three[13] quite simple automata. Their combined power is overwhelming.[14] Together they are often called a 'Von Neumann Machine'. [15] The Von Neumann machine architecture is considered *the* invariant fundament of IT. After all, it was first published in 1945 and it is still, after 60 years, to be found in each and every electronic computing device available to the public, be it in your PC or in your credit card, in your car monitoring system or your washing machine. Pretty invariant for an industry, otherwise renowned for its thrifty innovation speed.

On start up, your computer powers up its Von Neumann machine. But that is not enough. To be of any use, it must be able to communicate – to read input and to write output. Peripherals, like hard disks, screens, keyboards, network adapters, disk readers and pointing devices are very practical necessities. Communication with peripherals is guided by the processor. In order to do so, it must know what peripherals are there. So, on start up your computer reads its own hardware con-

---

[11] Several gigaHerz per second is the speed of a cycle in a mainstream personal computer anno 2005.

[12] Most PC processors have 32 bit registers anno 2006; 64 bit registers are coming into fashion, though. The earliest 'mainframe' computers did not have standardized register lengths – their registers tended to be larger, though.

[13] Three, because a processor is the combination of two automata: a control unit and a computing unit.

[14] Much has been written about this potential in the last century. Hofstadter's *Gödel, Escher, Bach*, Basic Books 1979, provides an intriguing picture of the mixture of strict formal proof and emotional speculation, evident in discussions about the power of computing in still earlier days.

[15] After John von Neumann, who wrote down the architecture in an obscure paper from as long ago as 1945 (now, of course, available on the Internet: <http://www.virtualtravelog.net/entries/2003-08-TheFirstDraft.pdf>) (*First Draft of a Report on the EDVAC*).

figuration from its BIOS.[16] The BIOS also tells your computer on which device to look for the very first instruction set it is expected to perform at start up. Thus, it 'boots'[17] itself and gets ready to operate.[18] Here we find a first handle for (possible) regulation: selling computing devices with BIOSs that will only recognize specific peripherals.[19]

### 2.3.1 *Some history: Moore's law, law, standards*

Apart from economics, innovation constraints in IT follows three lines – I consider them *trends.* Naming them will help to identify their role in current and future forms of regulation by code.

a. Moore's law – hardware innovation

In the early days a computer was quite something. The Leiden University computer of 1975 filled a small factory hall and needed around 50 full-time academics to keep it in service.[20] It boasted two megabytes of memory. Its processor cycle time was expressed in mega-, not in gigahertz.[21] Hardware has both shrunk and dropped in price in an incredible way during the last few decades. My current notebook (bought in 2001) has the combined capacity of some 200 Leiden University computers anno 1975 and its price, to a single one of those, is less by seven digits. This trend in miniaturization and price reduction is often referred to as Moore's Law and is expected to remain valid for another 20 years. If so, it will yield interesting results regarding music files. In my breast pocket is an iPod clone, carrying the content of 150 CDROMS. In 20 years, every one of us will be able to carry around the equivalent of 153,600 CDROMS in our breast pockets. It will take more than 50 years of our working lives to listen to them all, once, and a few years of our lives to upload a personalized selection. Will the war on file sharing be pacified by then? And will new iPods of this size then be imprinted with the world's comprehensive musical repertoire before being brought to the market (like, currently, operating systems in PCs)? Or will they be distributed 'empty' and meant to be connected and

---

[16] Basic Input Output System – often a separate flash memory unit.

[17] A reference to Von Münchhausen, getting himself out of the swamp by pulling the strap of his own boot.

[18] This also accounts for the fact that 'upgrading' your BIOS is dangerous – if something goes wrong you may not be able to use your computer again.

[19] It is understood that this type of regulation may under certain circumstances be legally controversial (e.g., competition or consumer protection law), but that is not the point here – from an IT perspective I only look at handles for *possible* regulation.

[20] None of these were formally educated in IT – the first Dutch computer science faculty started in 1975.

[21] <http://www.research.ibm.com/journal/rd/441/amdahl.pdf>.

managed digitally? It is clear that Moore's law will change architectural constraints and will influence economic choices, like what business model to employ.

b. Law – intellectual property and competition

IBM, Leiden University's hardware provider in 1975, was then *the* market leader and immersed in litigation on competition issues raised through its reluctance to tell the world what languages were used by IBM computers to communicate with peripherals. Whoever bought or rented an IBM computer, also bought or rented IBM peripherals. Other manufacturers simply could not design peripherals for IBM computers, because they lacked essential information. The importance of interface design, i.e., sockets for connecting hardware and protocols for communicating control information, started to come to light. They resulted (in Europe) in the decision that market power must not be abused by withholding essential connectivity information for longer than the short term, and later in extensive 'interconnection' regulation in the telecommunication sector.

Intellectual property rights aim to strike an effective balance with fair competition rights by providing temporary monopolies to hardware inventors (patents) and to software and content creators (copyrights). Hardware patents have proven effective and are (unlike HIV drug patents) hardly controversial economically. Important aspects are the (short) time-limits of protection and the publication of the invention, allowing innovation to proceed. There is a trend to allow the patenting of software 'inventions' that raises serious discussions.[22] The main risk considered is that strategic software patent litigation will induce excessive transaction costs for dispute resolution,[23] effectively excluding small businesses from the software innovation market.

The main legal protection of software is by copyright, which seems to gain ever increasing time-limits.[24] There are two trends which are of interest here. They both bear characteristics of anomalies. One: the protection of software innovation becomes two-faced when patent and copyright protection become cumulative instead of complementary. Two: there is a trend where copyright is used to promulgate open source licences for free access and use of these computer programs by all. Thus, in the software industry, copyright becomes two-faced in the sense that it is not only used for protecting innovation incentives indirectly through economic business opportunities, but also for protecting public interest directly by those creators

[22] The USA has adopted this practice since 1996, Europe meets serious political opposition in the attempt to follow this trend.

[23] For trivial and non-trivial patents alike.

[24] Consider the Eldred case, confirming the Sonny Bono Digital Copyright Term Extension Act of 1998, more or less harmonizing the USA protection period with the European, towards 70 years after the creator's death.

(apparently not susceptible to the economic incentives offered) who wish to donate their creations to the public domain resulting in the open source movement.

Finally, there is a trend in copyright protection *protection*, making any attempt to *hack* protection hardware and software a felony.

c. Communication and content representation standards

For personal computers, the times of secrecy concerning interconnection information lie behind us. First, IBM lost its litigation. Second, several accessible standards for peripheral hardware connectivity have emerged, (e.g., ISA and EISA[25]). And TCP/IP became *the* open communication standard. In a (still) generic area like IT, the emergence of *conventions* for interoperability is essential for mass application. Communication standards are such conventions. Their regulation potential is huge. Address information is, for example, an architectural necessity for communication. It is pretty comprehensively being accessed by the authorities for policing and terrorism-prevention purposes, at least in Europe. Resulting regulation may be indirect in this instance, making you think twice about what to ask and what not to ask Google, for instance. This issue concerns your privacy and your autonomy regarding information processing. And mine, for that matter. The war on file sharing is pushing this issue, where sniffing our information processing behaviour is becoming *en vogue,* in order to prevent copyright infringement more efficiently.

Apart from communication standards, the emergence of standards for content representation is also extremely important for mass IT services. When the Fraunhofer Institut created its mp3 standard for compressed music files, a host of applications followed, supporting this standard – Napster is only one of them. These representation standards have their own architecture. Modern architectures for content files are increasingly supportive of IT applications that manage the use in accordance with licensing schemes (DRM).[26] There is definitely a trend towards expanding digital copyright management beyond anything dreamed about by anyone before 1984,[27] as you will have experienced if you are using one of the later Microsoft Media player versions.

---

[25] I will only mention a very few from the huge pile of abbreviations that make up a large part of the IT professional language, and will not elaborate on them unless considered absolutely necessary in context. Wikipedia (at <http://en.wikipedia.org>) is a convenient source, explaining most of them very adequately if you should be interested.

[26] DRM systems also have implications for innovation, privacy and free speech. See also: <http://en.wikipedia.org/wiki/Digital_Rights_Management>.

[27] With, maybe, the exceptions of Aldous Huxley (*Brave New World*) and George Orwell (*Nineteen eighty four*).

### 2.3.2 *The operating system*

When your computer boots, the program started is part of your operating system – anno 2006 this will likely be some version of Microsoft Windows,[28] less likely some (open source) Linux or Unix brand. The operating system makes its basic functions (kernel) available. Let us look for handles for regulation in these basic functions.

One of those is your *file system*, meant to give you control over file[29] storage and file-storage organization in your peripherals. File system architectures are operating system specific and provide (often rather crude) means to implement security restrictions (write-read-execute) for use (by owner, group or all) on individual files. It is self-evident that whoever is responsible for critical information on her computer should be knowledgeable about security issues, especially when her computer is connected to Internet. It is also self-evident, that security restrictions may hamper functionality, excluding access to potential users. And in this context it may be useful to realize that to *really* (and irrevocably) erase the contents of a file has become next to impossible in modern operating systems. If your file system becomes corrupted, your PC may behave unpredictably. To avoid this, operating systems tend to remember earlier (hopefully uncompromised) states of your file system. This 'journaling' capacity complicates getting 'really' rid of information in systems employing it. Again, we have a handle for regulation – this time apt for policing and governance activities: is it possible to prescribe the employment of journaling file systems, for instance by, or in, corporations? Why not?

Another basic function is *network access*. If your computer has a network adapter, it will have to get access to the internet by 'plugging in'. Therefore it needs an unique IP-address, that will be provided by an access service provider, who can impose contractual conditions. If you want to map domain name(s) on your IPaddress, you need the service of the Domain Name System (DNS). Connecting your network adapter can be configured manually, but also automatically. Your machine may have a fixed IP address or a dynamic one, allocated by the automated DHCP[30] function (which makes it more difficult to act as a publication server). The com-

---

[28] Boosting a 95% worldwide market share for PC operating systems in 2005.

[29] A file is a container for information. Your operating system can, e.g., copy, remove, rename or execute files. Files may have an internal structure, specific for applications using them. Word processors expect their own, specific file structure. In file-naming conventions, an extension is often used to reflect the internal structure. The MSWord text processor will for instance generate (and expect) '.doc' extensions.

[30] Dynamic Host Configuration Protocol (DHCP) is a *client-server networking protocol*. Most organizations use DHCP. A DHCP server provides configuration parameters specific to the DHCP client host requesting, generally, information required by the host to participate on the Internet network. DHCP also provides a mechanism for allocation of IP addresses to hosts (from <http://en.wikipedia.org>).

puter, providing (DHCP) access to the Internet for a local network is a *router*. European regulation often prescribes *public* router services (deployed by Internet Service Providers) to register traffic information about the internet communications it facilitates. Will this, in time, prove to be contagious for private networks?

Another basic function is your *firewall*. If your operating system is well designed, it will not accept any information from the internet until it has activated a set of rules with which this information has to comply. A basic firewall understands the information addressed to your system, using the TCP/IP standard (protocol). A significant bit of information is the 'port', used to direct the information to specific programs. So firewalls may be used to block peer-to-peer communication using specific ports.

Yet another basic function is the *communication authentication service*, meant to keep unauthorized users seeking log-in access through Internet away from your system. This service requires encryption and identity verification, currently made generally available through a combination of protocols (like SSH, SSL, TLS) and verification services offered by a trusted certification authority (CA). There is a difference between certified CAs and non-certified CAs. A consumer may easily act as a non-certified CA for self-maintained user communities. Professional users will rather depend on certified CAs. Andersen has pointed out the architectural flaw of security through trusted parties: these parties become and concentrate *eo ipso* security vulnerabilities themselves.[31]

And yet another basic function[32] of your operating system is its *shield against viruses and worms*. Viruses and worms are computer programs that aim to operate in secrecy on your PC, usurping or even harming it. Parties that want to send Spam will try to use your computer as a mail server. Parties that want to know what you do (for instance, to get at your credit card information) will try to install small programs on your PC that read your keystrokes and send them to places where they can be analyzed and used for 'governance', policing or plain forgery. Viruses and worms abuse 'security holes' in your operating system (or related programs).[33]

Consequentially, another basic function of your operating system tends to be *automatic maintenance*. Security holes are discovered all the time. So operating system providers have to provide updates all the time. To reduce user transaction costs, these updates will be installed automatically. This introduces serious security issues in themselves. To be able to update your operating system, the updating party

---

[31] See: <http://www.cl.cam.ac.uk/~rja14/tcpa-faq.html> (Ross Andersen, *Trusted Computing Frequently Asked Questions).*

[32] As a matter of fact, this is not yet a part of most operating systems. Virus and worm combating programs are most often separate services. Still, they function at operating system level – checking for malicious software in emails and downloaded or consulted web content, even before they become available to the user.

[33] Most frequently the buffer overflow exploit. See: <http://en.wikipedia.org/wiki/Buffer_overflow>.

must have the authority to access the most vulnerable parts of your PC. One (obvious) risk is a malicious maintenance-service provider imitator. But automatic maintenance may also be used for regulation. Automatic maintenance may, for instance, be used to add Digital Rights Management features to your desktop software.

### 2.3.3 *Handles for regulation during boot*

During the few seconds it takes your computer to boot, your computer uses well established tricks of the trade to prepare itself to get to work. Its BIOS tells it how it is configured. Thus, the BIOS may also be used to tell your computer how it *should* be configured. Talking to hardware follows communication standards. In theory, it is possible to define communication standards to exclude communication with specific types of hardware – for instance hardware that accepts files in mp3 format. Your firewall may be used to do the same for services over specific IP ports.

During start up, you have some relation with your hardware provider(s), with your operating system software provider and your access provider. Relationships with hardware providers are of a pretty straightforward private law nature. If the hardware does not function according to its specifications you get it repaired or replaced. If you lose important information, for instance when your hard disk brakes down during start up, reread the terms and conditions and decide to implement better back-up procedures in the future. There is a catch, however. Your hardware may be, in principle, a generic machine – nonetheless its BIOS may restrict its behaviour significantly. You may further be regulated by your file system, your network access provider, by your firewall and by your application service providers during maintenance.

If you are a 'consumer' user, you have choices. You will be bound by contracts with your providers. If you want to launch a server yourself, seek out a service provider that will allocate you a fixed IP address; if you want to use peer-to-peer services, seek out a service provider that does not block the port numbers required. If you want to keep in further control, you will have to invest a remarkable amount of effort in acquiring the necessary IT expertise. But you *may* choose to do so, and in that case join one or several 'open source' communities.[34] However, choosing the open source alternative will hardly be *efficient* in an economic sense under conditions where time equals serious money. The persistence of some open source communities[35] consequently remains something of an economic puzzle. Apparently, values other than monetary rewards are part of the play here.

If you are a corporate user, your relationship with your company is under the law of your employment contract. This may easily include the acceptance of specific

[34] Open source communities operate on a remarkably ancient business model: who contributes is rewarded by the contributions of all other community members.

[35] Like Linux, FreeBSD, Postgresql, MySQL, OpenOffice, Thunderbird, Firefox, Apache and Aolserver.

BIOS, file-system, firewall and security policies. These are heavy weapons. Oxford University thus banned mp3 files from its intranet, at least when I last visited in 2002.

So, even before you have gained access to your computer, you will not only be regulated by mandatory law in general and specific private law contractual clauses, you may also be the subject of hard-wired regulation, implemented in the BIOS, in your operating system, in IPaddress allocation methods, in communication standards, in firewall rule sets and in maintenance and security policies. This regulatory repertoire is available to both sides in the war on file sharing.

## 2.4 **The desktop**

Back to our story. My computer has booted. Having been given the log-on form,[36] I provide my username and password and hit the return key. Again, I have to wait. My screen gradually takes the shape of my desktop, showing lots of icons. I have gained access to my desktop. Am I regulated?

If your operating system is a Linux or Unix brand, most likely your screen will initially behave as a 'terminal', as a non-graphical monitor device, showing lines of text scrolling off the screen. That is the fearful command line interface (CLI) and the default way your operating system accepts commands and will show what it is doing. This messaging ends with a character-based log in dialogue. If your operating system is by Microsoft or Apple, you will not be shown the CLI unless you ask for it[37] – your screen is immediately in 'graphical' mode. Linux and Unix operating systems use add-on programs that have to be configured to show this type of behaviour. A fundamental difference between Windows/Apple and Linux/Unix being the integration of the graphical desktop user interface and the operating system in Windows/Apple. Specialist graphical desktop user interfaces (like Gnome and KDE) are provided by several specialist organizations for Linux/Unix users. One consideration may be of relevance here. Integrating desktop software into the operating system supports hardwiring desktop regulation through the operating system.[38]

The desktop is several things. It is (1) the port to my operating system and (2) the port to my applications. Let us take a look at regulation opportunities there.

---

[36] And hoping no keystroke broadcasting worm has been activated,

[37] Try running the command 'cmd' in any MS-Windows system.

[38] For instance by lock-in schemes. Integrating desktop software into the operating system suggests that the markets for operating systems and graphical desktop interfaces need not be considered separate ones. A somewhat surprising state of affairs, considering the pre-existence of several separate systems for graphical screen rendition and remembering the outcomes of competition lawsuits confirming separate markets for operating systems, browsers and media players. Before Apple OS and MS-Windows were brought to the market, Xwindows was already there as a separate generic windowing interface for application programs.

### 2.4.1 *As a port to the operating system: policies*

As a user, you may want access to the basic operating system functions mentioned – you might, for instance, want to download a program from the Internet, save it in your file system, give it an Icon on your desktop and execute it for evaluation. This works for me at home (as a consumer user), but not at work (as a corporate user). In both roles, I use the same operating system. The difference is in system configuration. The behaviour of an operating system can be configured per individual user or per user group. Configuration scripts impose restrictions on operating system functionality. These restrictions regulate. The difference between being a home user and a corporate user is that I have the authority to change policies at home, which is my boss's at work. What matters is the way this authority is used. In organizations, this regulation often more or less 'emerges' in an opaque practice, leaving competency and legitimacy questions half- or unanswered. This may be due to a very classical issue in ITgovernance: the asymmetry in expertise between decision makers (service entrepreneurs) and technicians (application service providers). How can an ITlayman decision maker individually and independently evaluate expert IT opinions on security risks through possible buffer-overflow attacks and how can he fight them? The knowledge asymmetry implied is a handle for *technocratic* digital security management. This is a recurring theme in regulation by architecture issues,[39] and a forceful argument for discussing its morality.

In a somewhat wider perspective, imposing operating system policies is part of ITgovernance and ITgovernance is a question of politics. The current state of the art in ITgovernance still requires significant transaction costs.[40] And: ITgovernance proves an effective tool for 'strategic coordination' – not only in organizations, but also in restrictive, non-democratic societies.[41] In short: ITgovernance requires ITmorality.

### 2.4.2 *As a port to applications: stand-alone, client-server, peer-to-peer*

Your desktop is also a port to your applications. If you are allowed to, you can select and install them yourself and make them available via *icons*, small pictures helping you to remember what application is represented.[42] Behind these icons,

---

[39] See also the sections on Regulation by design and Regulation by Data Models.

[40] An interesting example is provided by the implementation activities issued by the 2002 Sarbanes-Oxley Act. In short, this Act allocates personal liabilities to CEOs and CFOs of large companies for quality information supply to stockholders. Accountancy consulting companies are currently extremely busy, searching for adequate procedures and policies for corporate ITgovernance, since practically all information to be supplied to stockholders is produced using information systems.

[41] See for instance: Bruce Buena de Mesquita & George W. Downs, 'Development and Democracy', in: *Foreign Affairs,* September/October 2005.

[42] Corporate users will most probably have experienced a change in this respect lately – security issues have urged many corporate service providers to adopt more restrictive policies. My university,

different application architectures may hide. The most common application architecture has always been the stand-alone application, that is, a program that runs on your PC without any outside help or interference over the net. Word processors are an example. But stand-alone applications are becoming more and more *passé*. Almost all serious stand-alone applications become inserted with a communication module, supporting automatic updating from a server on the web. If so, your stand-alone application has changed its architecture and has become part of a client-server architecture. The client-server architecture supports one server program to communicate (and provide services to) many client programs; its architecture supports centralized services (and control). This architecture has entered the media player world: media players may consult a digital rights management server before it will play any file. This digital right management architecture came to general fruition after the peer-to-peer *hausse* appeared. The peer-to-peer architecture is a decentralized one, where each node (or participating program) plays both client *and* server roles, and in principle with any other node within its reach. Where the architecture of internet itself is peer-to-peer, it need not really surprise that at some moment in time someone would dream of employing it for file sharing services. Regulating peer-to-peer services is not through a central service, it is done by design: some peer-to-peer services allow you to be a passive user, only downloading material and not uploading any, others do not. Music-file peer-to-peer services may also be regulated through particularities in the content of the files being shared, and in the management of the media players used to listen to them.

## 2.5 **Two application semantics, four efficiencies (intermezzo)**

That applications do regulate is not self-evident – you may be used to thinking about them as tools that support your work, rather than as tools, that by that very feature also constrain your behaviour. After all, you will not consider the uselessness of a hammer as regulation when you need a screwdriver: you simply put it down and fetch the screwdriver. To argue why this is often different for IT applications, I have to address the two-sided monster of computer-application meaning.

At this stage in the story, I was pointing my mouse at the icon identifying my internet browser. I activate it. Subsequently, I direct my browser to the Google search page to ask it my question. I have done this so often that what these actions *mean* has become self-evident by convention. But we are facing a discussion that will ultimately touch upon my responsibility, perhaps even my liability for what such actions imply – or on the responsibilities, perhaps even liabilities of the service providers that mediate these actions and implications, so self-evidence will not suffice.

---

for instance, will no longer allow me to install *any* program, not even a perfectly legal copy of a newer version of the word processor than is the current standard at the office.

Focusing on meaning is useful, because it links actions at a technical level (computer actions, data processing) to conceptualizations and because conceptualizations are needed for discussion about *legitimate* regulation by architecture – indeed, for regulation as such. Thus, talking about regulation by architecture requires proper conceptualization and proper semantics, linking the behaviour of computers with our understanding of it. As it happens, Ludwig Wittgenstein has described both sides of computer application meaning in a useful way, at least for practical purposes.[43] To avoid philosophical esotery, I will employ two short web-published characterizations by Garth Kemerling.[44]

### 2.5.1 *The reference approach*

Kemerling handsomely summarizes the early Wittgenstein as follows:

> 'In the cryptic *Logische-Philosophische Abhandlung* (*Tractatus Logico-Philosophicus*) (1922), the earlier Wittgenstein extended *Russell*'s notion of logical analysis by describing a world composed of facts, pictured by thoughts, which are in turn expressed by the propositions of a logically structured language. In this view, atomic sentences express the basic data of sense experience, while the analytic propositions of logic and mathematics are merely formal tautologies. Anything else is literally nonsense, which Wittgenstein regarded as an attempt to speak about what cannot be said. Metaphysics and ethics, he supposed, transcend the limits of human language. Even the propositions of the *Tractatus* itself are of merely temporary use, like that of a ladder one can discard after having climbed up it: they serve only as useful reminders of the boundaries of our linguistic ability. This work provided the philosophical principles upon which the logical positivists relied in their development of a narrowly antimetaphysical standpoint.'

The relevance of this approach *here* is its eerie accuracy when we look at the technical meaning of computer applications behaviour in the manner your software provider will. My typing in the phrase 'two part contention Brubeck' creates a physical configuration of bits, and exactly this configuration and only this configuration constitutes the meaning of the phrase to the geniuses who created Google. They are not 'really' interested in what I am looking for. They are interested in matching the physical meaning of my question with all other information made physical and made available to them. They are processing representations. As soon as the IT professional starts designing her service, she seems to lose all professional interest in what my question means to me, or to you. That is 'literary nonsense' to her. What

---

[43] Wittgenstein's work is almost exclusively referred to in theoretical and philosophical discussions. My practical reading will most likely hurt some linguist-philosophical feelings, but I am not taking part in philosophical debate – I am simply using its results. See also footnote 97.

[44] <http://www.philosophypages.com/ph/witt.htm>.

she is trying to achieve is that any information that has to be matched becomes available to her and her artifacts in a specific representation language she can use for computational purposes. She will focus on effective and efficient matching and computation, not on what is being matched or computed. Of course, this preoccupation may lead to serious misunderstandings between a principal and her ITdesigner, not so very much unlike the misunderstandings that may arise between a principal and her legal advisor, for instance when the latter starts speaking in the technical 'representation language' of the private law discipline. The crucial assumption for successful co-operation between user and application provider is that representations of input *and* the representation of processing results will be useful to the user. Apparently, the matching, searching, ordering and presentation formulae used by Google have some meaning to the user in that sense – otherwise no one would use it.

Every application may have its own formal representation language, may speak its own 'language,' so to speak. You notice that your word processor 'speaks' its own representation language as soon as you receive a document for editing, produced by a word processor of another brand. And it gets even worse: your application program does not only expect a specific representation language for its data, it also has a 'driving' language (a control language). The control language of your word processor gives you control over it. To be able to underline a word, you will have to know the commands to tell your word processor how to do that. But, again, every application has its own control language. Learning application control languages is what you have to do if you decide to use IT applications. Tiresome. In summary, every application has its own 'ontology', a somewhat mythic concept borrowed from serious philosophy. In its ITmeaning, the ontology of an application is the *repertoire* of the combined concepts its representation and control languages can, or are designed to handle. The ontology of an application gives it control over you by its sheer limitations. Do not expect serious results from anything you try to express outside these limits. The application will not even pardon your French because it simply cannot hear you. Try telling a web-form something meaningful that does not comply with the fields in the form. The ontology of an application defines its universe. If a tax law states (1) that you have to use a web-form for communication and (2) that a recent tax law reform declares circumstance X to be tax-deductible and (3) the web-form has no entry for circumstance X, you may feel this type of regulation.

Knowing the ontology of an application may give you a fair notion of what it can and cannot do for you from a reference perspective, but do not be too sure about it. Applications may speak with other applications. They may be compound, and consist of any number of sub-applications and sub-sub-applications, right down to the level of the hardware. Getting to know an application is quite a lot of work. Often even more than designing and creating it.

The reference approach (as described by Wittgenstein in 1922) can, in principle, provide certainty about the meaning of an application because the behaviour of computing hardware and software is determined by its very construction. As a consequence, in the reference approach, the physical behaviour of the machinery grounds the meaning of an application program. If I make a program, telling the computer to print 'Hello world', the meaning of this program is in the computer behaviour leading up to its actually printing 'Hello world'. I am indeed talking about processor and memory behaviour and the like. In practice, grounding the meaning of any substantial application by reference will require so much analysis and fragmentation that no single human mind can do it. Nevertheless, the reference approach is typical for ITprofessionals. For reliable computer program semantics in this sense, the IT profession heavily depends on design methods, on the reuse of incrementally growing libraries of proven software 'objects' and on co-operation between many designers and programmers.

From a regulatory perspective, the problem with the referential meaning of applications is the conceptual abyss it shows when trying to get to know large, complex or compound applications. As a result, not a single significant application can be guaranteed to always behave predictably and error-free.[45]

Usefulness to the user does not come in a simple manner. Formal representation languages are always necessary. The art of computer programming focuses on bridging the gap between the formal and the useful. Here, the application development process will regulate more rationally. In almost every case choices will have to be made at a technical level, making it necessary for technicians to make decisions for you.[46]

### 2.5.2 *The convention approach*

The reference approach is hardly ever open to users.[47] They need another approach to the understanding of computer services. Garth Kemerling continues his Wittgenstein summary as follows:

> 'But just as his theories began to transform twentieth-century philosophy, Wittgenstein himself became convinced that they were mistaken in demanding an excessive precision from human expressions. The work eventually published in the *Philosophical Investigations* (1953) pursued a different path. In ordinary language, he now supposed,

[45] This may induce some pretty weird behaviour in users: I, for instance, have inductively come to the belief that the sudden 'freezing' of my word processor on large texts is the result of inserting text in combination with automatic hyphenation. Now I avoid this combination and hope for the best.

[46] This has promoted the unified development methods mentioned later, trying to minimize this form of regulation (Regulation by application design).

[47] Apart from the effort necessary to read and understand computer programs, the source code of commercial computer programs is hardly ever made available.

> the meaning of words is more loosely aligned with their use in a variety of particular "language games". Direct reference is only one of many ways in which our linguistic activity may function, and the picturing of reality is often incidental to its success. Belief that language can perfectly capture reality is a kind of bewitchment, Wittgenstein now proposed.'

And this second approach (further referred to as the convention approach) describes the manner in which a user will find *her* meanings of computer programs – not in their behavioural grounding in computers, but in their use in the language game, one for every application, generated by the user's repeated use of the application in practice.

This second approach to application meaning is much more in line with ordinary life than the first one, which is technocratic at best. The second approach builds on real user experience, and on the practice we have gained in allocating meaning to phenomena in our day-to-day lives in general. And we tend to have a great capacity to find categories and concepts for ordering our experiences. Since we are turning our society more and more into an information society, we are in need of categories for computer application characterization.

### 2.5.3 *Application characteristics by convention*

My assumption is that how you and I give meaning to any desktop application relates to its character, to our expectations of it and our compliance with the policy it enforces. Each desktop application has four characteristics[48] of different weights. Together they determine the application's character. Every desktop application has economic, administrative, autonomic and collective efficiencies. Sometimes one of these characteristics is so much in command that the application (or its policy) is characterized by it. I will now be more specific about these characteristics and give each a description and some valuation criteria – finally instantiating the characteristics for four applications. For these, I choose applications used in file sharing: a browser (Explorer), a search engine (Google), a media player and a peer-to-peer application (KaZaA).

#### a. Economic efficiency

The main characteristic of economic applications is their potential to do work for you and provide results. Maths applications are the first applications in computing history, and they are mainly economic. Computers compute maths results better, quicker and cheaper than any human being. Economic applications are valued higher

[48] These characteristics follow from digesting the work of Douglas and Wildavski, *Risk and Culture*, University of California Press (1982) inductively, as acknowledged in Part V.

when they save time and money and when they yield results you trust because they perform a computational model you accept as reliable. Every desktop application has an economic efficiency.

A browser will efficiently access websites for you and show their content, a search engine will efficiently match your search question with a huge heap of world-wide internet content and order the results using tricks in the attempt to show most relevant hits first, a media player will efficiently play your music files and a peer-to-peer application will efficiently search for music files and make them available. Economic efficiency supports market regulation.

b. Administrative efficiency

The main characteristic of administrative applications is their potential to guide your work administratively, directly and indirectly. They will urge you to follow procedures and to comply with regulations. They will also broadcast monitoring information to executives for digestion in their managing and policy-making processes. Mainly administrative applications are, for instance, the air flight web services – showing web forms you may use to order a seat for a flight to London and to pay for it by credit card. Administrative instruments have emerged in the wake of economic applications. Executives soon understood that economic applications may provide additional information, useful for management. Potentially, any application may report on how it is being used and the weight of this reporting determines the weight of its administrative efficiency. This reporting functionality has been greatly enhanced by the introduction of the internet infrastructure in combination with client-server architectures. Administrative efficiency is valued higher by the user when she accepts the privacy and authority issues involved and when she comes to better trust the way authorities use the information. Administrative efficiency is valued better by executives, when the application provides better control. Every desktop application has the potency for administrative efficiency, because every operating system allows for the registration of application use. A recent trend is adding administrative functions to the operating system itself: the client-server part of any Windows XP system broadcasts its own unique identification number, together with hardware characteristics and service-pack versions to the Microsoft server, supporting not only effective maintenance procedures, but also intellectual property rights infringement monitoring.

A browser will store your browsing history. A search engine may archive your web search behaviour (here is an interesting statement in Google's privacy statement: 'Google does not collect unique information about you – such as name, e-mail address etc. – unless you supply this information explicitly and willingly. Google stores information as time, browser type, browser language and IP address of every search question. The information is used to check our records and to provide more relevant services to our users'). A media player will store your listening history and

a peer-to-peer application may register your search, upload and download histories. Administrative efficiency supports direct regulation by architecture (policies, digital rights management) and indirect regulation by law (making administrative information available for policing and fighting terrorism), by culture (making administrative information available to company executives) and by the market (making administrative information available to service entrepreneurs).

c. Autonomic efficiency

The main characteristic of autonomic instruments is their potential to support your individual and creative qualities. Stand-alone word processors, graphical design and music composing tools will qualify for this category. Autonomic efficiency is valued higher when ease of use and reliability are better.

A browser liberates your access to any web site and any web service and allows you to create your personal collection of favourites. A search engine opens almost all of Internet's content to your search ingenuity. A media player liberates you from predefined play lists and allows you to create your personalized ones. Peer-to-peer systems allow you to search for music files by any keyword and 'test' the results. Autonomic efficiency supports individuality, or non-regulation, or creativity and innovation.

d. Collective efficiency

The main characteristic of collective applications is their potential to support you in participating in community co-operation, pursuing non-profit aims – aims that are often difficult to quantify directly. Search services (like Google) and Wikis (like Wikipedia) are examples. Collective efficiency was boosted when Internet infrastructure and www standards became pervasive (Google dates from 1998, the Wikipedia from 2001). Collective applications have a compound structure: there is generally a user function, a content provider function and an editorial function working together. Valuation follows these functions and is better when users' experience value (Google: to find), as well as content providers' (Google: to be found) as well as editors' (Google: securing a market share for ads) are better.

It is clear that successful peer-to-peer systems as well as successful search engines have high collective efficiencies. They bring public community sharing far beyond the traditional schemes. Peer-to-peer allows for global libraries *con* copy-machines, search engines allow for instant worldwide publishing *con* marketing. Looking at browsers and media players as stand-alone programs, they hardly have any collective efficiency. We have seen, however, that stand-alone applications tend to become more and more endowed with collective functions. Especially when these collective functions also have administrative characteristics, a sudden perspective presents itself for an almost comprehensive direct and indirect control of informa-

tion processing on Internet. Lessig is right.[49] Collective efficiency supports regulation by culture.

## 2.6 **Asking a question (summing up)**

Back to our story again in order to finish off regulation from the user perspective. My computer has booted (the BIOS exposes me to possible direct regulation). It is connected to the Internet (IPaddress allocation, as well as the protocol I may use, expose me to possible indirect regulation). I logged in, gaining my desktop through my operating system (opening up regulation opportunities through policies, through file system peculiarities, through network access, through fire walling, through authentication services, through applications meant to protect me against viruses and worms and through services that will apply security patches to my system). On the desktop is an icon, representing my browser. I start it up and tell it to look for the web service provided at URL http://google.com. This action may be used for indirect regulation since it may be stored and processed by my boss for management purposes. The search service shows me a simple form. After some reflection, I enter the 'two part contention Brubeck' search phrase and hit the return key. I get my results, Google stores my question – maybe to compute a profile of my (more accurate: my IPaddress's) information needs, in order to show me better focused ads, maybe to do something else. Google shows me the results in an estimated order of interest to me (when I have thousands of hits, this ordering will very likely directly regulate my subsequent Internet behaviour).

All handles for regulation mentioned may be, like any form of guidance, be for better or for worse. But they *are* handles for regulation. And they *are* being used with ever increasing appetite. And in the war on file sharing, many of the traces of our information freedoms used are put into information processes for control.

However, we have choices. If we accept that every application is characterized by four efficiencies, we may design the weights of these characteristics. If we want to push individual creativity, we need applications with low administrative and collective efficiencies. If we want to push collective creativity, we need applications with low administrative and low autonomous efficiencies. If we want to push administrative efficiency, we need low autonomous efficiency. If we want to push economic efficiency, we let the market do its thing. If we want to push autonomous efficiency, we need low collective and administrative efficiencies. Since all applications are man-made, all of these choices are made during application design.

In the current section I have discussed possibilities for regulation by architecture through the eyes of the user – and consequently I have focused on economic, administrative, autonomous and collective efficiencies and appealed to convention

[49] Actually, Lessig published his Code and other Laws in 1999. His vision is coming true at a frightening pace in 2006, though.

semantics. I could safely do so, because asking Google a question concerns applications and services that exist and have become part of our collective user experience. But the user perspective tells only part of the story. Regulation by architecture is designed. How?

## 3. Regulation by Design and Deployment

Fuller's eight conditions[50] have spurred Dworkin and Hart into jurisprudential criticism. Fuller's answer identifies some essential questions in an effort to exhume the silent assumptions that fuelled the debate. These are questions (instantiated to regulation by architecture) like: Is regulation by architecture a one-way projection of authority over citizens/users? *Who* can make legitimate regulation by architecture? *What* are her institutional roles? What are the *role moralities* involved? How does human interaction obtain its place in regulation by architecture and its administration? We need to know so much about IT practice, that we can answer these questions in order to make our assumptions transparent. So: what are our assumptions towards regulation by architecture? This is discussed in section 4, using the picture of regulation by design and deployment as developed here.

Here, the two semantics mentioned earlier return to the stage. The relationship between these two meanings (by reference and by convention) is considered the main point in application design. At least, inside the IT discipline. One of the IT discipline's accomplishments is a (more or less) unified methodological approach to bridge the gap. And, if at all, the characteristics of the application or service are planned there. In this section I focus on how the conceptual abyss between user and designer semantics is bridged in ITpractice. Part of the bridge is in application design methodology, but the main secret lies in data modelling. I will introduce these, remodelling Napster on the fly. Thus, the story in this section is about the design and deployment of Napster.

### 3.1 **Application design methodology**

IT design projects have in the past often proven difficult to manage. During the 1960s and 1970s, millions and millions of any currency were lost in failed IT projects and considerable academic effort was made to reduce feasibility risks in ITdevelopment projects. The work has converged in 'unified' heuristics (or methodology) for planning and realization of computer services.[51] The tremendous

[50] See section 1 of this Part.

[51] A huge pile of learned writing has emerged in this area, ranging from addressing the formal, e.g., Codd's famous *relational data model* [E.F. Codd: A Relational Model of Data for Large Shared Data Banks. *Communications of the ACM* 13 (6): 377-387 (1970)] and Dijkstra's almost as famous

amount of work in this area has resulted in much better manageable development projects, resting on a stable paradigm.

The paradigm is treacherously simple: if you want to develop a computer service, you take an idea, make a model of it in natural language and translate that to more formal models until it is a working computer program. Unlike in the development of a subway system, an application does not need to be realized in the form of tunnels and steel. The seductive and wonderful thing about the most formal model in the IT development process is that it can be fed into a simple, generic machine and will spring into life forthright – operating. Then and there, the model is its own object, so to speak. In this line of reasoning, the meaning of a compiled computer program is purely referential to its own behaviour in the computer at hand. No wonder that computer scientists tend to be reluctant towards anti-realist philosophy entering their discipline: if the computer does not behave in accordance with its program, it assumes a contextual meaning (e.g., computer behaviour when the power is cut) that is simply wrong – the program does not show its *true* behaviour. This attitude is firmly rooted in the IT discipline, and rightly so – albeit not without its drawbacks. Rightly so, because in the IT business much depends on trust in proven or well-tested products, and *ceteris paribus*, software products can (in principle) be formally proven in this referential sense. Dangerously so, because *ceteris* tend not to remain *paribus*, and because the meaning of a computer program in a social world is rather its behaviour and use related to the original idea in an organizational context, then to the most formal model in the context of an operating computer.

There hardly seems to be a limit on what type of ideas can be transformed into formal models at all – provided the idea concerns the processing and communication of information. There *is* a limit though: formal representation. It must be possible to represent the process part of the idea in a formal language *and* it must be possible to represent the data part in a formal language as well. And there lies the crux. Ideas do not come naturally in formal languages.

The history of IT development methods has, without forgetting about the formal, gradually shown additional attention to the organizational meaning of the service being developed. The mainstream paradigm of the IT world is now also concerned with the construction of a working model of an idea, as used in an organization. Herewith it has shed much of its simplicity.

---

*structured programming* [O,-J. Dahl, E.W. Dijkstra and C.A.R. Hoare, *Structured programming*, Academic press 1972] via method comparison and fusion, e.g., Wieringa's *requirements engineering* [Wieringa, R.J., Requirements Engineering: Frameworks for Understanding, Wiley, 1996] and object orientation, *e.g.* Jacobson, Booch and Rumbaugh's trilogy [The most relevant of these is: Jacobson, I., Booch, G., Rumbaugh, J., *The Unified Software Development Process*, Addison-Wesley, 1999] to finally include the psychological and organizational, e.g., Schreiber et al., *knowledge engineering* [Schreiber, G., Akkermans, H., Anjewierden, *Knowledge Engineering and Management*, MIT Press, 2001].

### 3.1.1 *The ITdesign framework Sections*

The literature mentioned unfolds the modelling process in themes. These are best understood as recurring Sections[52] of the Chapters in the report, describing the various strands making up the realization of an information processing idea under realization. There are seven Chapters and every Chapter has five Sections. Thus, in this report, each Chapter has a fixed structure. The various Chapters together provide the description of the idea to be realized in its context; I name it the *contextual model.* The contextual model of an IT service under development is a moving target. It starts in very general and summary terms as the sketch of a business model. It ends in extremely formal and specific tones.

The five Sections in each Chapter are: one on the contextual organization, one on processes and tasks to be performed and to be performed in this context, one on agents that perform these tasks and their qualification as either automated or not, one on the communication between the agents (where communication between automated agents recieves special treatment) and one on the knowledge that the different agents need to perform their tasks. This dimension in the framework provides some sort of checklist. The checklist will be used in each sub-project of each Chapter. Consequently, the checklist represents a generic 'model' for project management.

### 3.1.2 *The ITdesign framework Chapters*

The first effective procedural view (again developed in the 1970s) of a generalized IT development process was represented by the waterfall metaphor, breaking down the work in an almost self-evident sequential chain of IT sub-projects – the general idea being that an information analysis must be available in order to make a functional model, that implementation should not start before the functional model had been completed, that testing could not take place before implementation, that the service should not be deployed before it had been tested, that the service cannot be used before it is deployed and that maintenance of the service should be considered only after substantial use experience had been gained.

Again, the waterfall metaphor is of a treacherously simple nature. It has proven to be of great value, but has in the meantime proven to be downright impossible to uphold in real world situations, *as a sequential chain*. Consequently, the procedural development paradigm has unfolded into (partly) parallel rather than sequential sub-projects. The ratio for identifying any sub-project is, apart from its specific goal, in the type of specialist expertise needed and the possible allocation of (almost) independent responsibilities. As I see it, the standard sub-projects settling in

[52] These Sections have been very well analyzed and described by Schreiber, et al., for academic education.

the nucleus of unified methods are: requirements analysis, functional design, implementation, graphical design, assessment, deployment and maintenance. The breakdown of the development process in Chapters can be seen as a generic checklist for analyzing complex design and development projects into sub-projects. Since each sub-project requires its own specific expertise (or its own discipline), the breakdown in Chapters is effectually a checklist for interdisciplinary co-operation in complex design and development processes. As such, it can be an inspiration for interdisciplinary research and may even provide a 'model' for interdisciplinary research projects.

Below, I use the framework to present an analytical reconstruction of a contextual model of the primary Napster service in order to identify the spots where decisions on its four efficiencies are made. This is not historic reconstruction. It is re-engineering in compliance with the 'contextual modeling grammar' provided by the framework at hand.

### 3.1.3 *Remodelling Napster*

Design and deployment in IT start with a dream. The dream may be of any kind: a better world, for instance, or a useful and stable desktop or omniscient police and intelligence bureaus or all computer scientists joining forces or all property being traceable or car owners paying taxes relative to the miles driven or music lovers paying licensing fees for minutes listened or making all internet content searchable or putting all Library of Congress content on an iPod. As it happens, I assume Fanning's dream to be a healthy and initially investigative one: to employ internet infrastructure for music file sharing with his friends. This dream starts to itch, pushing to come true. He now needs a business idea, and later a business model. Fanning must have had them, perhaps as an almost spontaneous product of his knowledge and creativity. The business model doesnot at first have to be directed to down towards earth monetary profit. Initial investments are hardly there – given his IT expertise gained at some university courses they boiled down to an internet connection and some time to work things out. And, presumably, not even Fanning will have foreseen the spectacular network effects of his final product. But he saw enough to make the investment and to make it happen.

It is only natural now to take a moment and think about the possible influence of the law on this project and its influence on innovation. Did Fanning really forget about copyright? And, if not, would he have pursued his dream? I do not know. What I do know is that specialized legal advice does not come cheap. And that legal advice on business models that are not yet imagined will lack reliability. And that naïve legal instruction would almost certainly have pointed out the simple fact that the business model would support illegal transactions. That a legally prudent line of action would be to negotiate for licences first. And that these issues are all dealt with much more easily by larger corporations than by start-ups and small busi-

nesses. And that Fanning's innovation might have been stopped then and there, even before it began, had he been of a more docile inclination. If intellectual property law is aimed at *supporting* innovation, it does not look anywhere remotely near on target – at least not in the context of exploring internet possibilities by individuals, nor by start-ups or small enterprises.

Now let us forget about innovation and law, at least for the moment, and redirect our attention to remodelling Napster.

a. Requirements analysis

*Requirements analysis* addresses the sketchy specification and approach to the main riddles involved on the road towards the dream coming true. It is the first chapter of our framework. Fanning will have thought about the organizational context of his project and will have decided that he would do things on his own with a little help from his friends. He states his mission: to create a music sharing service for his friends and himself on Internet. And he decides that he will leave copyright issues (and the RIAA) external to his project – perhaps silently deciding to deal with them as they present themselves in a more urgent manner, who knows. So Fanning plays the role of service entrepreneur. As such, he first wants to specify what the particular requirements are to make it all happen. *Organization requirements* of the project are its breakdown into the usual sub-projects and *agent requirements* imply looking at who has the expertise and can be responsible for each of the sub-projects. As it happens, he plans to play most roles himself. He only needs an external access provider. And some pilot users; he selects 30 of his friends for this purpose. Then he turns to the specific requirements that have to be fulfilled before his service will be able to perform its *tasks*. Music files take lots of space – to make the service more feasible, he will need a compressed format. He also needs information to be available about the music in the files like who is the artist, what is the name of the album, who is the composer, who wrote the lyrics, if any (often referred to as meta data). The information is useful for searching. When the service is to delegate actual music file transfer to the users, the system will have to handle the problem of user access, particularly the fact that most users get their IPaddresses dynamically by DHCP and may further be hidden by network address translators, proxy servers and firewalls. Solving these problems is a requirement. Furthermore, it will be necessary during user connectivity that only files and folders of the personal computers of the participants will be made available in agreement with the user's specification. Finally, there is the requirement that his central data base has the capacity to store the meta data and to serve all users connected concurrently in acceptable response times. Planning to pilot with 30 users he will decide that his personal computer will be able to comply. *Communication requirements* in this chapter concern setting up a feed-back and discussion infrastructure, a dedicated chat channel will do. *Knowledge requirements* mainly concern Fanning himself. He needs to start

additional reading on those requirements that he feels are not yet within his reach. Finally, he writes down the results in a document he calls the *Napster requirements report* and sits back – thinking about and deciding on further action. He decides that the project is feasible as a pilot for peer-to-peer and proceeds to the functional design sub-project.

b. Functional design

The *functional design* sub-project addresses the functional specification of the service as a whole. It is written in natural language. It yields a functional or conceptual model that will be the guiding document for the other sub-projects. Its natural language conception supports decision-making by IT laypersons. It is generally considered the most important document in IT development projects. Its formulation requires the blended effort of all eight roles mentioned earlier.[53] This presents a problem because during the development of the functional model, the different sub-models will change (or develop) and may influence each other. The main responsibility lies with the design specialist software provider.

The *organizational context* of the functional design sub-project remains simple: Fanning (occasionally helped by friends) will remain responsible for the main functions to be described. The business model implies a blended architecture: part of the service is to be realized on a central server, part of it is delegated to a program distributed to user personal computers. Fanning names this program 'Napster'.

The *functional tasks* are many. The server needs (1) a create/store connection data (e.g., user addresses) function, (2) a filter/store metadata (e.g., track name, artist, …) function, (3) an update connection data (users may get on and off-line at any moment) function, (4) a search metadata and connection data function, (5) an administration function, and finally (6) an application distribution function. Napster needs (7) a rip/store function to convert CD music into compressed computer files containing relevant metadata, (8) a user interface for searching metadata and accessing connection data, (9) a serve/share music file function, (10) a get/store music file function, (11) a chat with peers function, and finally (12) a play content function. The *functional agents* are partly persons (Fanning, the users and the access provider) and partly computer programs (the 12 functions mentioned above all represent computer programs). Their *functional communication* is mediated through graphical user interfaces, or forms, when it concerns person-program communication or person-person communication (chat). It is mediated through protocols (or tiny formal languages) when it concerns program-program communication. Their *functional knowledge* is either (for persons) made available in user manuals and the like, or (for programs) hardwired in their behaviour.

---

[53] As mentioned in the introductory paragraph of section 2.1.

While preparing the *Napster design report*, Fanning at least conceptually addresses the requirements from the requirements report. An important part of the design report is the identification of which programs or services are available and can be (re)used. Ripping music CDs into mp3 files is a widely available service that needs to be performed by users: Fanning does not invest any effort here. The same argument holds true for mp3 players. Storing and retrieving large amounts of data is typically performed by data base management programs/systems as provided by Oracle or Postgres – Fanning need not reinvent the wheel here either. Accessing the file system of personal computers (and complying with authorizations) is supported by specific operating system functions on any operating system, these can be reused. Basic internet communication will use the TCP/IP protocol, Fanning must use it. The problems of bypassing the limitations of server-functionality for personal computers with dynamic IP addresses had earlier been shown solvable by chat services (like ICQ), Fanning neither needs to reinvent the wheel here either. The problem of file transfer between computers had been solved a long time ago with FTP. The Napster design report consequently shows a rearrangement of known functionality.[54] In this rearrangement, much of the character of the service is at least partly determined. One of the issues of importance is the balance between collective and autonomous efficiencies. For instance, an important feature seems to be the authority of (and the functionality made available for) the user to determine whether she makes downloaded music files available for further distribution or not. Fanning decided to give her the choice.

c. Implementation

The *implementation* sub-project will 'translate' the design report into code. Code comes in two forms: source code and machine code. Source code is automatically translated into machine code by computer programs (compilers and interpreters), so the reformulation of the design report into source code is the last transformation involving human intervention. This transformation is the core business of the implementation sub-project. Ideally, the design model is already specific to the point where a software implementation provider can implement it without further ado. That this may be the case is shown by the current trend to offshore implementation, leaving the work to companies in India[55] and China[56] (or any other low labour-cost country with an adequate educational system). Anyhow, Fanning is both software design and implementation provider and will not have problems here. In general,

[54] This (the re-arrangement of known functionality) seems to be the very essence of innovation in the information society. Von Neumann's architecture (*o.c.*), Codd's relational logic (*o.c.*) and Berners-Lee's web link [*Weaving the Web*, HarperSanFrancisco 1999] are serious examples.

[55] Googling 'IT offshore outsourcing India' yielded 133,000 results on 18-9-2005.

[56] Googling 'IT offshore outsourcing China' yielded 96,100 results on 18-9-2005.

there will be intensive communication between designers and programmers to clear those points where the programmer must decide on how to code the design if there happens to be any choice left. In this communication the conceptual abyss mentioned earlier will be spanned. The most important decisions here concern data modelling.[57] If and when these decisions are reflected in 'character changes' of the service under construction will hopefully come to light during the assessment sub-project. The result of the implementation sub-project is mainly a bundle of source code and an installation (and configuration) guide, helping the deployment and assessment sub-projects.

d. Graphical design

The *graphical design* sub-project is concerned with yet another discipline: the graphical designer. In order to do her thing independently, the design and implementation sub-projects need to have kept this independence in mind. The need for separating implementation and graphical design came to the fore when companies started to use generic services for their brand-related activities. The Leiden University library wants to boast the Leiden University logo in its digital services, while using a generic service, designed to serve many university libraries. There are interesting examples of how the graphical design can work independently.[58] Graphical design will greatly influence user experience and acceptance. It should not, however, have any direct influence on the service's character.

e. Assessment

The *assessment* theme is complex and it is legally important in distributed development projects: acceptance or refusal of the resulting service belongs to it. In the requirements sub-project the conditions for acceptance and refusal are initially set and, if necessary, reset when the initial agreement needs be adapted. Pilot testing of the design models may be agreed upon. Agreements about procedures for conflict resolution are also necessary in these cases. In this sub-project the transfer of accountability for the service's deployment takes place between software providers and the service entrepreneur. For Napster, these issues have been trivial since Fanning plays all the relevant roles himself. Nonetheless, during the assessment period of Napster, Fanning used the feedback from thirty of his friends. And this feedback will have prepared him for the events to follow. They liked it.

---

[57] See sub-section (i) below.

[58] See <http://www.csszengarden.com/> or <http://www.dezwozhere.com/links.html>.

f. Deployment

The *deployment* sub-project[59] addresses the issue of live hosting and maintaining the service on servers in the network. It adds heavily to the contextual model in the organizational area. The issue is very much technical and system and network engineers will do the actual work for the hosting service provider responsible to the service entrepreneur. Legally, the use of service-level agreements has become standard in this relationship. The problems of scaling should be addressed also if there is any chance of the service becoming a country-wide or worldwide success. In an Internet context, things can get out of control very quickly. Of course, that is what happened with Napster. And that is why Fanning created Napster Inc. And why the music industry got itchy. Deployment in itself does not change service character. It merely makes it available to the public. The important difference is in its scale. And the service itself will face regulation by architecture, if scale requirements cannot be met.

g. Maintenance

The *maintenance* sub-project has two sides, one side aims to improve the quality of the service and may be realized through the closure of the current development process and restarting it again after relevant experience has been gained during operational use. The other side is concerned with continuity – which may be challenged by changing circumstances in the context (when new versions of TCP/IP or HTML become popular, the original contractor is out of business, software objects used in implementation, network or hosting service providers are discontinued and last but not least: when security issues threaten the service). An interesting reason for Napster maintenance has been the court's order to implement a filter function, weeding out copyright-protected music files. It shows that a service's character may be influenced drastically during maintenance. That is why proper maintenance involves all other sub-projects. The filtering issue also shows, in its operational failure, the importance of data models for the implementation of service character.

h. Data models

Data models are the essence of formal information representation. They are the roots of a service's ontology. They determine the scope of data processing (and will indeed be called data models there) and data communication (where they are called protocols). In any IT service development project they are specified in the design sub-project. However, they can also enter the development project during implementation, when existing data models or protocols are introduced as the legacies of

[59] Rather a program than a proper project, given its continuous character.

existing programs employed. Data modelling has to do with meaning. It links meaning by convention with meaning by reference. It reveals the secret of it all.

i. Data models in data bases and files

The secret can be shown using a simple example. Suppose I have somehow acquired the record I have been looking for for so long, and want to share it with other internet users.[60] I rip its contents into an mp3 file, using a simple program. The program has some collective efficiency: it will try and grab the record's meta information from the Internet. If it is not there, I will have to enter the information myself. I see a form, and what I can and cannot enter is decided by the program. In the 'Track name' field of the second track, I type 'Two part contention', rightly assuming that I am supposed to enter free text. How much of this text I can enter is dependent on the length of the field. What the text will be is up to me. Typing quickly and not verifying the result, I actually enter 'Yep [sty vpmyrmyopm' (accidentally letting my keyboard anchor position drift one position to the left). From now on, any program processing my mp3 file will behave as if this cryptic string is the name of its second track. A thoroughly trivial incident, but a telling one.

In the design of any application, the reference meaning of information is carefully related to the place and function of the information. Consequently if any user enters information on a specific location which is meant to mean something in this sense, it will assume that meaning during data processing. Computer applications do not think, but we are used to saying that Napster will from now on 'think' that the name of the second track is 'Yep [sty vpmyrmyopm.' The whole effort of design, implementation and deployment creates and depends on this framework of expectations. Data models make these expectations explicit. Where users provide data to applications, they need to know this data model. Where users are expected to understand the application's results, they need to know the data model too. What the user understands will often be considered 'knowledge', what the program expects will often be considered 'information' and what the program gets or gives will be considered 'data' when we discuss data models.

The secret of the link between referential meaning and meaning by convention hides in our understanding of the computer program's expectations when we provide information, and in our understanding of the computer program's functioning, when we are provided with results. Computer program expectations are specified in data models. They are really simple and straightforward.

Music files in mp3 compression format, for instance, have a fixed structure. The structure distinguishes a 'header' from the 'content' and allows for appending meta-information (information about the content). The meta-information of available music

[60] Knowing full well that Dave Brubeck's (or his music label's) rights forbid it. This is a hypothetical example.

files is sent by the Napster programs to the server, where it is entered into the database.

The database has a data model. Any database data model describes the meaning of the tables in the database. A table is a collection of records (information lines, not audio recordings) with identical structure. The structure of a record is broken down into fields. So the ontology of a data base is the collection of meanings of its fields in its records in its tables, or its data model.

Let us suppose that the Napster server database has two tables: (1) with records, describing music files and (2) describing user connection information. Several music file description standards have emerged. They contain fields like 'track title', 'artist', 'album', etc. Any field description schema may look like this:[61]

1. *Field value* – gives the value that is entered in this specific field of this specific record (e.g., 'Two part contention' or 'Yep [sty vpmyrmyopm'). This value may thus be different for different records in a single table.
2. *Field name* – gives the name of the field as it is used in computation (e.g., 'Track name'). It is a more abstract description of what content is meant to be stored in this field. It is fixed for all values for this field in this table.
3. *Field number* – gives the sequence number of the field in the record (may be automatically generated when the record is inserted). Again, fixed for all values for this field in this table.
4. *Format* – gives the type of coding used for the value in the record (*e.g.*: byte, number, text) and will be used by any program for computing purposes. Again, fixed for all values for this field in this table.
5. *Length* – gives the length of the field, will be used by any program for computing purposes. Again, fixed for all values for this field in this table.

The field description schema shows how meaning may be transferred from the meaning-by-convention domain to the meaning-by-reference domain and back again. The *field value* equates user knowledge to application information. All other elements (2-5) of the description schema are there to help the application to process this information.

Now consider the meta data that Napster gets for its search services. The meta data model need be standardized: Napster must know what field is supposed to mean what. There are several standards available. I assume that the primary Napster service used the ID3v1.1 (standard) data model for music file meta data.[62] It is injected into the mp3 file at the end.[63] It consists of 9 fields with the following field names:

---

[61] This is an analytical reconstruction, presumably different from the real Napster server database data model.

[62] See: <http://en.wikipedia.org/wiki/ID3>.

[63] The mp3 file format specification itself is directed towards the representation of compressed audio material.

‘Tag ident’, provides the name and version of the meta data standard used. This way, the meta data of the music file tells any program the standard used to represent the data. This presupposes a meta-meta standard, expecting any record with music meta data to start with a reference to the standard used.

‘Track title’, 30 characters, reserved for the name of the track.

‘Artist’, 30 characters, reserved for the name of the artist. It shows the standard to be pretty restrictive: 30 characters may prove to be too few to write the names of composers, arrangers, lyricists, singers, instrumentalists and who knows what other artists may be involved. Here, the user wishing to specify meta data needs extra information to make the right choice if she needs to.

‘Album’, 30 characters to represent the name of the album containing the track.

‘Year’. Four characters to represent the year (of the ‘première’, of the recording, of composing, of publication?).

‘Comment’. 28 characters to give additional comments.

‘Separator’. One byte – no user meaning.

‘Track no’. One byte to give the track number.

‘Genre’. One byte to give a number, indicating the genre of the music on the track. The ID3v1.1 standard includes a huge table with genre numbers. ‘8’ denotes jazz.

These nine fields complete the ID3v1.1 meta data model. It is immediately clear to anyone without any other computer literacy that this data model is insufficient for many purposes.[64] It does not provide enough space, for instance, to give decent artist acknowledgements for almost any piece of music on record. Its meaning to the user is ambiguous (what should be specified as the year?) And there is no field allowing the user to specify anything about copyright owners and copyright licences granted.[65]

All this shows that the data model is a construct that limits computational possibilities in an architectural sense. If the data model does not provide information on

[64] As a consequence, better standards have been developed, for instance ID3v2.4.

[65] In the mp3 format itself, two fields relevant to copyright issues are defined: a ‘copyright’ field and an ‘original’ field. These can be used for digital rights management purposes, but have little meaning for older records and CDROMs without these bits inserted in the original. See: <http://www.mp3-converter.com/mp3codec/mp3_anatomy.htm>.

copyright licensing, the application will not be able to process it. As a simple consequence, Napster Inc. will not be able to sieve out from its service references to copyrighted music: it simply cannot know.

What *is* possible, though, is to add a table to the Napster database. Such a table has been provided by the music industry, a table containing all their album names and track names to be excluded from the Napster service for copyright reasons. Now the database can compare track names and filter those tracks that are protected.[66]

This database data model discussion is included, because it shows how important data models for databases and files are to applications, their possibilities and limitations. Data models of databases and files determine these possibilities and limitations. As such, they regulate by architecture.

An extra dimension to these data models is added when considering mass applications in need of collective efficiency. Data models then need standardization. And later, they will need updating. Updating data model standards is not a trivial process. Any application using one specific version of a data model standard needs to be adapted to the new standard. And that involves maintenance and (re)distribution of the application. Consequently, flexibility, development, pushing and acceptance of data model standards for databases and files are very important competition issues. Entrepreneurs will use them to protect and gain market share, to regulate users by locking them in. An interesting example is the music file formats employed by Windows and Apple. For example: the iTunes music file service by Apple employs a format, suitable for iPods, also by Apple.

j. Data models in messages (protocols)

Collective efficiency presupposes (mass) communication. Mass communication builds on communication standards. Internet communication uses TCP/IP as its standard. It is pretty stable: IP version 4 (IPv4) has been around for 25 years now. IPv5 never got into action and IPv6 is being promoted since 1994 but has not yet taken over. The problem that IPv6 aims to solve is the size of the address space. In 1986, when IPv4 was accepted, the current pervasiveness of the Internet was not foreseen.

So messages over the Internet have a standard data model too. The communication standard *is* the model. It is only specific for communication purposes. We need not go into any further detail than recognizing that of every packet, of every message being sent the source address:port and the destination address:port are part of its header. The addresses are IP addresses (mine is currently: 83.160.27.192). I got it from my access service provider. It knows my name and address – after all, we

[66] Unfortunately, users started to circumvent this filtering by changing track names – not unlike the way spam message headers are rephrased in an attempt to 'fool' spam filters.

have an internet access service agreement. The port number is used to identify the application communicating. KaZaA uses port number 1214. So if anyone sniffing the internet sees a packet featuring 83.160.27.192:1214, she may get the impression that whoever has got IP number 83.160.27.192 is sharing music files. Access providers may filter out messages from port 1214, combining regulation by architecture with rule administration. In Europe, access service providers are bound to retain address information of *every* message for several months and hold them available to the police and intelligence bureaus. In this way, users' Internet communication behaviour may be regulated. As Lessig has made abundantly clear in 1999, address information is a necessary part of the architecture of Internet messaging. The TCP/IP communication data model thus *eo ipso* supports regulation by architecture.

### 3.2 **Regulation by design and deployment (summing up)**

By using computers and Internet, I am regulated 'by architecture' in many ways, directly and indirectly. I have pointed out that there are many opportunities to extend this regulation in practice. I characterized computer applications by their blend of four efficiencies: economic, administrative, autonomous and collaborative. I claimed applications and their characteristics are constructs, the result of design and deployment. I gave an overview of relevant aspects of design and deployment methods, showing that in developing computer applications at least eight different professions have to co-operate. The dream has to be translated into a business model, the business model has to be broken down into tasks, and the tasks have to be allocated to either persons or programs (functions). Deciding a task to be performed by a program equals deciding to regulate by architecture. The scope of the regulation is decided upon by data model specification, where user behaviour is 'understood' as expected by design, where user behaviour outside this scope is meaningless and where application behaviour is understood by user experience. Applications of any character may be designed: the limits of regulation by architecture are essentially in data model specifications. Data models precede user practice. Hence, subsequent user practice may force maintenance and redoing. If this concerns mass applications, existing (or emerged) standards may slow things down because they are not easily substituted.

## 4. The Morality of Regulation by Architecture

So far so good. In the three preceding sections I have first tried to show why anyone interested in the sustainability of our legal system should be able to understand Fuller's questions and conditions when applied to regulation by architecture. To get more specific about regulation by architecture I first identified the eight institu-

tional roles in IT practice. Thereafter I adopted the (conventional) perspective of a user – the one who becomes regulated by architecture, if at all – telling the story of asking Google a question. Subsequently I adopted the (referential) perspective of the designer – the one who implements regulation by architecture – remodelling Napster. As conceptually useful, I defined computer application character on the fly, as a blend of four efficiencies: economic, administrative, autonomic and collective. I showed administrative efficiency to be particularly relevant to regulation and I argued that in order to evaluate (regulating) computer applications, knowledge of its ontology or data model is required. By now, I must be able to comment on Fuller's conditions and questions, as applied to regulation by architecture, as applied to file sharing. In this, the final section to this Part of our book, I will venture to do so.

### 4.1 **Eight conditions**

Fuller[67] specifies eight dangers to our legal system's sustainability (he calls them moralities of duty), each providing a sufficient condition for losing it: (1) no rules at all, (2) the rules are unavailable, (3) the abuse of retroactive legislation, (4) the rules are not understandable, (5) the enactment of rules is contradictory, (6) rules require conduct, beyond the powers of the affected party, (7) such frequent rule-changes that subjects cannot orient their actions and (8) incongruence between rules and their administration. If one of these conditions completely applies, there is no legal system at all, Fuller claims. He suggests their positive counterparts to be challenges for improving our legal system. I discuss these challenges for regulation by architecture as I consider it part of out legal system. Later, I will use the results for the specification of the moralities involved in regulation by architecture.

*The generality of law.* This is the challenge countering the absence-of-rules condition. For its instantiation with regulation by architecture, the relation between regulation by architecture and law first needs clarification. Here I accept Dutch legal practice, (1) demanding democratic procedures for law making and (2) offering the legal fiction that the rules/conditions of an agreement *count as*[68] law to the parties entering into it. For rules between individual parties in individual agreements the generality challenge[69] does not apply, rather the opposite: genuine agreement re-

[67] Lon L. Fuller *o.c.*, Chapter 2 (The Morality that Makes Law Possible) p. 33-94.

[68] 'Counts as' as defined by John Searle, *The Construction of Social Reality*, Allen Lane The Penguin Press 1995.

[69] Here I take some liberty with Fuller's challenge: flattening it, as it were. This is the consequence of applying an elegant and interconnected theoretical framework for a single practical purpose and in a different context. To do justice to Fuller's challenge of generality, I would need to enter into his distinction between the moralities of duty and of aspiration. The attention required would change the subject and, with it, the clarity of the discussion. Anyway, I will try to make at least some amends in the last section of the current Part.

quires the specificity of what the agreement is about. For rules of a more generic nature (like general conditions or administrative requirements) it does, however. Regulation by architecture will 'by design' implement rules of generality by default – generality is part of any automation process by nature. Economic efficiency does prompt ITsolutions to be generic and so do IT design and deployment methods (generality is called abstraction there). No problems in this department, so it seems, but that would do injustice to the 'generality of law' challenge: experiences with automation show that generality of rules can be overdone. As a matter of fact, this has been an important criticism to regulation by architecture from its very start.[70] Regulation by architecture thus shows my 'flattened' generality of law challenge to be lacking in specificity. It is not maximum generality, but optimal equilibrium between generality and specificity in laws we should aim for. This may be an important issue in the war on file sharing in at least two instances of regulation by law: (i) where the generality of individual agreement conditions between artists and producers may include the transfer of copyright for media not yet available, and (ii) where the current articulation of copyright exploitation rules does not (or hardly) allow for correction by competition law. Regulation by law may be transferred by design into regulation by architecture, where, for instance, generality may tilt the character of an application towards higher administrative and lower autonomous efficiencies: the current state of the art of digital rights management may show this in its poor support of copyright exceptions.

*Publication.* This is the challenge countering secret rules, or the unavailability of rules to rule addressees. Internet supports better availability of rules already made available in text in adequate procedures, and this is the type of availability that Fuller was thinking about. The availability of rules in regulation by architecture is more complicated. Often, regulation by architecture boils down to designing law-based policies into applications. Now we meet the two semantics again. The question is how to read the application. Can we consider it to equal the policy it implements without further ado? Meaning by reference links the meaning of the source code *and* the data models of the application with its behaviour in the machine. Here traditional publication is extended through design and deployment methods. Since changes may occur during extension, they should be open to inspection[71] – difficult as that may be. Meaning by convention equals the user's experience in practice. To consider this type of meaning as part of the publication process is counter-intuitive: it would stretch the concept of publication beyond its

[70] Philip Leith, *Clear Rules and Legal Expert Systems*; II Convegno Internazionale Logica, Informatica, Diritto; Florence; 1985.

[71] This circumstance may provide serious arguments for the requirement that the source code of regulation by architecture and the data models should be made available to the legislator and to the public.

limits. I argued, nevertheless, that meaning by convention is the more important in legal discourse. One conclusion may be that the morality of regulation by architecture requires the availability of adequate user documentation.

*Prospective legislation.* This is the challenge countering the abuse of retroactive legislation. *Prima facie,* it would seem that regulation by architecture will be the perfect antidote to retroactive legislation: it would seem difficult to make a computer application regulate before it is even there. Well, retroactive regulation by architecture is perfectly possible in so far as it is possible to reprocess existing databases, representing information of the past. There is no technical problem in enacting a tax law now, working on information from previous years. I do not think, however, that regulation by architecture is something special in this respect, because it would require explicit and conscious design. If we do not want to regulate retroactively we simply should not do so, be it by law, contract or architecture.

*Clarity of laws.* This is the challenge countering rules that are not understandable. For regulation by architecture this implies that its meaning by convention fits the policy implemented (see also the argument presented under publication above). Clarity of regulation by architecture is a very difficult subject because of the conceptual abyss that has to be bridged between a policy as formulated in natural language and a working computer program, as I tried to show in the section on regulation by design and deployment (section 3). Anyway, it shows that clarity is never a single-sided affair. The articulation of rules should be clear to whoever has to know about them. On the other hand: whoever has to understand clear rules will have to make an effort and acquire the knowledge she needs to understand them. When we are talking about regulation by architecture it seems to me that this requirement counts for both sides. I am not sure that our current attitude to IT theory and practice shows any awareness of the issue. I consider it a serious issue for our legal system to prove sustainable in the information society. A case in point is the current public discussion in the Netherlands, showing the incapacity of the responsible government agencies to understand and monitor the networked voting services that will be employed in the next general elections in the Netherlands, to be held on November 22nd 2006.

*Consistency in laws.* This is the challenge countering the enactment of contradictory rules. For regulation by architecture this challenge does not lead to anything special or specific.

*Compliability in laws.* This is the challenge countering rules to require conduct beyond the powers of the affected party. For regulation by architecture this challenge does not lead to anything special or specific either. One small side comment on the side, though. Frequently used regulation by architecture shows itself in op-

tions offered to the user allowing her to accept certain conditions or not. If the user does not accept, the service will not be made available. There is nothing amiss with this scenario, I think. However. It may be perverted in several senses. One of these would be the presentation of an almost endless list of conditions in legal language. It can hardly be expected from consumer users that the transaction costs of reading and understanding these (including hiring a lawyer to explain things) are in any balance with the value of the service obtained or to be obtained. Another one is continuous prompting for updates when the user chooses not to accept an update. Endlessly removing the pop-up window involved may bully the user into accepting the update eventually. In both examples there is no conduct required beyond the powers of the users, but it is made pretty difficult for her to remain autonomous where she feels the need. So compliability in laws may urge some particular requirements for regulation by architecture design in order to preserve a balance between administrative and autonomous efficiencies.

*The constancy of law over time.* This is the challenge countering such frequent rule changes that subjects cannot orient their actions. For regulation by architecture it is the volatility characteristic to IT that enters the stage here: maintenance is part of the process, and maintenance is partly based on user feedback. So meaning by convention may, as feedback, be used to improve the publication extension (inherent in regulation by architecture) mentioned before. There seems little wrong with this, where it remains inside the boundaries of published policies, as it generally does or aims to do. It gets out of hand, however, when the maintenance process is used for (automatic) updating and changing the application so as to no longer fit its published policy.

*Congruence between official action and declared rule.* This is the challenge countering incongruence between rules and their administration. For regulation by architecture we again face the conceptual abyss mentioned a few times before. As it is the main risk for deviances between published policies and application behaviour, design and deployment procedures are of some importance here. What we want is a perfect match. If the application behaves differently from the published policy, and this policy is deployed by architecture, this will result in official action (by architecture) to be incongruent with declared rule (policy). The problem is similar to and may be approached in the same manner as described earlier under the publication and consistency challenges.

### 4.1.1 *Moral challenges for regulation by architecture*

The discussion of Fuller's *general* challenges for law making in a decent legal system as applied to regulation by architecture yields the following moral requirements (in summary):

| | **Challenges for regulation by architecture** |
|---|---|
| **Generality** | Balance autonomous and administrative efficiencies. |
| **Publication** | Have source code and data models open for inspection, and documentation available |
| **No retroactive law** | Don't process legacy data for regulation |
| **Clarity in law** | Expect IT literacy in the user |
| **Compliability** | Don't bully the user with transaction costs (balance economy and autonomy) |
| **Constancy, congruence** | Don't change the policy in application maintenance. |

## 4.2 **Five questions**

Fuller's questions (instantiated to regulation by architecture) are: (1) Is regulation by architecture a one-way projection of authority over citizens/users? (2) Who can make legitimate regulation by architecture? (3) What are her institutional roles? (4) What are the role moralities involved? (5) How does human interaction obtain its place in regulation by architecture and its administration? These questions were brought to the fore because they say something about our assumptions concerning the concept of legal systems. And knowing these may be useful in any debate about the morality of law. Since regulation by architecture is currently invading our legal system, it may also be useful to know about them when considering moral positions in the war on music-file sharing.

### 4.2.1 *Is regulation by architecture a one-way projection of authority?*

This is a good question, and the answer depends. Regulation by IT architecture is something new and currently is by default considered to belong to the domain of private law – as part of private law practice. In this line of reasoning, existing private law regulation adequately regulates regulation by architecture (like it regulates regulation by contract). Consequently, the answer to this question can be argued to remain unaffected by the emergence of regulation by architecture. It can also be argued that applications of autonomous character will better fit within private law than applications of an administrative character. Users of mass applications designed in *de facto* monopolies may feel regulation by architecture to be of an administrative character and, consequently, a predominant one-way affair. Pure private law regulation considers individual relationships only and depends on the notion of corrective justice.[72] It is blatantly obvious that trying to fit our current confrontations – as individual users of mass applications – with administrative regulation by architecture (e.g., automatic updates, digital rights management in media players) within these fences must fail, not unlike consumer law and competition law regulation are felt to be outside pure private law. The answer to the question then depends

[72] Ernest J. Weinrib, *The Idea of Private Law*, Harvard University Press 1995.

on the type of regulation by architecture. If it is part of pure private law, the answer is *no*; if it is part of pure public law, the answer is *yes*.[73] I am not sure we are already aware of which regulation by architecture is which. I *am* pretty sure, though, that the Microsoft media player digital rights management function sits in between pure private and pure public law regulation by architecture, as I am pretty sure that the RIAA considers their legal position to be in-between too (tending to a public law position if their *theft* rhetoric is to be taken seriously). Trying to induce the consumer's attitude is interesting: the peer-to-peer applications are considered to be of a mainly economic, collective and autonomous character, thus hardly regulating and in the private law domain, here their answer is *no*; the digital rights management applications are considered to be mainly of an administrative nature and here their answer is *yes*.

Zooming in on the attitudes of the institutional roles in IT design and deployment, more specific in design and deployment of peer-to-peer and digital rights management artifices, I suggest that the *hardware providers, network providers, access providers* and *hosting service providers* will not have specific attitudes towards any regulation by architecture which their work supports: they will tend to comply with the law concerning their operations (and will consider *that* law of public nature – e.g., the notice and take down procedures of hosting service providers). The *service entrepreneurs* who have designed applications that are of a predominantly administrative nature and the *application service providers* who deploy them must answer the question in the affirmative, because they must know that the regulation by architecture they exploit is a one-way projection by definition. Most likely, the *software providers* designing and implementing regulation by architecture do not currently take a position on the question, considering it not to be in their competence to make judgment as the entrepreneur is the boss. The *content providers* will consider copyright law as a one-way affair and copyright contracts (often standard contracts) as in between. When employing peer-to-peer software, users that open up their folders to the community know themselves to be content providers.

### 4.2.2 *Who can make legitimate regulation by architecture?*

Legitimate regulation in the private law domain requires genuine agreement between (human) parties. How do we go about this when one of the parties will employ a computer application as a front end to articulate her intentions? The application will regulate her, and her partner in the agreement by its architecture. Consequently, in private law the legitimacy of regulation by architecture depends on a pre-agreement on its use. As such, inserting digital rights management in media players le-

[73] This 'yes' includes all the required democratic processes for preparation and promulgation of legislation into account.

gitimately may for instance involve the expectation of a pre-agreement between the parties about the digital rights management functions and their side-effects. It not only involves the service entrepreneur (as one of the parties), but also the user and – in an as yet unclear position – the software provider. In this area a lot still has to be sorted out, as the Grokster case and the current legal research in e-commerce confirm. Legitimate regulation by architecture in the public law domain does not require agreement between parties, but it needs all necessary democratic procedures to be in place. How in-between regulation by architecture may gain legitimacy remains an open question. It needs answering, though. Pre-agreements on the character (which blend of economic, administrative, autonomous and collective efficiencies) of the application can be useful here.

I consider the legitimacy of *any* regulation to be derived from agreement (private law) or democratic procedure (public law). None of the institutional roles in IT practice is itself a source of legitimacy. Consequently – and in line with the general attitude in computer science – I cannot connect the institutional roles in IT practice with sources of legitimacy out of hand. Legitimacy is to be preserved in a design project through all actions and relations that bind the result (regulation by architecture) with the competent authorities (legislators and/or contract parties). IT role player morality is assumed to guard the integrity of these relationships and to be able to report on them.[74] Consequently, I expect the moralities of IT role players to be aware of the chains of relevant proxy and/or agency. And to be able to report on them. There is a caveat here, though. Nothing prevents any institutional role player in IT practice from starting private-law or in-between regulation by architecture. In general, this is done on a large scale by application service providers who tend to become oversensitive to security interests and risks. In the war on file sharing we see the peer-to-peer application provider, the digital rights management application provider and the access provider adopting these roles (see below).

### 4.2.3 *What are the institutional roles?*

So in the private law domain, parties have their traditional roles in regulating their own behaviour by agreement or pre-agreement. In the public law domain, the institutions of our administration also have their traditional roles. Problems arise for institutions emerging in between. Technocratic input by software providers and deployment providers may have un- or badly governed influences on the design process if the entrepreneur lacks expertise and cannot understand design or data models. Open source communities complicate things further: they are software providers without legal status, they have institutional roles but are not proper institu-

[74] Shareholders have lately been victims of amorality in this respect (Enron, World Online, Parmelat). The US legislator has promulgated the Sarbanes-Oxley Act of 2002, in an attempt to (re)assure that the required moralities are upheld. A whole discipline focusing on *IT governance* has subsequently emerged.

tions. And the war on file sharing seems to be fought by in-between institutions like the RIAA, Grokster, Microsoft, institutions that do not enter into individual agreements with the users of file sharing applications. The RIAA assumes it to be its institutional role to protect copyrights and to police copyright infringement.

#### 4.2.4 *What are the role moralities involved?*

Again, pure private law and pure public law institutions' moralities are common legal knowledge and their relation (be it by proxy) with institutional IT roles should be transparent. We do not know the role moralities of in-between institutions yet. That is the main reason for the fight against file sharing at hand. Perhaps we will be able to get some sort of indication when we look at Fuller's conditions (see below). I may, however, try and characterize the moralities of some intermediary institutions' roles. File sharing entrepreneurs like Napster, Grokster and KaZaA assume the morality of instrument makers, redirecting abuse liability to users. The RIAA combats copyright infringement on behalf of the copyright holders – seemingly oblivious to users' (and customers') feelings. Microsoft employs its market power to protect copyright by generic digital rights management (in its media players) and to protect or even gain market share on the side, who knows. Apple adopts a similar attitude with the iPod-iTunes combination. Open source software providers have strong community morals directed at the public domain. Google seems to assume part of this morality in its initiative to make university library content accessible by default – removing content from its service on right-holder request. The big question is, of course, not what these moralities are, but what they should be.

The role moralities of institutional role players in IT practice as such have been considered before, with the first two questions.

#### 4.2.5 *How is interaction placed in regulation by architecture and its administration?*

This question seems to hit the bull's eye. Where computer applications regulate, human interaction becomes man-machine interaction. Not between entrepreneur and software provider, but between regulator and regulated party. In private law conditions, this may be a complicating factor as we have seen (the pre-agreement). And in public law conditions the restrictions on the data model may rob regulated parties of the opportunity to enter exceptional circumstances interactively. However – these are not the issues that Fuller's questions aim to address. What he really wants to get at is our basic attitude, our assumption on how we value the feedback by regulated parties on regulation as an essential part of our legal system. *I* think that these opportunities *are* essential. Moreover, I think that regulation by architecture can support this feedback, at least when its administrative and collective efficiencies are adequately designed into relevant applications. But in the war on

music-file sharing *my* opinion is not the point. And if I try to induce the assumptions of the music industry from their position in it, I cannot but conclude that the music industry disagrees.

### 4.2.6 *Basic assumptions on the morality of regulators by architecture*

Since none of the institutional roles in IT practice equal the role of regulator by architecture, their morality in projects involving regulation by architecture is indirect. For all regulation by architecture it is concluded that the institutional role players in IT practice should be able to show the legitimacy of their contribution. The same morality applies to those directly responsible for regulation by architecture. In the war on file sharing I see three important parties in IT practice: (1) the application service providers, distributing peer-to-peer software, (2) the application service providers, distributing media players featuring digital copyright management regulation and (3) the access service providers, employing automated notice and take-down functions. (Whether these access providers are actually employing applications that regulate is still hypothetical[75]). The reason for the above discussion of the assumptions considered relevant to *general* discussions on the role of morality in decent legal systems is simple. Like the discussions inherent in the war on music-file sharing, these general discussions have shown themselves to be rather persistent. Fuller tried to get out of the deadlock by making the assumptions transparent. In this section I have tried to use these questions in order to identify relevant institutional role players in IT practice *and* their assumptions in the regulation of file-sharing by architecture. I provide their positions with regard to the five questions in the table below (in summary).

| | **P2P distributor** | **DRM distributor** | **Notice & take-down SP** |
|---|---|---|---|
| **One-way regulation** | No | Yes | No |
| **Who is competent?** | I am (private law) | I am (private law) | I am (public law) |
| **Institutional roles** | Application provider | Application provider | Access provider |
| **Inst. Role morality** | Instrument maker | Private law policing | Public law duty |
| **User feedback** | Yes | No | Yes |

## 4.3 **The morality of regulation by architecture**

At long last I am ready to confess that it took some nerve to complete a whole Part of this book with a Title referring to morality without talking about the morality concept at all. And I am still hesitant. Discussing morality in law has proven to be

[75] These may become economically efficient when the RIAA extends its use of the notice and take-down procedure.

an intellectual swamp, baffling the best minds in jurisprudence. While all I need is the application of their finest results.[76] Why a morality in law approach is important seems self-evident to me. If regulation by architecture invades our legal system, while the profession of those invading it considers itself hardly regulated by law *in this respect* at all, we must hope for the next best thing. A ready candidate would be its morality. But what do I mean by that? And what does it mean for a legal system in its course of assimilating regulation by architecture? And, finally, what *is* the morality of regulation by architecture?

What do I mean by morality and law? The set of normative conditions *we* must meet in order to earn our legal system its title.[77] Jurisprudence has known some pretty persistent debates on the subject. For example, Hart, Fuller and Raz all contributed. Despite their differences, they hardly argued about the set of Fuller's formal[78] conditions for legal systems: the more important difference was on how to read them. Fuller gets existentialist about this: if one of the conditions completely fails, the system does not deserve the title of a legal system at all, so it is not. His opponents prefer to conclude that such a system is a bad legal system, since they are existentialist about promulgation procedure and context. They can imagine a normative system becoming a legal system by promulgation,[79] even where one or more of the formal conditions is not met.[80] Why is this controversy important for discussing the morality of regulation by architecture in the war on music-file sharing?

### 4.3.1 *Morality of duty (M1)*

Fuller addresses the issue of bad and good legal systems by distinguishing between moralities of duty (say: M1) and of aspiration (M2). M1 applies to the formal conditions as existential conditions: if one of those completely applies there is no legal

---

[76] To those immersed in readings on morality, this sentence may be repugnant in itself. And I confess to my sins: I do not even consider their fine reasoning when I do not find it accessible and applicable – perhaps not unlike most moralists find the work of leading philosophers of computer science inaccessible and inapplicable. P.C. Snow's, *The two Cultures* (1959) seems to apply here. I have learned to accept, as a heuristic in interdisciplinary work, that only those articulations of results that are readily accessible and applicable to the other disciplines will be of any use.

[77] It may not come as a surprise that I follow Fuller's lead. I do this in part because his formal conditions are hardly controversial and broadly supported. Simmonds, for instance, uses them in somewhat the same manner in 2005 (N.E. Simmonds, 'Law as a Moral Idea', 55 *University of Toronto Law Journal*, 2005, p. 67).

[78] The eight necessary conditions are *formal*, that is, they do not directly support the legal system to have good or bad content. I will discuss this aspect of morality and regulation by architecture later.

[79] Implying the opinion that rules in a legal system are a one-way affair – hence Fuller's first assumption-revealing question.

[80] An example often mentioned is the Nazi regime in last century's Germany. Anyway, we can easily make a whole list of nations where doubts may be in order as to their legal systems' moralities.

system at all. Discussing the better or worse quality of legal systems requires M2, which Fuller expresses in terms of challenges,[81] related to the existential conditions of M1. Fuller's M1 allows for the opinion that a normative system may exist that has *not* been promulgated but nonetheless *is* a legal system. Hart finds the notion repulsive: 'This large conception of law, admittedly and unashamedly, includes the rules of clubs, churches, …'[82] I do not. Why? Because Fuller's approach opens an important notion for our discussion that Hart and Raz define outside jurisprudence. Because we can now imagine and discuss any operational normative system, complying with the existential conditions, to be a legal system – even if its rules are not promulgated in any sovereign way that Hart or Raz may require. This notion is of importance for our subject, because we are talking about the morality of the IT profession when engaged in rule making by architecture, an emerging business surrounded by fuzzy notions of sovereignty.

Hart's and Raz's assumption requires legitimacy of regulation by architecture to flow through hierarchical channels of delegation and proxy, starting at a body with a high level of competence. Applicability of this mechanism to the emergence of regulation by architecture is highly counter-intuitive[83] and does not inspire notions of morality in whoever finds herself involved in designing or employing regulation by architecture when no applicable legal rules are yet in place. Fuller's assumption, on the other hand, immediately requires at least M1 in whoever finds herself in the position of designing or employing regulation by architecture that may be considered a part of our legal system. Hart's approach places M1 requirements 'off-side' for jurisprudential discussion until they are formally represented in promulgated legal rules. We cannot wait that long when things are on the move. Moreover, it would prevent us from discussing research results like Ellickson's[84] – perhaps even prevent us from discussing the morality of alternative dispute resolution.

We can go even further: if regulation by architecture is to become part of our legal system, then we must test first its formal conditions. This brings us into a position where we accept the morality of the formal conditions to apply for a legal system, even if it does not yet exist positively. Finally, I can formulate the minimum requirements for morality in regulators by architecture. These are:

*Generality.* Assuming regulation by architecture to be always implemented by rules, this M1 requirement is met by default.[85] The responsible role, if needed, would be the service entrepreneur.

---

[81] The M1 moralities for regulation by architecture (the challenges) have been discussed earlier.

[82] H.L.A. Hart, 78 *Harvard Law Review,* p. 1281 (1965).

[83] One even wonders if this approach does not support an analogy to the concept of 'economy by plan' and opens the door conceptually to something weird as a 'legal system by plan'.

[84] Ellckson's, *Order without Law*, shows an interesting example.

[85] Although IT theorists are spending a lot of attention to the possibilities of what has become known as 'mass individualization' I think discussing it here will complicate matters unnecessary.

*Publication.* Publication addresses the issue that the meaning of rules is made public. For IT we have two meanings: the referential meaning can be minimumly published by making the source code available, the meaning by convention can be minimumly published by making a user manual available. These are then the minimum requirements of publication *for regulation by (IT) architecture.* If regulation by architecture is done secretly, it is not part of our legal system on moral grounds. The responsible parties are the software provider and the entrepreneur respectively.

*Prospective regulation.* Prospective regulation forbids regulation by architecture as applied to data, older than the published rules themselves. If it does, it is no part of our legal system on moral grounds. The responsible parties are the application service provider and the entrepreneur.

*Clear rules.* Regulation by architecture must not only be published, it must also be understandable. The requirement cannot readily be instantiated to regulation by architecture, because it is not yet clear what minimum level of IT education can be expected to be part of general education. A way out of this quandary may be found in an extension of the formal publication requirement: it should formulate what education is sufficient for understanding the rules. If it is neither specified nor self-evident, the rule is no part of our legal system on moral grounds. One other minimum condition may be formulated: in Artificial Intelligence, some applications are designed that can do wonderful things, but that cannot be understood in terms of rules, not even by its designer. Such rules (e.g., created by neural networks) may not be employed to regulate by architecture, unless they can at least be explained by means of convention. This requirement needs serious discussion and research since this type of application is entering the worlds of security, criminal law and crime prevention, often without such explanation (face recognition, profiling of large collections of messages). Without such explanation, it is not part of our legal system on moral grounds. The responsible parties are the software designer, the application service provider and the entrepreneur.

*Consistency.* This requirement is nothing special to regulation by architecture as I have mentioned. Anyway – the concept of consistency is, as soon as it is applied to multilevel regulation (e.g., by rule, by principle), very difficult to specify. One might conclude that a minimum requirement would be the formal extension that, as soon as inconsistency in rules is encountered in practice, some authoritative choice will be made in order to resolve it. If such a decision procedure is not made available, the rules which are considered inconsistent are not part of our legal system on moral grounds. The responsible parties are the application service provider and the entrepreneur.

*Constancy.* The requirement of constancy gets a specific meaning in regulation by architecture, because maintenance, updating and versioning are very much part of IT practice. I find it impossible to formulate a general minimum requirement. So, again, I choose for a formal extension: the requirement to publish the minimum duration of the rule to remain in force. If not, it is not part of our legal system on moral grounds. The responsible parties are the software designer, the application service provider and the entrepreneur.

*Congruence.* The requirement has a specific meaning for IT where the actual regulation by architecture may diverge from the published policy it is meant to implement. If such a diversion exists, the rule is not part of our legal system on moral grounds. The responsible parties are the software designer, the application service provider and the entrepreneur.

~

So my conclusion is that whenever regulation by architecture is designed and deployed, formal moral obligations rest with the entrepreneur, the designer and the application service provider – even if no legal rules have been promulgated. They should be aware when these obligations may apply: every time an application is being designed or deployed with a significant administrative character streak. Thus we have the fundamentals of the M1 morality for regulation by architecture.

~

These fundamentals are not controversial in the jurisprudential debate (as Fuller, Hart *and* Raz would probably agree), but they are controversial for current IT practice. An example: publishing the source code of regulating proprietary software is as yet not at all customary. Copyright owners tend to protect their intellectual property rights on software by keeping its articulation secret. A suggestion, eccentric for current practice would be that legal rules are exempt from copyright protection, that the source code of regulatory applications *are* legal rules and should consequently be published and free of copyright. And in the war against file sharing we can see what happens: proprietary applications of a combined administrative and collective character may regulate us by secret rules. I *do* know that my operating software and media player providers register my licences individually, and information snippets about my use of them – I *do not* know what rules they have built in or are planning to deploy. Here we have practices that will morally corrupt our legal system if we allow them to do so.

These fundamentals are not controversial in jurisprudential debate, but the assumptions that go with them are. Fuller identified them by using the five questions discussed before. Looking at these questions and their possible answers make me suggest that we can – no, we have to – add one additional formal condition. And that we can do so without entering into questions of material morality. We must do so, because our set of formal conditions will not be complete without setting minimum standards for institutional roles.

*Institutional roles* are a necessity for any legal system. It may seem a difficulty to infer from Fuller's list that the set of formal conditions must support legal systems without law promulgation being an existential condition, on the one hand, and on the other hand agree with Hart that institutionalized legislative competence is a necessity for the survival of any legal system. So we distinguish between existential conditions and a condition for survival. We need to do so, for without institutional roles that legitimately make rules, that legitimately administer rules, that legitimately administer justice (or decide conflicts) *and* that provide legitimacy,[86] no legal system will survive for any significant duration of time. So I decide on a ninth formal requirement, that of a minimum set of institutional roles. For regulation by architecture, making the rules follows the dream-design-implementation path and advocates to have at least some IT governance procedures in operation; administering the rules is the application service provider's role; administering justice is more often than not performed outside the architecture; providing legitimacy is the responsibility of the user in private law situations and of the political system in public law situations. If these roles are not provided for after the legal system has come into existence, regulation by architecture will fail with it.

### 4.3.2 *Morality of aspiration (M2)*

So much for M1 moralities for regulation by architecture. Something remains to be said, however. One of the most persistent arguments against the formal requirements for legal systems is their very formality. Many legal systems that will be considered immoral in a material sense may meet the formal requirements for being one. So the set of formal requirements is only to be considered sufficient for the determination of a legal system as such. It is not sufficient to determine whether the legal system is a better or worse one in any material sense. Fuller proposes that rephrasing the conditions as challenges will help here – and it does, as we have seen some pages earlier. But something is lacking. For one thing, the morality of rule addressees has hardly been touched upon while discussing the formal requirements. Why is that? If nobody *in fact* hides the rules, can we still stipulate the legal system exists? And is that not what the war on music-file sharing is all about? Here, we enter into the discussion on morality of aspiration.

Morality of aspiration, however, does not belong to the morality of law (as a discipline) and also not to the morality of computer science, but to the morality of politics. I have been discussing the morality of regulation by architecture – not the politics of regulation by architecture. This subject is reserved for Part V.

---

[86] These institutional roles follow naturally from the last four of the five questions discussed earlier, and they include a very general notion of Hart's rule of recognition.

# Part III
# THE ECONOMICS OF P2P IN MUSIC

# Part III
# THE ECONOMICS OF P2P IN MUSIC

**Wilfred Dolfsma***

## 1. Introduction

Music on the Internet exists in bits and bytes. Music exchanged over the Internet is a pure information product. In economic literature it is known that those markets where information products are exchanged are different from those markets where physical products are exchanged. Some of the differences are obvious, some are not. Certainly not obvious are the effects that these differences imply for the dynamics in a market of physical products, partly transforming into information products.

In addition to importing the differences in physical and information products into the music market, the Internet changes the ways in which parties relate to one another. Issues of geography no longer play a role, it is sometimes argued (Cairncross 1997). This may have a number of consequences, especially for an industry that is dependent on a system of copyright law. As will be argued below, the music industry is highly dependent on the system(s) of copyright law. Even though the view that geography will continue to play a role in the economic sphere remains convincing,[1] how market processes and outcomes are influenced by geographic issues certainly changes, due to the Internet. Similar arguments are valid concerning the geographical foundations for government policy and law enforcement. This is of special importance for the music industry and other 'content' industries, where the rules laid down in the systems of copyright laws are constituting the market (see also Dolfsma 2000d).

Based on analyses of music products (or goods) and, subsequently, of markets for information products in general, one might discuss certain pertinent market mechanisms that will emerge, or become more prominently noticeable. Price discrimination, in combination with the bundling of products, and customisation are

* International Institute of Infonomics (& Erasmus University Rotterdam); wilfred.dolfsma@infonomics.nl (& w.dolfsma@fbk.eur.nl).

[1] See, among others, Graham (1998) and Van der Panne & Dolfsma (2003).

*A.H.J. Schmidt, W. Dolfsma and W. Keuvelaar, Fighting the War on File Sharing*

important examples of mechanisms that one may expect to be more prominently visible in the market for information, given the nature of the products exchanged. The argument can be made that the characteristics of information goods (of the cost structure in particular) are such that renting them to 'clubs' might be more feasible than selling them. Indeed, the technological options are there and business models are developing in this direction. It would be an instance where the characteristics of information goods allow for a feasible excludability on the basis of copyright law to be introduced.

A discussion of these issues will provide the avenue for discussing and analysing the changes that the music industry is facing now and in the future. Which kinds of parties are likely to be most affected? Why? And how? Will new parties emerge, and if so: what functions will they have, what roles will they play? To what extent will there be a convergence between the different content industries, and what does this mean for the music industry?

Following this analysis at the industry level, the different business models for firms in the music industry distributing music electronically that have emerged, or may still emerge, will be evaluated. The focus here will not be on particular firms that now (still) exist. Instead, *types* of firms that operate in the music industry and have a specific function (role) therein will be analysed. A dominant way in which music may be distributed and consumed digitally, via the Internet, has not emerged yet. As such, many things are still fluid and uncertain. In these circumstances, explaining the processes that can be observed is a daunting task; making intelligent forecasts about the future of the music industry will be speculative. The question whether or not a system of copyrights like today's will prevail can, for these reasons, only be addressed in general terms. Informal structures ('communities', or, in economic terms: clans, clubs) are expected to play an increasingly important role in the music industry and will thus be considered. The perspective of the research will thus have to be mainly theoretical.

Based on the economic analysis that preceded, conclusions will be drawn on the effects of developments for the different parties involved. Here, the perspective of welfare economics is predominant. Who are likely to benefit from a particular course of events taken? Who will be hurt? The approach whereby 'musical networks' are distinguished and analysed is of particular interest here. Is a situation to arise that is more optimal in Paretian welfare terms?[2] At this point, an evaluation will consider the extent to which the economics of peer-to-peer systems in the music industry and relevant copyright law are in conflict.

[2] A situation where at least one party is better off, and no one is worse off, is a Pareto improvement.

## 2. Markets for Information Goods

Information goods have distinct properties relevant to economic theory. As a good, their consumption by one person does not exclude in any way the consumption by others. In addition, and especially using ITechnology, an information good may be consumed by several (many) individuals at the same time without either of them having an experience that is diminished in any way. Information goods are, thus, non-excludable and non-rivalrous. Information is consequently, in economic terms, a public good.

Within the discipline of economics, a separate field of the economics of information has emerged (Ripley 2001). The field is acknowledged as being important – the 2001 Nobel Prize for economics was awarded to three representatives: George Akerlof, Joe Spence and Joseph Stiglitz (Heijdra, et al., 2001). Economics of information takes insights from the main body of economic theory, but has developed additional insights itself. Some of these insights have become common good in economical discourse. For information goods increasingly take on a central place in economic reality, whether it be pure information goods, or the information component of physical goods. A number of products that were traditionally inseparable from a physical object, now become or can be digitised. One may think of books, video material, or audio material. The emerging 'market' for digitised music has certainly caught the attention over the past few years, shaking up – as it did – a sector of the economy that many people take a particular interest in, a sector that had also developed some degree of complacency.

In addition, it is increasingly clear that (physical) appearance characteristics no longer count as the predominant selection factor for goods exchanged in an economy. Consumers are rather led by what information they have about the products, including information about how the product functions in a social context in their decisions whether or not to buy that product.[3] The extent to which information about goods fit the preferences of individuals will predominantly determine their willingness to actually buy it (Lancaster 1965).

Information goods may further be divided into information that has a direct use to the consumer, and information that is of indirect use (Herings & Schinkel 2000). The former is what the consumer actually wants: he derives utility from obtaining and consuming/using it. The latter is the prerequisite he needs to find the former: examples are yellow pages, telephone 'books', etc.

Information goods tend, furthermore, to have a characteristic cost structure: creating a first issue involves high investment costs, and these are to a large degree sunk costs. Such costs need to be invested, but cannot be recovered if the project fails. They are idiosyncratic to the product or project. In the course of the project, it

[3] Such information would be, for instance, if a product is, in the words of Irving Fisher (1903), 'in the swim'.

can become clear that the project will not be as successful as expected. The (psychological) inclination will be to go ahead with the project anyway because so much has already been invested. From economic theory, this is not a correct decision to make. If it becomes clear that the project will not be worthwhile, one should abort it straightaway and cut one's losses. Costs already 'sunk' in the project, which cannot be recovered, must not be considered in the decision on continuation. If, against the economic logic, a firm investing in the creation of an information good decides to continue anyway, consequences tend to be bad. The firm may find itself in a position, when the product can be brought to the market, where it decides to try to generate whatever cash flow it can. The firm will thus cut prices significantly, perhaps even to the extent that the price barely covers the variable costs of producing a single unit of a particular product, let alone fixed (investment) cost. This will affect other players in the field that may be forced to adjust their prices, and be forced into a position where they do not make a profit in a market where they otherwise would.

In Figure 1, the relation between unit costs and the quantity produced is presented graphically. The exact shape of such a curve depends on empirical circumstances. Unit costs consist of fixed and variable costs. As production increases, fixed costs can be spread over a larger number of units, and so unit costs decrease. There, where the lowest unit costs are reached, the optimal production capacity would be for a firm to plan for. In most industries, unit costs will tend to rise again, pointing to diseconomies of scale. The Minimum Efficient Scale (MES) for most (physical) products is a good distance away from the origin. However, for digital information goods, the MES is very close to it. The additional costs for an extra copy are low and tend to zero. Charging, as neo-classical price theory suggests, a price which is equal to marginal cost could mean that a firm producing information goods is not able to recover investment costs.

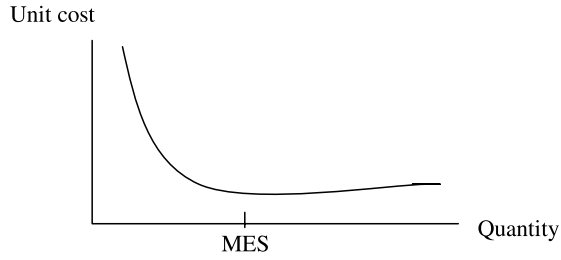


Figure III-1 – Unit Cost and Scale of Production

High initial investment costs and low marginal or variable cost are an important consideration for firms in designing their strategy. A high investment, to be faced before the product can be marketed, implies that firms run a risk. If the product does not find a (sufficiently large) market, such costs will not be recovered. The

sunk cost effect will thus be especially strong for markets where information products are exchanged – pressure for prices to lower are stronger in these cases, *ceteris paribus*. Alternatively, competitors of that firm may, once a product launched by the firm turns out to be successful, imitate or copy. Intellectual property rights of various kinds are protecting the creator, or any right holder that has obtained these rights from the creator. Intellectual property rights legally protect the products of the intellect from commercial exploitation by or in the name of parties other than the right holders. For information products, especially if no physical (technological) element is involved, the system of copyright law is relevant.

Legal protection is, however, only one element of what might be called the 'appropriability regime' of a product, determining the extent to which the innovative firm can appropriate the profits, or benefits more generally, associated with the product (Teece 1986). Another is the 'nature of technology', conceived broadly (see, e.g., Dolfsma 2001). If, for instance, a (new) product must be produced using a new production process (that may be legally protected by patent law) and is critically dependent on this process, the likelihood of imitation are diminished. Process innovations are rather more difficult to 'read' from a product than innovations in that product itself. Innovations in the creative part of the music industry tend not to be process innovations.

Although information technology does have effects on the production of new music, it has more serious implications for how music products can be distributed. As such it has features of a process innovation. In addition, if the production of a new product in the media industries is dependent on tacit knowledge of people involved, it is not so likely that the product can be imitated. Links with other parties, such as in (r)etail, the media, or organizations in the business of life performances are important and often rely on personal contacts. In the interactions between musicians and the staff responsible for production, tacit knowledge plays an important role as well (Gillet 1996). While IT would be facilitating some of the technical aspects of the work of producers, these are not the critical capabilities that they have. Critical is the way they relate to the musicians.[4]

The ease of making versions of an information product gives the initial creator the possibility of catering for the different audiences and thereby increasing the revenues from an innovation. However, it also gives competitors the opportunity to imitate (cover) cheaply. So-called *neighbouring rights* provide intellectual property law means to recover costs here. Copyrights are especially relevant for fighting the identical, high quality digital copies that may become available on the market, distributed in violation of them. But here there is, amongst others, the additional issue of upholding the law. These and other legal intricacies in a digital environment are discussed in the contribution by Wim Keuvelaar in this volume.

[4] On the relation between innovation and trust or 'culture' more generally, see O'Reilly & Tushman (1997).

Production of information goods is different from the production of physical goods. Some of the consequences for the markets of such goods are discussed above. There are a number of features of information products, unrelated to the cost structure of such goods – at least in principle. Valuing information goods is a complex issue, especially when pure information goods are considered. In a situation where there is a buyer and a seller of such a good, it is the seller who is best able to properly value the good, due to the fact that information is distributed asymmetrically. Typically, when the seller shows the good in its entirety to the potential buyer, the latter is not only able to value the good, but no longer needs to buy it, as he already has (seen) it. Only when the seller can (legally) prevent the buyer from using that information in the future will this 'information paradox' not present itself. The strategy of overcoming the information asymmetry by giving 'shareware' is thus of limited economic use.

The problem is, then, to credibly signal the value of an information good without surrendering the good itself. One signal a buyer takes into account is the (apparent) experience of other customers. Traditionally, the second-hand market for goods provides such signals (Akerlof 1970). If many products become available that are relatively new at a relatively low price, the first-hand product will most likely not be very good. Information products are, however, easy to make copies of, and consequently there are many information products available at low (zero) prices on the second-hand market. The signal from the second-hand market that then becomes useless. Allowing the use of an information good in a stripped-down form may be a solution for the information asymmetry problem. It depends, however, on the reputation of the firm providing the good for reliably being able to claim the representative nature of such a stripped-down product. Reputation is thus a valuable asset for firms in markets for information goods. Reputation can be difficult to attain – incumbent, well-endowed firms have an advantage in this regard.

Many of the problems for firms in the business of producing and selling information goods discussed up to now relate to a feature of information products that can be made to work to the advantage of such firms. As strongly argued in, e.g., Shapiro & Varian (1999), information goods are exchanged in markets where network effects are typically strong. Consumption or use of information goods by some makes it more attractive for others. Each additional member of the group increases the value to the existing members of being a part of the group, for example by using the information good. Firms producing such information goods must realise this and use it to their own advantage. It may even be the case that the product itself can be configured so that network effects are made better use of. For instance, by increasing or improving the extent to which communication with others is a central part of the product. Another option is to make the products technically compatible with other products or other complementary goods.

Information goods are, from an economic perspective, different from the physical products we have become used to using ourselves and thinking about conceptu-

ally as scholars. The differences between the two kinds of goods have important consequences for players in the business of producing and selling, e.g., music. As argued elsewhere (e.g., Dolfsma 1998, 1998b), and contrary to the view that is still widely held, markets on the Internet are not the perfect markets known from neo-classical economic theory. One important difference of information goods in comparison to physical goods is that they are non-rivalrous and non-exclusive. In reality, however, information goods are regulated under the law, thereby imposing conditions of exclusivity and rivalry on them. In theory, there are a number of sound reasons for doing this, as discussed in the next section.

## 3. Some Economics of Intellectual Property Rights

The economic rationale for IPRs is to create an incentive for creative individuals to actually be creative. The incentive lies in the fact that they alone are legally competent to exploit the fruits of their intellect on an exclusive basis. In fact, right holders are granted a monopoly on the exploitation of a product. The creative person, or his appointed representative, can thus recoup the investment expenses incurred, and earn (part of) their living by being creative. By securing a financial stimulus, they may try to be more creative, continue to try to be creative, or they may be more likely to make public the creative products that they have developed.[5]

From an economic perspective, one would be wary of providing a monopoly position to a particular party in the market. Such a party is able to extract maximum gains from the market by setting a price, setting a quantity or by modifying some characteristics of the product (or a combination of these) accordingly. The outcome will inevitably be a situation where fewer products are brought onto the market, higher prices or set and inferior characteristics persist. Or, again, a combination of these.

This situation is not a desirable one. The alternative, however, might be a situation where the products that are now at least available, would not be on the market at all. It has long been recognised that the market fails to generate innovations (in a sufficient number), and fundamental innovations particularly may not emerge (e.g., Nelson 1959). Indeed, in the perfect market from neo-classical economic theory, where all parties know everything there is to know and have perfect capability to process all such knowledge, there is no room for novelty.

To sustain innovation, imperfections in the market may thus be unavoidable.

Governments, recognising this, have opted for awarding creative individuals a monopoly over the commercial exploitation of their fruits of intellect, but have restricted the monopoly in important ways. Patent law, for instance, is restricted to a period of 20 years after the granting of the patent. In addition, to be granted a

[5] Landes & Posner (1989) make such a case for copyrights.

patent, the applying party should submit all relevant material to the office judging the application. This material is either made public by this office upon application (Europe), or upon the granting of the patent (United States).[6]

An economic analysis of IPR precludes moral considerations, or a view of the law as presenting inalienable rights. Certainly a neo-classical economic analysis of the law would analyse the costs and benefits of different systems of law, a utilitarian approach. From a utilitarian perspective one would then compare alternative systems in terms of which would generate the greatest happiness to the greatest number. A particular system of law in this view has no value in itself, and needs to be changed or replaced as the need arises. Welfare economics would add that in a new system nobody should be worse off than in the original system – this point is known as the Pareto criterion. Also, one could argue, in the *transition* from one system to the next, welfare economics would not allow anybody to be (temporarily) worse off. This, of course, is a criterion that favours the status quo.

By not considering the moral aspects of law, or the value of legal principles as expressed in them, an economic analysis of the law emphasises that a legal system has advantages and drawbacks and encourages one to think of alternatives. One obvious drawback of IPRs in general is that they limit competition in providing a particular product or by not allowing the use of a specific means of production, or the production of a particular good, at least for some time. It would seem desirable, therefore, to investigate the effects of the existence of IPRs on specific industries – necessitating an understanding of that industry before as well as after the changed system. Changes in the music industry are most pertinently related to information and communication technologies.

## 3.1 **The music industry: digitisation**

In the course of the development of the music industry as a whole, several phases can be distinguished. In each phase, it might be argued, competition between the parties involved turned on a different issue (Huygens 1999). During the early days, in the early 1900s, competition focused mainly on establishing the technological standard for recording and playing music. So, firms competed mostly on the devices with which to play music, such as the Gramophone Cabinets. Later, competition shifted to the music itself, the 'software' as it were. Then, in the 1930s, firms in the music industry began to compete for star musicians: whoever was able to hire a star would see their expected income in this uncertain market rise. Skipping a few phases, the music industry is now in a phase where the ownership of copyrights

[6] This is an important difference in terms of the competitive environment faced by the potential applicant; when publication of the material is immediate upon application and before a decision is made regarding the granting of the patent, there is a tendency for firms not to apply for a patent (Dolfsma & Soete 2002a).

constitutes the most important source for competitive advantage. Without a catalogue of rights in music, built up over a number of years or acquired at high cost, a feasible existence in this industry is impossible. This is one reason for the current concentration in the music industry. Table 1 shows that in 1998, 76% of the global music market was in the hands of five players. Entry barriers are high and incumbent firms enjoy a certain level of protection from competition by outsiders.

(% of total market)

| | |
|---|---|
| Universal | 21.1 |
| Sony | 17.4 |
| EMI | 14.1 |
| Warner | 13.4 |
| BMG | 11.4 |
| Total | 77.6 |

Table III-1 – Players in the Global Music Market, 1998 (source: BMI)

As in other industries, a large number of different parties are involved in the creation, distribution and consumption of music. It is instructive, and relevant for research, to present a picture of the music industry's value chain (Figure 2). Any such representation of an industry's value chain is an abstraction of the many features one will see in reality. As such, it serves as a device to focus attention on some aspects rather than on others. Indeed, a value chain might include more or less details (see Adelaar, et al., 2000). Although not often in economic terms, the music industry is a much discussed segment of society (Burnett 1993; Dolfsma 2000; Frith 1983, 1996; Leyshon 2001; Negus 1996; Rutten 1997; Sadler 1997; Shuker 1994).

Two extreme views are, of course, that the music industry will be changed completely, as opposed to the view that nothing will change at all. The former view is, in economics, usually translated into the prediction that intermediary parties will disappear. Dis-intermediation will result in a situation where musicians will relate directly to consumers.[7] One example held up in such discussions is that of Ani Difranco. The other view tends not to be so outspoken, and often expresses the prediction that the Internet will (just) be a (minor) addition to the existing means of distributing music.

At least for now, digital distribution of music is not a major part of the entire market for music. Of course, the value of music distributed digitally by organizations that have no licence to do so, and often do not charge the consumer directly, is difficult to establish and often escapes the statistical eye. There is no doubt that the part of digital music in the entire market is low.[8]

[7] See Chircu & Kauffmann (1999) for a discussion on intermediation, dis-intermediation and re-intermediation as a consequence of the use of Internet.

[8] Moreover, figures are not easy to come by in this sometimes secretive industry. Adelaar, et al. (2000) state that digital music makes up 1.2% of the entire market.

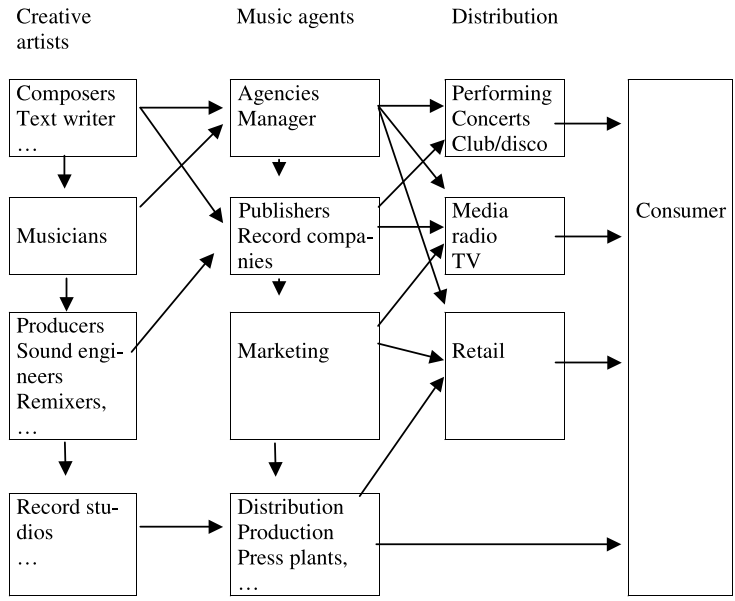


Figure III-2 – A Stylised Picture of the Music Industry (source: Dolfsma (2000))

In terms of the even more stylised Figure 3, dis-intermediation would mean that the two types of intermediaries between artist and consumer would disappear. Stated differently, of the three dotted lines, only the top one will materially remain. If the Internet will only prove to constitute an additional means of distribution, it would mean that both (some of) the dotted and the fixed lines will remain to be observed in this industry.

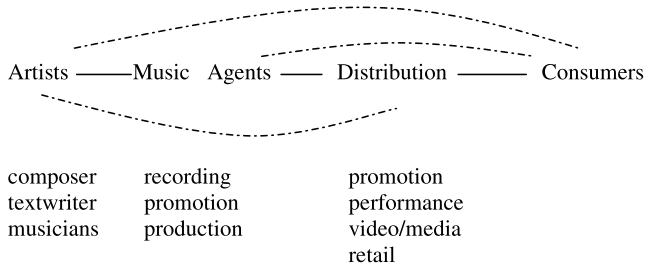


Figure III-3 – Channel functions and information exchange – the music industry

Dis-intermediation is not likely to occur, if not followed by a process of re-intermediation. The number of musicians who want to attain the attention of an audience is immense. It has taken Ani Difranco 10 years in her attempt to bypass the existing intermediaries in the music industry (such as music publishers and record compa-

nies and others) to become known to a reasonably large audience who want to buy her music. Even when time is available to look for music, people will generally limit their search costs by only considering a choice of different pieces of music where some selection and qualification has already been applied (Dolfsma 1998). Music is a good that has qualities that are difficult to establish and often need to be experienced before it can be valued. Some music, for some people, can even be considered a credence good, meaning that the qualities of the good and its value depend on and are established by people other than the consumer. Other opinions, most likely those that depend upon a reputation in the field, will be consulted and thus limit and prestructure the choice. There will, consequently, be a task for intermediaries in the music industry, even as Internet is used extensively.

In general, one may say that existing parties are in a favorable position to take on such an intermediary position. They have built up expertise and knowledge on the markets. They have established links with the other players in the field. It is also more likely that they have the necessary resources to make the necessary investments.

In the music industry, this general picture needs an appendix. The most important players in this industry, the 5 big record companies that have a combined market share of about 80% globally as well as in most local markets, and that have stakes in music publishing as well (Dolfsma 2000), do not have a good reputation in the field, among the consumers. Musicians gain a lot of credit and legitimacy from the consumers when they rebel against the record companies with which they have a long-term contract. Prominent examples are Prince, Robbie Williams, and George Michael.

There is an irony in this, as only the stars are in a position to rebel. They are more likely to be able to turn to another record company. At the same time, the stars are more often criticized for lacking artistic credibility (Hesmondhalgh 1998). The star system is itself a system, promoted by the record companies in order to decrease the uncertainty in the market for music. Of the products released on the market, at least 90% will not be able to cover the costs of development. A smaller part actually makes a profit. But the profits these few products make, in general, tend to compensate for the costs of developing the other products. Media industries in general are more profitable than the average firm (Vogel 1998). Major record companies have stakes in, or form organic partnerships with, players that are respected and well situated, and thus are able to thrive in the business even though they lack credibility.

The ongoing existence of companies in the music industry in particular, but the content industries in general, is closely related to their capability not only of constantly developing new products, but also of targeting a large enough market with these products. The rate of success of new products in the media industry already used to be at a relatively low level of 10% in the 1960s and 1970s. It has even declined in the years thereafter (Peterson & Berger 1975). Some 95% of music

released nowadays does not even reach its break-even point [REF]. Of course, the thorough selection *before* the actual release of songs involves substantial costs as well. However, the few media products that actually are profitable do handsomely compensate for the non-profitable ones. The success of product innovations thus challenges the organization of media companies. Scale is important to survive failures, but a certain feeling of the market is equally important. The latter is notoriously difficult for large corporations.

Given the pressure of illegal use on information product markets, producers are driven to constantly launch new products. It is a certain way to stay ahead of – unlawful – competition. In addition, adapting products to every taste is a well-known strategy to pre-empt entry in a market, one that has been initially analysed by the economist Hotelling (1929) in the case of ice-cream parlors alongside beaches (see also Scherer & Ross 1990). Possibilities to influence the success of a certain song through effective marketing are there, but are of limited use as consumers are not perfectly malleable nitwits.

The large incumbent players in the music industry – the 'majors' – control the most important complementary assets that allow them to maintain and even improve their position over long periods of time despite the uncertainty in the market for music products. For decades the 5 majors have had an 80% combined market share, even in the face of daunting uncertainties (Burnett 1993, Dolfsma 2000). Deep (financial) pockets, distribution capabilities and marketing expertise are what large, existing corporations focus on. Having acquired these capabilities, they are in an advantageous position.

If businesses learn that a smaller percentage of new products proves successful, they must be able to survive unsuccessful releases. The period for raising profits from the market will shorten. Success has to be generated through short, highly agile, intensive and sophisticated advertisement. Also, the importance of a thorough feeling for the market will increase. Majors in the music industry thus have formal agreements with independents on a local level in order to take over talent that proved successful in local markets and will be less of a risk. Majors, as well as independents, will benefit from those relations (Hesmondhalgh 1998).

A proven strategy is that of building on previous success by creating 'platforms'. The star system in the music industry is an example of such a platform strategy. Star musicians releasing a new album have less chance of the new production becoming a flop. Related products that are adjusted can hitch a ride on the success of hypes, exploiting successes to the optimum. Platforms can remain internal to the genre, such as the star musicians, but can also transcend genres: Britney Spears 'writing' a book, or the Spice Girls shooting a film. Music proves to be a media product that can serve as a platform itself, but it can rely on other platforms as well. Music stars appearing in a film increase the chance for success for that production. The soundtrack of a Disney film, composed and sung by Elton John, is another example. One should therefore not be surprised that the influence of companies in the media industry is

| | Time Warner | Disney | Sony | Seagram | Bertels-mann | Viacom | News-corp |
|---|---|---|---|---|---|---|---|
| Television, production | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Film | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Music | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Publishing | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| Television, broadcasting | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| Cable TV | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Satellite TV | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Internet | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Theme parks | ✓ | ✓ | | | ✓ | ✓ | |
| Retail | ✓ | ✓ | | | ✓ | ✓ | |

Table III-2 – From Platforms to Conglomerates (source: The Economist (1998))

widespread. Table 1 presents the stakes of the seven biggest firms in the media industries. Of course, developments in the media industries have not stagnated since 1998. In addition, some sectors are not included, most notably among these is the computer games sector. Here is a young market that is currently already bigger than that for movies. Nevertheless, the general picture is clear: in the media business it makes economic sense to diversify (cf., Dolfsma 2000b).

While it is true that incumbents are in the better position to take advantage of the opportunities that the Internet offers, the issue remaining is: which ones? Media industries converge, as Table 1 indicates. Firms from other industries might also find that they can benefit from having a presence in one of the media industries. Especially at the retail level, such competition from outsiders may become apparent. In addition, other parties that have had a long presence in specific functions in the industry may venture to join in. One might think of (publishers of) music magazines such as Rolling Stone in the USA or OOR in the Netherlands taking up (some of the) roles that are traditionally performed by the record companies or music publishers. Some parties or functions might, of course, disappear altogether; some measure of dis-intermediation is likely.[9]

## 4. Market Standards, Business Models and Future Music

Up to now, and for several decades, the business model in the music industry has been focused on the control of copyrights. Over the years, as a back catalogue of records over which legal control can be exerted is accumulated, the reliance on this model by the record companies has grown. Owning the rights to exploit exclusively

[9] The position of the (sometimes officially sanctioned monopolies of the) collecting agencies could be threatened, for instance, by music publishers (*Financial Times*, October 8, 2001).

songs produced in the past, allows record companies to weather periods where business is slow.[10] During those days, they can draw on their stock of material and re-release records. As such, a backlog of material constitutes an important barrier to entry for firms aspiring to enter or start in the music industry.

The term business model is, however, a term used in many different guises. Rather than following the practice of assuming to be obvious what a business model is, I believe it serves a purpose to explicate the concept somewhat. A useful way to think of a business model is as (Timmers 1998):

- An architecture for the product, service and information flows, including
- A description of the various business actors and their roles; and
- A description of the potential benefits for the various business actors; and
- A description of the sources of revenue.

Usually, only the third aspect is meant. It is more realistic, however, to see a firm as part of a competitive environment. It competes with others for a market, but it is also dependent on still others to co-operate. Indeed, sometimes the very parties with which a firm competes can be the parties which the firm needs or wants to co-operate with.

Nevertheless, of course, the first two points in this description of a business model may be conceived as providing the necessary information for the third element. Indeed, 'the bottom line' of each business model is whether it provides a sustainable basis to generate revenue.

In this light, and in view of one general goal of the research endeavour in this joint research project, it would be helpful to present an exhaustive list of ways in which a firm can charge for the products or services it offers on the market.[11] Figure 4 presents the different ways to charge, partly coinciding with the different products (physical products, services) which can be charged for.

A separate issue is, of course, that of *whom* and *for what* to charge.[12] Music provided online, for instance, may be regarded as a service when provided in streaming format. Consumers may be charged by the song, or by the minute. They may also subscribe with a service provider that allows them such benefits on a number of different terms. Music as a product may be delivered in a format that allows

---

[10] The struggling record company EMI has released an anthology of singles by The Beatles that have listed in the charts at number one by the name of '1'. This has helped the firm to maintain their position even when it seemed to be lagging behind in its attempts to sign new promising 'acts' (*Financial Times*, May 22, 2001).

[11] Please note that giving a product away is here seen as charging a price of $ 0. Benefits – material or otherwise – of a different kind may/will be appropriated by firms, organizations or individuals who operate in such a manner.

[12] The latter is not an issue which is easily dismissed. In the early days of film, firms producing movies charged by the length of the reel of a movie.

consumers to store it and use it more often. In these cases, it is clear that the consumer directly pays for music. Music can, however, also be bundled together with other products. A consumer buys a bundle of (information) goods, whether he would prefer each of them or not. Often, in these cases, it is unclear what part of the charge relates to which part of the bundle of products. The consumer may not even be fully aware of all the elements in the bundle. While IT and the Internet provide excellent opportunities to unbundle products, commercial considerations may make sure that bundling of goods does occur (much) more often than would seem technically likely.

One of the parties most likely to be involved in this is the Internet Service Provider.[13] Price and product strategies will be discussed at more length below. One objective of our goals is to look for, on theoretical terms, a way to reconcile (1) legal imperatives, related mostly to copyrights and attempts to sustain those on the one hand, and (2) economic necessities on the other hand. Is it possible to devise a business model that is not in conflict with existing (or modified) copyright law, while at the same time making economic sense?

Addressing this question requires looking more closely at the extant business model(s) of the music industry first. Prior to that, market *standards* that have arisen or are arising must be mapped. Especially for information markets, market standards are of great importance. In such markets, as the discussion in sections 1 and 2 have shown, the forces driving a standard, as well as the consequences of a standard once it exists, are more pertinent. Network effects and, music undeniably being a symbolic good, bandwagon effects push the tendency for a market to adopt a single standard.

Market standards are often standards in a technical sense, but need not be technical in nature (Farrell & Saloner 1986). What does define them is their general acceptance in the market – discussing standards from the perspective of an economist does not add much if they are not *de facto* accepted in the market.

For the music industry, one explicit standard that has emerged over the past few years is of a technical nature. Many players in the music industry now accept the MP3 standard. Certainly consumers perceive this standard – developed by a German public research institute, the Frauenhofer Institut – as the standard for distributing music online. Even people who rarely consume music in a digital format, accept the MP3 standard. To give an indication, the term 'MP3' is consistently one of the most searched for terms in the search engines of the Internet. MP3 is actually a way of compressing the size of a file in order to make its transmission easier. The wrapping for the file, what MP3 is in essence, is independent from the content. As such, the technical standard that has emerged in this market does not allow for *strict* control over the distribution and commercial exploitation of the content (music) at

[13] One of the best examples of an information good that is increasingly unbundled is the newspaper. Now, attempts are made to rebundle some of the elements together with the services of an ISP (*Financial Times*, October 9, 2001).

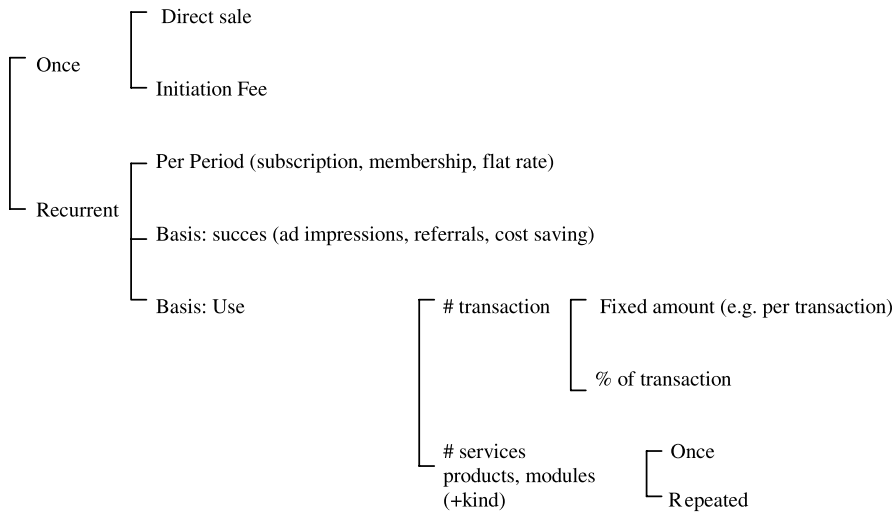


Figure III-4 – Models of Revenue Generation

hand. 'Illegal' copying – 'pirating' as the interested players call it – cannot be avoided. In this regard, there is no difference with other, earlier ways of distributing content (music). The copying of sheet music, records, tapes or CDs could not be avoided in the past. One issue is, of course, whether or not the extent to which music can be copied using ITechnology is larger than ever before. Certainly, the quality of the copy is higher.[14]

The industry has allied themselves in a group called the SDMI (Secure Digital Music Initiative) whose aim is to develop a way to distribute music digitally that does allow some measure of control. However, many important players in the SDMI seem to adopt MP3 as a market standard. SDMI thus embraces players who create software that supports the use of MP3 files, or MP3 players. The alliance also has member companies that manufacture MP3 players. What is most striking, perhaps, is the fact that both Napster as well as the Recording Industry Association of America (RIAA) are or have been members. These two are involved in long and devious legal procedures that have drawn a lot of attention. To say the least, therefore, the almost 150 members are a diverse lot, with different and sometimes clashing interests, and are not likely to reach a consensus at any time soon, if at all.

MP3 has come to be a standard in the technical as well as in the commercial sense of the concept standard. One indicator of this is that the term 'MP3' is consistently among the terms most searched for on portals. Another such often searched for term, 'music', entails music in MP3 format. In terms familiar in the manage-

[14] That is to say, when an attempt to copy succeeds. Tools such as Napster or Gnutella do not offer guaranteed success in downloading music.

ment of innovation, the era of ferment has passed, and basic configurations have been established on the grounds of which coming developments in the technology to compress (rip) content will stand (Anderson & Tushman 1997). Of course, technology develops more rapidly than it used to in this sector, and so a new standard may emerge. Still, it is highly likely that the MP3 standard will be the standard to compress and distribute music and content generally for the coming time.

Given this technical and economic standard, firms in the music industry will need to develop a feasible way of distributing music so that it is possible to generate an income. Several such 'business models' may be considered (e.g., Timmers 1998, Rappa 2001).

- Brokerage – where a party brings together buyers and sellers, facilitates a transaction and charges a fee;
- Infomediary – collects and sells information to other businesses;
- Manufacturer / Merchant – wholesaler or retailer (e-tailer) reaches buyers directly, compressing the distribution channel and increasing efficiency or providing better service; digital or physical product, product or service;
- Community – allows users to provide content, charge subscription or advertise;
- Subscription – users pay for access to site with high value added content compiled by the firm.

Categorising may differ among authors, and may be more or less fine-grained. As such a categorisation becomes more detailed, however, overlaps begin to become more apparent. Although some of these models overlap, different elements are emphasised, or a broader and more encompassing model is provided. Any of these models might rely, to a degree, on income from advertising. In addition, the subscription model will, in actual practice, most often and most feasibly be used in combination with other models.

The advice of New Economy-thinker Kevin Kelly (1998), in his *New Rules for the New Economy*, to 'follow the free' and charge for ancillary products, is not likely to be a sustainable one to follow. Not to charge for the music downloaded or consumed digitally, but rather to ensure that income is derived from, for instance, advertisements, is not likely to provide a sustainable basis for a business. While the Internet offers tremendous opportunities for unbundling products that were previously bundled together and sold for a single price, many of the suggested business models suggest a bundling of some sort. Content, in other words, will be bundled, but bundled differently than before.

Instead of a number of songs on a record or a compact disc, selected or bundled by the record company and the musicians, consumers might now bundle songs themselves. Alternatively, they may opt for a bundle that includes not just songs, but other goods and/or services. The latter can be premium quality and highly valued goods, provided through a website dedicated to a particular band, for instance,

such as interviews, videos, live performances brought via streaming, possibilities for priority booking, behind the scenes footage, and the like.[15]

Bundling can be a profitable proposition, to be implemented through a subscription model or by one-off sales (cf., Choi, et al., 1997, 361-4). Imagine, in a relatively simple setting, three individuals, Ringo, John and Mick, being variously interested in an album by the Beatles and the Rolling Stones. Ringo wants to pay $40 for Rolling Stones music and $60 for Beatles music; Mick $60 for Rolling Stones music and $40 for Beatles; John $50 for both. When there would have been one firm selling both,[16] faced by production costs for each product of $40, it would make sense for this firm to bundle the music. If sold separately for $60, only Ringo would buy Beatles, and Mick would buy Rolling Stones, yielding a profit of $40. If sold separately for $50, Ringo and John would buy Beatles music, and Mick and John would buy Rolling Stones music. The total profit would be $60. If bundled and sold at $100, all three would buy, yielding a similar profit of $60, but satisfying all the customers and creating the possibility for additional interests to emerge by somebody not previously interested in a different kind of music.

It would also be more convenient to buy such a product. One needs to understand that this analysis is for two well-known products considered in isolation from other products. In the case of the music industry, for instance, at least some of the products in any bundle would be new products, most of the products would be experience goods or even credence goods whose value is difficult to establish, and there would be the additional problem of information asymmetry as well. All of these considerations would strengthen the case for bundling.

Goods bundled with music must, in order for people to be willing to pay for such digital content, be truly unique and premium if they are to be enticed to pay for it. One way to entice is by limiting the availability of a product in time. The possibilities for arbitrage are diminished. Providing goods that are highly personalized and closely meet an individual's preferences, cannot be distributed by such an individual to others so easily. If one recognizes the social meaning of consuming the highly symbolic good that music is (Dolfsma 1999), one would recognize that there will continue to be a substantial market for obviously authentic, physical products that are not priced excessively high. Even if the further, 'illegal' distribution cannot be prevented, there will be many people who want to consume music or music-related products, provided (1) that this can be done conveniently and (2) there is an obvious social need to consume the event at that moment and no later. The social need may consist of being aware of what is 'in the swim' – as Fischer (1903) would put it – so as not to be excluded from communications. Of course, such social elements in individual consumption can take different forms (Leibenstein 1950).

---

[15] This is a model that UBC Media and record company BMG are testing at the moment (*Financial Times*, October 14, 2001).

[16] Which is actually true. Currently, copyrights in music by the Beatles as well as the Rolling Stones is owned by UK record company EMI.

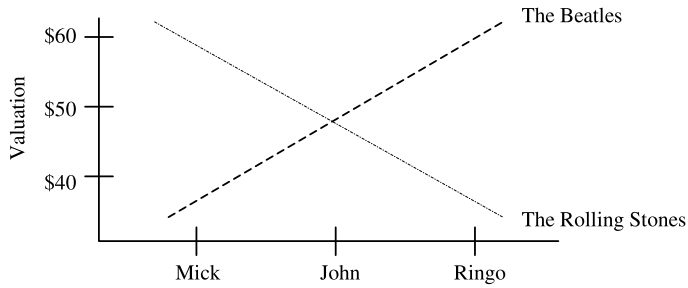


Figure III-5 – Bundling Digital Music

For the time being, then, the tried models in the music industry will continue to function. Most music will be distributed in a physical form. Physically distributed music allows for the social and symbolic dimensions of music to be fully utilized. Virtual markets for music may grow rapidly in the near future. Obstacles preventing this are of a general nature, as evidenced by a large number of studies of grater and lesser academic nature, and they include the following.

People

- tend to be reluctant to pay at all for content delivered over the Internet because it is not sufficiently premium and will most likely become available online through parties who perform arbitrage anyway,
- have concerns over privacy and security when actually ordering and paying for a good. In addition,
- some business models that might work for distributing music require safe forms of micro payments; transaction costs for such a system are still high.

When such considerations no longer play a role, it would seem that firms in the music industry might well be in a position to develop models that are economically sustainable. Creating and sustaining communities of consumers will certainly be a part of that strategy. People participating in such communities help provide material to others, mostly free of charge, making use of network effects. Participants in such dedicated communities might be offered products to be bundled together with music on attractive terms. Others may be offered different bundles of goods, or for adjusted prices. The possibilities for product differentiation and price discrimination on the basis of consumer preferences that can now be better and cheaper collected and analyzed is thus made use of.

In section 1 of this contribution, it was argued that information proper is called a 'public good' by economists. The consumption by one person does not exclude that by others (non-excludability); when one person consumes the product, others will be able to do so at the same time and will not find the product to have diminished in quality (non-rivalry). However, in section 2 it is argued that it could make sense for

a government to issue laws that give (some) information goods some elements of private goods, possibly under certain conditions. It would give producers of information goods an incentive to develop and exploit new goods. From a public point of view, when everybody consumes public goods, an optimum level of utility in society is reached. In the case of private goods, distributed in the textbook-perfect economic market, the optimum is at the point where marginal production costs are equal to the price in the market.[17] In between are the so-called club goods (Buchanan 1965, Sorensen, et al., 1979). Here, groups of consumers are formed who together buy an information good and organize a system of renting it amongst them. Libraries are the most prominent examples. Information with club characteristics may often not seem to be in the best commercial interest of the producer of that product, but can certainly be. Examples are the CD and video libraries (Shapiro & Varian 1999, pp. 94-7). Adding a member to the club must add more value than it costs. Network effects may make sure that adding members will be beneficial. (Congestion) costs may arise, even if production costs may lower due to scale economies related to IT. Such sharing arrangements are typical where the price of a product is higher than the reservation price consumers have in mind, and where the product does not diminish in quality when consumed. When people want to use the product more than once, however, there is a tendency for them to want to buy it. This seems to be the case for music. Technology now certainly allows firms to rent information goods directly, or through commercial intermediaries to consumers. If and when there are means by which copying can be prevented, this would be an option. It is one model that is being experimented with for software (Windows XP), for instance. One could either rent by the song, or consider a subscription model. The latter, one would say, is more likely when other 'premium' content is bundled with music.

Not surprisingly, at this stage, little can be said about which business model is most likely to become successful in the music industry. To rephrase the American question: If we were so smart, why aren't we rich? Still, it is possible to study the processes in this and related industries. Some constraining factors and opportunities have been highlighted and analyzed. Another issue is the evaluation of the consequences of the general direction in which developments are heading – the subject of the next section.

---

[17] Thus, at this point, not everybody may consume the product. A perfect market is one where there are homogenous products, and where there are large numbers of producers and consumers competing in a situation where everybody is fully knowledgeable about all relevant circumstances and can thus not influence developments on the market.

## 5. Three Models Assessed

As discussed in the previous section, three models for distributing music electronically seem to typify the plethora of models one may already observe on the Internet to date, as well as the many variations one could conceive of. Based on the preceding analysis in this section, we will evaluate at a more concrete level the following three models: Napster, KaZaA and Aimster. From an economic as well as from a legal perspective these are models that differ from each other in important respects. It is useful to reiterate some features of the models, emphasizing the differences that are most significant from an economic point of view.

Napster had come to be the quintessential model for exchanging – mostly music – files on the Internet. A ruling by a California court has forced it to shut down, although attempts are under way to return with a legal, commercial service. Napster has a central server containing the details of music files as provided by subscribers to this service – in actual fact, Napster is an intermediary party as its servers do not contain content themselves. Files exchanged in a peer-to-peer fashion, facilitated by the Napster servers, are of the MP3 kind. Subscription has been free in the past, but may in the future be priced. Subscribers need to download software to use the service. Other subscribers may decide that they would like to obtain a particular piece of music. To do so, they establish a direct link with the person (computer) who has made the music available and download that music from their hard disc. Downloads may fail when the source computer is not online, or goes off-line during the process. Napster has proven to be vulnerable to law suits brought against them by parties in the music industry. Most notably, the Recording Industry Association of America (RIAA) and the International Federation of the Phonographic Industry (IFPI), who represent record companies and music publishers, have sued it for infringements of copyrights. They have been successful in (temporarily) closing down Napster. The vulnerability of a service such as Napster lies in the fact that it has a central server.

A plethora of other services have emerged, catering for the apparent demand for freely exchanged music on the Internet. In the present legal environment, the owners of copyrights on music[18] are legally protected from illegal copying in such networks. The incumbents should first, it is argued, be allowed to develop and implement a system for distributing music online themselves, and not be pre-empted from doing so.

---

[18] Of 80% of the music currently played worldwide, record companies and music publishers own the copyrights. Record companies and music publishers are often part of the same corporation – the division of responsibilities and tasks is not clear, while the profits for the latter have been substantial for long periods of time. See Dolfsma (2000).

Services such as Gnutella, Aimster and Kazaa do not have a central server that lists the music available.[19] In addition, they rely on their clients to create buddy lists themselves, which would mean that music would be shared among friends and relatives. As such, the 'fair use' or 'fair exchange' question applies. As discussed in section 1, the way in which lists of 'buddies' are formed can vary, and with it the length of the list. Most of these services use the MP3 technical format, and can thus not only exchange music, but any kind of 'content'.

There are several features of these services that link the brief account of some of them to the previous discussion on business models. How may services such as Gnutella, Kazaa or Aimster generate revenue? Will the way that they do generate an income interfere with the strictures of copyright law as it currently stands? Will such business models provide a sustainable basis for firms in this industry? Most of these services rely on the use of some piece of software that they provide free of charge, and sometimes encourage others to distribute free of charge as well to make maximum use of network effects. Use of the software is, however, subject to certain rules (under contract law) specifying what content may and what content may not be exchanged using the software. Charging for such software is not likely to be a source of revenue as there are too many competing programmes that could be used that consumers could resort to – network effects would not take off if software were to be charged. Networks that have a more distributed structure, such as Kazaa and Aimster, relying on peer-to-peer kinds of communication, would find it impossible to charge a subscription fee for access to a database of music.

In the present circumstances, which are especially uncertain as a result of legal complications, a model with a central server that provides access to especially copyright protected, music files would seem to be unsustainable unless they are set up and operated by incumbents from the music industry. It would, however, require that they reach agreement as to how they would be able to provide material that is owned by others. For an industry that is already under scrutiny for anti-competitive behaviour, the anti-trust authorities will watch newly forming entities such as Pressplay and Musicnet closely. For this reason, as well as because co-operation from the producers of relevant hardware is needed but not yet forthcoming, the incumbents have not been very successful in establishing a platform for the exchange of digital music. They might actually not be so much interested in doing so, given the business model that would underlie such an exchange of music over the Internet.

As argued, a product such as software provided free of charge to consumers who value it might convince people to buy other products or services. It would over-

[19] Indeed, as section 1 shows, in a strict sense of the term Kazaa does not offer a service at all, but merely provides the technical means by which organizations or private individuals can offer services. In a recent case before the Dutch Supreme Court it was established that Kazaa can therefore not be held liable for copyright infringements.

come the information asymmetry problem. The latter product may cross-subsidize the former, and a profit might ensue. Kazaa has these elements in its model. What might add to this is a feature that Aimster adds. Aimster provides a forum for different communities. It would allow firms to monitor their market, collect information on people's preferences, and possibly sell additional, complementary products mor effectively. As such, communities allow for a better application of the strategies of product differentiation (versioning) and price discrimination – in the process committing consumers to such an extent to the firm that they might indeed be seen as (dependent) subcontractors (Dolfsma 2001b). Especially when participants in the communities provide (part of) the content of such communities themselves, this is an option that can be highly attractive.

Sometimes, elements for a business model by means of which music would be distributed on the Internet in a way that makes commercial sense may contradict with one another. Digital means now allow for product differentiation and price discrimination to a large degree, as will be further explored in the next section. When allowed and supported by means of government policy, as the Dutch government for instance considers (Ministry of Justice, 2001), this increases the problem for potential customers of determining the value of a product. The discussion on information markets in this section has argued that for digital products especially establishing their value is more difficult than for physical products. One effect of arrangements in copyright law that limit the extent to which this law creates a monopoly for the rights owner such as fair use provisions is that it alleviates to some extent the information paradox creating a valuation problem. Because of fair use provisions copies would circulate that potential customers will use to establish the value of a particular product for themselves. If fewer signals would be available to customers, these will try to use whatever signals can be found. These will be signals of the name of the artist and the team of people and the record company that has made the recording possible. The first will entail a strengthening of the stardom phenomenon already prevalent in the music industry. In the short to medium term this will benefit record companies, but the life cycle of artists is not indefinite and may be shortening. In the longer term, new artists and music genres eating away their market share may surprise record companies. Relying on their own reputation as a signal that customers may use when valuing a recording is not an option. The reputation of the big record companies is not particularly good. An artist, such as George Michael or Prince (TAFKAP), who has benefited from signing up with a record company (re)gains instant approval from his (former) audience by blaming the record company for the 'commercial' nature of his latest albums. These are some of the mechanisms behind both the academic and the public discussion about the issue of whether services such as Napster or Kazaa stimulate people to buy music they would not have bought otherwise, or whether they take away the need to legally buy music as they have access to it online at little or no direct cost.

## 6. Products & Prices: Welfare Implications

Assessing the welfare implications of the developments set in motion by IT entails looking into an uncertain future. It is only recently that the Internet has begun to have an impact on society, an influence going beyond the confines of the universities and research laboratories where it had been in use for several decades. Since there is relatively little material available, the danger is that one identifies trends that suit one's own convictions. It is, of course, easy to ridicule the predictions of a Chief Executive Officer of IBM in 1948 when he predicted that there would, perhaps, somewhere in the future, be a world market for possibly 4 computers. With the benefit of hindsight we know that this has not turned out to be true. Still, the theoretical discussion that has preceded this section, as well as an understanding of the industry studied, does allow one to make some predictions. The implications of developments induced by IT for the music industry as a prominent example of other content industries will be in terms of welfare economic theory. Here, as in Dolfsma (2000d), the focus is on the assessment of the *number* of *different* products becoming available at a certain *price*. In general terms, some useful things might be suggested as to the effects on the *distribution* of the benefits in such a newly emerging situation. The analysis will be a dynamic one, based on a number of assumptions validated in theory and empirical observations.

As a number of observers have indicated (among others, Varian 1996, Reinartz 2001) the Internet provides ample opportunity to collect information about consumers' preferences on the basis of which one might adjust the products one offers as a firm ('versioning'), but on the basis of which one might also charge different prices to consumers with a differing willingness to pay. Such price discrimination has different forms:

- First-degree price discrimination means that the producer sells different units of output for different prices and these prices may differ from person to person. This is known as perfect price discrimination.
- Second-degree price discrimination means that the producer sells different units of output for different prices, but every individual who buys the same amount of the good pays the same price. Thus prices depend on the amount of the good purchased, but not on who does the purchasing. A common example of this sort of pricing is volume discounts.
- Third-degree price discrimination occurs when the producer sells output to different people for different prices, but every unit of output sold to a given person sells for the same price. This is the most common form of price discrimination, and examples include senior citizens' discounts, student discounts, and so on.

Conditions for price discrimination to hold are the availability of information to discriminate between (groups of) consumers, and the absence of arbitrage between

the groups or individuals addressed. The Internet would now seem to offer the possibility of first-degree price discrimination. People's willingness to pay is easier to determine, while the costs for repricing goods on the Internet (menu cost) decrease. There is, of course, the possibility that people will be outraged when they find out that identical products are sold on different terms. As consumers become more sophisticated about buying on-line, this moral feeling might disappear (Reinartz 2001).

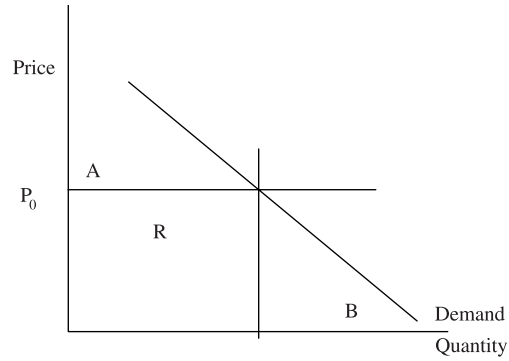


Figure III-6 – Price discrimination

Important in evaluating price discrimination in welfare economic terms is Figure III-6. The total area below the demand curve signifies the utility to society when such a product would be available free of charge. Assume a given price ($P_0$). Area R is the revenue accruing to the firms in this market. Areas A and B are, however, of greatest import in a welfare analysis. A is the so-called consumers' surplus; it is the price which some consumers would have been willing to pay for a product, but, given the price prevailing in the market, did not have to pay. They can now spend it on something else. Area B is a dead-weight welfare (efficiency) loss, since the consumers here would like to have consumed the good, but cannot pay the prevailing price.

Price discrimination means that some consumers pay a higher price, but not all. More consumers may be able to consume the good. Price discrimination will most likely be combined on the Internet with product differentiation, making it difficult to asses the consequences; consumers may have to pay a higher price, but will also obtain a product that meets their preferences more closely. If and to the extent that this happens, it will become difficult to analyze the situation as if it were the same market. It is likely that the first effect will be stronger than the latter. As argued elsewhere (Dolfsma 1999b), using consumer preferences to differentiate products means that they are involved in the production process and, as it were, become subcontractors to the firm. Since they need to make idiosyncratic investments, they are more dependent on this relationship than the firms are (cf. Williamson 1985). It

is only after an initial period where consumers invest in a relationship by filling in questionnaires, surfing onto a site, and asking questions that they may expect the benefits of tailored products. As such, they can become the victims of opportunistic behaviour by the firm; they are locked-in.

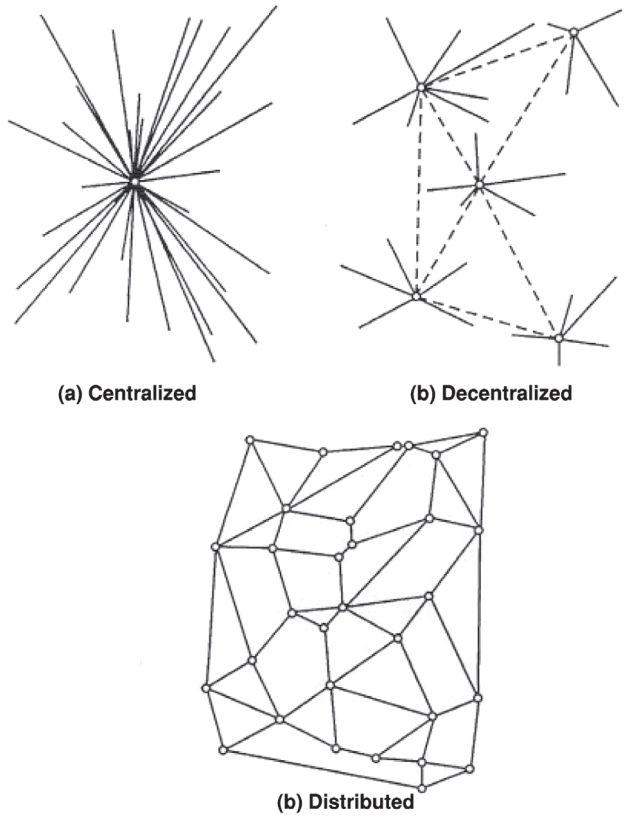


Figure III-7 – Types of Communication Visualized (Dolfsma 2005)

For pure information goods, marginal costs for producing an additional copy are or approach zero. Economic analysis would suggest that people should be able to obtain such a good at a price that equals marginal costs, a situation where public welfare would be greatest. The dead-weight loss of triangle B would not occur. At the same time, however, there would be no material incentive for people to create new information goods. IPR are an important element in such an incentive system. It involves introducing a measure of excludability where nothing like that exists naturally. A static consequence would be that the quantity of goods brought onto the market will be more limited – a disadvantage. Dynamic consequences might, however, outweigh this. The empirical question is, of course, if this is indeed the case.

Do copyrights contribute to an incentive system that makes creative individuals produce more new ideas and products? The picture is unclear. Most of the benefits due to the existence of copyrights, at least for the music industry, accrue to intermediaries such as music publishers and record companies (Dolfsma 2000). Although these intermediaries do provide a creative input and take a risk in signing a musician, it remains to be seen that a cut that is an average of 80% is fair. Particularly younger creative individuals are paid little, although they are most creative.[20] Whether this points to an inherent need to be creative and express oneself, or to an (irrational) expectation that one will become one of the few stars in the system cannot be determined more conclusively.

A consequence of the use of IT for the future of the music industry that is, perhaps, less likely to be considered is that of the *diversity* of music that will be on offer. It is, of course, difficult to distinguish between versions of an existing product and new products altogether. Relying on the characteristics of a product as determined by the analyst is an approach that is troublesome, as argued earlier. Even if one can only look at how consumers have perceived the product *ex post*, it is possible to make educated guesses about the diversity of music that will become available as IT is widely used. Dudley (1999) proposes an analysis in terms of transmission costs, decoding costs, and storage costs. Depending on which cost forms the bottleneck, different patterns of communication emerge. A situation where, for instance, transmission is cheap but decoding and storage are expensive is one where one party will be central – he will store and convey the message (Figure III-7a); no noise will further complicate decoding. When storage costs drop, communication can become decentralised (Figure III-7b). Internet certainly decreases the costs of transmission and storage. Decoding will also become less costly, and will depend mainly on one's ability to understand the English language. Communication will be 'distributed', as in Figure III-7c: there will be many local centres of knowledge, and many links between the centres. Since it is known that creativity is, in general, positively related to the number of communication links one has, as well as to the knowledge base one commands, it is likely that the diversity of the music becoming available in the future will increase. Imposing exclusivity by means of transporting the existent system of copyrights to the Internet, or a more powerful or strict one, would result in a situation where, ceteris paribus, less different products would become available. It is important to note the c.p. clause: it needs to be assumed that, somehow, musicians would earn a living and continue to be as creative as they would otherwise. Dolfsma & Soete (2002b) have developed this argument somewhat further.

---

[20] On this particular point, as well as on the issue of motivation of individuals and the role of material incentives generally, see Frey (1997).

## 7. Conclusions

IT is a generic technology in the sense that it can be used for many different purposes and by many different players in economy and society. At the same time, and partly for this reason, it is a technology that constitutes a watershed, economically and for society. The economic consequences of the use of ITs in the music industry are a case in point. The economics of this industry is changing rapidly – these changes are related to the fact that music has become an information good. Many of the changes in this industry are changes that one will be able to observe in one way or another in other information industries.

Peer-to-peer (P2P) services, such as Napster, will not only have effects for the economic sectors with which they have now come to be associated: the music industry, and possibly the content or media industries more generally.[21] However, for these latter industries, the immediate effects have already become visible. What is more, one may say that what happens to the music industry, and the other content industries, may be exemplary for what happens in other industries. Here, the focus will be on some of the economic implications of this basically technological development. This is not to say that technological developments are an autonomous force impacting on society or the economy,[22] of course, but just to indicate one aspect of the general approach taken.

At the level of individual organizations such as firms, ways of relating to others in the industry, creative processes, relation(s) with their consumers, and the nature of their products will change. For the music industry, specifically, the uncertainty it faces in this period is not so much related to the technical issues. Legal uncertainties are of a more profound nature. In an increasingly global economy for the music industry, differences between legal systems of copyright become much more apparent to both producers as well as consumers. The conglomerates that are involved in this industry have relied heavily on this part of their firm. The way in which the market for music has developed over the last decades is crucially intertwined with the system of copyright law. Future developments in copyright law will largely determine what business models will emerge. In relation to this, the kinds of firms – such as their size, the extent of vertical integration, and the possibilities for economies of scope available in the sector – will be determined.

At the moment, it is unclear what route developments will take. In this contribution I have, however, provided an analysis of these changes and provided tools for understanding them. In addition, some steps have been taken that are needed to predict the business models that emerge in the music industry.

[21] In a recent survey, p2p applications are also linked to changes in the organization of work more generally, both within and between firms; see *The Economist* (June 23, 2001) 'Profit from peer-to-peer' (Technology Quarterly, pp. 21-3).

[22] A view on the relation between technology and society known in technology studies as 'technological determinism' (see van de Poel, Franssen and Dolfsma 2002).

# Part IV
# INTELLECTUAL PROPERTY RIGHTS FOR MUSIC FILE SHARING

# Part IV
# INTELLECTUAL PROPERTY RIGHTS FOR MUSIC FILE SHARING

**Wim Keuvelaar***

## Preface

From March 2001 to April 2002 I carried out research with regard to the intellectual property aspects of peer-to-peer file sharing at the Department of Law and Computer Science of the University of Leiden. During that period I undertook an internship with the Directorate of Legislation at the Ministry van Justice for a period of two months. Both the University of Leiden and the Ministry of Justice provided a fertile breeding ground for my research. I would like to thank these institutions and their employees. Special thanks go to the supervisors of the research-project: Prof. Dr. A.H.J. Schmidt (University of Leiden) and Dr. E.J. Arkenbout (Ministry of Justice) – the latter was later replaced by Dr. C.B. van der Net (Ministry of Justice) – for providing useful comments with regard to earlier drafts. Nevertheless the views expressed in the text are entirely mine. Finally, I would like to thank Dr. L. Mommers for translating the text from Dutch into English. Officially the research project closed in April 2002. Developments occurring after that date were noted up until April 2004, but could not be taken into full account. In the Postscript, the most important developments up until September 2006 are mentioned. These developments do show hectic legal activities – they have nevertheless not yet succeeded in ending the war on music-file sharing.

## 1. Approach

### 1.1 **Copyright, neighbouring rights and file sharing**

Copyright provides the authors of works of literature, science or arts with the exclusive rights to multiply and to make public their works. Neighbouring rights pro-

* Center for elaw@Leiden (Leiden University); elaw@leiden.edu.

*A.H.J. Schmidt, W. Dolfsma and W. Keuvelaar, Fighting the War on File Sharing*

vide performing artists, phonogram producers, broadcasting organizations and film producers with equivalent rights to their performances, phonograms, broadcasts and films. Developments with respect to the Internet have led to renewed attention to the question of why such protection is provided. Generally, the following arguments are put forward: copyright and neighbouring rights are a reward for creative achievements. These rights enable the entitled parties to recover the costs of their investments and make a profit. Copyright and neighbouring rights offer an incentive to create original materials and to make investments, offering benefits to the entire society.[1] The rights, however, are not unlimited. They are, for instance, limited to the extent that the justified interests of others who make use of protected materials are legally protected. In this area one may think of fundamental rights such as privacy and freedom of the press. Furthermore, limitations are imposed in order to further culture-political ends, for instance with respect to research and education. In this manner, copyright and neighbouring rights aim at striking and maintaining a balance between interests arising from intellectual property rights on the one hand, and limitations with regard to these rights on the other.

On the Internet, information is exchanged independently of country borders. File sharing is a relatively new method to exchange information on the Internet. The method enables one computer user to search (a part of) another computer user's hard disk through a network connection, and to download information stored on that hard disk. An important architectural feature of the information exchange is that it can take place either by using a central server (the so-called Napster model) or without a central server (peer-to-peer proper, the so-called Gnutella or KaZaA model).

## 1.2 **Problem definition**

File sharing can be used to exchange materials that are protected by copyright or neighbouring rights. In this report, we investigate if and to what extent the questions that are induced by file sharing can be adequately settled within the current and nearby future framework of copyright and neighbouring rights.[2] This central question can be divided into sub-questions: (1) does the exchange of protected materials through file sharing yield an exploitation act according to copyright and neighbouring rights? (2) Does a limitation regarding copyright or neighbouring rights apply to file sharing? (3) What is the liability position of intermediaries,

[1] An extensive account of the ratio underlying copyright law is provided by: F.W. Grosheide, *Auteursrecht op maat. Beschouwingen over de grondslagen van het auteursrecht in een rechtspolitieke context* (dissertation Utrecht) Deventer: Kluwer 1986, p. 135.

[2] See: P.B. Hugenholtz, 'Napster: een bliksemonderzoek', *Computerrecht* 2000-5, p. 228; J.M.B. Seignette, 'Napster en de controle van de rechthebbende over de distributie van zijn werk', *AMI* 2001-2, p. 29-38; D.J.G. Visser, 'Napsteren, Gnutellen en de afwezigheid van legale muziek op het internet', *Computerrecht* 2001-3, p. 131-133.

especially the provider of file sharing software? (4) What questions arise from the use of file sharing with respect to exercise and enforcement? (5) Is digital rights management the cure for the problems that are induced by file sharing?

### 1.3 **Context**

In answering the aforementioned questions, we take into account that copyright and neighbouring rights do not exist in a legal vacuum. They are, for instance, influenced by competition law and privacy protection.

The context of the research project is to a large extent determined by the Copyright Treaty and the Performances and Phonograms Treaty, both realized in 1996 by the World Intellectual Property Organization (WIPO). Those treaties guarantee the applicability of copyright and certain neighbouring rights in a digital environment. The European Community and the Member States have not yet ratified those treaties. They have agreed to accede to the treaties jointly.[3] For this purpose, Directive 2001/29/EC of the European Parliament and of the Council *on the harmonisation of certain aspects of copyright and neighbouring rights in the information society* should be implemented in national legislation.[4] The term for implementation expired on December 22, 2002. As for the present Member States, Austria, Denmark, Germany, Greece, Ireland, Italy, Luxembourg and the United Kingdom implemented the aforementioned Directive. As far as the ten acceding Member States are concerned, Malta, the Czech Republic, Lithuania and Slovakia implemented the Directive. The other current and future Member States are working feverishly to implement the Directive as soon as possible. On July 22, 2002, the Dutch government introduced legislation with the Parliament that certifies the implementation of the aforementioned Directive. The proposal was addressed in a plenary session of the Second Chamber on the 10th and 11th of February 2004, after an elaborate written preparation. On 19 February the proposal was accepted with two minor amendments. When the First Chamber of Parliament agrees to the proposal, the legislation will enter into force.[5] The current research project takes current and pending future Dutch legislation as its primary starting point. Nevertheless, in several instances, we consider the situation abroad. Especially American law will be taken into account.[6]

---

[3] Decision No. 2000/278 by the Council of Ministers on the 16th of March 2000, PbEG 2001, L 89/6.

[4] PbEG 2001, L 167, 10.

[5] Parliamentary documents II, 2001-2002, 28 482, nos. 1-25.

[6] In 1998, the United States enacted the Digital Millennium Copyright Act. Subsequently, on September 14, 1999, they ratified both treaties. The choice for a comparison of laws with the United States is based on a number of grounds. First, we are under the impression that, in the USA, new methods and techniques for accessing information are applied at an earlier stage, and therefore lead to earlier answers to legal questions. More concretely, this means that American case law has extensively covered file sharing. Second, US legislation already conforms to the demands imposed by the WIPO

### 1.4 **Restrictions to the research project**

By using file sharing, information can be exchanged, including software, text, still images, moving images, and sound. In this report, emphasis will be put on the exchange of music, because it currently has the greatest societal relevance. As a consequence of the proposed restriction, we focus on the rights of authors, performing artists and phonogram producers. We will not pay attention to broadcasting organizations and film producers, but the results of this research project may be relevant for these right holders as well. With the growing availability of broadband Internet, the exchange of broadcasts and films will increase. Finally, it should be noted that we limit ourselves to the exchange by individual users who use file sharing for non-commercial purposes.

### 1.5 **Research goal**

We investigate whether the legal questions induced by file sharing can be answered on the basis of the existing legal framework and the legal framework in preparation. Moreover, the goal of this project is to provide a survey of new questions and problems arising from file sharing.

### 1.6 **Plan of work**

In section 2, we provide an overview of the legal framework established in the treaties of the World Intellectual Property Organization. These treaties constitute the international basis for legislation concerning copyright law and neighbouring rights in the information society. Subsequently, in section 3, we investigate whether the exchange of protected materials yields a relevant exploitation act following from copyright and neighbouring rights. In section 4, we discuss the question whether a restriction regarding copyright and neighbouring rights applies to file sharing. The exercise of copyright and neighbouring rights is discussed in section 5. The subject of section 6 is the enforcement of copyright and neighbouring rights. In that section we also investigate the liability position of intermediaries with special emphasis on the provider of file sharing software. Section 7 discusses digital rights management, section 8 draws conclusions and section 9 enumerates recent developments.

---

Copyright Treaty and the WIPO Performances and Phonograms Treaty. Moreover, the interesting thing is that American copyright is based on the Anglo-Saxon tradition, whereas Dutch copyright is based on the European continental tradition.

## 2. The WIPO Treaties

### 2.1 **Introduction**

In 1996, within the framework of the World Intellectual Property Organization (WIPO), two international treaties were concluded: the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty. The added value of these treaties, as compared to existing treaties, relates to inherent ambiguities gathering around formulations in existing treaties. Especially the Berne Convention for copyright and the Rome Convention for related rights focused on specific acts, inducing questions as to whether and how provisions are applicable in a digital environment. The WIPO treaties aim to clarify and certify the applicability of copyright and neighbouring rights in a digital environment. Furthermore, right holders needed an extension of protection as compensation for the ease with which materials are copied and distributed by means of new technologies. The treaties took effect on March 6, 2002 and May 20, 2002 respectively, after the thirtieth ratification. The European Community and the Member States have not yet ratified the treaties. They will ratify the treaties jointly. First the Member States (including the acceding Member States) have to implement Directive 2001/29/EC as pointed out in the first section.

In this descriptive section, we discuss the provisions in the WIPO treaties that concern exploitation rights (section 2.2), the restrictions on these rights (section 2.3), the exercise and enforcement of these rights (section 2.4), and the legal protection of digital rights management (section 2.5).

### 2.2 **Exploitation rights**

In this section, we discuss the exploitation rights that are part of the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty. Subsequently, we explain the rights of reproduction, of distribution, of rental, of communication to the public and of making available to the public.

#### 2.2.1 *The right of reproduction*[7]

The original proposal of the WIPO Copyright Treaty contained a special provision concerning the right of reproduction. During the conference, however, an agreement could not be reached. As a consequence, the WIPO Copyright Treaty does not contain a provision regarding the right of reproduction. Nonetheless, in an official statement accompanying the treaty, we read the following:

---

[7] See: J. Reinbothe & S. von Lewinski, *The WIPO Treaties 1996*, London: Butterworths 2001, p. 37-44, 308-317 and 342-350.

> 'The reproduction right, as set out in Article 9 of the Berne Convention, and the exceptions permitted thereunder, fully apply in the digital environment, in particular to the use of works in a digital form. It is understood that the storage of a protected work in digital form in an electronic medium constitutes a reproduction in the meaning of Article 9 of the Berne Convention'.

The addition of this statement ensures that the broad concept of reproduction, as used in the Berne Convention, is applicable to a digital environment.

The WIPO Performances and Phonograms Treaty does contain provisions with respect to the right of reproduction. These are found in Articles 7 and 11 for the performing artist and the phonogram producer respectively. Their contents correspond to the definition of reproduction we find in the Berne Convention for copyright law.

### 2.2.2 *The right of distribution*[8]

Article 6 of the WIPO Copyright Treaty grants to authors the exclusive right to authorise or prohibit the distribution of the original work and copies thereof by sale or other form of transfer of ownership. Articles 9 and 12 of the WIPO Performances and Phonograms Treaty grant to performing artists and phonogram producers the same exclusive right with respect to their phonograms for the phonogram producer and the performances recorded on those phonograms for the performing artist. The phrase 'through sale or other transfer of ownership' expresses that temporary forms of distribution, such as rental, fall outside the scope of the articles.[9] The right of distribution seems to be limited to the distribution of protected material in tangible format.[10] It should be noted here that both the WIPO Copyright Treaty as well as the WIPO Performances and Phonograms Treaty leave room to regulate the exhaustion of the distribution right.

### 2.2.3 *The right of rental*[11]

Article 7 of the WIPO Copyright Treaty offers authors of computer programs, authors of cinematographic works and authors of works embodied in phonograms the exclusive right to authorise or prohibit the commercial rental to the public of the original or copies of their works. Article 7 paragraph 2 contains some limitations to these rights. The second limitation formulated in that paragraph is applicable only if rental does not lead to a severe infringement of the right of reproduction (the so-called *material impairment test*). In the third paragraph, we find a so-called

---

[8] Ibid., p. 80-87, 317-323, 351-356.
[9] Ibid., p. 86.
[10] Ibid., p. 87.
[11] Ibid., p. 88-99, 324-332, 357-363.

*grandfathering clause*, which signifies a restriction to systems of remuneration that were already in effect on April 15, 1994 and are still valid. This restriction applies subject to the condition that the use conforms to the *impairment test* mentioned above. Just like the right of distribution, the scope of the right of rental seems to be limited to the rental of protected material in tangible format. Articles 9 and 13 of the WIPO Performances and Phonograms Treaty contain a similar arrangement for performing artists and phonogram producers.

### 2.2.4 *The right of communication and making available to the public*[12]

Article 8 of the WIPO Copyright Treaty provides authors with the exclusive right to authorize or prohibit any communication to the public of their works, by wire or wireless means. Most States (an important exception should probably be made for the United States) are of the opinion that the right only addresses situations whereby a distinction can be made between the place of the source from which the protected material originates and the place of the public who read, listen or view the protected material as is the case with broadcasting. The right of communication to the public does not apply if the source and the public are present in the same location as is the case with public performance.

The aforementioned right of communication to the public in Article 8 of the WIPO Copyright Treaty comprises the right of making available to the public. Authors thus have the exclusive right of making available their works and copies thereof in such a manner that the protected material is available to the members of the public, and that those members may access the protected material from a place and at a time individually chosen by them. One might think of surfing the World Wide Web or using file sharing software. Again, the source and the public ought not to be located in the same room. The public – not the source – commands the initiative to access the protected material. In this respect, the right of making available to the public can be distinguished as a special instance of communication to the public.

Articles 10 and 14 of the WIPO Performances and Phonograms Treaty give to performing artists and phonogram producers the exclusive right of making available to the public their performances recorded on phonograms. The WIPO Performances and Phonograms Treaty does not give performing artists and phonogram producers the exclusive right of communication to the public comprising the exclusive right of making available to the public. For forms of communication to the public other than making available performances recorded on commercial phonograms, Article 15 of the WIPO Performances and Phonograms Treaty provides for a renumeration right for performing artists and phonogram producers.

---

[12] Ibid., pp. 100-113, 333-341, 364-373.

### 2.3 **Limitations**

In the preamble to the WIPO treaties, it is emphasized that a balance must be maintained between different relevant interests. To a large degree, the limitations to the exploitation rights described above are to attain the balance. Article 10 of the WIPO Copyright Treaty and Article 16 of the WIPO Performances and Phonograms Treaty allow the Member States to establish limitations (1) in special cases, (2) provided they do not damage normal exploitation and (3) provided the legitimate interests of the right holder are not impaired in an unjustified manner. In this formulation we recognize the three-step test that is already part of international treaties such as Article 9, paragraph 2 of the Berne Convention and Article 13 of the Trips ageement.[13]

### 2.4 **Exercise and enforcement**

The WIPO treaties do not impose rules on the exercise of copyright. They do contain provisions on enforcement. Through article 14 of the WIPO Copyright Treaty and through article 23 of the WIPO Performances and Phonograms Treaty, Member States have committed themselves to taking measures in their national law which are necessary to enforce both treaties. The second paragraphs of the articles mentioned commit the Member States to provide for effective procedures for right holders to take action against possible infringements.

### 2.5 **Technical protection measures**

The WIPO treaties contain a provision regarding the legal protection of technical protection measures. Articles 11 of the WIPO Copyright Treaty and 18 of the WIPO Performances and Phonograms Treaty instruct the Member States to provide adequate legal protection and effective legal remedies to prevent certain technical measures from being rendered ineffective. These technical measures are applied by authors, performing artists and phonogram producers to exercise their rights – emanating from the above-mentioned treaties – in order to prevent acts that they have not permitted or that are not legally permissible with respect to their works, performances or phonograms. The formulation leaves substantial room to shape the legal protection. We can conclude from the formulation that the legal protection does not need a wider scope than the extent of the systems that serve to protect acts with respect to technical measures, protecting copyright and neighbouring rights.[14]

---

[13] K.J. Koelman, 'De nationale drie-stappen-toets', *AMI* 2003-1, p. 3-9 and M. Senftleben, 'Beperkingen à la carte: Waarom de Auteursrechtrichtlijn ruimte laat voor fair use', *AMI* 2002-1, p. 10-14. M. Senftleben, *Copyright, Limitations and the Three-Step-Test*, The Hague/London/New York, Kluwer Law International, 2004.

[14] K.J. Koelman, Auteursrecht en technische voorzieningen, Juridische en rechtseconomische aspecten van de bescherming van technische voorzieningen, Sdu: The Hague, 2003.

In addition to the regulation for technical protection measures, the WIPO treaties contain a regulation for the protection of information regarding management of rights. Articles 12 of the WIPO Copyright Treaty and 19 of the WIPO Performances and Phonograms Treaty instruct the Member States to provide for adequate measures and effective legal remedies to protect information on the management of rights.

## 3. The Application of Copyright and Neighbouring Rights

### 3.1 **Introduction**

In this section we investigate whether or not sharing files with materials protected by copyright and neighbouring rights amounts to an act of exploitation according to copyright and neighbouring rights in current and immediate future Dutch law.

As pointed out in section 2.1 the European Union has not yet ratified the WIPO treaties discussed in the previous section. The EU Member States have agreed to accede to the treaties jointly. For this purpose, Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society has to be transposed in the national legislation of the Member States.[15] The period for transposition expired on December 22, 2002. Although the Dutch government had introduced legislation in Parliament on July 22, 2002 to transpose the aforementioned Directive, the proposed legislation has not come into force in time. More than a year after the expiry of the deadline the proposed legislation was finally accepted by the second chamber of parliament. The legislation will enter into force after the first chamber of parliament also ratifies the legislation.[16]

Again, we discuss the right of reproduction (section 3.2), of distribution (section 3.3), of rental (section 3.4) and of communication and making available to the public (section 3.5). The aim is to assess if, and to what extent, these rights apply to file sharing. We conclude the section with an overview of new questions and problems that result from applying intellectual property rights to file sharing (section 3.6).

### 3.2 **The right of reproduction**

Article 2 of Directive 2001/29/EC contains a provision regarding the right of reproduction. The provision instructs the Member States to assign to the holders of copyright and neighbouring rights the exclusive right ‘to authorise or prohibit direct or indirect, temporary or permanent reproduction by any means and in any form, in

[15] PbEC 2001, L 167, 10.

[16] Parliamentary documents II, 2001-2002, 28 482, nos. 1-8.

whole or in part.' As a consequence of this broad description, purely functional and technical acts also fall within the domain of copyright and neighbouring rights.

However, Article 2 cannot be regarded as separate from the mandatory implementation by the Member States of Article 5, first paragraph. This paragraph contains a compulsory and mandatory limitation for temporary acts of reproduction that have a transient or incidental nature, and that constitute 'an integral and essential part of a technological process and whose sole purpose is to enable (a) a transmission in a network between third parties by an intermediary, or (b) a lawful use of a work or other subject-matter to be made, and which have no independent economic significance.' From the considerations preceding the articles, we can conclude that the limitation serves to enable caching and browsing through the Internet.

The Dutch Copyright Act contains a right of *multiplication*. Two meanings are attached to this right. The first meaning comprises the manufacturing of one or more material copies in which the work is embodied, that is the 'one to one copying' (cf., Article 14 of the Copyright Act). The second meaning comprises the adaptation of the immaterial work, as in translation (cf., Article 13 of the Copyright Act).

According to the Dutch government, the scope of the right of multiplication is sufficiently broad to include the right of reproduction. Therefore, no amendment to Dutch copyright law was proposed on this subject. Nonetheless, the compulsory and mandatory limitation for pure technical copies will be implemented. However, the limitation for pure technical copies is supposed to fall outside the scope of the right of reproduction rather than an explicit restriction on the right of reproduction.[17]

The Neighbouring Rights Act does not contain a right of multiplication, but its Articles 2 and 6 contain a right of reproduction for the performing artist and the phonogram producer. The limitation for purely technical copies is part of the definition of reproduction we find in Article 1 of the Neighbouring Rights Act, just as it is part of the right of multiplication regarding copyright described above. An apparent anomaly between the copyright of multiplication (embedding reproduction) and the neighbouring right of reproduction is thus put right.

At first sight, downloading musical works within a file sharing network seems to yield a relevant reproduction act according to current and future law.[18] The limi-

---

[17] See the critical account of J.M.B. Seignette, 'Implementatie en dan nog meer. Reactie op het conceptwetsvoorstel voor de implementatie van de Auteursrechtrichtlijn', *AMI* 2002-1, p. 6-10. Additionally, see: H. Cohen Jehoram, 'De stille strijd tegen een spookrijder', *NJB* 2002, afl. 34, p. 1690-1695.

[18] The same is valid from the viewpoint of American law. The California district court, as well as the court of appeals found downloading through Napster an infringement of the right of reproduction (*A&M Records, Inc.* v. *Napster, Inc*., 114 F. Supp. 2d 896, 912 (N.D. Cal. 2000); *A&M Records, Inc*. v. *Napster, Inc.*, 239 F. 3d 1004, (9th Cir. 2001). If music is downloaded, it is recorded on the hard disk of a computer. This recording is sufficiently permanent or stable to be perceived. The fact that this information can be deleted does not refute this conclusion. On the basis of these considerations, we may conclude that downloading music through file sharing constitutes a relevant act of reproduction.

tation with respect to purely technical copies may prevent such a reproduction act from occurring, however. This is the case when protected material is copied in order to guarantee the proper functioning of the network in which the material is exchanged. In this context, we may think of copies needed for routing and caching. Copies that are made to enable listening to the protected material can also be classified under the limitation with respect to purely technical copies found in the right of reproduction regarding copyright and neighbouring rights and therefore fall outside the scope of the right of reproduction. This is different if the copies have an autonomous economic significance. In any case, reproductions that are made at the end of the file sharing chain, both in the process of uploading as well as in the process of downloading, constitute reproductions in terms of copyright and neighbouring rights.[19]

### 3.3 **The right of distribution**

The WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty contain a provision regarding the right of distribution. In Article 4 of Directive 2001/29/EC, the right of distribution is described as the exclusive right of authors to authorize or prohibit the distribution of physical copies of their works.

Dutch copyright law contains an openly formulated right of *making public* in Article 12.[20] It covers the right of distribution. The only new provision considered necessary is Article12b, prescribing Community exhaustion with regard to the right of distribution. Previously, within copyright law, only in the case of software and databases such exhaustion was prescribed. For the remaining parts of copyright law, worldwide exhaustion was presupposed.

For neighbouring rights owners, the right of distribution has been settled by Council Directive 92/100/EEC of 19 November 1992 on rental right and lending right and on certain rights related to copyright in the field of intellectual property.[21] As far as neighbouring rights are concerned, Community exhaustion applies as well.

Different from US law, transmission via the Internet and other transmissions are not within the scope of the right of distribution. Following European and Dutch law, file sharing does not deal with physical copies and consequently does not constitute a relevant act of distribution according to copyright and neighbouring rights.

---

[19] Cf., P.B. Hugenholtz, 'Napster: een bliksemonderzoek', *Computerrecht* 2000-5, p. 228; T.J. Bousie, 'Hugenholtz kort door de bocht. Het kan nog korter. Napster:geen probleem', *Computerrecht* 2001-1, p. 23-24; A.H.J. Schmidt, 'Napsteren mag niet', *Computerrecht* 2001-1, p. 24; J.M.B. Seignette, 'Napster en de controle van de rechthebbende op de distributie van zijn werk', *AMI* 2001-2; D.J.G. Visser, 'Napsteren, Gnutellen en de afwezigheid van legale muziek op het internet', *Computerrecht* 2001-3, p. 131-133.

[20] Article 12 also provides a non-limitative list with examples of making public.

[21] PbEC 1992, L 346, 61.

In the United States, however, the right of distribution as well as the tenet of exhaustion apply.

### 3.4 The right of rental

The WIPO Copyright Treaty contains a provision regarding the right of rental. For holders of neighbouring rights, such a right had already been established in Council Directive 92/100/EEC of 19 November 1992 on rental right and lending right and on certain rights related to copyright in the field of intellectual property.[22] The right of rental has been established in Articles 12 and 12a of the Dutch Copyright Act. For performing artists and phonogram producers, the right has been established in Article 1, in conjunction with Articles 2 and 6 of the Neighbouring Rights Act. The right of rental is not relevant to file sharing in the European Union and the Netherlands, because file sharing does not concern physical copies of a work or other protected materials.

### 3.5 The right of communication and making available to the public

In Article 3 of Directive 2001/29/EC, the Member States are instructed to provide authors with an exclusive right of communication to the public of originals and copies of their works. Communication to the public comprises making available to the public. Making available to the public is attained when communication takes place in such a manner that the protected material can be accessed by the public at a time chosen by the members of that public ('interactive on demand'). Dutch copyright law contains an openly formulated right of *making public*, also in Article 12. The rights of communication to the public and of making available to the public can, according to the government, be classified and understood under the concept of making public under Article 12. No amendment to the act will be needed.

The Directive only assigns an exclusive right of making available to the public to holders of neighbouring rights (performing artists, phonogram producers, film producers and broadcasting corporations), because rights of communication to the public are already established in Council Directive 92/100/EEC of 19 November 1992 on rental right and lending right and on certain rights related to copyright in the field of intellectual property.[23] For performing artists and phonogram producers, in article 1, in conjunction with Articles 2 and 6 of the Neighbouring Rights Act, the right of making available to the public has been inserted for technical reasons regarding legislation even though that right was supposed to covered by the right of communication to the public (at least as far as the Netherlands is concerned).

---

[22] Ibid.
[23] Idem.

Article 7 of the Neighbouring Rights Act allows broadcasting and other forms of communication to the public if performing artists and phonogram producers are paid an equitable remuneration. On the basis of Article 15 of the Neighbouring Rights Act, one organization (named SENA) is exclusively entrusted with the collection and distribution of these remunerations. Directive 2001/29/EC does not allow Member States to arrange the right of making available to the public as a right of compensation. Therefore, the government has proposed to remove the right of making available to the public from Article 7 of the Neighbouring Rights Act. The right of making available to the public becomes an exclusive right for the performing artist and phonogram producer, established in Articles 2 and 6 of the Neighbouring Rights Act.

The right of making available to the public pre-eminently applies to the exchange of protected materials through file sharing. The right of making available to the public is already covered by Article 12 of the Copyright Act, formulated in a technology-independent manner. The regime established by the Neighbouring Rights Act already covers the right of making available to the public, although the current Article 7 of the Neighbouring Rights Act settles this right for performing artists and phonogram producers as a right of compensation as far as commercial phonograms are concerned. After the implementation of Directive 2001/29/EC, this right will become an exclusive right for performing artists and phonogram producers, laid down in Articles 2 and 6 of the Neighbouring Rights Act.

### 3.6 **New questions and problems**

File sharing is a relatively new way of exchanging information in general, and music in particular. File sharing amounts to relevant acts of exploitation according to copyright and neighbouring rights. Not everything is clear, though. In our opinion the meaning of the mandatory limitation for purely technical copies in Freenet-like file sharing systems needs clarification.

The mandatory limitation in Article 5 of the Directive allows temporary acts of reproduction that have a transient or incidental nature and either constitute an integral and essential part of a technological process while its sole purpose is to enable a transmission in a network between third parties by an intermediary, or constitute a lawful use of a work or other subject-matter to be made, and which have no independent economic significance. The limitation serves to enable caching and browsing through the Internet.

Here, it is by no means clear what the position is of a person participating in peer-to-peer file sharing with a Freenet-like architecture. He makes part of his personal computer's disk and communication capacity available for file sharing by other members of the file sharing community. He does not, and cannot, verify what files are shared, since files and communication are encrypted. He only has access to the files he has himself solicited from the network or has himself made available to

the network. It could be argued that for the files shared by others and passing through his PC (where those files are copied in a technical sense), he (and all other members of the file sharing community) can rely on the limitation for pure technical copies. Serious questions may arise when such systems are extensively used for a mixture of copyright-protected and non-protected works. Lawful participation in such peer-to-peer communication systems may bring the issue outside the realm of intellectual property regulation altogether.

## 4. The Application of the Restriction of Private Copying

### 4.1 Introduction

In this section we examine whether, according to current and future Dutch law, a restriction regarding copyright and neighbouring rights applies to file sharing. We limit ourselves to the exchange by individual users who use the possibilities of file sharing for non-commercial ends. This means that especially the restriction concerning private copying matters. We pay attention to that restriction as found in Directive 2001/29/EC (section 4.2), in current legislation (section 4.3) and in future legislation (section 4.4). We conclude the section in section 4.5 with an inventory of new questions and problems that emanate from file sharing.

### 4.2 Private copying in Directive 2001/29/EC

In addition to the compulsory and mandatory limitation concerning purely technical copies in Article 5 of Directive 2001/29/EC, the directive contains a large number of restrictions that Member States can implement optionally. The second paragraph contains restrictions to the right of reproduction, the third paragraph contains restrictions to the right of reproduction and the right of communication and making available to the public and the fourth paragraph contains restrictions to the right of distribution.

The restrictions subsequently regard photocopying, private use, use in libraries and archives, ephemeral recordings of works made by broadcasting organizations, copies of such works in social institutions, use within the framework of education or science, use in favour of people with disabilities, use in the press, freedom of quotation, use in administrative or judicial procedures, use of political texts, use within the framework of religious or official events, coincidental use in recordings or reports, use in relation to caricatures and parodies, use in relation to reparation and demonstration, use in relation to advertisements, use of images of public buildings and sculptures, and reading and listening in a library environment.[24]

[24] D.J.G. Visser, 'De beperkingen in de Auteursrechtrichtlijn', *AMI* 2001-1, p. 10-17.

The fifth paragraph, finally, contains the so-called three-step test, with respect to which each restriction should be assessed. The limitations and restrictions may only be applied (1) in special cases, (2) under the condition that no harm is done to normal exploitation of works or other materials and (3) that the legitimate interests of the party concerned are not impaired to an unreasonable extent. The Dutch government believes that the three-step test is an instruction norm for the legislator and consequently need not be implemented in national legislation.[25]

In Article 5, paragraph 2 under b of the Directive, we find a restriction for personal use. On the basis of this article, a natural person is permitted to make a reproduction for personal use, if he or she does not act with direct or indirect commercial intent, and the right holder receives fair compensation for this use. Fair compensation constitutes a reward for the use that is made of a work. Fair compensation is often realized in prices of the media (blank carriers) used for private copies. However, fair compensation can be something other than financial remuneration (e.g., special licence rules, subsidies or damages). In special cases, the compensation can be nil. This can be the case, for example, when right holders have not sustained damages as a result of the making of private copies. Obviously, the compensation can become anomalous if the right holder, by using digital rights management systems, is able to regulate and control the use of protected material in the private sphere.[26]

### 4.3 **Private copying according to current law**

In general, on the basis of existing Dutch legislation (Article 16b of the Copyright Act and Article 10, paragraph a, of the Neighbouring Rights Act) it can be claimed that the reproduction of one or more copies of a protected work for personal use is allowed. Still, we have to take into account that downloading for 'consumptive' use, on the one hand, and reproduction for making available to the public on the other, are two separate acts as seen from the perspectives of copyright and neighbouring rights.[27] The first act may be subject to the restriction concerning private copying. The second act is not subject to that restriction. That observation is – of course – of particular interest if the file sharing software enables users to share – or not to share – files with others.

According to current law, one may instruct someone else to copy material for personal use for one's own benefit. There is an important exception. Such an in-

---

[25] See also: D.J.G. Visser, 'Enkele opmerkingen bij wetsvoorstel 28 482', *AMI* 2002-5, p. 167-172. A critical reply can be found in: J.M.B. Seignette, 'Implementatie en dan nog meer. Reactie op het conceptwetsvoorstel voor de implementatie van de Auteursrechtrichtlijn', *AMI* 2002-1, p. 6-10. Also critical: H. Cohen Jehoram, 'De stille strijd tegen een spookrijder', *NJB* 2002, afl. 34, p. 1690-1695.

[26] For an account of digital rights management, see section 7.

[27] See also: T. Kreutzer, 'Napster, Gnutella & Co. Rechtsfragen zu Filesharing-Netzen aus der Sicht des deutschen Urheberrechts de lege late und de lege ferenda – Teil 1', *GRUR* 2001-3, p. 200.

struction is not permitted if it concerns recording a copy on an image or sound carrier. At first sight, it seems to follow that providers of web sites that copy MP3 music files for their users, enter dangerous ground. According to current law, the legitimacy of making available to the public, which precedes reproduction, is not relevant for the question whether the user may appeal to the exception for private use. Still, we cannot exclude that someone, who knowingly profits from the private use that follows the wrongful making available to the public, could commit a wrongful act, depending on other relevant circumstances of the case.

According to present legislation, the law contains a compensation arrangement in favour of right holders to music and moving images. This arrangement amounts to a fee on blank image and sound carriers. Momentarily, compensation in the form of equitable remuneration is paid with regard to blank audio tapes, blank video tapes, blank compact disks (CDs) and blank digital versatile disks (DVDs). The level of the remuneration is negotiated in a foundation called SONT. The fee is collected by an organization appointed by the government (called 'Stichting de Thuiskopie'), and distributed by this organization among the right holders. The obligation to pay this fee rests on the manufacturer or the importer of the blank image or sound carriers. According to Article 10, paragraph a, of the Neighbouring Rights Act, the arrangement applies equally to neighbouring rights. Hard disks of computers – on which files exchanged by file sharing are stored – do not fall within this arrangement. According to present law, right holders are not directly compensated for private copying by file sharing. Indirect compensation already occurs, since storage on a hard disk is often of a transitional nature. Most of the time the information will eventually be fixed on blank CDs and blank DVDs.

### 4.4 **Private copying according to future law**

In the legislative proposal transposing Directive 2001/29/EC, the arrangement for private copying is slightly adapted. Article 16c, first paragraph, of the Copyright Act 1912 allows the making of a private copy provided that the copy is made by a natural person and the copy does not have a(n) (in)direct commercial purpose.

The question whether it is possible to make a legal copy from an illegal source was dealt with at great length during the discussion in parliament. On the basis of both present and proposed legislation the reproduction of works protected by copyright for private use is allowed. The internet user who makes use of the possibilities provided by Napster, KaZaA and comparable peer-to-peer services to reproduce works protected by copyright thus operates within the bounadaries of copyright. This also seems to apply when a private copy is made from an 'illegal' source, in other words a work that is made public without the consent of the right holder.[28]

[28] For a more critical approach see: S. Ricketson, 'WIPO Study on limitations and exceptions of copyright and related rights in the digital environment', p. 80-84.

If the same internet user places the copy in a 'shared folder' of its peer-to-peer software, thus allowing others to make (private) copies, this may be qualified as making a work protected by copyright available to the public. This is only allowed with the consent of the right holder. The private use exception does not relate to that.[29] As mentioned before, we cannot exclude that someone, who knowingly profits from the private use exception, that follows the making available to the public without the consent of the rightholder, could commit a wrongful act, depending on other relevant circumstances of the case.

Article 16c, second paragraph, of the Copyright Act 1912 provides that the manufacturer or the importer of blank carriers intended for the fixation of copyright protected material is obliged to pay equitable remuneration to right holders. Usually this remuneration is passed on to the consumers. At least two things must be noted: (1) the reproduction of text for private use has become subdued to this remuneration; (2) more carriers fall within the scope of this remuneration rule, since remuneration is no longer restricted to carriers that are intended for the fixation of images and sounds.

The SONT determines which carriers fall within the scope of Article 16c of the Copyright Act 1912. Another task of SONT is to set the level of remuneration through negotiations. On the basis of Article 5(2)b of the Copyright Directive the SONT has to take the availability and the use of technological protection measures into account. When the use of works protected by copyright can suffiently be regulated and controlled – even in the private sphere – through such measures, there will be no more need for compensation by means of remuneration.[30]

If the negotiations in the SONT fail, the Minister of Justice may – in accordance with Article 16c, sixth paragraph, of the Copyright Act 1912 – issue specific rules and state conditions concerning: (1) objects that fall within the scope of the remuneration system; and (2) the form, level and indebtedness of the remuneration.

Generally speaking, it is (still) not allowed under Article 16c of the Copyright Act 1912 to make a private copy for somebody else.

## 4.5 **New questions and problems**

### 4.5.1 *The non-commercial criterion*

A new feature is the non-commercial criterion (Article 16c, first paragraph, of the Copyright Act 1912). It is not clear in what way this criterion will be explained, but it is conceivable that a connection is made with the American Napster decision, in which the acquisition of something, free of charge, for which one is normally obliged

[29] Parliamentary documents II, 2002-2003, 28 482, no. 5.

[30] P. Hugenholtz, L. Guibault & S. van Geffen, *The Future of Levies in a Digital Environment,* IVIR, Amsterdam 2003.

to pay, is classified as indirect commercial use. As a consequence, such use may not fall within the scope of the limitation for private copying. The application of copyright law in the private domain is a sensitive matter. Privacy protection, the inability to control acts in someone's private life, and the desire to allow information to circulate on a micro-level of (non-commercial) use play a role in this matter.[31] At the same time, the digital environment offers increasing commercial opportunities through, among other things, file sharing techniques. With respect to analogue reproduction techniques, this problem has already been addressed with a so-called home copying levy, which is imposed on objects that are meant to make copies of image and sound (films and music).

### 4.5.2 *A home copying levy on other equipment*

The existing Dutch arrangement is meant for video tapes and music cassettes. It is currently debated whether this system can also be applied to modern carriers, and to recording and playback equipment, such as DVD recorders, MP3 players and computers.[32] The introduction of a levy on such equipment raises a number of important and difficult questions.

The first question that has to be answered is which objects are specifically designed for fixation of copyright protected material. The fact that an object is merely suitable for fixation of copyright protected material is not in itself enough. The second question is which criteria should be used to set the level of equitable remuneration. In this context one of the most important questions that needs to be answered is whether or not the mere availability of the actual application of (effective) technological protection measures have to be taken into consideration.[33] The third question is whether the absence of a European level playing field causes any problems for the proper functioning of the internal market. And will the absence of a level playing field lead to a situation in which it will take longer, if possible at all, for new products and services (for example, Apple's I-pod) to come onto the European market? This would be bad for innovation.

### 4.5.3 *Determining the amounts of fair contribution and retribution*

The question is how to determine the amount of a fair contribution. After all, many digital carriers can be used for the storage of works that are not copyright protected. This may lead to a situation in which the imposed fixed amount has an arbitrary

---

[31] Chr. A. Alberdingk Thijm, *Privacy vs. auteursrecht in een digitale omgeving*, IT*e*R no. 49, The Hague: Sdu Uitgevers.

[32] E.J. Arkenbout, F. van Dijk, P.W. van Wijck, 'Auteursrecht in de informatiemaatschappij. Bouwstenen voor een justitiestrategie', p. 22.

[33] P. Hugenholtz, L. Guibault & S. van Geffen, *The Future of Levies in a Digital Environment,* IVIR, Amsterdam 2003.

nature. A similar problem occurs with the repartition of collected money: how should the vast amounts of money that are collected be divided among the right holders?

#### 4.5.4 *The need for collective administration*

If the collection and repartition are delegated to collective administration organizations, this means a major extension of their tasks. Such an extension seems to be only justifiable if collective administration organizations are sufficiently capable of making the collection and repartition tasks occur in an efficient and transparent manner.[34]

## 5. The Exercise of Copyright and Neighbouring Rights

### 5.1 **Introduction**

We now investigate how copyright and neighbouring rights can be exercised for file sharing. In section 5.2, we discuss how copyright and neighbouring rights can be exercised: individually or collectively. In section 5.3, we focus on the exercise of musical copyright. In section 5.4, we discuss the exercise of neighbouring rights for music, considering current and future law. In section 5.5 we conclude with an inventory of new questions and problems that arise from exercising copyright for file sharing.

### 5.2 **Individual or collective**

In principle, the exercise of rights is the prerogative of each individual right holder, within the framework of contract and competition law. In practice, right holders unite in many cases in order to exercise their rights collectively (reuse of journalistic works, reuse of visual art and photos, exploitation of television programmes and films in public places). For compound works (certain products of publishers, films, productions of broadcasting corporations, multimedia), producers tend to allow their rights to be transferred in order to facilitate further exploitation. Only in a limited number of cases has the government imposed mandatory collective administration (photocopying, rental, private copying, public use of music). Where the government prescribes mandatory collective administration, government supervision applies.[35]

---

[34] Consideration 17 of the copyright directive calls for a higher level of rationalisation and transparency with respect to collective enforcement.

[35] The Supervision of Collective Management Organizations (Copyrights and Neighbouring Rights) Act entered into force on 1 July 2003, Stb. 2003, 278. For more information see: H. Cohen Jehoram, 'Verrassingen in het wetsvoorstel Toezicht collectieve beheersorganisaties', *AMI* 2001-5, p. 108-110.

Several advantages arise from collective administration.[36] Such administration enables right holders to influence the result of negotiations with users, it furthers the enforcement of rules that can hardly be enforced by individuals, and it offers certainty with respect to collection and payment of compensation. Collective administration also offers advantages for users. After all, there is an institution that can grant permission for the use of varying protected materials. One no longer needs to negotiate with many right holders, who are difficult to find and who employ different terms. Also, (mandatory) collective administration offers a counterbalance to the power of dominant individual right holders or interest groups.

The directive itself does not contain rules on collective administration, and thus leaves the subject to the discretion of the Member States for the time being. We have already discussed the right of making available to the public: the exclusive right to make protected materials available, so that individual members of the public can access protected materials at any time and place. This right concerns the interactive ('on-demand') exploitation of, e.g., music tracks and films, for which it is not important whether or not the material can be copied by the public. Typically, this is a form of exploitation that can occur in the case of file sharing through the Internet. Insofar as is relevant to this research project, the directive offers an exclusive right for this kind of making available to the public for authors, performing artists and phonogram producers. National legislators cannot implement such an exclusive right as a right of compensation in national legislation. At the same time, the directive prescribes that insofar as phonograms are an integral part of programs that are offered by broadcasting corporations through 'on-demand' systems, the Member States shall further the exercise of this right through collective agreements. The directive does not indicate how this task should be carried out, not to mention the lack of any indication as to how to handle file sharing by broadcasting corporations.

### 5.3 **Exercising musical copyright**

In the Netherlands, musical copyright is exercised collectively on a legal basis by the BUMA association. In accordance with Article 30a of the Copyright Act, the BUMA association has been granted a licence to negotiate rights concerning public performance and broadcasting. The Copyright Act permits right holders to exploit their rights individually, but in practice, this right is hardly ever exercised. Moreover, users are indemnified against liability by BUMA. This means that liability emanating from the use of a work of an artist who is not a member of BUMA,

[36] For an overview, see J.M.B. Seignette, *Exploitatie en clearance van intellectuele eigendomsrechten*, IT*e*R no. 10, Alphen aan den Rijn: Samsom Bedrijfsinformatie b.v. 1998, p. 163-241. Critical comments can be found in H. Cohen Jehoram, 'Auteursrechtenbureaus: enkele grondbeginselen', *Informatierecht/AMI* 1991-7, p. 127-138.

occurs on account of BUMA. Additionally, the use of works of foreign authors falls within the scope of BUMA's administration, because of reciprocal agreements with related foreign organizations. This leads to a situation in which public use of music is permitted if compensation is paid. Outside the scope of its licence (public performance and broadcast), the appearance of other mediation organizations than BUMA cannot be excluded. STEMRA, for instance, negotiates mechanical reproduction rights.

Outside the scope of its licence (the use of music during performances, in public places, in television and radio broadcasts) BUMA may venture into agreements with its members (composers, lyricists and music publishers). In practice, BUMA also acts on behalf of right holders for other forms of making public. The use of music on the Internet is a clear example. Until recent, BUMA used a so-called Temporary Arrangement, a policy for web site owners putting music on their sites under certain conditions.[37] Such developments show an example of self-regulation. It has to be noted that, as things currently are, outside the area of its licence, BUMA will have to accept competition from other mediators of musical copyright.

It seems logical that the exclusive licence concerning the mediation of BUMA should not unthinkingly be extended to other digital forms of making public. When the licence was granted to BUMA, in 1933, there was no such concept as making available to the public on-line. Therefore, the licence ought not to be extended without an explicit prior decision of the government.

Music file sharing is a form of making available to the public. It does not fall within the scope of the BUMA public licence. According to current and future law, it may be brought within the competence of BUMA (or of any other intermediary organization) by agreement.

### 5.4 **Excercising neighbouring rights with respect to music**

In the Netherlands, neighbouring rights with respect to music, in favour of performing artists and phonogram producers, are exercised collectively on a legal basis by the SENA foundation. On the basis of Article 7 of the Neighbouring Rights Act, fair compensation is indebted to phonogram producers and performing artists for making commercial phonograms public. The concept of making public in the Neighbouring Rights Act comprises, but is not limited to, broadcasting and public performance. On the basis of Article 15 of the Neighbouring Rights Act, the collection and repartition is granted exclusively to SENA. Outside the scope of the licence, in cases in which there is no occurrence of making commercial phonograms public, parties other than SENA, among which are individual right holders, are entitled to administer rights.

---

[37] See: <http://www.bumastemra.nl/>.

Insofar as broadcasting or other forms of making commercial phonograms public through the Internet are concerned, SENA is the only institution authorized to grant permission for such making public. The Neighbouring Rights Act comprises such a broad concept of making public, that making commercial phonograms public through the Internet currently falls within its scope. Therefore, individual performing artists or individual phonogram producers are currently not permitted to negotiate such use of music on the Internet, be it individual negotiations, or collective negotiations that are not conducted through SENA. This affects the position of SENA: if a fair compensation is offered, SENA cannot reasonably refuse to grant permission for the use of music on the Internet, and the party that offers the compensation is, in principle, legitimized in its making public. It is not plausible that the legislator was aware of the consequences which the Internet would have for collective administration by SENA. Even so, this leaves unimpeded the fact that reproduction requires permission. Especially phonogram producers are generally not inclined to grant such permission.

With the implementation of the copyright Directive, the right of making available to the public is detached from the right of compensation for making commercial phonograms public.[38] Instead, neighbouring right holders get an exclusive right of making available to the public, resulting in the fact that SENA is no longer exclusively competent to act. The concession of BUMA and the assignment of SENA then regard the same rights of making public.

Currently, file sharing – typically an act of making available to the public – falls within the scope of the assignment of SENA. According to future law, this will become an exclusive right.

## 5.5 **New questions and problems**

During the past decades, opportunities of use have increased, which results in scattered uses of information. File sharing is a clear example of this development.

### 5.5.1 *Legitimacy of collective administration organizations*

The legitimacy of collective administration organizations is threatened slightly. There are a number of reasons for this. In the previous section, we indicated that the levy amounts and their division among right holders, as compensation for private copying, increasingly attains an arbitrary nature. Second, the Internet leads to more transparency in the market, so much so, perhaps, that users and right holders can find each other and enter into individual agreements. In other words: the Internet offers opportunities for new forms of clearance that were not available earlier. Third, in the near future, right holders will be able to regulate the use of their works through

[38] Parliamentary documents II, 2001-2002, 28 482, nos. 1-5.

digital rights management. All these developments force us to reflect on the role of collective administration in a digital environment. Collective administration could hinder the development of efficient clearing of rights.[39]

### 5.5.2 *Increasing importance of competition law*

An increasing number of copyright questions concern matters of access and exclusivity: who acquires access to what information, and at what price or according to what other conditions? Therefore, the importance of competition law for this field is increasing considerably. Can right holders prevent that systems for making protected materials available to the public are exploited within networks, especially when these systems are not exploited by themselves or with their consent?[40] In regard to this question, legal literature discusses the Magill decision of the European Court of Justice.[41] In Magill it was decided that the practice of copyright can result in the abuse of a dominant position under certain special circumstances. Just like in the Magill case, the development of a new market is impeded. On the other hand, in the current case, less fundamental information is involved. Still, competition authorities have sufficient reasons to follow the actions of the music industry closely.[42]

### 5.5.3 *Territorial boundaries and (national) collective administration*

The developments with respect to the competition issue seem to lead to a commercial model for the acquisition of permission and for the determination of compensation for the exploitation of protected materials which is deemed fair by all the parties involved. From the viewpoint of competition law, such a model should be acceptable. The question is whether public collective administration is a suitable method for such a model. Public collective administration organizations are organized according to territory, while the Internet ignores such boundaries. For collective organizations, this means that they have to enter into reciprocal contracts for granting international or at least Community licences. This development seems to have consequences regarding competition law as well.

The European Commission announced a communication and a directive on collective management. Both documents were made public in 2004. On 15 January

---

[39] H. Cohen Jehoram, 'De toekomst van auteursrechtenbureaus', *Informatierecht/AMI* 2000-8, p. 157.

[40] E.J. Arkenbout, F. van Dijk, P.W. van Wijck, 'Auteursrecht in de informatiemaatschappij. Bouwstenen voor een justitiestrategie', p. 61.

[41] ECJ 6 April 1995, [1995] 4 Web JCLI.

[42] D.J.G. Visser, 'Napsteren, Gnutellen en de afwezigheid van legale muziek op het internet', *Computerrecht* 2001-3, p. 131-133.

2004 the European Parliament adopted a resolution on a Community framework for collective management societies.[43]

## 6. The Enforcement of Copyright and Related Rights

### 6.1 Introduction

We investigate the enforcement of copyright and neighbouring rights for file sharing. In particular, we focus on case law on whether, and if so, to what extent, intermediaries can be held liable for abusing opportunities offered by file sharing. First, we discuss the means that are available to right holders for enforcing their rights. For this, we distinguish between civil law and penal law instruments (sections 6.2 and 6.3). In section 6.4 we will focus on the Directive of the European Parliament and of the Council on measures and procedures to ensure the enforcement of intellectual property rights which has recently been adopted. After a brief introduction, the American Napster and the Dutch KaZaA decisions are discussed (section 6.5). The section concludes with an inventory of new questions and problems in the area of enforcement, raised by file sharing (section 6.6).

### 6.2 Civil law enforcement

The starting point in combating copyright infringement is civil law enforcement. Right holders join forces in order to do this. An example is the Brein foundation, in which the music and film industries work together. In addition, publishers and phonogram producers collaborate. They decided to establish the Platform for Multimedia Producers (Platform Multimediaproducenten), which fights copyright infringements. This platform seeks to collaborate with the Brein foundation.

First, right holders have at their disposal the general prohibition and damages acts. In addition, the Copyright Act (Articles 27 through 29), and the Neighbouring Rights Act, (Articles 16 through 18) contain a number of special provisions, among which are payment of profit, handing over infringing objects, handing over wrongfully acquired money, and the destruction of infringing objects and equipment with which such objects are manufactured or distributed.

### 6.3 Penal law enforcement

Penal law in the Netherlands is an ultimate remedy. It is mainly applied in large-scale cases of infringement (piracy). In this context, piracy refers to the large-scale

[43] European Parliament resolution on a Community framework for collective management societies in the field of copyright and neighbouring rights (2002/2274(INI)), PE 340.695\57-65, P5_TA-Prov(2004)0036.

sale of copyright-protected materials, without consent being granted for such use. Apparently, small-scale cases of infringement are given lower priority by the Public Prosecutions Department, because of the private nature of the interest concerned, and the opportunities to find a solution through a civil procedure. In this way, penal law remains reserved for very serious cases needing very serious copyright enforcement measures.[44]

Investigations were carried out by a special institution, the Buma/Stemra Investigative Authority (Buma/Stemra Opsporingsdienst). Its investigating officers had official investigative powers. Although the investigative authority and its officers were formally under the authority of the Public Prosecutions Department, funding and management were in the hands of right holders, united in the Brein foundation. As a consequence of the parliamentary investigation on special investigation, the government decided that the tasks and competences of this Authority should be transferred to government.[45] The investigative authority is now accommodated within the fiscal investigative authority (FIOD/ECD). The preservation of specific expertise and the size of the department are guaranteed, as well as its visibility and its competence to determine investigation priorities.

Intentional infringement is punishable as a criminal offence (Article 31 of the Copyright Act). Intent occurs if the will is aimed at infringing behaviour or to achieve that consequence (including conditional intent).[46] Article 31a of the Copyright Act makes punishable intentional acts concerning the distribution of illegal copies. These acts are punished more severely if committing these criminal offences constitutes one's occupation, or if they are committed as a company activity (Article 31b Copyright Act). The increase in the penalty has consequences for the competences of investigating officers. Additionally, a criminal judge may confiscate and destroy copies, or hand them to the right holders, on their request (Article 36 Copyright Act). In the Neighbouring Rights Act, we find corresponding penal provisions in Articles 21 through 30.

### 6.4 **Directive on measures and procedures to ensure enforcement**

The aim of this directive is to harmonise the legislation of the European Member States concerning the enforcement of intellectual property rights to provide for a level playing field of protection throughout the Community. The proposal relates to the infingement of all intellectual property rights that have been harmonized within the European Union among which are copyright and neighbouring rights.

The Directive forces the Member States to provide for civil law actions for infringement of intellectual (and industrial) property rights including provisional

[44] Spoor/Verkade, p. 436.
[45] Parliamentary documents II, 1999/2000, 26 955, no. 1.
[46] Spoor/Verkade, p. 438.

measures allowing for the immediate termination of the infringement and prohibitory measures aimed at preventing further infringements. In addition Member States are free to provide for penal law sanctions as well. While applying the measures in the directive, attention should be paid to the specific characteristics of each individual case, especially to the characteristics of the infringed intellectual property right and to the question whether the infringement was deliberate or not. In the case of judicial procedures judges should be able to order the inspection of financial or commercial documents at the disposal of the alledged infringer.

### 6.5 **Liability of software providers**

There can be no doubt that whoever abuses file sharing can be held accountable in civil law and even in penal law. A problem is that enormous numbers of persons are involved. They can hide behind their relative anonymity on the Internet. Moreover, abusers are often to be found abroad. We have to take into account that cross-border investigations are not allowed without burdensome inter-policing agreements or treaties. A different problem is that wrongful or punishable acts are in this case committed within the shelter of private life. Reason enough for right holders to address their grievances to the providers of file-sharing software.[47]

#### 6.5.1 *Napster*

Acomplaint was filed against Napster, a file sharing system with central servers, by the Recording Industry Association of America (RIAA) because of *contributory infringement* and *vicarious liability* in copyright infringements of its users.[48] Contributory infringement is a form of indirect infringement in which someone with sufficient knowledge incites, causes, or contributes substantially to the infringing behaviour of another person.[49] The concept of vicarious liability is related to contributory infringement, in the sense that it occurs if an infringing act takes place under the supervision of a person or institution, and this person or institution fails to intervene, and derives financial benefit therefrom.[50]

Napster defended itself by appealing to the *staple article of commerce doctrine*, as developed by the American Supreme Court in the Sony decision.[51] This doctrine

---

[47] See <http://www.wired.com/news/politics/0,1283,54153,00.html> for information on Berman's proposal for a peer-to-peer piracy prevention act.

[48] *A&M Records, Inc*. v. *Napster, Inc*., 239 F.3d 1004, 1013-14 (9th Cir. 2001).

[49] 'One who with knowledge of the infringing activity, induces, causes or materially contributes to the infringing conduct of another, may be held liable as a contributory infringer', *Gershwin Publishing Corp*. v. *Columbia Artists Mgmt., Inc*., 443 F.2d 1159, 1162 (2d Cir. 1971).

[50] 'even in the absence of an employer – employee relationship one may be vicariously liable if he has the right and ability to supervise the infringing activity and also has a financial interest in such activities', *Fonovisa, Inc*. v. *Cherry Auction, Inc*., 76 F.3d 259, 264 (9th Cir. 1996).

[51] Sony was charged with contributory infringement because of the introduction onto the market of video recorders.

states that there is no contributory infringement if the equipment used is suitable for substantial non-infringing uses. It is meant to find a balance between, on the one hand, equipment that serves only as an aid, and, on the other, means and services that are mainly meant for facilitating infringements. The norm that can be derived from this is that a work has an economic rationale, in addition to an infringing quality. This defence did not succeed. It was not excluded that Napster can be used for non-infringing acts, but Napster knew that the system was abused to make copyright infringements. Moreover, it could act against those infringements because of the presence of central servers. Therefore, Napster should not have failed to act.

According to the judge, there was an instance of vicarious liability as well. Napster had both the right and the opportunity to act, and had unjustly failed to make use of that opportunity.[52] The financial benefit is derived from the presence of infringing material, serving to attract new customers. According to the judges, the staple article of commerce doctrine does not apply to vicarious liability.

The defense raised by Napster was of no avail. Access providers, whose activities consist of routing or making connections through their systems, are not liable according to § 512 (a) Digital Millenium Copyright Act (hereafter abbreviated as DMCA) – even if they know about the presence of infringing information – if (1) they do not take the initiative in sending the information, (2) they do not influence addressing the information, and (3) they do not interfere with the content of the information. According to § 512 (d) DMCA, information location tools providers who facilitate access to information through search engines and hyperlinks are not liable if (1) they do not have actual knowledge about the presence of infringing materials, (2) they are not aware of the facts from which the presence of infringing materials may be derived, (3) if knowledge of the infringement is present with the providers, they have to remove the infringing information immediately, or bar access to it, and (4) they may not benefit directly from the infringement. One of the most important arguments for rejecting the application of § 512 (a) DMCA is that protected information does not go *through* the Napster system. Additionally, Napster objected that, prior to the trial, there was no clear copyright policy, as prescribed in § 512 DMCA. Reliance on § 512 (d) DMCA was rejected because Napster had 'actual knowledge'.[53]

### 6.5.2 *Grokster and Streamcast*[54]

Grokster offers a peer-to-peer server/client that can be used for filesharing. A certain amount of the files (not all) shared by the users of Grokster contain copyrighted

[52] "Has the right and ability to supervise its users' conduct".

[53] Victoria McEvedy, The dmca and the e-commerce directive, e.i.p.r., 2002, p. 65-73 i.h.b. 71-73 for a critical comment on the Napster ruling.

[54] <Http://www.eff.org/IP/P2P/MGM_v_Grokster/030425_order_on_motions.pdf>.

works. The searching and exchanging of files takes place through and among different nodes. These actions are performed and governed by the end-users. Grokster cannot interfere with these actions. Streamcast offers a program that functions in the same manner as Grokster does. The difference is that Streamcast uses open source software, whereas Grokster uses proprietary software (Fasttrack). The difference could be relevant when defendants are compelled to change the design of their software; an obligation that cannot be met in the case of proprietary software, but can be met when the program is based on open source software.

The district court concluded that there was no direct infringement from the side of Grokster, et al., because when any infringements take place, they are the result of the conduct of the end users of the software. Neither did the district court hold Grokster liable on grounds of contributory infringement since: (1) liability only originates when Grokster, et al., have specific knowledge of the infringement at the moment when the infringement took place and then they failed to act according to that knowledge; and (2) there is no material contribution to the infringing conduct. The ending of all activities by Grokster and Streamcast would have absolutely no influence on the infringing behaviour of the end-users.

The district court's judgment on the question of whether Grokster, et al., could be held liable on grounds of vicarious infringement provides important addidional food for thougt. Vicarious infringement occurs: 'in cases in which a defendant has the right and ability to supervise the infringing activity and also has a direct financial interest in such activities.'[55] The court concluded that Grokster, et al., have a financial interest because of the revenues from advertisments. However, Grokster, et al., did not have the right and ability to supervise. Therefore the district court rejected the claim that Grokster, et al., could be held liable on grounds of vicarious infringement.

However, the district court ended with the following extremely important remark:

> 'The Court is not blind to the possibility that Defendants may have intentionally structured their businesses to avoid secondary liability for copyright infringement, while benefitting financially from the illicit draw of their wares
> (…)
> To justify a judicial remedy, however, Plaintiffs invite this Court to expand existing copyright law beyond its well-drawn boundaries. As the Supreme Court has observed, courts must tread lightly in circumstances such as these,
> Sound policy, as well as history, supports our consistent deference to Congress when major technological innovations alter the market for copyrighted materials. Congress has the constitutional authority and the institutional ability to accommodate fully the raised permutations of competing interests that are inevitably implicated by such new technology'

[55] Napster, 239 F.3 at 1022

And

> 'In a case like this, in which Congress has not plainly marked our course, we must be circumspect in construing the scope of rights created by a legislative enactment which never calculated such a calculus of interests'.

The judges passes the ball back to the legislator, as Schmidt stated correctly.[56]

### 6.5.3 *KaZaA*

In the Netherlands, the question arose whether file sharing without a central server conflicts with copyright law. The President of the disctrict court of Amsterdam decided in interlocutory proceedings that KaZaA, by enabling users to download programs, had acted in conflict with copyright law.[57] According to the President, the main indication was that KaZaA started to negotiate about remuneration schemes without reservations. By requesting such a licence, KaZaA 'cannot succesfully contend that it is not the reproducer of the works.' Subsequently, the President placed the actions of KaZaA in a broad context, thereby reaching the conclusion that there was a case of infringement: 'The goal of KaZaA, namely to enable users to download music files through its software, and thereby to reproduce the files concerned, is thus realized by the company itself.' Consequently, the acts of KaZaA were deemed wrongful, resulting in a decision instructing KaZaA to take appropriate measures, within fourteen days, so that it would no longer be possible to infringe copyrights within the Buma/Stemra repertoire with the computer program KaZaA offers.

KaZaA appealed against this decision to the Amsterdam court of appeal. The court came to the following findings: the KaZaA network does not depend on a central server, which constitutes the most important difference with the Napster network. The services provided by KaZaA, such as offering new versions of the program, and placing advertisements, were not deemed necessary for the functioning of the network. When it became clear that KaZaA could not stop the use of the network, the court turned to an investigation of protection measures. The court concluded that with the current state of standardization, it is not possible to detect technically which files are copyright protected, so that such a barrier would be of little use. Buma/Stemra referred to the fact that KaZaA had claimed in several instances to be able to intervene in case of potential infringements. Subsequently, the court pointed out that KaZaA's disclaimer contained a provision that it only has to intervene if notice of the infringing material has been given. KaZaA claimed not to be able to intervene. This was accepted by the court, with the argumentation that if it were possible, KaZaA would not have closed its web site. Now that KaZaA was

---

[56] A.H.J. Schmidt, 'Recht om te spelen', *JAVI* 2003/3, p. 87-100.
[57] Rb. A'dam, 29 november 2001, *AMI* 2002-1, p. 21-25 m.nt. PBH.

not able to intervene, the court could not grant the counterclaim (to uphold the challenged decision). Additionally, the court considered the judgment of the President with respect to copyright law.

> 'Insofar as acts relevant to copyright are performed, these are performed by the users of the computer program and not by KaZaA. Providing means for making public or reproduction of copyright-protected works does not itself constitute an act of making public or reproduction. It is not the case, at least we cannot assume, that KaZaA's computer program is used exclusively for downloading copyright-protected works. [...].'[58]

Buma/Stemra appealed in cassation to the Supreme Court. That request was based on the proposition that the court of appeal had misunderstood the request by Buma/Stemra. If altering the software would prove to be impossible, the further distribution of the KaZaA-program should, of course, have been prohibited, so argued Buma/Stemra. According to the Supreme Court there was no need for the court of appeal to apply such a wide interpretation of the request. If Buma/Stemra wanted the court to forbid the distribution of the program, they should have asked for that explicitly. This was already a sufficient basis for the court to reject the appeal in cassation. The Supreme Court did not have an opportunity to go into the most important legal question: does the distribution of KaZaA-software (directly or in a combined action with its users) constitute an infringement of copyright and neighbouring rights, or is it wrongful conduct because it facilitates the infringement by others? Because the Supreme Court had rejected the appeal in cassation, the verdict of the court of appeal remains valid.[59]

## 6.6 **New questions and problems**

### 6.6.1 *Mass infringement and privacy*

Regarding enforcement, file sharing gives rise to a number of interesting questions. The main question is how one fights infringements when there is no central directory, such as with the Napster system. In that case, one has to focus on individual users, in contrast to the Napster case. The problem then arises that an enormous number of people are involved. Moreover, investigations have to intrude private lives. Users on the Internet are relatively anonymous. They are often located abroad. Investigations – if at all advisable in private life – are thus difficult or even impossible to carry out.

---

[58] Hof A'dam, 28 maart 2002, *Mediaforum* 2002-5, p. 190-191, m.nt. KJK.
[59] HR 19 december 2003, *AMI* 2004/1, p. 9-25, m.nt. PBH.

### 6.6.2 *Careful behaviour of software providers*

A question, not yet sufficiently addressed, is whether distributing such file sharing software without certain mechanisms for corrections satisfies the requirementsof care as in careful behaviour in society. To establish criteria for determining liability of internet providers some authors have tried to make a link with the criteria for personal injury.[60] Among these are the following criteria: the probability that others do not pay necessary attention or employ necessary care to prevent the accident; the possibility that because of that an accident will occur; the seriousness of the consequences of the accident; the difficulties that will be encountered when taking precautions. As noted by Verkade in his conclusion before the ruling of the Supreme Court in the KaZaA-case these criteria are drafted for personal injury.[61] Verkade observes that it is not obvious to use these criteria to determine the (possible) liability of KaZaA. A better connection could possibly be found in the ruling of the Supreme Court in *The State* v. *Bonda*[62] and *Buma* v. *De Vries.*[63]

In the case *Staat* v. *Bonda* the Hoge Raad (Supreme Court) had to decide whether the offering and delivery of objects and services that were suitable for infringement of intellectual property rights, but that were also suitable for – more or less – other non-infringing uses, was lawful. In *Buma* v. *De Vries* the Hoge Raad had decide on the question of whether the owner of a café where copyrighted music was performed without authorization could be held liable on the ground of wrongful conduct in not satisfying the requirements of care. Because the owner had control over the place and his staff (including the musicians) and because Buma – more than once – had drawn attention to the infringements it was his duty to ascertain that the music performed was not part of the Buma repetoire.

Possible criteria:
- Is it easy to foresee that people will use the software for infringing use?
- Is the software suitable for non-infringing use, or can it only be used for infringing use?
- So if the software is suitable for non-infringing use, what value does society attribute to that use?
- What is the actual use of the software? How many people are engaged in infringing use, in relation to the amount of people who are engaged in other non-infringing uses?

---

[60] K.J. Koelman, *Mediaforum*, 1998, p. 206-208.
[61] HR 19 december 2003, *AMI* 2004/1, p. 9-25, m.nt. PBH.
[62] HR 18 februari 1949, *NJ* 1949, 357 (Staat/Bonda I).
[63] HR 8 maart 1957, *NJ* 1957, 271 (Buma/De Vries).

## 7. Digital rights management

### 7.1 Introduction

We now focus on digital rights management, often considered as the panacea for the questions and problems that are raised by file sharing. Digital rights management can be described as the use of technologies to monitor the use of digital content, and, if necessary, to impose conditions on that use.[64] Digital rights management should ensure that right holders receive compensation for the use of creative materials. In section 7.2, we discuss the way in which digital rights management is regulated legally. In section 7.3 we discuss new questions and problems arising from (possibly grand scale) implementation of digital rights management techniques.

### 7.2 The legal framework for digital rights management

Articles 6 and 7 of Directive 2001/29/EC contain rules that protect both effective technological measures and information concerning digital rights management. Following Article 6, third paragraph, of the Directive, 'technical measures' means

> 'any technology, device or component that, in the normal course of its operation, is designed to prevent or restrict acts, in respect of works or other subject-matter, which are not authorised by the right holder of any copyright or any right related to copyright as provided for by law or the sui generis right provided for in Chapter III of Directive 96/9/EC. Technological measures shall be deemed ' effective' where the use of a protected work or other subject-matter is controlled by the right holders through application of an access control or protection process, such as encryption, scrambling or other transformation of the work or other subject-matter or a copy control mechanism, which achieves the protection objective.'

By imposing such quality demands, the hardware and content industries are *de facto* depending on each other's co-operation. They have to reach an agreement on the measures to be imposed. If technical measures do not meet the applicable requirements, the producer of equipment in which content is used would risk liability

---

[64] 'The use of technology to describe and identify digital content protected by intellectual property rights, and which enforces usage rules set by right holders or prescribed by law for digital content.'
'DRM amounts to an encryption scheme with a built-in e-business cash register. Content is encoded, and to get the key a user needs to do something – maybe paying money, maybe providing an e-mail address. DRM providers deliver the protection tools; it is up to the content owners to set the conditions.'
'Digital Rights Management (DRM) is the secure exchange of intellectual property, such as copyright protected music or text, in ditgital form over the Internet or other electronic media, such as CD's and removable disks. DRM allows content owners to distribute digital products quickly, safely and securely to authorized recipients.'

if the protection would not be recognised. Also, a technical protection could hinder the normal use of hardware. For that reason, the directive contains provisions such as playability and no mandate clauses. These clauses have a competition law nature, and are thus less relevant for the problems in this report.

On the basis of Article 6, first paragraph, the Member States have to

> 'provide adequate legal protection against the circumvention of any effective technological measures, which the person concerned carries out in the knowledge, or with reasonable grounds to know, that he or she is pursuing that objective.'

On the basis of Article 6, second paragraph, the Member States have to

> 'provide adequate legal protection against the manufacture, import, distribution, sale, rental, advertisement for sale or rental, or possession for commercial purposes of devices, products or components or the provision of services [...]'

which enable circumvention and are primarily designed for that purpose. After the implementation of Directive 2001/29/EC the Copyright Act 1912 now states that the circumvention of technical measures and facilitating that circumvention constitute wrongful conduct (torts).[65] The danger that may arise from effective technological measures is that limitations become meaningless. At least, this is valid for so-called bulk deliverances. In the case of interactive on-line on-demand contracts, agreements can be adjusted to specific demands, so that the problem of meaningless limitations is less likely to occur. On the basis of Article 6, fourth paragraph, fourth part, the regulation below does not apply to the latter situation.

The Member States have to encourage right holders to establish certain measures voluntarily, through which the limitations and restrictions will not become meaningless. If such measures are not taken voluntarily by the right holders, the Member States have to establish appropriate measures regarding the right holders if certain limitations and restrictions are endangered, namely those that are specifically mentioned but can be implemented optionally. These limitations and restrictions concern photocopying, copying by libraries, copying by social institutions, copying for educational purposes, for people with disabilities, and for judicial and administrative procedures – all of these because of the underlying general interest. If the right holders do not take measures voluntarily, the Member States are allowed to establish measures to provide for the optional exception for private copying (Article 6, fourth paragraph, third part).

---

[65] Article 29a, second and third paragraph, of the Copyright Act 1912. See also Article 19, first and second paragraph of the Neighbouring Rights Act and Article 5a of the Database Act.

The question emerges what appropriate measures are. An appropriate measure could be that the right holder is obliged always to distribute a paper copy of an electronic work. A different appropriate measure is that right holders are obliged to make available a key to users that enables them to make use of a limitation or restriction. A different question that comes up is who should take appropriate measures if right holders do not voluntarily do so themselves.

Member States can take appropriate measures through judicial or legislative powers. The directive does not provide answers to the questions above. Member States have a considerable discretionary power in this matter. The Dutch proposal empowers the Minister of Justice to provide for additional rules by means of secondary legislation if necessary.

## 7.3 **New questions and problems**

The concept of grand-scale implementation of digital right management techniques forces us – again – to contemplate our ideas on copyright. New questions arise: how can we preserve the copyright balance (the balance between the interests of right holders and users) in an environment dominated by digital right management techniques? Can we simply transpose the rights of users to a digital environment, or do we need to recalibrate it as a whole taking into account all aspects? What may future consumers expect from a 'purchased' work protected by technical measures? What are 'effective' technical measures? Is compulsory collective management to be regarded as an obstacle to the development of a market based on digital right management systems? Do we want such a market? Do we need (the possibility of) government intervention to safeguard the interests of consumers? How does this relate to competition law?

### 7.3.1 *Position of 'open information' initiatives*

Digital rights management schemes may further persuade individuals to bring their creative products in 'open' distribution environments, using their intellectial property rights to ensure their work remains available and accessible. The example is the open source industry in computer software (*e.g.,* around Linux, Java and Apache) – an example that may be followed widely, in scientific publication as in music. Viable business models to support open source initiatives outside the software industry have yet to emerge. Will open source be able to strike a new balance, in the face of digital rights management?

### 7.3.2 *Accountability, individual normative choice*

Digital rights management provides an architecture, protecting the public from normative choice. Everything a digital rights management system allows you to do, is

considered to be allowed normatively. And everything you cannot do, you may not do. Accountability is transferred to a technical system. What if we get used to such a form of life?

## 8. Summary

File sharing can be used to exchange materials that are protected by copyright and neighbouring rights. In this report, we investigated if, and if so, to what extent, the questions that are invoked by file sharing can be answered satisfactorily on the basis of current and future Dutch copyright and neighbouring rights law. We can determine whether a relevant exploitation act is concerned following from copyright and neighbouring rights. On the basis of Dutch law, the right of multiplication (comprising the right of reproduction) and the right of making public (comprising the right of making available to the public) are relevant. Concerning neighbouring rights, especially the right of reproduction and the right of making available to the public are important. Based on the existing legal framework, it is possible to determine whether a limitation applies to file sharing. The limitation concerning private copying does not extend to the point where it withdraws file sharing from exploitation rights. However, the matter does not end there. The exercise and enforcement of copyright law and neighbouring rights in a digital environment give rise to major problems. We do not exaggerate if we state that the answers to the central research questions in fact invoke many new questions. A large number of those new questions are identified in this report. These questions not only concern intellectual property law, but also liability, competition law and privacy protection, because we find ourselves on the intersection between new technologies and new business models. Digital rights management can constitute a solution for the problems and questions that are raised by file sharing. A totally new playing field arises from this. For the law, the major challenge is to maintain a balance between rights and limitations. We have to guard against a new divide in society, between the information 'haves' and the information 'have nots'.

## 9. Postscript

As this Part has been consolidated based on information available in 2004, we add a Postscript in order to enumerate the most important developments up to September 2006:

(1) The Dutch legislation transposing Directive 2001/29/EC (Copyright in the Information Society) entered into force on the first of September 2004. Some minor adjustments have subsequently been made to the private copy exception in the course

of the transposition of Directive 2001/84/EC (Resale Right). That did not lead to fundamental changes, however.

(2) France and Spain were the last EU Member States to transpose Directive 2001/29/EC mid 2006. The ratification of the WIPO Internet Treaties by the Community and its Member States will follow shortly (probably at the beginning of 2007).

(3) The European Commission did not publish a proposal for a directive concerning collective management. Instead the Commission opted for a recommendation addressing on-line music services. The recommendation provides for different models for Community-wide licensing of music in an on-line environment; some of which the Commissions explicitly does and does not favour. Furthermore, the recommendation pays attention to the rules that ought to be in place in the relation between right holders and collecting societies, on the one hand, and between collecting societies and users of music, on the other.

(4) The European Community is currently working on a recommendation concerning the necessary reform of private copying remuneration schemes. The Commission observed that member states have adopted a different interpretation, as allowed under Directive 2001/29/EC, concerning the private copy exception and fair compensation. There is no level playing field, which causes problems for the proper functioning of the internal market and as a direct result also for innovation. The Commission noted, furthermore, that remuneration schemes in the Member States are flourishing even though effective technological protection measures are more widespread in use. That is anomalous, since levies were supposed to fade away. The recommendation will probably provide for tariff-setting criteria which Member States and relevant stakeholders have to take into account. The Commission is expected to give clear guidance as to whether the actual application or the mere availability of technological protection measures is indicative for the fading out of levies. The recommendation is due by the end of 2006.

(5) The Dutch legislation transposing the enforcement directive is currently pending before the second chamber of parliament. A directive on criminal sanctions is being negotiated in Brussels.

(6) The most noteworthy development in the United States is the ruling of the Supreme Court in the Grokster case where it was concluded that pure peer-to-peer software providers may be considered to infringe *by inducement* if they promote infringing use. Two key quotes from the ruling:

> ‘For the same reasons that Sony took the staple-article doctrine of patent law as a model for its copyright safe-harbor rule, the inducement rule, too, is a sensible one for

> copyright. We adopt it here, holding that one who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties.'

And:

> 'We are, of course, mindful of the need to keep from trenching on regular commerce or discouraging the development of technologies with lawful and unlawful potential. Accordingly, just as Sony did not find intentional inducement despite the knowledge of the VCR manufacturer that its device could be used to infringe, ... mere knowledge of infringing potential or of actual infringing uses would not be enough here to subject a distributor to liability. Nor would ordinary acts incident to product distribution, such as offering customers technical support or product updates, support liability in themselves. The inducement rule, instead, premises liability on purposeful, culpable expression and conduct, and thus does nothing to compromise legitimate commerce or discourage innovation having a lawful purpose.'

# Part V
# UNDERSTANDING THE WAR

# Part V
# UNDERSTANDING THE WAR

**Aernout Schmidt***

## 1. Introduction

The war on music-file sharing shows two contesting sides. On the one hand we see an industry that keeps suing in defense of its copyrights – already for several years now stooping to the level where its legal arrows are aimed at its own customers, finally even invoking criminal law.[1] On the other hand, we see a 'community' employ peer-to-peer communication services that become more and more intractable to authorities and that consequently become attractive for criminal use. And, as a phenomenon to show the war's persistence: *legitimate* peer-to-peer music-file distribution services where users share their personal collections against remuneration have not emerged – anywhere – not even 6 years after the massive and rather successful economic feasibility test as provided by the original Napster service in 2000.

In this, our closing analysis, I follow the gut-feeling impulse that in order to identify reasonable 'peace processes' for the war on music-file sharing we need better methods for the integration and evaluation of (abundantly available) legal and economic theories about music-file sharing in a networked and globalizing world.

Its driving force is the assumption that combining the forceful results of different disciplinary perspectives on a conflict concerning innovation in the music industry will provide deeper knowledge about feasible conditions for better business models to emerge. Rephrasing this assumption for research purposes, my working

* Professor of Law and Computer Science at the Centre for Law in the Information Society of Leiden University (a.h.j.schmidt@law.leidenuniv.nl); I gratefully acknowledge the most helpful comments from and discussions with Laurens Mommers and especially Wilfred Dolfsma on earlier drafts. I also acknowledge the value of the input by those who attended the seminars organized by CBKE at Wroçlaw University in September 2006, where drafts of the material were discussed under sponsorship of the ECLET program.

[1] <http://www.nu.nl/news/762272/52/rss/Meer_onderzoek_naar_vermeende_internetpiraten.html> referring to a Dutch criminal lawsuit against the people, which are responsible for a web site providing links to copyrighted material, available in a sharing network service was heard on June 23, 2006.

*A.H.J. Schmidt, W. Dolfsma and W. Keuvelaar, Fighting the War on File Sharing*

hypothesis will be as follows: combining the results of different disciplinary perspectives on a conflict about innovation in the music industry *cannot* provide the articulation of feasible conditions for better business models to emerge, or, more to the point: legal, economic and IT results on the war on music-file sharing are incommensurable. The analysis will show, eventually, that the hypothesis can be falsified and that reasonable scenarios for peace may indeed be designed.

The reasoning involved is multidomain and multilevel. Consequently it is rather complex and conceptually risky: we have (for instance) to keep apart the notions that (1) incommensurability between contestants is the key issue in the war on music-file sharing and that (2) commensurability between disciplines is needed for results. I borrowed large parts from different disciplinary sources perhaps best characterized by their shared helicopter perspective. First, I summarize the results of the three mono-disciplinary analyses and argue why their combined results are underspecific (section 1). Second, I report on an ecclective and constructive effort in order to find and specify a framework for veritable multidisciplinary analysis (section 2). Third, I apply the framework to the war on music-file sharing in order to try and understand it in a multidisciplinary manner (section 3). Fourth, I provide conclusions and recommendations (section 4).

### 1.1 **Mainstream IT, economic and legal analyses**

Looking at our earlier efforts in Parts II-IV, we are able to point out several issues of importance as the results of mainstream IT, economic and legal analysis.

#### 1.1.1 *IT*

As an academic discipline, IT focuses on questions raised by the ambition to transfer task performance from human actors towards communicating IT agents or machines.

Theoretical issues concern design for computability and information representation. Here the limits to IT capabilities are studied. Important progress has been made in music-file representation (e.g., mp3, mp4) and 'computation' for storage, communication, access, and retrieval as well as for playing. In practice, the IT discipline has come up with unified methods for design and deployment that provide ample support for any business model that comes to mind in relation to music-file sharing and pacification of its conflicts. Digital Rights Management is utterly possible in hierarchical and peer-to-peer architectures alike.

The single most important perspective of IT concerns compliance with task specifications. Applied IT is an engineering discipline – less interested in the effects of its results in society at large than in its results as measured against the articulation of a principal's requirements. These requirements are external to the IT discipline. IT feels responsible for translation, not for the original text.

Thus, as shown in Part II, the IT discipline's support to both sides in the war on music-file sharing depends on who comes up with which specifications within theoretical IT capabilities. Since specifications may come from both sides, IT may support both sides. And although IT has played an important role in creating conditions for war making, its main perspective is neutral to both sides in the war as it is able to create any solution any entrepreneur in the conflict may suggest. The IT perspective allocates responsibility for economic feasibility and legal compliance to the entrepreneur. Thus, IT claims to play a servant's role, not a principal's.[2] Solutions to the war on music-file sharing have to be envisioned outside the IT discipline (which most likely will subsequently demonstrate itself to be willing to realize them). At the peer-to-peer side this has led to two types of adaptations. One type seeks secrecy (like Freenet), the other seeks support for legitimate services (like Bittorrent).[3] At the music-industry side efforts are directed towards Digital Rights Management and pay-per-play solutions. Again, as Part II has shown, all these solutions are well within standard IT capabilities. Still, none of these capabilities have been employed by the music industry in order to offer a legitimate peer-to-peer music-file sharing service with remuneration. One wonders why. Perhaps economic arguments prevent the emergence of such a service.

### 1.1.2 *Economics*

As an academic discipline, economics tends to focus on the efficiency of markets and business models, as related to production, logistics, prices and demand. Neoclassical economics, the mainstream branch, claims that individual transactions in a free market result in market-equilibrium pricing, thus gaining optimal general welfare (the invisible hand). The basic assumptions for this scheme to be viable expect humans to transact costless (in a frictionless market) and to choose transactions in accordance with their individual welfare optimum (the homo economicus). Two additional existential conditions for the market to exist and to do its thing are (i) the allocation of property rights for the commodities in the market[4] and (ii) a context where property rights can be established and will be upheld.[5]

As Ronald Coase pointed out in 1937,[6] these basic assumptions are contestable analytically and empirically. Transactions are not costless (e.g., knowledge about

---

[2] And when IT itself comes up with requirement specifications, it plays a double role: as entrepreneur *and* as service provider.

[3] Bittorrent is frequently used for open source software distribution (e.g., FreeBSD) and rumour has it, that Warner Bros. and Bittorrent have made an agreement to co-operate in June 2006.

[4] R.H. Coase, 'The Problem of Social Cost', *The Journal of Law and Economics*, October 1960, p. 1-44.

[5] This condition is a precondition for almost any market-related economic theory (see, for instance, Thomas Carothers, *Promoting the Rule of Law abroad – the problem of knowledge,* Democracy and Rule of Law Project: Rule of Law series Number 34, January 2003).

[6] R.H. Coase, 'The Nature of the Firm', *Economica*, November 1937.

availability, quality and prices has to be gained) and a crucial part of economic production transactions does not (organizationally) fit a free market, but hierarchically structured firms. An economic puzzle remains: these hierarchically structured firms may behave more efficiently than the free market. Transaction costs play an important part in pricing and organizational processes, and should consequently be internalized in economic assumptions. Coase's results have not only yielded economic interest in organizations and organizational rules (called institutions here), but also a niche branch in economics, calling itself the New Institutional Economics, has emerged from them.

As Part III shows, the mainstream economic perspective looks at analyzing commodities (e.g., digital information as a 'public good'), pricing, production, distribution[7] capabilities and business models, taking the costs of information and property transactions into account – all within the conditions provided by (externally determined) property allocation. Below, Wilfred Dolfsma's summary of Part III is cited:

> 'Economic theory has adapted itself to information as a commodity and has expressed relevant notions on what this may mean for the music industry, entering the information age. At the level of individual organizations such as firms, ways of relating to others in the industry, creative processes, relation(s) to their consumers, and the nature of their products will change. For the music industry, specifically, the uncertainty it faces in this period is not so much related to the technical issues. Legal uncertainties are of a more profound nature. In an increasingly global economy for the music industry, differences between legal systems of copyright become much more apparent to both producers as well as consumers. The conglomerates that are involved in this industry have relied heavily on this part of their firm. The way in which the market for music has developed over the last decades is crucially intertwined with the system of copyright law. Future developments in copyright law will largely determine what business models will emerge. In relation to this, the kinds of firms – such as their size, the extent of vertical integration, and the possibilities for economies of scope available in the sector – will be determined.
>
> At the moment, it is unclear what route developments will take. In this contribution I have, however, given an analysis of these changes and provided tools for understanding them. In addition, some steps have been taken that are needed to predict the business models that emerge in the music industry. Do copyrights contribute to an incentive system that makes creative individuals produce more new ideas and products? The picture is unclear. Most of the benefits due to the existence of copyrights, at least for the music industry, accrue to intermediaries such as music publishers and record companies (Dolfsma 2000). Although these intermediaries do provide a creative input and take a risk in signing a musician, it remains to be seen that a cut that is an average of 80% is fair. Particularly younger creative individuals are paid little, although they are the most creative.[8] Whether this points to an inherent need to be cre-

[7] I will refrain from using legal-technical language in this Part. 'Distribution' may thus imply 'making available to the public' in a legal sense.

[8] On this particular point, as well as on the issue of the motivation of individuals and the role of material incentives generally, see Frey (1997).

ative and express oneself or to an (irrational) expectation that one will become one of the few stars in the system cannot be determined more conclusively.

A consequence of the use of IT for the future of the music industry that is, perhaps, less likely to be considered is that of the *diversity* of music that will be on offer. It is, of course, difficult to distinguish between versions of an existing product and new products altogether. Relying on the characteristics of a product as determined by the analyst is an approach that is troublesome, as argued earlier. Even if one can only look at how consumers have perceived the product *ex post*, it is possible to make educated guesses about the diversity of music that will become available as IT is widely used. Dudley (1999) proposes an analysis in terms of transmission costs, decoding costs, and storage costs. Depending on which cost forms the bottleneck, different patterns of communication emerge. A situation where, for instance, transmission is cheap but decoding and storage are expensive is one where one party will be central – he will store and convey the message; no noise will further complicate decoding. When storage costs drop, communication can become decentralized. Internet certainly decreases the costs of transmission and storage. Decoding will also become less costly, and will depend mainly on one's ability to understand the English language. Communication will be 'distributed': there will be many local centres of knowledge, and many links between them. Since it is known that creativity is, in general, positively related to the number of communication links one has, as well as with the knowledge base one commands, it is likely that the diversity of the music becoming available in the future will increase. Imposing exclusivity by means of transporting the existent system of copyrights to the Internet, or a more powerful or strict one, would result in a situation where, ceteris paribus, less different products would become available. It is important to note the ceteris-paribus clause: it needs to be assumed that, somehow, musicians would earn a living and continue to be as creative as they would otherwise. Dolfsma & Soete (2002b) have developed this argument somewhat further.'

Considering the possibilities for organizational change in the supply chain, conclusions are drawn in the light of general welfare – suggesting that the position as currently defended by the music industry may not be optimal (or efficient). If so, and if the sub-optimal condition remains, the market for music-file sharing shows what economists call market failure. Path dependence,[9] as shown by the music industry towards the possibilities of innovation, may be at work here.

From its basic perspective, economics does not take sides: it analyzes for efficiency. The music industry's current business models do not seem efficient because they do not take advantage of the network effects and the new organizational possibilities as provided by peer-to-peer distribution. The problem here seems to reside in established contractual practices, at least partially external to economics and apparently persistent through changing and innovative conditions relevant to the music industry.

[9] See Douglass C. North, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press 1990, p. 93-97.

The other side, the peer-to-peer side, is not economically acceptable either, because it does not uphold property rights. And the capability to uphold property rights is an existential, external condition for the free market to work. Consequently, the peer-to-peer side in the war on music-file sharing confuses market analysis and is considered dangerous to the free market economy.

However, in a less rigid interpretation, mass avoidance of the industry's distribution channels can be understood as unhappy-customer behaviour. If this type of behaviour were considered to play its part in normal market conditions, economic expectations would point out that it is only a matter of time before the industry readjusts itself towards a new, better-accepted equilibrium.

Somehow, however, the absolute character of intellectual property rights becomes inherited through the supply chain by contract, allowing right holders to monopolize customer choice where it concerns distribution channels and domains. And somehow, it seems, the additional capabilities of Digital Rights Management will support the monopoly to change character, from a simple monopoly towards a more and more price-discriminatory one.[10] The administrative character of Digital Rights Management does support information harvesting for price discrimination. Current discussions on Digital Rights Management in the music industry claim that the customer will be offered new opportunities and choices. For instance, to discriminate between the right to personally listen to music files and the right for his family to also listens to these files. I expect that these new possibilities will be recognized as new restrictions (compared with more traditional business models) rather than new choices for the customer. And I do not expect that these new possibilities will endear the industry to its customers. And neither do I expect that they will induce customers to stop sharing music files.

These expectations are partly confirmed by the results from the recent boom in multidisciplinary IT economics research.[11] It shows that music-file sharing may have negative effects (also: not), although less devastating as propagated by the music industry. And when DVDs are taken into account (these are left out of the literature referred to), the media container sales shows continuous, healthy growth.[12]

---

[10] A. Odlyzko, 'Privacy, economics, and price discrimination on the Internet', in *Fifth International Conference on Electronic Commerce*, ACM 2003 p. 355-366.

[11] See for instance: Felix Oberholzer-Gee and Koleman Strumpf 2005, *The Effect of File Sharing on Record Sales: An Empirical Analysis:* <http://www.unc.edu/~cigar/papers/FileSharing_June2005_final.pdf> and *The Journal of Law & Economics*, Vol. XLIX(1), April 2006, Covering the symposium on piracy and file sharing with contributions by Stan L. Liebowitz, *File Sharing, Creative Destruction or Justy Plain Destruction?,* p. 1-28; Rafel Rob and Joel Waldfogel, *Piracy on the high C's: Music downloading, Sales Displacement, and Social Welfare in a Sample of College Students*, p. 29-62; Allessandro Zentner, *Measuring the effect of file-sharing on music purchases*, p. 63-90; Sudip Bhattacharjee, Ram d. Gopal, Kaveepan Lertwachara and James R. Marsden, *Impact of Legal Threats on Online Music Sharing Activity: An Analysis of Music Industry Legal Actions*, p. 91-114.

[12] A historical overview of cumulative LP, CD, MCassette, DVDmusic and DVDvideo sales (presented by G. Wirtz of Philips at an informal conference on the future of digital rights management in

The conclusion is inevitable: inefficiencies and externalities are at both sides related to legal issues. So: if these inefficiencies and externalities do fuel the war on music-file sharing it may be worthwhile employing mainstream legal research to further identify the conditions.

### 1.1.3 *The law*

What lines of legal reasoning are valid has been researched and commented upon extensively. It is not my aim to enter into the quagmire of legal-academic dispute in this area of jurisprudence. For making my point here I need some practical characteristics to break down the field heuristically, so that I can make use of a generalized legal approach. I use two dimensions for this, irreverently and mercilessly[13] borrowed from the work of the constitutional law scholar Bobbitt[14] and the psychologist Fodor[15] respectively. Bobbitt analyzed the types of arguments used during the history of constitutional review in the USA and comes up with a limitative[16] list: historical (addressing the intentions of the rule makers), textual (addressing the present sense of the rule wording), doctrinal (addressing the principles and relations derived from precedent), prudential (self-consciously addressing the role and position of the party or institution that is ruling), structural (addressing the implicit meaning from the existence and role of legal institutions) and ethical (arguments addressing the *ethos* of a[17] jurisdiction or *politeia*). Fodor is interested in natural and in artificial intelligence and in how human knowledge representation relates to knowledge representation in IT. He finds the distinctions of abstraction layers as a basic similarity and considers the positioning of abstraction layers relative to reasoning of fundamental importance. Imposing Fodor's abstraction layers upon legal argument I suggest six layers: common beliefs (like in a free market, the ten commandments, being responsible for one's acts), principles (like in human rights, in the constitution), rules (like in legislation, for instance democratically formulating exceptions to human rights), policies (like in administrative plans, interchange agreements and common-law precedent), individual judgments (like in civil-law precedent, in transactions) and facts (making up the facts of a case).

---

The Hague, May 10th 2006) shows limited life cycles for each and every physical carrier and also shows that cumulative sales grow healthily and steadily. In the period from 1982 until 2005 by about 700% (with no dip after 2000). Reported sources: IFPI, IVF, DEG, U&A, Philips.

[13] Irreverently, because put to use in a very blunt, practical and generalizing way that does not and cannot respect the finesses of their fine work.

[14] Philip Bobbitt, *Constitutional Fate – theory of the constitution*, Oxford University Press 1982.

[15] J.A. Fodor, *Psychosemantics*, MIT press 1987.

[16] Despite his claim not to be exhaustive on p. 8, the exercise proposed on pp. 94 and 95 suggests the opposite (Bobbitt, *o.c.*)

[17] Here I generalize Bobbitt's typology – he mentions the ethos of *Amercan* polity.

| | Historical | Textual | Doctrinal | Prudential | Structural | Ethical |
|---|---|---|---|---|---|---|
| Beliefs | | | | | | |
| Principles | | | | | | |
| Rules | | | | | | |
| Policies | | | | | | |
| Judgments | | | | | | |
| Facts | | | | | | |

Table V-1 – Abstraction levels and argument types

Types of argument can be related to levels of abstraction in the framework as presented in Table V-1. The framework may help to analyze legal reasoning and to present a heuristic distinction between valid and invalid legal reasoning in the different contexts. First of all, the different levels of abstraction represent different sources for legal arguments. In mainstream legal analysis, only facts, judgments, policies, rules and principles are valid sources for argument, and only that legal reasoning is valid that brings facts within the constraints of valid judgments, that are within the constraints of valid policies, that are within the constraints of valid rules, that are within the constraints of valid principles. In normal circumstances, common beliefs do not provide valid sources for legal argument and neither are ethical arguments admissible – anyway, within a stable *politeia*, arguments at the common-belief level and arguments of the ethical type are most often coherent with valid legal reasoning.

If not – when there are no applicable sources or interpretations or when there is no stable *politeia* – then there is a case to be made for a shift in perspectives and for jurisprudential reasoning to come to the fore. Valid jurisprudential reasoning accepts arguments about the quality of our legal systems and thus allows, if necessary, ethical arguments at all levels and allows, if necessary, common beliefs to provide a closure for all argument types.

The second perspective in legal academics (jurisprudence) focuses on the quality of legal systems as such. Its results[18] yield (the discussion of) existential conditions for legal-system quality and may as such be seen as recommendations to the legal system's polity. Here, the Rule of Law and its moralities are central issues. In this perspective, the war on music-file sharing is a sign of eroding quality, where additional analysis may be in order for finding out whether stricter enforcement of existing law will prove more beneficial than adapting the law. A practical approach towards an operational conceptualization of legal-system morality can be realized by instantiating the *rule of law* concept with Fuller's[19] list, supplemented by two

[18] E.g., Lon L. Fuller, *The Morality of Law, revised edition*, Yale University Press 1969, John Rawls, *The Law of Peoples,* Harvard University Press 1999 and Brian Z. Tamanaha, *On the Rule of Law*, Cambridge University Press 2004.

[19] See Lon Fuller, *The Morality of Law* (1967 ed.) and Brian Tamanaha, *On the Rule of Law* (2004).

additional requirements, one concerning system-role organization[20] and one concerning accountability for reciprocity in asymmetric relationships, as explained in Part II.[21] The resulting list of ten formal[22] conditions supports the distinction of normative systems in four types: (1) formal law systems (governmental, with the rule of law), (2) informal law systems (non-governmental, with the rule of law), (3) formal non-law systems (governmental, without the rule of law) and (4) informal non-law systems (non-governmental, without the rule of law). This distinction reduces one issue of the Fuller-Hart debate into a semantic one,[23] but in an interesting way. In the 1960s, Hart deemed it a jurisprudential *perversity* to consider informal law (say: club law) a legal system. In the 21st century, however, developments in globalization support our serious need for conceptualizations of all four types of normative systems because they become more and more important to society in practice and thus need serious jurisprudential attention.

Thus, as an academic discipline, the law fosters two very distinct perspectives. The mainstream perspective considers the local legal system with its rules and organizations as intellectual tools to support normative interpretations[24] for the solution of problematic situations in individual cases. Material law is king here. This is the perspective adopted in Part IV.[25] Its results have been summarized as follows.

> 'File sharing can be used to exchange materials that are protected by copyright and neighbouring rights. In Part IV, we investigated if, and if so, to what extent, the questions that are invoked by file sharing can be answered satisfactorily on the basis of current and future Dutch copyright and neighbouring rights law. Copyright laws have been promulgated in order to provide the legal instruments to creative agents so they can profit from their work. The assumption is that free riding erodes creative motivation.
>
> We can determine whether a relevant exploitation act is concerned, following from copyright and neighbouring rights. In Dutch law, the right of multiplication (comprising the right of reproduction) and the right of making public (comprising the right

---

[20] The requirement of adequate system-role organization (separation of powers à la Montesquieu) is, after all, a cornerstone of Western jurisprudence. It is consequently an important concept in (formal) comparative analysis.

[21] Reciprocity is considered fundamental in virtually every (Western) political and socio-economical theory, including Hobbes, Hume, Locke, Smith, Fuller, Hayek, Rawls, Coase, Searle and Pessers.

[22] That is, these conditions can all be formulated in an impartially observable manner.

[23] By dropping the term 'legal system' and adopting the term 'law system'. Formal normative systems equal Hart's legal systems. Hart's conceptualization does not accommodate a distinction between law systems and non-law systems, as it does not accommodate a distinction between formal and informal normative systems. When applied consequentially, Hart's conceptualization bars jurisprudential attention from informal normative systems.

[24] As, e.g., for American constitutional reasoning in Philip Bobbitt, *Constitutional Fate,* Oxford University Press 1982.

[25] I will use the jurisprudential argument later in the current Part V.

> of making available to the public) are relevant. These rights are absolute monopolies granted to the maker. They may be transferred, and are in fact often transferred by the maker to the industry. Protection against free riding has for a long time been organized as a legal monopoly as well. In 2002, the 'market' for intermediary organizations, protecting copyrights was liberated in the Netherlands. Concerning neighbouring rights, especially the right of reproduction and the right of making available to the public are important. Furthermore, the existing legal framework makes it possible to determine whether a limitation on copyright applies to file sharing. The limitation concerning private copying does not extend to the point where it withdraws file sharing from exploitation rights unconditionally.
>
> Consequently, the law is clear: whenever the right holder reserves the exploitation rights, file sharing is against the law. This is a consequence of the interpretational approach by the legal system towards Internet innovation as formulated by society: what counts as legitimate off line should count as legitimate on line.
>
> Of course, the matter does not end there. The exercise and enforcement of copyrights and neighbouring rights in a digital environment give rise to major legal and economic problems. A large number of new questions are identified in Part IV. These questions not only concern intellectual property law and intellectual property law enforcement, but also contract, liability, competition and privacy law.'

Digital Rights Management can contribute to solutions for these problems in an economically feasible way, if and when entrepreneurs in the music industry design requirements for IT-supported services that comply with legal constraints, deploy economic opportunities and convince the customers of its reasonable value. Mainstream legal analysis shows that the current mandatory law conditions leave room for moulding such efficient business models. It also shows that these business models have not emerged in practice.

So mainstream legal analysis does not provide answers to the question *why* the music industry prefers economically inefficient business models for distribution and it neither provides an answer to the question *why* mass violations of copyrights occur and continue to occur in otherwise stable legal systems. It determines the conditions for intellectual property and its exploitation, not guidelines for economic efficiency within these conditions. And it neither determines guidelines for business modelling that proves acceptable to a large part of the music industry's customers. And such is exactly what the relationship between the law and the market is meant to be in any open economy.

Jurisprudential reasoning is something else. It does look at legal-system quality, and at the impact of mainstream reasoning as a relevant factor. As such, politico-legal discourse is of a jurisprudential nature. I will employ this type of reasoning later on.

### 1.1.4 *Preliminary conclusions*

Our analyses from the three mainstream perspectives do not easily translate into commensurable results. One of the reasons may be that if multidisciplinary work is attempted at all, it tends to boil down to either 'imperialistic' or to exogenous models. The Law & Economics movement will internalize legal institutions into their economic models, yielding results on their efficiency. The other side – legal results on business institutions – is traditionally kept external to these models (as sketched above). The IT movement will internalize legal and economic practices into their IT services, either yielding results on the automation capabilities of legal tasks or on the legitimacy of IT services. So IT capability internalizes both legal and economic features as required by the entrepreneur. Economic efficiency and legitimacy may reflect on each other. But how IT capability, economic efficiency and legitimacy can best be combined does not follow.

What the three perspectives thus do offer is rational analysis from three different academic domains, describing the three value types (capabilities, efficiencies and legitimacies) leading up to, and sustaining the conditions for the war on music-file sharing to emerge and to continue. Looking at the battlefield again, now at least two paths that may lead out of the deadlock present themselves.

One approach is by designing IT-based business models that better support incentives for *de facto* customer compliance, at least providing better services than current peer-to-peer sharing. This is a direction where legal support for compliant customer behaviour may be efficient to realize. Currently, the music industry shows little interest in choosing this path.

The other approach will boast forceful repression, furthering effective IT-based enforcement of copyright compliance, without upgrading the level of service to something comparable with the service level of peer-to-peer, and thus opening the risk of either clogging up our legal system with mass private and criminal lawsuits, or bullying the industry's customers into accepting services at a level considered unacceptable by comparison. If this were to occur (and everything points in the direction that this path has been chosen), it may result in parts of the customer base going 'underground'. It may ultimately even become necessary to remodel parts of the legal context, where copyright, competition law and privacy law meet – again and again – until the anomaly of an industry set *against* its customers is brought to an end.

From the combined IT, economics and law approaches I conclude that, although legal, economic and IT-related conditions allow for peace, there is a tendency for the war on file sharing to develop further and to keep irritating. The use of digital rights management applications and the selection of exploitation models are to a large extent outside mandatory law and thus open to the invisible handshake of private law with the market. By fostering restrictive business models in the information society, the music industry opens itself up to resistance from the consumer

community. A variety of reasons are offered, from monopoly abuse via disproportionate pricing to privacy and information freedom threats.

The Internet has become an almost universal information service, of incredible importance to many individuals. Not only the Napster and Bittorrent services are examples of (peer-to-peer) file sharing, Google and Yahoo are too, as well as blogs and RSS feeds. If the current strict copyright-enforcement approach to music-file sharing is to become applicable to the whole of the Internet, we will need a better and less controversial context for copyright processing. IT, economics and jurisprudence will have to supply models for these conditions. Unfortunately, they have not succeeded so far.

What has becomne clear is this: current IT and business modelling capabilities, as well as mandatory legal conditions all leave possibilities for war, as well as for pacification, wide open. Current practice (as of 2006) does not. What has become clear as well is that mainstream approaches in different applicable disciplines are useful, but not sufficient. We need better integration of legal, economic and IT results than can be reached through bilateral combinations.

## 2. Framing for Multidisciplinary Analysis

In this section, I try to develop a framework that will support structural understanding of the regularities in behaviour as are shown in the war on music-file sharing and that will concurrently support the combination of input by different disciplines. It provides an exposition of the method that will be used in the final sections.

As Ulen has pointed out in his convincing essay, the ambition for an international paradigm in legal research is something to be worked on. He is not convinced that where the medical and economic research communities do succeed in compiling assumptions, models and methods into coherent and internationally comprehensible bodies of knowledge, the law research community cannot. How is it, that if a medical researcher finds a cure for prostate cancer in Moldova, it will be understood and be effective all over the world? How is it that if an economics researcher finds an effective method to internalize transaction costs in his model for optimal firm size in Moldova, it will be understood and be effective all over the world? And how is it that if a law researcher 'in Moldova were to write about a change in contract law that the courts in that country may have effected … it is highly unlikely that the piece is of interest to students of law in other countries?' Because: … '[T]here is no accepted theory of law that applies to every legal system and to which legal scholars in every country can appeal in explaining the particular institutions or rules in their own systems.'[26]

[26] Thomas S. Ulen, 'A Nobel Prize in Legal Science: Theory, Empirical Work, and the Scientific Method in Legal Work', *University of Illinois Law Review* 2002, p. 875-920.

I do consider Ulen's questions and answers to be of great urgency to academic legal research, although I think he is only partly right. It is true, that mainstream legal research is mainly occupied with case-related interpretation of local rules. In itself, I can see no problem there. After all (to employ an analogy), the most interesting anthropological research results concern local knowledge.[27] What legal science seems to lack, however, is a paradigm of generic legal assumptions, models and methods that can be used for the presentation of the results in an internationally understood conceptual framework. Nevertheless, there are serious candidates for such a framework. Local interpretations are eventually linked to high-level legal principles and beliefs that have gained international stature.[28] Legal research results concerning principles and beliefs will be understood internationally, especially when these are employed as normative criteria to validate legal practice. And these results (for instance to be found in monographs on the separation of powers, the rule of law, the morality of law, the system of law, law and truth, the law of peoples) are thus candidates for the legal research paradigm.[29] Somehow, however, mainstream legal research has forgotten all about that and has ousted jurisprudence (that is: the normative analysis of normative systems) towards becoming a niche branch[30] of legal research.[31, 32]

Consequently, I do not consider the non-existence of a legal research paradigm to be a valid objection to legal science. It may not be very popular, but it does exist. What I do find problematic for our subject, however, is that the paradigms of IT, economics and law need to be commensurate in the analysis of the war on music-file sharing. What I need is a paradigm, or rather: a framework[33] for multidisciplinary analysis. As mentioned before, the paradigm of the law and economics movement does not qualify in its current approach, where it does not tend to combine jurisprudential and economic results, but to reduce mainstream legal results into objects for economic analysis.

---

[27] E.g., Clifford Geertz, *Local Knowledge*, Basic Books 1983.

[28] See for instance the Bobbitt-Fodor framework for legal interpretation presented earlier.

[29] Charles Montesquieu, *De l'esprit des lois*: XI, 6: *De la constitution d'Angleterre*, <http://www.bacfrancais.com/bac_francais/96-montesquieu-de-la-constitution-d-angleterre.php>; Brina Z. Tamanaha, *On the Rule of Law*, Cambridge University Press 2004; Lon L. Fuller, *The Morality of Law*, Yale University Press 1969 ed.; H.L.A. Hart, *The Concept of Law*, Oxford University Press 1961; Dennis Patterson, *Law & Truth*, Oxford University Press 1996; John Rawls, *The Law of Peoples*, Harvard University Press 1999.

[30] Mainly practiced in Public International Law.

[31] I do not see the seemingly perennial controversy between legal positivist and natural law perspectives as a serious problem: the results of both perspectives are most often materially compatible.

[32] Somewhat off topic: I rather expect economic motivation to be at work here. Legal practice seldom sees any use for jurisprudential knowledge in local interpretation of individual cases.

[33] A paradigm refers to the set of assumptions, models and methods that serves as common, almost canonic knowledge in a discipline, accepted by most of its main researchers. As far as I am aware, neither an interdisciplinary discipline nor an interdisciplinary paradigm exists.

Such a framework has to support the rational analysis of (seemingly) irrational behaviour. Our mainstream analyses did conclude that no rational arguments exist that prevent the pacification of the war on music-file sharing. And a basic economic assumption (that under these circumstances the invisible hand will yield this pacification) does not seem to work. I will look at selected historical and anthropological work to sort this out.

Such a framework also has to support the articulation of the paradigmatic aspects as well as the local research results of all three disciplines involved. Consequently, its function for multidisciplinary analysis is very much comparable to the function of a data model for an IT service as it is meant to work as an explicit collection of concepts, defining and limiting the domain of discourse. As acknowledged below, in New Institutional economics much of the required work has been prepared.

The reasoning in this section is ecclectic and follows this path in its ransoming of different disciplines. First, I turn to historic strategic studies for inspiration on war and peace characteristics and their possible analogous relevance. Then I look at some anthropological insights concerning the meaning of culturally epistemic anomalies as reasons for conflicts and the strategies available to domesticate them. In order to try and translate the conceptualizations involved towards a framework for understanding, I have to elaborate on concepts like 'culture', 'domain', 'jurisdiction', 'law system', 'market', 'organization' and 'belief.' These prove to play key roles in the framework as it relates generalities in social behaviour to 'institutions' – thus finding a connection with a specific form of institutional analysis as developed by Greif (2006). In order to prevent too much abstraction, I will use material on the war on music-file sharing for illustration while the framework is thus constructed. Some of the material will reappear in the later sections wherein the framework is employed to analyze the war.

## 2.1 **War**

I have rather consistently used the 'war' concept while referring to the public contest on peer-to-peer music-file sharing. I explained why in Part I: rhetoric comparable to war rhetoric is used, arms are used to inflict harm and rational arguments prove ineffective. Still, 'war' is a concept most often used to denote armed conflict between sovereign states, while 'civil war' is used for armed conflict within a state. Consequently, a central issue in wars is *jurisdiction*. If we accept that wars can rage between and within non-state jurisdictions also, the 'jurisdiction' concept becomes useful for an analogous analysis of 'wars' between and within institutions.

John Logie agrees, when analyzing the peer-to-peer war rhetoric as analogous to cold war rhetoric:

> 'While it is easy to understand how copyright holders would view peer-to-peer file transfers as a kind of attack, the rhetorical turn toward the discourse of military conflict has radiated throughout the debate.' [34]

Logie employs the analogy for classical rhetoric analysis and concludes that the war-rhetorical state of play shows the debate involved to be stuck in a phase where negotiations for peace are not yet feasible.[35]

I will give a few additional quotes, most of them stemming from the Logie article to illustrate the kind of (pseudo?) war that is being fought and the kind of rhetoric employed:

> 'Skirmishes between the record industry (and industry-supporting performers) and file-traders are increasingly common, and some of these battles have the jittery energy of the spy culture celebrated in the wake of the Cuban Missile Crisis. In a recent example, Madonna, fresh from having recorded the theme for the latest instalment in the James Bond series, completed an album entitled 'American Life' to surround the Bond theme (listed on the album as ''Die Another Day' from the MGM motion picture 'Die Another Day''). In coordination with the Warner Music Group, Madonna recorded a profane challenge to downloaders (she snarls 'what the fuck do you think you're doing?') which was then disguised as leaked tracks from the 'American Life' album, and uploaded onto the major file-transfer systems that rose up in Napster's wake (e.g. KaZaA, Limewire). By flooding these networks with bogus files, Warner and Madonna hoped to at least slow, and perhaps impede altogether the traffic in 'American Life' downloads. Shortly after the bogus files were uploaded, a hacker cracked Madonna's site and posted a parodic response ('This is what the fuck I think I'm doing') followed by five genuine music files from 'American Life'. In addition to the hack, the Madonna soundclip has become the focus of 'The Madonna Remix Project' with dozens of downloaders preparing musical compositions featuring the snippet, usually mixed in with fierce and/or hilarious attacks on Madonna and Warner Music Group.' [36]

> 'We're fighting our own terrorist war,' … 'the great moat that protects us, and it is only temporary, is lack of broadband access.'[37]

> 'The industry will take whatever steps it needs to protect itself and protect its revenue streams. It will not lose that revenue stream, no matter what. ... We will develop technology that transcends the individual user. We will firewall Napster at its source — we

---

[34] John Logie, 'A Copyright Cold War? The Polarized Rhetoric of the Peer-to-Peer Debates', *First Monday,* 8 (2003).

[35] John Logie, *o.c.*

[36] Ibid.

[37] Jack Valenti, President of the Motion Picture Association of America (MPAA) as quoted by Amy Harmon, 2002. 'Black Hawk Download: Pirated Videos Thrive Online', *New York Times* (17 January).

will block it at your cable company, we will block it at your phone company, we will block it at your ISP. We will firewall it at your PC.'[38]

~

So the industry will take whatever step it needs to protect itself, so it claimed in 2001. On May 23rd, 2006, ZDnet copied a story from Reuters, stating that 'German police have filed *criminal* charges against more than 2,000 people accused of using the *eDonkey* file-sharing network to share copyrighted music illegally, the recording industry's trade group said Tuesday.'[39] Apparently, the industry sees fit to try and upgrade their defences, changing from the civil to the criminal law domain and directing their litigation efforts at individual sharers in 2006. Apparently the war is not yet over. And if we are formalistic up to the point where we want to confine our definition of the 'war' concept to denote armed conflict between or within *states*, we may accept the war on music-file sharing to be at least a pseudo war between non-state entities.

### 2.1.1 *War and peace as a multilevel affair*

Now if the contesting sides in the peer-to-peer scene can really be considered to be engaged in some sort of brawl that shows an essential family-likeness to war, it should not surprise us that mainstream legal or economic research do not immediately provide an answer. Wars tend to be resistant to rational argument. For our analysis of the war on music-file sharing, inspiration may be found in literature on war and peace and related issues.[40]

As Michael Howard points out in his helicopter view essay, historical analysis of war and peace shows (i) that peace does not equal the absence of war, but requires active effort and (ii) that the survival of political and military elites that organize defensive efforts is dependent on legitimacy which may be gained, '*by their success in converting their subjects to their own system of beliefs, by the cooperation of indigenous elites, and above all by their ability to maintain economic and political stability in the societies they govern*.'[41]

The quote is laden with assumptions that come natural to the discussion of war and peace: (1) a society, (2) governed by an elite, that (3) succeeds in convincing its members of their belief systems, that (4) succeeds in securing the support of local elites, shows (5) an ability to provide economic stability and finally provides (6)

---

[38] Steve Heckler, a Sony vice-President as quoted in John Alderman, 2001. *Sonic Boom: Napster, MP3, and the New Pioneers of Music.* Cambridge, Mass.: Perseus, p. 139.

[39] <http://news.zdnet.com/2100-9588_22-6075460.html>.

[40] E.g., Michael Howard, *The Invention of Peace & the Reinvention of War* (revised and extended edition), Profile Books 2002; Philip Bobbitt, *The Shield of Achilles: War, Peace and the course of history*, Knopf 2002.

[41] Ibid., p. 4.

political stability. Let us accept for the moment that history teaches us that these are the requirements for sustainable peace *within* a society. Now do these requirements tell us something about war and peace *between* societies? Yes they do, if the requirements mentioned apply to peace in a society of societies as well. Accepting these requirements suggests that peace can be built in hierarchically architected societies with military and political elites. In this frame of thought, peace requires a multi-layered structure of elites – and war between two societies can be transformed to peace by appointing a higher-level elite, capable of contesting societies' commensuration. Greif provides an interesting example from medieval history.[42]

There are two major problems with these requirements, when we try to apply them to the war on music-file sharing. First, when we talk about war, it is our intuition that we are talking about a contest between states or within a state. And it is not at all clear how we can understand the music industry or the peer-to-peer music-file sharing community to be states, or even sovereignty-claiming societies. Second, in the contest between the music industry and the peer-to-peer music-file community only the first is organized hierarchically. So it is difficult to understand how any 'peer-to-peer community elite' will be able to convince its members, by force or otherwise, of any belief system since the community does not have a hierarchical structure and, consequently, does not have an elite either. These two problems show two anomalies in the war analogy employed. I will nevertheless proceed along the lines of the war analogy, because further detail may provide patches. For guidance to these details, I will first turn to anthropological analysis where the subject touches on the logic of war-like epistemic[43] and later to historical analysis in institutional economics where the subject touches on co-operation/contestation issues in and between not 'sovereign societies' but institutions.[44] This eclectic approach is risky, for different disciplines employ different dialects and are based on different assumptions – they have different cultures, so to speak.

## 2.2 **Danger and dirt**

Conditions for a better balance between copyright protection and freedom of information within a playing field, expanding itself towards the Internet, are political

---

[42] Avner Greif, 'Self-enforcing Political Systems and Economic Growth: Late Medieval Genoa', *Analytic Narratives,* Princeton University Press 1998.

[43] Mary Douglas, *Purity and Danger,* Routledge 1962; Mary Douglas, *Natural Symbols*, Barrie & Rockliff 1970; Clifford Geertz, *Local Knowledge – Further Essays in Interpretative Anthropology*, Basic Books 1983; Mary Douglas, *Risk and Blame,* Routledge 1992.

[44] Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups*, revised edition, Harvard University Press 1971; Douglass North, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press 1990; Mancur Olson, *Power and Prosperity*, Basic Books 2000; Avner Greif, *Institutions and the Path to the Modern Economy*, Cambridge University Press 2006.

rather than rational. We want our approach to remain as analytical and objective as will prove possible. Still, we want better progress than the three applied disciplines seem to provide. Considering the multilevel logic as induced by Howard's insights on the invention of peace, we turn to a higher-level perspective. Perhaps political anthropology[45] will serve.

The work of Douglas and Wildavski on cultural theory qualifies. Their question would not, like ours, have been 'what has modern technology done to IT, economic and legal practices in order to cause so much concern?' but rather: 'what sort of people would use risks to fundamental assets like the availability of music to get other people to change their ways?'[46] Risks are unknowable. Risks are selected. Risks are political weapons. Risk selection is biased by cultural structures.[47] As we will see, risk is a two-faced concept. For one thing, it may be used to denote a more or less real danger and its probability to occur. On the other hand, it may also be used in an appeal for what might be called cultural contestation[48] in order to further a political goal. In its second disguise (examples are numerous, e.g., witches, lepers, Jews, steam, electricity, globalization, Internet, terrorists, Tutsis, Muslims, Americans) risks are used as populist-rhetoric weapons appealing to cultural insecurity and seldom represent well-founded knowledge of any sort. I now need to explain what I consider a culture first.

### 2.3 **Cultures**

What cultures do the parties in our war on music-file sharing represent? Both can be considered a culture – that is: a community, or an organized group of individuals with coherent practices, beliefs and mind-sets regarding collective interests. One of these communities – the music industry – is organized in firms, associations of firms (e.g., the RIAA and the IFPI) and compliant customers. Their shared mind-set considers unapproved music-file sharing a felony. Their shared belief is that mass unapproved music-file sharing will kill the industry. Their shared interest is to generate revenues that will prevent this and will keep the industry prosperous. The risks they employ politically are that piracy supports organized crime as well as terrorism and that it will eventually leave the world music-barren. The other community – the peer-to-peer users – is organized in networks of Internet users. Their shared mind-set considers all unprotected files on Internet to be sharable by default. Their shared belief is that internet is an incredibly useful and beneficial information source by all for all and, consequently, that sharing for free of what one gets for free

[45] See also: Paul Feyerabend, *Against Method*, NLB 1972.

[46] Both questions slightly rephrased along the lines of our current subject.

[47] Mary Douglas and Aaron Wildavski, *Risk and culture: an essay on the selection of technical and environmental dangers,* University of California Press, 1982, Mary Douglas, *Dealing with uncertainty*, Multatuli-lecture 2001, <http://www.multatuli-lezing.be>.

[48] Or even outright culture-based predation.

is a moral requirement. Their shared interest is to keep it that way. The risk they employ in political debate is that strict intellectual property rights enforcement on Internet will leave it barren. Obviously both cultures clash. And almost as obvious, the risk-weapons used do appeal to cultural insecurities that prove stronger than impartial evidence. As has been extensively researched empirically, mass music-file sharing may in some interpretations have some effect on the music industry's revenues, but these are not devastating and most probably non-existent when the combined sales of media carriers is considered.[49] And as has been shown by the open source movement for more than 15 years now, it is perfectly possible to create one or more domains for free information-file exchange that will happily compete with domains for proprietary information-file exchange if anyone would take the trouble to do so. These rational arguments are well-known and well used. Still, they do not change the war or its rhetoric in the least. As mentioned before, the employment of risk as political weaponry in war rhetoric is hardly ever rationally grounded.

### 2.4 **Monsters**

It may consequently be useful to focus some more on the specific epistemic reactions by both contesting cultures concerning each other. For both cultures, individuals in the other culture may be considered borderline cases or anomalies. Douglas teaches us that communities, confronted by epistemic anomaly, may employ interpretation, physical control, avoidance, danger attachment or meaningful projection for their protection.[50] Smits[51] refines Douglas' theory for epistemic moral anomalies (Smits names them 'monsters', in this I will follow her lead) raised by the use of new technology, like in the debates on sustainable development and biotechnology. Their nature implies that monsters cannot easily be accommodated by science; their very existence falsifies the shared beliefs (cultural paradigm) of the culture confronted with them. Thus monsters do focus attention on weaknesses in the set of shared beliefs and can consequently become dangerous to cultural cohesion. They require domestication, if possible.

Where Douglas mentions five strategies for a culture in reaction to epistemic monsters (that may very well result from scientific innovation), Smits identifies four: exorcism, adaptation, embracement and assimilation.[52] I relate them tentatively in Table V-2. I will need them later.

---

[49] Felix Oberholzer-Gee and Koleman Strumpf 2005, *The Effect of File Sharing on Record Sales: An Empirical Analysis:* <http://www.unc.edu/~cigar/papers/FileSharing_June2005_final.pdf>.

[50] Mary Douglas, *Purity and Danger*, Routledge 1966.

[51] Martijntje Smits, *Monsterbezwering – de culturele domesticatie van nieuwe technologie,* (tr: Taming Monsters – on cultural domestication of new technology) Boom 2002 [In Dutch. Rumour has it, an English translation will be forthcoming in 2006].

[52] The English translations are from: Van der Sluijs, 'Uncertainty as a monster in the science policy interface: four coping strategies', *Water Sci Technol.* 2005; 52(6):87-92.

| **Douglas (1966)** | **Smits(2002)** |
|---|---|
| Interpretation | Assimilation |
| Physical control | Exorcism |
| Avoidance | |
| Danger attachment | |
| Meaningful projection | Adaptation |
| | Embracement |

Table V-2 – Strategies for cultural defence against monsters

Any customer of the music industry may *also* share music-files occasionally and may thus be an anomaly to the music-industry community. And the music industry employs avoidance (file-sharers do not belong to their culture), danger attachment (they kill musical creativity, support terrorism) and physical control (court cases, DRM) to face the risks involved. And music-file sharers consider the music industry (or any party) that does not visibly protect files it wishes to be treated as protected on the Internet as an anomaly. They employ interpretation (what is freely accessible on internet can, even should be shared), physical control (by ripping, using peer-to-peer programs, sometimes by hacking DRM functions, employing digital pseudonimity and secured services) and danger attachment (strict IP enforcement will kill the internet) to face the risks perceived.

One interesting result of the approach ventured seems to me that we may see the war on music-file sharing as a clash between two cultures, trying to exclude each other in order to protect their proper domains. Both feel it invaded by the other: the music industry sees its domain of intellectual-property protected works invaded by file-sharers on internet and the file-sharers see their internet 'commons' polluted by unmarked but legally protected files. These domains are conceptually different, but they do overlap. The contest is about the overlap of the two domains – one for private and one for public information commodities. This overlap confuses both cultures and may prove a threat to the stability of their common-belief sets. A culture may cease to exist when that happens. There are existential interests at stake here. Thus monsters in domain overlap will generate any – at least one – of the reactions presented by Douglas and Smits. And, in the case of the war on file sharing, they apparently did.

One of the most interesting features of Douglas' anthropological analysis of primitive cultural reactions to the conceptual anomaly, is her success in showing that these regularities (anomalies cause interpretation, avoidance, etc.) are still part of our modern world, that our modern cultures may have evolved beyond the tribal, but that these regularities remain operational. Looking at our war on music-file sharing through this lens does not falsify her analysis, but it is not enough. Our culture may have kept its tribal heritage concerning epistemic belief anomalies; it has nonetheless changed significantly in other respects. One of these aspects is organization. If we consider monsters in our Western world, we must find out how we can find the equivalent of cultures and cultural boundaries as seemingly found

by Douglas in tribal Africa using anthropological common sense. To that purpose, I expand our analytical language with dedicated descriptions of organizations, domains as jurisdictions, domain types and institutions.

## 2.5 **Organizations**

How can we understand organizations to emerge in a tribal culture? Let us first specify what an organization is. An organization is a sub-culture – that is, an organized group of individuals with coherent practices, beliefs and mind sets regarding a specific interest (that is part of the more general interest of the culture of which it is a part). An organization is thus a specialized part of a culture, inheriting its structure.[53] How do they come about? One way to approach the question is to look for empirical evidence of organization within our own culture and to try and find out why they are there. The first explanation that comes to mind relates to the nature of the firm. Coase[54] argued a firm's possible economic efficiency, even in the face of a perfect market, due to the transaction costs involved in creating and recreating individual relationships when markets and businesses are becoming more complex, and relationships continue. Hence, Coase argues, firms may be more efficient to play parts of the market than the invisible hand of the market itself. I simply assume that organizations come into existence (as a specialized sub-culture) to perform tasks better for individual members then the individual members can themselves. Organizations come into existence when required tasks can be performed more efficient by them than without them.

Are the parties in our war on music-file sharing organizations in this sense? I think so. 'The music industry' is a label for RIAA-like organizations, working for and on behalf of the individual firms in state jurisdictions. Their task is to protect their (intellectual-property secure) domain. And the music-file sharing community is also an organization – albeit completely differently structured – working for and on behalf of the individual internet users in what has been coined cyberspace, sharing an 'open access' type of belief. I tend to think that the main part of this organization is networked *and* automated. Contrary to the music industry, the file-sharing community does not show internal hierarchical levels. As described in Part II, a few simple functions have been delegated to software programs, processing files and messages that comply with predetermined standards and that operate autonomously in an otherwise completely flat network. The hierarchical structure inherent in organization thus obtains a peculiar form in file sharing communities. It has two levels, and the top level is purely IT – purely architectural (including its regulating capacity).

---

[53] This description supports multiple levels of organizations in a culture.

[54] R.H. Coase, 'The Nature of the Firm', *Economica*, November 1937.

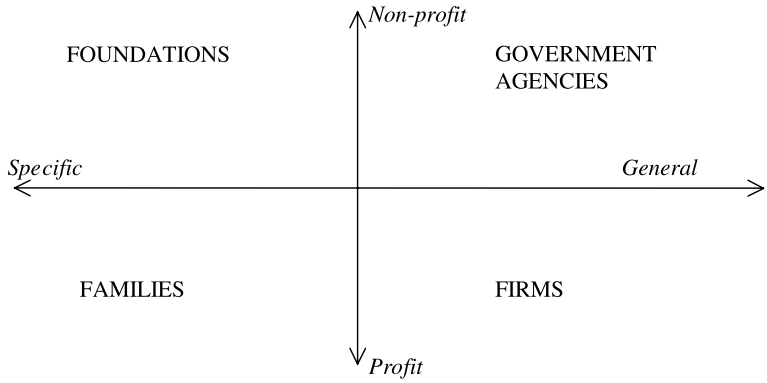


Figure V-1 – Organization types and values

## 2.6 **Domain and jurisdiction – organizations as normative systems**

When we accept that organizations come into existence when required tasks can be performed more efficiently by them than without them, we accept that economic efficiency is an important factor for organization legitimacy. It is not the only one, though. Another factor (effectiveness) looks at the performance of required tasks. We can try and make a general typology of the tasks for which an organization is responsible along two dimensions: one dimension ranging from the individual to the general and one dimension from the egoistic to the idealistic. We can thus link four prototypical task types with four prototypical types of organizations: firms, families, foundations and government agencies (see Figure V-1).

*Firms* perform tasks for profit (a general-egoist value) more efficiently than individuals (the market, consisting of individuals and other firms), or families, or foundations, or government agencies can do. *Families* perform tasks for defending individual autonomy (a specific-egoist value) more efficient than the market, or firms, or foundations, or government agencies can. *Foundations* (mainly groups, churches, schools, hospitals, communities and associations) perform non-profit tasks (with specific-idealistic value) more efficiently than the market, or firms, or families or government agencies can. And g*overnment agencies* perform legitimate public tasks like tending public order and security (with general-idealistic value) more efficiently than the market, or firms, or families or foundations can. Here the second condition for organizational legitimacy emerges: it should perform its task *also* at an acceptable level of effectiveness considering the values of individual autonomy, collective ideals and public security. Consequently, a practical prerequisite for organizational legitimacy is a feedback mechanism that allows communication about organization efficiency and effectiveness between its elite and its members. The

exhaustive typology of these four prototypical domains, as it is linked to four different types of interests (or values), does not fit with reality when we look at organizations and try to consider their domain as representative of one pure type. Firms will not exclusively operate for profit: they will *also* operate for their members and publics – supporting their autonomy, their ideals and their security. And families do not exclusively operate for their own autonomies: they will *also* try to make money, have ideals and pay taxes. Foundations will not exclusively operate for their ideals: they will *also* have to respect their members' autonomy, to comply with their governments' security directives and to mind their funding. And government agencies will not exclusively operate for their public goals: they will *also* operate in ways to support the autonomies, the ideals and the capabilities to make money of their members and publics. These four domain types seem to be omnipresent in any organization. Together they make up the *value character* of an organization in a multi-layered way, like any particular colour can be experienced by looking through a layered set of primary-coloured foils. And I think the theoretical disctinction will prove applicably useful because families, firms, foundations and government agencies all have their particular legal accomodations in a wide variety of law systems.

I introduce this small, value-based typology of organizations to support some analytical order in the nowadays otherwise bewildering complex subject of jurisdiction, since the scope of an organization's jurisdiction may vary with its inherent value character. The main differences between these organization types are the following. All have internal and external relationships. For firms and foundations, internal and external relationships are a matter of choice, of construction. The characteristic difference between firms and foundations is what they work for. Firms aim for profit in general, foundations for specific, non-profit results. The domains may be identical while their character differs, though, as the existence of public and private schools for example shows. For families, internal relationships are 'born into' and for citizens, families, firms and foundations, mandatory, no-choice relationships with government agencies do exist. Every organization's governance is more or less influenced by internal and/or external feedback.[55] The domains of government agencies are the only ones directly constrained by national state jurisdictions.

Consequently, internationally-operating firms and foundations have grown to accommodate several overlapping jurisdictions. For example, of the different states[56] in which they operate and of supra-national organizations constructed along the lines of international agreements with which they have to comply. But they have also become accustomed to the jurisdictions of other firms and foundations, and

[55] As the foregoing shows, our whole collective mind-set regarding organizations supposes there to be some hierarchical form of governance. As mentioned earlier, music-file sharers employing peer-to-peer do not fit in this scenario.

[56] In the current argument, a state is a government-agency character organization.

they will consider conflict, competition or co-operation accordingly. One important aspect of any organization is the articulation of the domain over which it claims competence: the organization in the focus's own jurisdiction.

*I will further use the terms 'domain' and 'jurisdiction' as synonyms.* This epistemic decision is an important one, resting on considerations far better worded by Fuller in 1967 than I could in 2006. Let me give two citations:

> 'If law is considered 'the enterprise of subjecting human conduct to the governance of rules,' then this enterprise is being conducted, not on two or three fronts, but on thousands. Engaged in this enterprise are those who draft and administer rules governing the internal affairs of clubs, churches, schools, labour unions, trade associations, agricultural fairs, and a hundred and one other forms of human association.'[57]

and:

> 'Why, then, do we hesitate to describe the parietal rules simply as law? The easy answer is to say that such an extension of the word would violate ordinary linguistic usage. This begs the question why linguistic usage has taken the turn it has. I think the answer lies in considerations something like the following: We intuitively realize that in cases … we are confronted with delicate issues of maintaining a proper balance of institutional functions within our society. That such issues are at stake becomes apparent if the case brought for judicial determination involves a student expelled from a school run by a religious order because of heresy … When issues as delicate as those here suggested are under consideration we hesitate to throw into the balance a word as heavily loaded with implications of sheer power and established authority as is the word "law".'[58]

Thus, when 'jurisdiction' is generally understood as 'state jurisdiction' and I claim it to denote 'domain', I introduce a major digression from common jurisprudential understanding. Something similar has been advanced by Fuller and has been seriously contested, e.g., by Hart and Dworkin, as Fuller's reply to critics shows.[59] Hart even deemed it a jurisprudential perversity to consider informal normative systems (say: local firm, family or foundation systems) to be a legal system, thus entering into an interesting jurisprudential controversy I intend to avoid as off-topic here. My aim is not to solve this aspect of the Fuller-Hart debate, but to establish a vocabulary that supports the discussion of structural similarities in relevant enterprises 'subjecting human conduct to the governance of rules' (I will call them 'institutions' later on) because I think that restricting jurisprudential attention to state legal systems (more or less implied by Hart's widely accepted Concept of Law)[60]

---

[57] Lon L. Fuller, *o.c.,* p. 124-125.
[58] Ibid., p. 126-127.
[59] Ibid., p. 178-242.
[60] H.L.A. Hart, *The Concept of Law*, Oxford University Press 1961.

may be considered harmful in the light of the emergent abundance of other normative systems that may show (or fail to show where expected) governance efficiency and effectiveness.[61] Consequently, I accept state-jurisdiction and non-state jurisdiction as characteristics to distinguish between normative system types. So in my vocabulary we have state-law systems and non-state-law systems. I want to be able to address their differences and similarities. Discussing enterprises 'subjecting human conduct to the governance of rules' lies at the heart of another persistent and important jurisprudential debate: the debate on the minimum quality required by normative systems to be considered an acceptable law system.

| **Domain characteristics** | **Normative system type** |
|---|---|
| State jurisdiction, Rule of Law applies | State-law system (= Hart's legal system) |
| State jurisdiction, Rule of Law doesn't apply | Immoral state-law system |
| Non-state jurisdiction, Rule of Law applies | Institution-law system |
| Non-state jurisdiction, Rule of Law doesn't apply | Immoral institution-law system |

Table V-3 – Typology of normative systems (= institutions)

Currently the debate mostly boils down to the question whether a law system has the Rule of Law (which is often considered to include the requirement that the law system respects universal human rights). Notwithstanding the reasonable claim that concepts like 'the Rule of Law' and 'universal human rights' tend to be open to very different interpretations, I think it worthwhile to distinguish between normative systems that comply with these minimum requirements and normative systems that do not. I will refer to them as moral and immoral law systems respectively (see Table V-3). Below I provide the reader with my personal interpretation of law-system morality, as I will further use it. And I will need to use it where I expect immorality in law systems to motivate resistance.

### 2.6.1 *Intermezzo: an interpretation of law-system morality*

The Rule of Law refers to a working, minimumly decent legal system in a minimumly decent society. As Tamanaha shows in his recent book, the 'Rule of Law' concept is currently not only a very popular one, it is also widely abused as an argument by governments of various reputation to expect civilians to comply with their rules.[62] On top of that, it is an elusive concept. Almost everyone using it means something

[61] Consider Francis Fukuyama, *State Building: Governance and world order in the twenty-first century* (Cornell University Press, 2004), where the focus is on moralities, scopes and strengths of nation states, while, arguably, the analytical approach might just as well be directed at moralities, scopes and strengths of (sub-, supra-, meta- or epi-national) institutions.

[62] Brian Z. Tamanaha, *On the Rule of Law*, Oxford University Press 2004

different. I need a working notion and thus start with the question of which normative systems are minimumly decent law systems. Fuller (1969) specifies eight necessary moralities of duty in this context:[63]

- There cannot be a minimumly decent law system if it does not have any general rules at all;
- There cannot be a minimumly decent law system if the rules are unavailable to the addressee;
- There cannot be a minimumly decent law system if legal practice shows abuse of retroactive legislation;
- There cannot be a minimumly decent law system if the rules are not understandable to the addressee;
- There cannot be a minimumly decent law system if the enactment of rules is contradictory;
- There cannot be a minimumly decent law system if rules require conduct which is beyond the powers of the addressed party;
- There cannot be a minimumly decent law system if rules are subject to changes so often that subjects cannot orient their actions thereto;
- There cannot be a minimumly decent law system if there exists incongruence between the rules and their administration.

I picked Fuller's list because it conveys a well-founded, non-controversial set of formal conditions that can be used as a simple checklist for the existence of a minimumly decent law system. Fuller's list has nevertheless been seriously criticized as underspecific. I agree and add another non-controversial condition to Fuller's list: the condition of adequate institutional roles à la Montesquieu:

- There cannot be a minimumly decent law system if it does not show in its elites the three independent roles as addressed in the maxim of the separation of powers.

These nine conditions have been considered to provide a formal description of the Rule of Law. Still, they have as such been subject to additional criticism, mostly because they would allow some very unsavoury systems inside the domain of minimumly decent law systems. Again, I agree and will consequently add one other, non-controversial condition to the list

- There cannot be a minimumly decent law system if it does not show at least one effective procedure for political feedback, supporting reciprocity in the relationships between the law system's elites and the law system's subjects.

[63] I made similar use of Fuller (1969) in Part II.

What we have thus far is the definition of what I consider to be a minimumly decent law system, and as such it is an articulation on paper. I need the following closing condition:

- There *is* a minimumly decent law system if, and only if, it shows itself in accordance with conditions (1) – (10) *in practice.*

Which relates my personal jurisprudential interpretation of the Rule of Law to reality and thus to empirical scrutiny. (A major criticism I expect many readers to feel may concern the restriction to formal criteria. The reason why I choose to avoid material normative criteria relates to their inherent controversialist character. And my expectation is that the tenth condition will support the promulgation of rules, protecting human rights, if the law system's subjects feel the need.)

At last, I can claim what the whole exercise in this section is about: if we wish our law systems to be decent, jurisprudence suggests that they need to show compliance with these criteria, independent of whether they are state or non-state law systems and independent of whether they govern firms, families, foundations, government agencies or states. This is, I think, what legal science is all about.

## 2.7 **Externalities**

Where anthropological fieldwork tends to relate the 'culture', 'monster' and 'organization' concepts to phenomena in tribal communities primitive to our Western eyes, but persistent in our modern cultures, research of historic economy has opened our eyes to the enormous changes in complexity in the way organizations emerge, operate and interact today. I have related this complexity to the need for specialization (and thus: organizational fragmentation) and the possibilities for secure long-term agreement (as, e.g., needed for secure outsourcing). The argument also holds for the possibilities as recently introduced by Internet. A result has been that complex layers of domains, claimed by firm and foundation-type organizations tend to gain importance, as compared to state jurisdiction. Domains do not only support discourse about overlap, they also support the identification of subjects to be treated as external. I will give an example to get a feeling.

The domain of a football (soccer) match is a specific playing field during a specified time-slice. It is under the scrutiny of institutional football rules and the rules governing the roles and jurisdiction of trainers and referees. The organization of a football match often presupposes a football club (organizing its members), which is itself a member of an association (organizing the competition). Spectators, spectator fees, broadcasting rights and security against hooliganism may be considered *external*[64] to the strict domain of the football match. National teams and world

[64] This use of the term 'external' may prove different from economic terminology, where 'external' is not external to an institutions' domain, but external to the pricing model under discussion.

champion tournaments too. And, stretching my point, the cohesive effects of national communities of fans may be considered external to the tournament organization, as well as its being considered an opportunity for terrorist attacks by terrorist groups. Thus, all these external organizations (with their proper domains and cultures) may partly overlap with the domain of a football match and/or may otherwise relate to it through contract or other institutional instruments. And there may be areas of co-operation, as well as areas of collision (as recently shown in FIFA threatening to exclude the national team of Greece from any international competition if the Greek legislator were to promulgate a law to allow government influence on the management of the national team; here, national sovereignty clearly lost against private international enterprise). The main point of the example is to show that structured analysis for domains, their related organizations, rules, interests and externalities not only comes quite natural, but also seems to support focused discourse about co-operation and conflict between organizations.

### 2.8 **Markets**

The 'market' concept is extremely important to economics, politics, competition law and common sense alike. It is often in itself an argument in political debate. When we consider recent Dutch political history, however, we may find reason to be somewhat more explicit about what a market is and about what we may expect of it. An apt example seems to me to be the current political ambition in the Netherlands to 'liberate' academic education. On the one hand, government wishes students to choose their university courses freely from any Dutch university the student considers best for the course subject. On the other hand, primary funding for Dutch universities is government funding, only partly correlated to student population size. And the remuneration scheme involved does not support quality-based price discrimination. The resulting market for academic education would not be a free market at all, since it does not leave space for any freedom to transact at the university side of the bargain. Still the government plans thrive under the rhetoric of 'liberation of the market for academic education'. This is not what I consider a free, but an organized market. And here lies the crux of the market concept. In classic economy, organization was considered irrelevant. After Coase's *Nature of the firm* it became gradually accepted that organization matters, and that transactions within an organization are efficient exactly because these transactions are *not* market transactions, since they are constrained by previous agreement. The resulting discussion on what a market is has been a difficult (but interesting) one, and I do not venture to end it here. For practical purposes, I choose a compromise between North and Polanyi. 'Polanyi made a market synonymous with a price-making market. It should be readily apparent, however, that any form of voluntary contractual exchange involves a market …'[65] North mentions. The crux seems to me, that North equals a market with

[65] Douglass C. North, *Structure and Change in Economic History*, Norton 1981, p. 42.

any space for contractual voluntary exchange. And I want to stress the *voluntary*, which implies that *both* contracting parties are free to choose. Thus, in order to distinguish between market and organizational transactions, I consider a market to be a price-making place for voluntary contractual exchange, not constrained by previous agreement.

## 2.9 **Institutions**

The notion of multiple shifting and overlapping domains will prove an essential prerequisite for analyzing the problems of conflict-related conceptualization mentioned earlier: monsters may emerge where domain overlap shows.

| | |
|---|---|
| Institution | Institutions are cultural law systems with collective interests, a domain, markets, rules, policies, norms, organizations, individuals, feedback mechanisms and beliefs that together protect and nurse collective interests and therefore generate regularities in the social behaviour of the organizations and individuals under its jurisdiction. |
| Collective interests | The existential reasons for the institution to emerge. |
| Domain/jurisdiction | Transaction space for the protection of the collective interests |
| Markets | Spaces for voluntary contractual exchange, constrained by rules. |
| Rules | Rules that constrain behaviour in the domain. Non-compliance implies legal sanctions become applicable. |
| Policies | Policies are informal rules, describing practices for efficient and effective behaviour within the transaction space as limited by rules. They are not (directly) linked to legal, but to social and economic sanctions. Since the links with their efficiency and effectiveness may be forgotten through repeated use, policies tend to contribute to path dependence. |
| Norms | Norms are 'policies' unrestricted by (some of) the applicable formal rules. |
| Organizations | Are tangible elements of institutions *and* are institutions themselves. They produce, change and disseminate rules; perpetuate beliefs, norms and practices; influence behavioural beliefs; differentiate between functionaries and members; contribute to collective interests; are of the firm, family, foundation or government agency type. |
| Individuals | People transacting. Either as members of an organization (functionaries) or as members of any organization's public (members). |
| Feedback | Transactions between individuals, between individuals and organizations and between organizations about performance. Feedback may rattle path dependence. |
| Beliefs | Collective expectations concerning the effects of specific events and motivate behaviour. Beliefs on how the universe works or is made to work are metaphysical (scientific or religious); beliefs on how organizations and their members will react to specific events are practical (and will mainly be interpreted as opportunities or threats). |

Table V-4 – The conceptual structure of an institution

Before I can re-enter that arena for our current subject, however, I have to try and structure our emerging analytical framework to support reasoning patterns where the essentials of the different – seemingly incompatible – disciplinary approaches can be combined. For inspiration I turn to the concept of 'institutions' as it became central to the work of, *e.g.*, Olson, North and Williamson,[66] and as it has been recently further refined and specified by Greif.[67]

*Institutions are cultural systems of individuals, markets and organizations (with collective interests and a domain wherein these interests are protected and nursed) that generate regularities in social behaviour by cultivating rules, policies, norms and beliefs through feedback transactions*.[68]

In his fascinating *Institutions and the Path to Modern Economy: Lessons from Medieval Trade*, Avner Greif constructs an elaborate concept of 'institution' as a semantic framework. He uses it to examine and explain economic developments historically. For the explanation, Greif needs a firm grip on how regularities in social behaviour come into existence, and how they change. Interestingly, the explanation of economic development is not necessarily a mainstream economic one. Greif's institutions even explicitly exclude variables for individual choice (and thus: the concept of 'market'), where he focuses on social behaviour. My structuring of 'institutions' (see also: Table V-4) is a *variation* (like in music) on Greif's work, which I consider *thematic.*

I need the variation, (1) because the notion of jurisdiction (domain) is hardly addressed in the theme at all (where I consider it essential), (2) because I want 'institution' to be a concept, fit for reasoning about economic *and* legal systems (where Greif focuses on economic systems) and (3) because I expect that relationships between individuals and social choice are to be expected and will need discussion.[69]

The structure of an institution is very much like a data model (see Part II). And it is meant to function like a data model – that is: as an explicit collection of variables, limiting the domain of discourse. In economics, the domain of discourse is international and there are good reasons to at least aim for such an international discourse in jurisprudence too.[70] Greif's notion of an institution is both generic and func-

[66] Mancur Olson, *Power and Prosperity*, Basic Books 2000; Douglass North, *Institutions, Institutional Change and the Path to Modern Economy*, Cambridge University Press 1991; Oliver Williamson, 'The Economics of Governance', *American Economic Review*, 2005.

[67] Avner Greif, *Institutions and the Path to Modern Economic: Lessons from Medieval Trade*, Cambridge University Press 2006.

[68] Based on, but not equal to Avner Greif, *o.c*.

[69] Where I have, as compared to Greif, made additional room for interests, markets, domains, practices, organization types and feedback.

[70] Thomas S. Ulen, 'A Nobel Prize in Legal Science: Theory, Empirical Work, and the Scientific Method in Legal Work', *University of Illinois Law Review* 2002, p. 875-920.

tional. It may even be expressed in functions. The idea that the collection of regularities in social behaviour [Rsb] is the effect of a collection of institutions [Inst] can, for instance be jotted down like:

(1) $[\text{Rsb}] = f\,[\text{Inst}]$

As a matter of fact, this representation is so general, that it may be appropriate for regularities in social behaviour that interests us from jurisprudential *and* economic perspectives too. We might, for instance, be interested in the regularities of the social behaviour as shown by the music industry [$\text{Rsb}_{\text{mi}}$] and by the music-file sharing community [$\text{Rsb}_{\text{sc}}$], as the result of institutional settings. Now we can replace the very generic notation of institutions by its 'data model' as indicated in Table V-4:

(2a) $[\text{Rsb}_{\text{mi}}] = f\,[[\text{C}], \text{D}, [\text{M}], [\text{R}], [\text{P}], [\text{N}], [\text{O}], [\text{I}], [\text{F}], [\text{B}]]_{\text{mi}}$

(2b) $[\text{Rsb}_{\text{sc}}] = f\,[[\text{C}], \text{D}, [\text{M}], [\text{R}], [\text{P}], [\text{N}], [\text{O}], [\text{I}], [\text{F}], [\text{B}]]_{\text{sc}}$

Which is meant to express that the collections of possible regularities in the social behaviour of the music industry and of the file-sharing community are functions of the institutions they take part in, where an institution is a cultural system that is defined by its set of collective interests ([C]), its domain (D), its set of markets ([M]), its set of rules ([R]), its set of policies ([P]), its set of norms ([N]), its set of organizations ([O]), its set of individuals ([I]), its set of feedback mechanisms ([F]) and its set of beliefs ([B]).

The use of formal representation has pros and cons. Cons are well-known. Formal representation in variables leads almost inevitably to loss of individual detail. And defining a formal representation also leads inevitably to the possibility that relevant information is left out of the discourse. Here rests the origin of the famous *ceteris paribus* clause. However, the pros are related to the cons. Most important, formal representation allows for rigorous testing both analytically and empirically. Furthermore, it allows for clarity and for experiment.

We may consider for a moment that we use the right hand side of (3a) to describe the institution, responsible for the regularities of social behaviour as shown by musicians in an orchestra [$\text{Rsb}_{\text{o}}$]:

(3) $[\text{Rsb}_{\text{o}}] = f\,[[\text{C}], \text{D}, [\text{M}], [\text{R}], [\text{P}], [\text{N}], [\text{O}], [\text{I}], [\text{F}], [\text{B}]]_{\text{o}}$

Then, this formula will express something like the socially regular behaviour of an orchestra during a concert. As a function of the concert's collective interests (success), its domain (the concert), its markets (agreement spaces where the concert hall, the orchestra and the audiences offer their services, its rules (play what the

musical director selected and the composer composed), its policies (play in the way as practised with and taught by the director), its norms (do not play Varese to an audience expecting Bach), its organizations (the different sections in the orchestra, the director, the musical director, the concert hall), its individuals (audiences may consist of bus loads with disinterested children or with dedicated fans, we have a world-famous soloist today, our hobo player is sobbing over Isolde's Liebestod again, the Queen is in the audience), its feedback mechanisms (the hobo player will be replaced, the audience gives a standing ovation, a journal review crushes the performance) and its beliefs (if we play well, our audiences will keep coming back for more). I not only try to show that the model defines an ordered set of variables that will direct the discourse. In such an institutional context, formal representation may also be used to experiment (and thus: validate). And this happens often, for composers use a formal notation too, and they may experiment with it – and they may, as a result of the institutional regularities in the orchestra's social behaviour, expect the orchestra to actually play their experimental music.

There is another very important advantage to formal notations. It allows for defining what is well-formed and what is not (grammatical correctness). And it also allows for theorizing about what may be contradictory, and what may be anomalous. Our (still embryonic) models in (2a) and (2b) have several such bugs (or features). For instance, we have claimed that any organization is also an institution. This means that any O in the right-hand side of (2a, 2b) can be substituted by the complete right-hand side of these equations. If we do that without constraint, we start a (theoretically) unending process of substitutions that makes no practical sense at all. In practice the problem is solved by some limiting heuristics that are self-evident. As soon as we are down to one individual functionary in an organization, further breakdown in institutions ceases to be possible since organizations need at least one member. Another seemingly untidy aspect of the formal notation is the variable for beliefs. These may *also* refer to aspects, outside (or external to) the institution itself. Beliefs may be promoted by outside institutions like churches and sciences and practical beliefs may be expectations concerning outside organizations' behaviour. And they may be used in feedback transactions across institutions and organizations. We may expect these to be very important for analyzing relationships between institutions. And the untidiness of inter-institutional feedback mentioned will only show, when we fail to model the institutions, linked in the feedback. It may thus prove to be a feature, rather than a bug, inviting to model relevant institutions instead of allowing them to remain external to the domain of discourse.

## 2.10 **Multidisciplinary institutional analysis**

By now, the descriptive part of the framework required has been introduced. Before I apply it in the next section, I have to explain why I expect it to be of use for multidisciplinary research. The reasons are simple:

- The framework allows for hierarchical ordering and analysis of jurisdictions and jurisdiction overlap, and thus for the identification of areas of contest and/or cooperation.
- The framework allows for the collection of different disciplinary research results and their relation (through motivation) to behavioural regularities in its slot for beliefs.

In IT, when considering relational databases, an important aspect of a 'data-model' notation is its interfacing capability with 'stored procedures.' These procedures represent procedural, rather than descriptive knowledge. And yes, I know – this type of jumping around in analogy must be either unnerving or irritating or both. Still. I think it shows a feature of the institutional framework introduced above. If our structured concept of 'institution' has any generic merit, it may not only apply to the war on file sharing, but also to IT services, and to the academic disciplines focusing on IT, economics and law. However, our multidisciplinary institutional analysis is not about the wars between the disciplines, but about the war between the music industry and the file-sharing community. Consequently, I will now choose the strategy of analysing the war on music-file sharing institutionally. We will find out during the process whether the stored procedures (or paradigmatic procedural knowledge) of the three disciplines involved will present themselves as commensurable when and where they appear as beliefs.

Let me try and sketch my expectations concerning how veritable multidisciplinary analysis might be supported by the framework introduced by focusing on (2a) and (2b):

The left-hand sides refer to dependent variables – that is: actual regularities of social behaviour brought about by the independent variables that make up the relevant institutions. This structural aspect opens up a basic scientific approach in principle: (1) instantiations of the right-hand side with empirical data, combined with procedural functions (as models, as hypotheses) allow us to predict the related instantiation of the left-hand side; (2) comparison of thus predicted instantiations of the left-hand side variables with independently gained empirical data allows for validation of the model employed.

- This basic scientific approach can be considered multidisciplinary, if the various mono-disciplinary results are combined in the right-hand sides (often in the slot for beliefs).
- In this approach, multidisciplinary research boils down to using meta-disciplinary models.

Translation of the reasons and expectations into veritable scientific method is outside any individual effort and thus outside the scope of this book. I expect that

many questions have to be answered by many, and many problems have to be solved by at least as many before such a method can be considered established.

I have used the current section to introduce my concept of institutional analysis as a multi and meta disciplinary affair. 'Institutional analysis' is currently a popular label. There is hardly any evidence that it denotes a stable concept, though. Different meanings are attached to it in the history of economics,[71] in political economy,[72] in socio-economic practice,[73] in public policy,[74] and in legal research.[75] References in the literature mentioned hardly show any overlap, and neither do the methods proposed. Either 'institutional analysis' is a natural language concept, or it lacks paradigmatic maturity. I consequently felt the need to explain what my approach will be and to explicitly acknowledge its main inspiration in work by Howard, Bobbitt, Douglas, Smits, Coase, North, Williamson, Greif and Fuller.[76]

## 3. Institutional Analysis of the War on Music-File Sharing

In the following analysis I will use the framework of the previous section analytically by way of exploratory or 'boot-strap' research. Which means that I will (section 3.1) first try to instantiate the regularities in the social behaviour (the left-hand sides of (2a) and (2b)) of the contestants empirically, (section 3.2) subsequently try to instantiate the relevant institutional information (the right-hand sides of (2a) and (2b)) in order (iii) to identify the causal relationships that I consider candidates for the explanation of (i) as functions of (ii). My conclusions and recommendations will be based on analytical experimentation with (section 4.).

In the war on music-file sharing, roles are played by at least four institutions: the music industry because it is one of the contestants in the war, the file-sharing community (further: the sharers) because they are the other contestants, providers of (IT) peer-to-peer services (further: the providers) because they create and distribute the software weapons used and the courts because they pacify local battles with authority. No new descriptive information will be used in the analysis.

---

[71] E.g., Avner Greif, 'Historical and Comparative Institutional Analysis', *American Economic Review,* Papers and Proceedings (May 1998), p. 80-84.

[72] E.g., John L. Campbell, 'Institutional Analysis and the Role of Ideas', *Theory and Society*, Vol. 27, No. 3, (June 1998), p. 377-409.

[73] E.g., Harriet Mutsaert, 'Institutional Analysis in Natura; Resources Research', *Socio-economic Methodologies for Natural Resources Research. Best Practice Guidelines*, Chatham: Natural Resources Institute 2002.

[74] E.g., Hand Klein, 'Understanding WSIS: An Institutional Analysis of the UN World Summit on the Information Society, *Information Technology and International Development*, Vol. 1, No. 3-4, (Spring-Summer 2004), p. 3-13.

[75] E.g., Susan Freiwald, 'Comparative Institutional Analysis in Cyberspace: The Case for Intermediary Liability for Defamation', *Harvard Journal of Law and Technology*, Vol. 14, No. 2 (Spring 2001) p. 570-655.

[76] *Bien étendus de se trouver ensemble,* no doubt.

## 3.1 **Regularities in social behaviour**

Regularities in social behaviour appear in at least two ways: (i) by the size of a group showing similar social behaviour under similar circumstances and (ii) by the size of a group, changing its behaviour in a similar manner when circumstances change.

Below, I summarise the regularities in social behaviour concerning music-file sharing that have been shown by the music industry, the sharers, the providers and the courts during the last six years.

### 3.1.1 *The music industry*

Since 2000, the music industry demonstrates six tacks of regular social behaviour concerning music-file sharing.

- It protects physical media distribution with DRM.
- It offers DRM-protected digital client-server distribution against physical-media distribution pricing.
- It does not provide such distribution through peer-to-peer.
- It does not provide licences to peer-to-peer services.
- It sues peer-to-peer providers for (vicarious) copyright infringement – sometimes settling out of court.
- It sues peer-to-peer sharers for copyright infringement – often settling out of court.

### 3.1.2 *Sharers*

Since 2000, sharers demonstrate four tacks of regular social behaviour concerning music-file sharing.

- Sharers massively use peer-to-peer services, ignoring copyrights.
- When services are closed as a result of lawsuits lost by providers, sharers either adopt another service or stop sharing.
- Sharers continue to buy music through regular channels.
- Some sharers tend to hack digital rights management instruments they consider an intrusion on their autonomy.

### 3.1.3 *Providers*

Since 2000, providers demonstrate seven tacks of regular behaviour concerning music-file sharing.

- They design peer-to-peer programs supporting community exchange of mp3 files through Internet.
- Some try to strike a deal concerning copyright payments with the music industry.
- They make these programs available via a web site or an ftp-service – generally for free.
- Most of them get an income from advertisements on their sites.
- Some get an income by advertisements mixed through the file-sharing service.
- Some advertise the copyright-dodging character of the service (which courts find an argument to close them down).
- Some design for intractable use.

### 3.1.4 *Courts*

Since 2000, the courts demonstrate seven tacks in their rulings on music-file sharing.

- Providers of peer-to-peer services will be held responsible for infringing use if they have the capability to stop it but do not.
- Providers of peer-to-peer services will be held responsible for infringing use if they profit from the service.
- Providers of peer-to-peer services will be held responsible for infringing use if the service cannot be used substantially for legitimate content sharing.
- Providers of peer-to-peer services will be held responsible to the music industry for infringing use if they promote infringing use.
- Users of peer-to-peer services will be held responsible for damages due to facilitating uploading IP-protected music-files.
- In some countries, users of peer-to-peer services will be held responsible for damages due to downloading IP-protected music-files.
- In some countries, Internet service providers have to disclose names and addresses of their customers to (and for prosecution by) the music industry if it can show these users actually did facilitate uploading of IP-protected music-files on some scale.

### 3.1.5 *Two questions*

One conclusion quite naturally comes to the fore: there are many regularities in social behaviour within the nucleus of institutions, related to the war of music-file sharing. As a feeling for proportionality dissuades one from trying to explain them all by instantiating the related institutional data, I select only those regularities for further analysis that can be related to genuine questions. Looking at the 23 regularities mentioned only three have no self-evident explanations. Not one of these ques-

tions relates to the courts. Perhaps some explanation is needed for classifying the courts' regularities in social behaviour as self-evident. They were surely not self-evident to the parties requesting a judgment at the time. However, the rulings that make up the courts' policies have become understandable through the supplied grounded judgments and opinions – and as I understand and share your possible curiosity in the relevance of institutional analysis of courts' policies, I really do not expect these policies need any further explanation in order to be able to understand their role in the war on music-file sharing. The regularities I considered more to the point here have been rephrased as the following questions:

- Why does the music industry not offer for-money peer-to-peer distribution (or why does it not provide licences to aspiring peer-to-peer services)?
- Why do sharers massively use peer-to-peer services, ignoring copyrights and why do they, concurrently, still buy music from the music industry?

and

- Why do providers design and distribute peer-to-peer services for free?

Looking at these questions again, it seems arguable that the last one may be considered external to the analysis of the war at hand: sure, peer-to-peer services are there, the capabilities they support have been and still are instrumental to the war – the war would not have taken place if they had not been available. And the war would indeed stop if the Internet were to be 'disarmed' of peer-to-peer. However, our question concerns how to stop the war, while allowing for peer-to-peer. For the analysis we consider peer-to-peer to be simply there, irrespective of the question how it came into existence. Consequently. I will not address the third question directly.

## 3.2 **Institutional analysis**

In the current context, institutional analysis focuses on the institutional elements causing regularities in social behaviour (where an institution is analyzed in its set of collective interests, its domain, its set of markets, its set of rules, its set of practices, its set of norms, its collection of organizations, its set of individuals, its set of feedback mechanisms and its set of beliefs).

### 3.2.1 *Collective interests*

The collective interests of the music industry as an institution simply concern maximum profit for its organizations on the market for music. This implies that the availability of monopolist distribution rights is a collective interest to the music

industry. It implies that the availability of sellable quality music is a collective interest too, as well as a demanding customer base. Since free riders do not pay, it is a collective interest of the music industry that free riding is kept down. Consequently it is a collective interest of the music industry to influence any institution supporting free riding as regular social behaviour (like the sharers), in order to try and mend their ways.

The collective interests of the sharers (as music consumers) concern the maximum availability of quality music via Internet against minimum prices and minimum inconvenience. Since sharing music files through peer-to-peer dramatically enhances the availability of music via Internet against minimum cost and inconvenience, peer-to-peer distribution is a collective interest for the sharers. Since the availability of (new) quality Internet music depends on a cost effective music industry, remuneration at market-equilibrium level prices is a collective interest of sharers too. And since free riding threatens a cost effective music industry, it is also a collective interest of the sharers that free riding is kept down.

If we would consider sharers also to be customers of the music industry, we might look for collective interests of both the music industry *and* the sharers. We find these to be the availability of quality music, the remuneration at market-equilibrium prices *and* the keeping down of free riding. Interests that may contribute to end the contest will then be the remaining ones: (i) the availability of monopolist distribution rights to the music industry (this can hardly be seen as a collective interest of the sharers) and (ii) the availability to sharers of music-files through peer-to-peer architectures legitimately.

### 3.2.2 *Domains*

Assuming the music industry to have bought the copyrights by default, the music industry domain relates to its copyright-based jurisdiction for protecting their interests against free riders, for setting prices and for organizing production, distribution and retail. The domain thus also extends to the business-modelling choices to be made in the face of innovative opportunities.

The domain of the sharers is Internet, as a space that supports unhampered exchange of information. Sharers will employ legal, social and technical means which they consider necessary to protect this domain. The domain of sharers also extends to customer choices (take, leave) concerning the services offered by the music industry and by other sharers.

The domains of the music industry and the sharers show two distinct areas of overlap. One concerns business-modelling choices on Internet, where the sharers fail to recognize the jurisdiction of the music industry, refuse to wait and start to deploy their own peer-to-peer services. The second one can be seen in the mass evasion of copyright, inherent in the current forms of peer-to-peer: Internet information exchange should by default be free according to sharers and copyrights

should be complied with, according to the music industry, even if the file does not show who is the owner and neither what her attitude is towards file-sharing licensing.

### 3.2.3 *Markets*

As mentioned earlier, markets are considered to be spaces for voluntary contractual exchange, constrained by rules. As discussed in Part III, the music industry acts in several of these spaces. There is such a market for music-related copyright transfer, populated by music composers, lyricists, performers and the music industry. There is also a market for recording, populated by the music industry, performers and recording studios (recording studios may be part of the music industry's organisation). There is also a market for multiplication of physical recordings, populated by the music and printing industries. There is also a market for the distribution of recordings, populated by the music industry, broadcasters, recording retailers and the audio-hardware industry. Finally, there is a market for music consumption, populated by the music industry, the distribution organizations and the music consumers. I thus recognise five relevant markets where the music industry participates: for copyright transfer, for recording, for multiplication, for distribution and for consumption.

For sharers, there are three relevant markets. First, sharers take part in the market for consumption mentioned above – in their capacity as customers of the music industry. Second, they populate the market for peer-to-peer software, together with the providers of the software. Third, they take part in the market for (free) information exchange, as supported by Internet and as populated by anyone connected, together with the access, music-ripping, music-file-compressing, music-file-rendering and digital-rights management software providers.

The market for Internet information exchange shows a functional overlap with the markets for multiplication, distribution and consumption mentioned above. Since electronic recording media were available this overlap emerged. It became a matter of discussion after the (mass) introduction of recording consumer electronics. It became a matter of urgency when broadband Internet and adequate software for music-file exchange became available. At that moment, anyone having somehow acquired a recording not physically protected against digital copying was able to rip it and make it available to the whole of the Internet on the market for free information exchange.

Notwithstanding the functional overlap mentioned, these markets cannot be considered identical. For one thing, the music industry has for approximately six years steered clear from any form of Internet information exchange, eventually welcoming Apple, taking the lead on the market for (remunerated) client-server music-file exchange with iTunes, in their midst. Consequently, a market for legitimate peer-to-peer music-file exchange does not exist next to the now seven-year-old market

for peer-to-peer information exchange, which thus only supports illegitimate mass exchange of copyrighted music files. Another reason for not considering these markets identical lies in the remarkable lack of harm done by the quite considerably sized (free) information exchange market to the functional equivalent markets where the music industry does take part. Since 1993,[77] in the first ten years of its existence, the market for (free) information exchange has not been entered by the music industry at all.

### 3.2.4 *Rule-sets*

The rule-sets that may lead up to legal sanctions may be of a public or of a private character. Pure private-law rules are made up by and agreed upon between parties in a market. Pure public-law rules are mandatory and cannot be set aside by contract.

In the *market for copyright transfer* organizations from the music industry meet composers, lyricists writers and performers. These three have earned their copyrights by being creative and make a musical work. As has been discussed in Part IV, copyrights are absolute, exclusive rights, providing monopoly jurisdiction over making the work available to the public and over its reproduction. This monopoly right is transferable, in parts or as a whole. Consequently, immense varieties of agreements are possible on the market for copyright transfer. A maker might offer the right to reproduce her work against any condition she may think of. I give three examples of very different scenarios. She might, for instance, licence the right to reproduce her work non-exclusively to anyone who promises her a certain fee per copy made and sold. The result of such a scheme could either be that reproduction and sales of a single work becomes competitive, or that no single organization in the music industry accepts the offer resulting in the work (with all its rights) remaining with the author (who eventually might even be tempted to amend her conditions or even to reproduce and market it herself). This scheme is, to my knowledge, not employed in practice because it is not considered very attractive in the traditional music industry. It might take off on Internet, however – who knows.

A rather different scenario would emerge when the maker sells her copyright completely to an organization of the music industry for a fixed amount of money. The result of such a scheme can either be that the new copyright holder has a musical hit and makes a lot of profit, or that it has a flop and suffers a loss. This scheme might occur when the maker has not yet made a name for herself. It sometimes even happens that under these (private) rules a hit yields such a perversely disproportionate remuneration distribution, that legislators make some efforts to render them *post hoc* amendable.

[77] I consider the Internet market for (free) information exchange to have started in 1993, round about when access to Internet became a mass commodity.

A third approach might be that the maker offers her complete copyright for sale to an organization in the music industry, against payment of a percentage of the sales value made. This is the most common type of contract on the market for copyright transfer. It has the advantage that the problem of disproportionate remuneration distribution is avoided. It has the corollaries that the music industry administrates its sales *and* that it administrates who holds the right for pay back (which might be sold or legated by the right holder) and, consequently, that corporate-governance rules are brought into play. The third approach also has a disadvantage. The monopoly rights of the maker are transferred to the new copyright-holding organization, thus capacitating it to create and maintain an industrial chain (from production via reproduction and marketing to consumption) based on and protected by these absolute monopoly copyrights. As these monopolies rest on, even are created by, copyright legislation, any counterweight of competition law to be considered is severely limited in practice.

However, in *the markets for recording, multiplication and distribution*, copyrights tend not to play an important role. These shackles in the chain may be outsourced, as well as be performed in-house.[78] Trust is an important factor here.[79] Partial copyright transfer often happens by temporary and limited licensing in order to make the work at hand legitimate.

The *market for music consumption* supports agreements on prices for specific licensing schemes for specific recordings. They are chosen by the copyright-holding music industry and the customers decision to take it or leave it. Licensing schemes are of a private law character and free in principle, only to be constrained by public law exceptions. Which exceptions are legitimate in the light of the WIPO agreements is not always clear and neither is it always self-evident whether or not an exception can be circumvented by contract (see Part IV). Anyway, there is considerable room for differences amongst consumer licensing schemes. I give three classical examples to sketch the room for variation.

Traditional music-consumption licensing allows for ownership of the physical container, for unrestricted private playing and listening and for producing private copies for personal use, included in the fee for purchasing the container.

One can also think of the (legitimate) licence to play the contents of a specific container one time on an identified playing machine for a fixed price without the right to produce a private copy for personal use (‘jukebox licensing’).

And one can also imagine (legitimate) licensing of the right of access to a whole collection of containers and to play any one of their contents at any time for a flat fee per month with the right to make private copies for personal use (‘library licensing’).

---

[78] Williamson’s (2005) analysis on governance seems particularly adequate on this subject.

[79] Consider, for instance, the emergence of ‘bootleg’ recording-session tapes, harvested by technicians.

Internet music-consumption licensing *can* support any of these licensing schemes, and many more. It is up to the music industry to design adequate services with adequate licensing schemes and pricing and, as said, up to the customers to take it or leave it.

The introduction of consumer electronics has opened up possibilities for consumers to make private copies for personal use (time and player shifting). It has consequently induced the music industry to claim remuneration of the connected loss of copyright revenue. Legislators have sometimes rewarded the claim by prescribing levies to be paid at empty-container sale.

The subsequent marriage between Internet and consumer electronics has boosted the possibilities for consumers to make and distribute copies towards global levels. The levy system is not considered to be effective for Internet. Consequently, the music industry turns to digital rights management in order to create a separate market for music consumption on Internet. Since digital rights management is realized by specific communication standards, encryption methods and authentication methods, it is realized in the orchestrated production of digital-content containers and rendering consumer electronics. Digital-rights management functions are realized in computer hard- and software, in principle open to hacking. On request of the music industry, the legislator has promulgated rules that make digital-rights-management hacking a crime. And case law is currently extending the interpretation of liability and damages rules so as to include liability for software providers of peer-to-peer programs that are marketed for infringing use.

On the market for music consumption, licensing contracts create private rules. Laws on liability and damages protect these rules and tend to be of a more public nature, specifically where knowingly making a profit by infringing copyright-based licensing rules is defined as a criminal offence. Enforcement of these rules is difficult – transgression of these rules will often take place in conditions protected by privacy rules. Consequently, these come into play when the music industry invests in policing for licence infringement by customers.

The *market for free information exchange* on Internet is governed by rules on the freedom of information. These can be, and are, legitimately limited by the rules on copyright and copyright licensing as sketched above and as discussed in Part IV.

Of course, one of the reasons why the war on music-file sharing continues might well be the overlap shown by the market for music consumption and the market for free information exchange.

### 3.2.5 *Policies*

Policies are informal rules, inducing and describing practices for efficient and effective behaviour within the transaction space as limited by rules. They are not (directly) linked to legal, but to economic (efficiency) and social (effectiveness)

sanctions. Since the links with their efficiency and effectiveness may be forgotten through repeated use, policies tend to contribute to path dependence.

Most of the rules (as described above) have been designed before Internet came into existence. During these times it seemed effective to consider copyright to exist *by default* on any information on any carrier as the copyright was concurrently generated with the creation of the work *per se* and as (re)distribution required professional effort which, also by default, included negotiation about licensing. Internet, as a space for free information exchange, took off under different defaults. (Re)distribution no longer required professional intermediaries and the population of Internet (and thus the content to be exchanged) belonged in its first years (1970-1993) almost exclusively to the internationally oriented realm of academics – enjoying unrestricted information exchange on Internet as more efficient and more effective than the traditional information (re)distribution practices – the exception being computer programs, where a distinction between copyrighted and copyright-free distribution could be readily derived from its code form (source code: free and object code: protected). So during Internet's first decades, the universal practice emerged to consider any information not in object code to be copyright-free information.[80] Consequently from 1993 onwards, when it became more and more efficient and effective to commercially (re)distribute information through Internet, two different types of practices started to become mixed. The aboriginal one considering (re)distribution of information on Internet free by default (if not explicitly labelled otherwise) and the traditional one from the physical world, considering (re)distribution of information anywhere – also on Internet – to require previous negotiation about licensing. Both policies are compliant with legal rules, as long as it is clear what licensing conditions apply for which Internet information. Since both policies refrain from providing this clarity,[81] the aboriginal Internet policy becomes more and more of a legal risk, thus introducing severe inefficiencies into the realm of free information exchange, where it becomes necessary to search for and contact right holders who may either consider the licence to (re)distribute self-evident or consider it an equally self-evident subject for negotiation. On the other hand, and in the light of existing aboriginal Internet practice, it becomes more and more of a risk to the traditional market for information exchange (and thus to the music industry) to produce copyright-protected works in unmarked digital containers when these are open to what they consider Internet free riding. It seems clear to me that the clash of both practices on Internet shows path dependence in both institutions (the music industry and the sharers).

[80] Even then, distribution of commercial programs in object code showed so many disadvantages that from the 1980s onwards movements for 'open source' like the Free Software Foundation and later, for 'open content', were established.

[81] Not due to a lack of IT-support – see for instance the operational licensing publication service of the 'Creative Commons' at <http://creative.commons.org>, also supporting labelled audio-file publications on Internet.

Several solutions are available. First, Lawrence Lessig's initiative of the 'Creative Commons' will (for instance and in principle[82]) support efficient licence-information labelling of audio-files published on Internet. Second, digital rights management coding of Internet information will not only support licence-information labelling, but also the automated enforcement of the conditions for use.

Looked at from the perspective of these two policies, the war on music-file sharing may peter itself out when new practices emerge and become accepted to provide more information on licensing together with the information proper and together with digital rights management services that automate enforcement in a manner which is acceptable to the consumer.

Still two other policies need to be mentioned here. First, the policy as developed by the music industry to enforce copyright-licensing compliance through mass litigation against individual users who may also be customers. Its efficiency and effectiveness depend on the way the litigation influences the future behaviour of sharers. And second, the policy to provide more secure and intractable peer-to-peer services for free information exchange on Internet like Freenet. This second policy is motivated by considerations of free speech support, not by considerations of copyright-protected file-exchange support (although it may be employed in that way). One of the most important legal and jurisprudential questions of our times will address the issue of the legitimacy of software design and provision, supporting intractable information exchange on Internet.

### 3.2.6 *Norm-sets*

What remains at the centre of the controversy is the immense (and still growing) collection of unlabelled and unprotected music (and, currently off-topic: other media) files floating around on Internet, generated for sharers by sharers who have ripped (and are still ripping) music containers unprotected by digital-rights-management functionality. The practice of ripping physically unprotected but copyright-protected music files and redistributing them on Internet is against the law, as has been extensively discussed before. This practice is so widespread, however, that it makes sense to look for the norms involved – that is for the shared 'policies' that have emerged irrespective of the applicable law. In the institutional framework, norms are rooted in considerations of efficiency and effectiveness. It is consequently a reasonable expectation that the norms supporting illegal peer-to-peer music-file sharing of physically unprotected files which have emerged *after* the Napster experience showed the enormous efficiency and effectiveness boost (by its network ef-

[82] It may be useful when there is any copyright-protected information on a digital container to publish the identity of the maker as well as the address and identity of who owns the copyright it in order to support efforts to procure licences for secondary use. I am not sure that the Digital Commons scheme supports this.

fects) as provided by transforming sharing among friends in the physical world (a practice not actively fought by the music industry) into sharing among anyone connected.

Considering the ways in which norms emerged to handle boundary and cattle-trespass issues in Shasta County (California), Robert Ellickson showed empirically that efficiency problems with the law might in practice be handled in ways which diverge from formal-law guidance.[83] Napster practice, and its later peer-to-peer equivalents, proved very effective and efficient, but against the law. Peer-to-peer efficiency and effectiveness were there, but not supported by the music industry. When peer-to-peer started, those providing it expected the music industry to jump at the opportunity to make it productive in a legitimate way and provide their customers with a better service. But it did not do so. No equivalent legitimate alternative came to the fore. Consequently, one of the norms behind the persistence of illegitimate peer-to-peer may well be the very basic normative notion that if an industry does not supply a service in accordance with the expectations of the customer, the customer is free to provide it herself if she is able to. It is the basic norm that encourages individual initiative and expects the invisible hand of the market to do its thing.

Unfortunately, the basic norm as sketched above cannot easily be distinguished empirically from quite another norm that may be responsible for illegitimate peer-to-peer use. That would be the norm (using music-industry rhetoric) that whenever the opportunity arises to steal unnoticed it would be inefficient and ineffective not to do so. This, rather than the former, is the regularity in social customer behaviour as feared by the music industry.

The music industry is not relying on the invisible hand of the market, but on the power of strict legal enforcement of monopoly privilege. And it is able to do so, because it is protected by law to monopolize the distribution of copyright-protected work up to the point where offering the better service by the customer becomes forbidden.

### 3.2.7 *Organizations*

Representation of the networks of organizations[84] that make up the top-level institutions playing the roles of the contesting sides in the war on music-file sharing is a

---

[83] Robert C. Ellickson, *Order without law: How Neighbors Settle Disputes*, Cambridge: Harvard University Press 1991.

[84] Organizations have individuality and often have legal personality. They have an internal structure, often hierarchical. Organizations are the tangible elements of institutions that produce, change and disseminate rules. They perpetuate beliefs, norms and policies or influence them. And they perform all these tasks in order to beat the market for efficiency (like Coase suggested) and/or effectiveness (as many tend to add). And organizations have value character – that is, they show a characteristic

matter of choice.[85] I choose to focus, first, on hierarchy and to subsequently search for non-hierarchical relationships with organizations outside the hierarchy.

a. The music industry

At the top level there are two[86] organizations which are operational, the IFPI (the International Federation of Phonogram and Videogram Producers) and the RIAA (the Recording Industry Association of America). The IFPI represents the music companies outside, the RIAA represents those within the USA. The IFPI and the RIAA are affiliated. Together they represent music-companies worldwide. Both organizations see the fight against peer-to-peer based on free riding as one of their major tasks. They further spend a lot of effort on awareness building around the immorality of free riding and on knowledge transfer concerning estimates of free-riding damages and, more in general, on branch performance statistics. The IFPI not only allows recording companies to be members, it also welcomes national associations representing them. I choose the last ones to make up the second organizational level in the institutional analysis.[87] The national associations mainly act to represent the recording companies for copyright enforcement, for infringement policing and, if necessary, for filing lawsuits. At the third level of the hierarchy, I locate the national branches of the recording companies. This three-level worldwide hierarchy is a smoothed sketch of reality, but I consider it sufficiently true to reality for analytical use.

This smoothed-down hierarchical structure of organizations has several links to outside organizations. One of them is the linkage to the company hierarchies of the recording industry.[88] As about 80% of the world market for recorded music is in the hands of what is currently called 'the big four' (referring to Universal, Sony BMG, Warner and EMI in sequence of market share). I thus consider to exist at least four different enterprise hierarchies built upon the national branches of these companies. Between these companies and the institution under investigation there will be cross-hierarchy feedback relationships at any level. It is to be expected that the rules for behaviour in the national branches will be set by the company hierarchies at executive level. Consequently, the rules within the hierarchy of the music industry are (mainly) set, or at least acknowledged by the big four. Another set of links exists between the music industry and international non-governmental organiza-

---

blend of four basic end-means tuples: profit-entrepreneurship, security-power, non-profit freedom of speech and autonomy-privacy. And, finally, organizations often are institutions by themselves. This is a shorthand summary of family characteristics that together are supposed to structure a meaning quite near to what 'organization' means in natural language.

[85] 'Recording industry', 'record industry', and 'music labels' are a few other references used.

[86] It only makes sense here to focus on organizations of considerable influence.

[87] Consequently, the RIAA operates at two levels in the hierarchy.

[88] To be distinguished from the 'music industry' here.

tions like the WIPO and the WTO,[89] both working at getting and keeping copyright legislation harmonized all over the world at an acceptable level. Consequently it may be expected that the big four have a serious influence on legislation and legislation maintenance. Another set of links exists between the big four and their related markets (for copyright transfer, for production, logistics and retail and, finally, for customer-licensing). Again, the rules, policies and norms involved are decided upon by the company executives. Lobbying for legislation, policing for infringement, related prosecution and copyright-related propagative activities are the activities that are partially[90] outsourced by the recording industry to organizations in the music industry (as one of the two institutions under investigation).

It may be concluded from the organizational structure and its outside links that the music industry as an organization operates for and is guided by the recording industry, and that the market for the recording industry is largely in the hands of the big four, resulting in their considerable influence. The recording industry consists of companies, largely searching for profit and employing entrepreneurship to that end. The music industry as an institution is of a more mixed character. At the bottom, its participating organizations are mainly of a profit-entrepreneurship character. At the higher two levels, the organizations in the institution operate in a non-profit manner, employing their freedom of speech to propagate their moral views and employing their agency to enforce them. A crude characterization might be that the music industry as an institution does not operate for its own profit, but for the ideals it nurses considering the profitability of the recording industry it represents.

b. The sharers

The organization of the sharers is a completely different story. First of all, the question must be raised whether they make up an organization at all. The 'Sharer community' organization does not have individuality or (legal) personality. If the sharer organization has an internal structure at all, it is the structure of a completely flat network, managed by a computer application. And if the sharer organization has internal rules, they concern the conditions for participation and the workings of the software. Some of these rules may be enforced internally by digital rights management[91] (for instance when no passive sharing will be allowed when active sharing

[89] Rumour has it that at the moment of writing this (August 10, 2006) the Swedish government has been informed by the USA government that it will request a WTO panel action if the Swedish court will rule in favour of 'Pirate Bay' (a site supporting media sharing with Bittorrent) in the current, not yet decided case (expert commentary on BNR radio, August 10, 2006).

[90] This outsourcing hardly ever includes the exclusive transfer of authority. Companies will take action in any of these areas if considered necessary.

[91] Digital rights management equals law enforcement procedure, when delegated to IT. I consider the acceptance of conditions for participation to constitute the entrance of contract, making compliance with these conditions part of private law ruling.

is denied), others are expected to be enforced externally (for instance when participation conditions prescribe that non-copyright-protected files should be exclusively made available). These rules are all made, changed and distributed by the entrepreneur responsible for the design and the dissemination of the peer-to-peer software at hand. So, eventually, it seems that we indeed have an institution here, with a host of sharing organizations – as many as there are different peer-to-peer software designs – in each of which its entrepreneur sets the rules, implements them in autonomously networking software products and distributes these. Peer-to-peer software for music-file sharing shows network effects and efficiency at a level previously considered incredible. Partly, perhaps, because the inherent organizations have virtually no overheads. Once the software is made available, the entrepreneurs can leave the scene. All the work is further done by the software and the participating individuals. Often, however, a feedback link remains between the community and the entrepreneur providing the software and its updates. It is interesting that there are hardly any cross-institutional links between sharers and the music industry. Attempts in that direction – when KaZaA requested negotiation with the music industry in order to make its service legitimate in 2001[92] – have always failed up to now. Many loosely-knit cross-organizational feedback links exist with foundations, supporting licensing labels (like the 'Creative Commons') or resisting the policies of the music industry (like 'Boycott RIAA' and the 'Electronic Frontier Foundation').

Like the music industry, the sharer organization has a mixed character. It profits from the lack of copyright remuneration; it has a non-profit character where it propagates free-information exchange on Internet and also where it propagates the development of legitimate peer-to-peer services.

### 3.2.8 *Individuals*

Individuals are the people in institutions that may transact. I distinguish between functionaries and publics. Functionaries are individuals working for an organization; publics[93] are the individuals, addressed by organizations. In Table V-5, I have listed the individuals, related to the organizations in the music industry as an institution.

The relationship with the organizations is relevant, because (in addition to the exceptions to the freedom to act as promulgated by public law and which count for all individuals) when individuals are functionaries, they are bound by contract in their behaviour towards the organization, which links their expected behaviour to rules, policies and norms set by these organizations. For instance: employees of the

[92] Almost ironic in this context is the settlement between KaZaA and the music industry as agreed upon on July 27th 2006.

[93] Terminology borrowed from marketing management literature, e.g., Philip Kotler and Karen F.A. Fox, *Strategic Marketing for Educational Institutions,* Prentice-Hall, 1985.

| Organisation | Related organisations | Individuals (type) |
|---|---|---|
| IFPI and RIAA | Recording companies<br>Legislators<br>WIPO, WTO | Employees (F)<br>Politicians (P)<br>Sharers (P) |
| RIAA (and other national associations for the recording industry | Recording companies<br>Legislators<br>National judiciaries<br>Peer-to-peer system providers<br>Internet service providers | Employees (F)<br>Politicians (P)<br>Courts (P)<br>Entrepreneurs (P)<br>Sharers (P) |
| Recording companies (e.g., 'The big four') | Recording studios<br>Printing companies<br>Distribution companies<br>Retail companies<br>Peer-to-peer system providers<br>Internet service providers<br>IFIP, RIAA and national associations | Employees (F)<br>Composers (F)<br>Performers (F)<br>Lyricists (P)<br>Entrepreneurs (P)<br>Customers (P)<br>Sharers (P) |

Table V-5 – Individuals in the Music Industry as an institution

IFPI, the RIAA and other music-industry associations as well as employees of the recording companies are employed by organizations which have a stated goal to fight music-file sharing. For employees of such organizations it is – either by rule or norm – not expected that they take part in sharing 'communities'. The same goes for composers and performers, who have bound themselves by contract to transfer their rights to the recording industry. If they would start taking part themselves in sharing their files, they would take part in breach of contract, so when it comes to sharing their own work, they are bound by rules.

Something quite different applies to politicians, judges, most lyricists, the ISP entrepreneurs, the peer-to-peer entrepreneurs and the sharers: they are publics of the music industry's organizations in the sense that they are not bound by previous contract to them and are free to behave independently. This behaviour may even go against public law if the norms of the institution wherein these individuals take part as functionaries are strong enough.

In the sharer institution (see Table V-6) there are two groups of individuals that operate as functionaries. First, the entrepreneurs, who are responsible for design and deployment of the software. Second, the sharers, who agree to the conditions, set by the entrepreneur for using the software. All other individuals involved are publics to the sharer institution and, consequently, free in their behaviour towards it.

These publics may have an influence on the behaviour of the entrepreneurs who design and deploy peer-to-peer software, as well as on the behaviour of sharers. In our institutional framework these influences follow the paths of the feed-back mechanisms available.

| Organisation | Related organisations | Individuals (type) |
|---|---|---|
| Peer-to-peer systems (KaZaA, Limewire, Bittorrent, etc.) | Internet service providers<br>Recording companies<br>Legislators, WTO, WIPO<br>National judiciaries<br>Recording studios<br>Printing companies<br>Distribution companies<br>Retail companies<br>Peer-to-peer system providers<br>Internet service providers<br>IFIP, RIAA and national associations | Entrepreneurs (F)<br>Sharers (F)<br>Customers (P)<br>Employees (P)<br>Politicians (P)<br>Courts (P)<br>Composers (P)<br>Lyricists (P)<br>Performers (P) |

Table V-6 – Individuals in the Sharer institution

### 3.2.9 *(Market) feedback mechanisms*

Feedbeck mechanisms support transactions concerning institutional performance between organizations and between individuals and organizations. Feedback is not restricted to intra-institutional communication; individuals who are a public to one organization may be functionaries in organizations of other institutions. Thus feedback mechanisms open up the institutional analysis to influences of external institutions (e.g., courts, legislators), external to the institutions primarily discussed (music industry, sharers).

Feedback mechanisms are different in organizations and in markets. Organizational feedback is between functionaries within organisations or between hierarchically-ordered organizations. Market feedback is feedback where individuals and organizations communicate without being bound by a previous contract. On organizational feedback, much has already been said, for instance when showing the intricate organizational structure of the music industry and the recording industry or between the music industry and national legislators and courts. These feedback mechanisms tend to be bound either by previous agreement, or by public law procedure.

In Table V-7 there is a sketch of some of the market feedback mechanisms considered essential to the war on music-file sharing between the music industry and sharers. I will discuss them briefly for their potential to influence behaviour. I will focus on feedback relationships showing some development.

a. SPs (Internet Service Providers), entrepreneurs and sharers

One interesting feedback relation between two organizations external to the institutions under investigation is the relation between ISPs and the legislator. In Europe, liability legislation is harmonized – providing access, caching and hosting providers with distinct exceptions. These regulations leave much to be interpreted, and

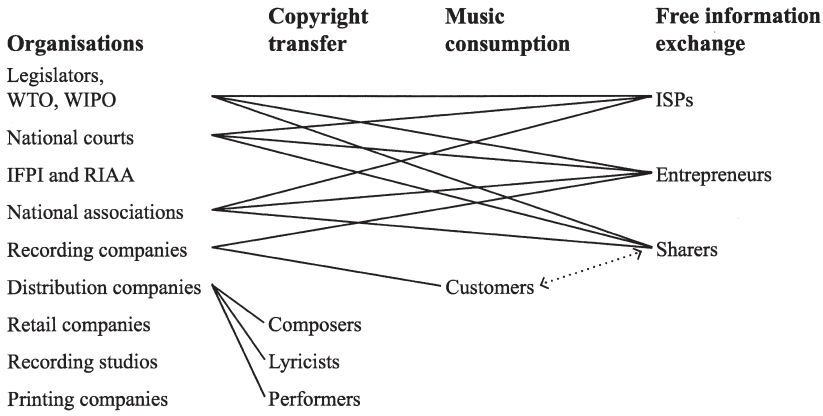


Table V-7 – Market feedback mechanisms for the music industry and sharers

ISP feedback to the legislator concerns more clarity in their duties. One way of formulating this type of feedback is done indirectly, through negotiations with national associations of the recording industry, who crave for information on sharing and sharers and through formulating their defence when confronted with lawsuits by the associations, for instance for providing the names of their customers in relation to IP addresses. Feedback is the other way around too: court decisions will clear up vague concepts as used by the legislator and the issues brought to court by the national associations will make it clearer in what way they perceive their interests to be related to ISP services. Feedback relations between the legislator, courts and national associations follow the same lines.

b. Customers and sharers

There is one very important and simple market feedback relation between customers and recording companies. It is the relationship, where the customer can express satisfaction with quality and/or price about the service provided by buying – and dissatisfaction by not buying. The practice of not buying for Internet use but to share is becoming an ambiguous statement in this relationship. At first it was not so. When there were no alternatives – say until 2004[94] – sharing could be seen as a message of dissatisfaction about legitimate services not being offered on Internet. This interpretation is born out by the incongruity between the (tiny – if at all) drop in regular music sales and the sheer volume of music files shared on Internet.[95] If at all, there was hardly any displacement of regular sales by sharing at a proportional

[94] On April 28th 2003 Apple launched the iTunes Music Store, the first Internet music store to gain a commercial market for music files on Internet.

[95] Felix Oberholzer-Gee and Koleman Strumpf 2005, *The Effect of File Sharing on Record Sales: An Empirical Analysis:* <http://www.unc.edu/~cigar/papers/FileSharing_June2005_final.pdf>.

level, which supports the hypothesis that PC-based music consumption is rather an additional market to the traditional market for music consumption than a displacing one. After 2004 the ambiguity set in. When the iTunes Music store became more and more of a commercial success, a success urging the introduction of competing Internet music stores, the message changed. Thereafter, sharing can not only still be seen as a message of *customer* dissatisfaction (for instance, because Internet music stores do not make use of peer-to-peer efficiency and consequently need considerably higher prices than considered necessary by sharers and/or because as a message of dissatisfaction that the enormous amount of 'legacy' music files made available in peer-to-peer networks that have lost their commercial appeal and have gone out of print is not on offer legitimately), but also as a message of *sharer* contempt for copyrights. One of the most interesting aspects of the war on music-file sharing is the fact that the established music industry has not picked up on the customer dissatisfaction aspect of the feedback at all and has interpreted sharer behaviour exclusively as contempt for copyrights. While fighting against sharer 'terrorism', it forgot to spot the inherent additional opportunities of Internet, leaving room for an outsider organization like Apple to make an entry in the industry. The recording industry's failure to spot the peer-to-peer opportunities and to act upon them is picked up by the sharers as negative feedback, at least partially motivating their sharing practice.

c. Composers, lyricists and performers

Composers, lyricists and performers have very strong market feedback mechanisms in their relationship with the recording organizations. They start out with absolute copyrights and are free to dictate licensing conditions. As we have seen, things have taken a different turn on the market for copyright transfer: in almost all of the cases the recording organizations prove to have better bargaining power. From an institutional perspective this is not very surprising, when we take into account that the music industry has become *the* institution fighting for copyright enforcement, while composers, lyricists and performers do not easily organize in associations that will enforce copyright for themselves. As is turns out now, about 80% of the profit in the music industry ends up in the recording industry. Interestingly, the feedback possibilities available to the composers, lyricists and performers are hardly made effective for a reshuffle of profit distribution. Perhaps Olson's logic of collective action[96] is at work here, together with the autonomous character of artists,[97] preventing them from teaming up in effective political pressure groups.

---

[96] Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press 1965.

[97] See also (by analogy) the 'group-grid' classification in: Mary Douglas, *Natural Symbols*, Routledge 1970.

### 3.2.10 *Belief-sets*

Belief-sets are collective expectations concerning the effects of specific events that motivate behaviour. Beliefs as to how organizations and their members will react to specific events are embracing (and will mainly be interpreted as opportunities) or defensive (and will mainly be interpreted as threats, or risks, to be linked with blame); beliefs as to how the universe works or is made to work are metaphysical (either scientific or religious).[98] Beliefs and norms motivate individuals to follow institutional rules.[99]

#### a. Embracing beliefs

The music industry is fostering an embracing belief towards the possibilities of digital rights management combined with Internet distribution. The new possibilities to design services cost-effectively towards almost complete individualization (for instance, distinguishing between licences to listen once or twice for IP address X) open ambitions towards something resembling a price-discriminating monopoly, protected by law – a situation close to paradise for any industry. A matched belief concerns excludability. Where Lessig's observation that the freedom on Internet will subside (and has subsided already) for tractability,[100] the music industry firmly believes he is right and, contrary to Lessig's constitutional analysis, welcomes it, employing this tractability (i) to prepare price-discriminatory Internet services and (ii) to gain evidence in order to enforce copyright through litigation.

One part of the sharers believe that free information exchange on Internet is to be welcomed as extremely beneficial – to them and to all. They see the Internet not only as a place where publication of any information by any individual makes it instantly available worldwide, they include an ambition to make Internet a global 'library' of any information, fed by and accessible to all.[101] Sharers believe in reciprocal information exchange, globally. Many of them believe it perfectly possible to design and deploy peer-to-peer architectures for commercial services in a manner that need not interfere with their ideal of Internet as a place for free information exchange. Another part of the sharers – the veritable free riders – believe that peer-to-peer services provide opportunities to dodge copyright remuneration and consider it silly to ignore this possibility as long as the risk to be caught and held liable is low enough.

---

[98] Since religious beliefs hardly have any relevance for our two questions, I will not be addressing them.

[99] Avner Grief, *o.c.* p. 36.

[100] Lawrence Lessig, *o.c.*

[101] And for instance initially expressed by 'Google Books'.

b. Defensive beliefs

The music industry believes that sharers invade severely into their sovereign jurisdiction over copyrights and licensing. The music industry perceives peer-to-peer music-file sharing as a deadly risk to its revenues, to be fought by any measure. The reasoning involved is based on three other beliefs: (i) one concerning the identification of the new markets for music consumption (Internet, iPods, mobile telephony, etc.) with the traditional one (thus keeping them barren until sufficiently secure business models have been made available), (ii) another concerning the free-rider attitude amongst customers on these new markets to be or soon to become ubiquitous unless copyright infringement is strictly enforced – by mass litigation, by digital rights management or both and (iii) the last one concerning the music industry's own (lack of) capability to launch these business models under sufficiently secure digital rights management applications. On the other hand, the sharers believe that the music industry, with its tendency to employ Internet tractability for litigation and digital rights management, invades their perceived autonomous jurisdictions to shift music-files in their homes and to bring and keep information-sharing communities into life. Furthermore, the sharers believe that the music industry is not serving them up to scratch, by not developing legitimate (or postponing their deployment as long as they can), remunerated peer-to-peer services. Sharers believe that the music industry severely invades their autonomy by depicting their behaviour as amoral. Some of them believe they have to protect themselves by designing and employing intractable peer-to-peer services. Others invest in hacking digital-right-management instruments that prevent private (re-)use.

3.3 *The war path*

By now, the institutional framework has been instantiated sufficiently to start looking for results. Let us first bring back the two questions and answer them succinctly by linking regularities in social behaviour to motivating beliefs.

- *Why does the music industry not offer for money peer-to-peer distribution (or why does it not provide licences to aspiring peer-to-peer services)?*

The music industry does not yet offer for money peer-to-peer distribution (1) because it does not believe to have sufficiently secure digital rights management systems available, (2) because it believes that hacking digital rights management will have explosive network effects, endangering the whole industry, (3) because it does not believe that the Internet market for peer-to-peer information exchange offers sufficient additional business opportunities to take the risks involved early, (4) because it believes that it does not have an obligation to do so, as its jurisdiction is protected by its legitimate and absolute monopoly rights, (5) because it believes

that strict enforcement will prove effective and (6) because it believes that the morality of sharers equals 'steal if you can do so unnoticed'. It does not provide licences to others motivated by exactly the same beliefs.

- *Why do sharers massively use peer-to-peer services, ignoring copyrights and why do they, concurrently, still buy music from the music industry?*

Sharers keep sharing because they believe (1) that peer-to-peer provides superior service when connected. When sharers still buy music from the music industry they do so because they also want to listen to music on their legacy equipment when *not* connected to Internet, PDAs, iPods or mobile telephones. Sharers are split into two subcategories. The members of one category, the idealist sharers, ignore copyrights because they believe (2) that the recording industry fails them and (3) invades their autonomy to share by its enforcement and defaming policies, thus (4) construing their moral right to share and their inclination to 'fight back'. The individuals in the second category, the opportunist sharers, simply prefer to free ride when they believe (5) not to be in immediate danger of prosecution, thus motivating opportunist behaviour relative to the level of actual enforcement.[102]

The answers to the questions concern the motivation to fight. Genuine motivation to fight can, on the one side, be found in a homogeneous music industry, organized to represent the recording companies, and, on the other side, in the self-organized group of idealist sharers. These motivations to fight both stem from separate institutional histories. Music distribution has always been protected by copyright enforcement; it is its main defensive policy. The music industry was created to effectuate this approach in a long history of necessary adaptations when new techniques for copying and distribution appeared on the market. The music industry simply continues this approach in the face of Internet opportunities. The sharers' motivation to fight stems from the 'community' character of early cyberspace inhabitants, who experienced anonymous and open communicative co-operation, unlimited by physical distance as new and extremely valuable in practice and thus embraced it to be their policy to be as open as possible and to keep interference to a minimum. The 'community' character of Internet has not only proven to be persistent as the successes of 'open initiatives' as well as of list server, chat, search, blog, RSS and peer-to-peer services show, its success also makes it attractive to commerce. Sharers have a tendency to fight commercial invasion of their autonomy to take part in community activity,[103] unless the service offered is considered ad-

[102] Sudip Bhattacharjee, Ram d. Gopal, Kaveepan Lertwachara and James R. Marsden, 'Impact of Legal Threats on Online Music Sharing Activity: An Analysis of Music Industry Legal Actions', *The Journal of Law & Economics*, Vol. XLIX(1), April 2006, p. 91-114.

[103] Contests about commercial invasions lead to different solutions. In the open source movement, for instance, communities of programmers (or authors) have united to protect their autonomy, making their works openly available using carefully designed licensing schemes. Many scientific researchers

equate.[104] Both sides in the war on music-file sharing have selected a policy long before peer-to-peer came to the fore. Both sides clung to their proven policies when confronted with peer-to-peer. They were already following their paths to war, long before the contested issue arose.

## 4. Recommendations and Conclusions

### 4.1 **Institutional understanding**

Institutional analysis assumes beliefs to provide the motivation for generalities in social behaviour, as shown in the previous section where the two questions raised were answered. I suggested that the behavioural paths as chosen by the contestants were rooted in proven policies, thus providing instances of path dependence. The question raises itself how to break the resulting deadlock. In Table V-8, I show the relevant beliefs of the two contesting institutions as contradictory beliefs. These contradictions show that there may be domain overlap and thus semantic ambiguities (Smits calls them 'monsters'). In this section I will first identify these monsters, in order to try and pinpoint the parts of the domain where the battle is about and relate these parts to appropriate market definitions in order get a more condensed focus for the final analysis.

#### 4.1.1 *Monster, monster domains, monster markets*

Considering the contradictory beliefs as presented in Table V-8, I can see two monsters. The first one concerns the music industry's perceived entitlement to enforce copyright compliance with digital rights management functions as it overlaps with the autonomy on Internet as perceived by the sharers. It is the DRM-autonomy monster. The second one concerns the customer's requirement of a proven optimal service and her capability to collectively provide it as it overlaps with the industry's entitlement to decide on business and service models as well as their pricing. It is the initiative-monopoly monster.

The DRM-autonomy monster domain shows itself, for instance, where customers expect to be able to play their acquired music containers in several different machines at home and the music industry employs limiting DRM techniques. The domain for the DRM-autonomy monster is the customer's private sphere. And to protect this sphere, some customers are willing to risk prosecution for hacking

currently seem to be following their lead. It seems that in fast-growing areas of intuitively open co-operation (chat, search, blog, RSS) licensing schemes are non-existent, opening co-operative practice to commercial invasion along the lines of default copyright protection.

[104] Google seems to be *the* example here. iTunes also gains growing support.

| **Music industry** | **Sharers** |
|---|---|
| Strict enforcement will be effective | Secure DRM is an invasion of autonomy |
| Sharing will be ubiquitous without secure DRM | Defamatory & dangerous to idealist sharers |
| No sufficiently secure DRM yet available | DRM evokes hacking by idealist sharers |
| No obligation to enter p2p market | p2p provides superior service |
| p2p market not feasible for the music industry | Customers do so themselves by sharing |

Table V-8 – Contradictory beliefs

DRM.[105] Let us call this domain the primary DRM-autonomy domain. It is closely linked to a future market as perceived by the music industry: the market for price discrimination for different services, even within families. A secondary domain for the DRM-autonomy monster concerns the manner in which hacked music-files will be shared. The music industry fears and expects of its customers that they will share music-files once cleared of the DRM protection with all the rest of the world on Internet, instead of limiting it to within-family sharing, thus opening the market for digital-music consumption sideways, for free. Thus the secondary market relating to the secondary DRM-autonomy domain is the world market for multiplication and distribution of non-DRM protected, but still copyright protected digital music-files. This is the market the music industry wants to protect through litigation. And this is also the market that threatens to contaminate the open-information-exchange character of Internet by its unmarked copyright-protected containers. A tertiary domain of the DRM-autonomy monster concerns customer morality. The music industry expects its customers to 'steal' if the opportunity arises. I very much doubt whether the customers of the music industry agree. The tertiary domain of the DRM-autonomy monster is projected onto the secondary market mentioned.

The initiative-monopoly monster shows itself where sharers decide to rip and share their non-DRM-protected music collections where the music industry decides not to make them available through peer-to-peer. The domain involved covers the entitlement to decide on which music is made available through peer-to-peer. And the related market is the market for peer-to-peer music distribution of non-DRM protected music containers. So in the war on music-file sharing I found four monsters to fight. It helps to further sketch the character of the markets involved into five sub-markets:

(1) the market for DRM-protected music-container multiplication and distribution; This is rapidly becoming the default market for now and for the future. This is the market where currently commercial services like iTunes emerge. Conse-

[105] See: <http://www.pcworld.com/article/id,108462-page,1/article.html> on Jon Johansen's trial for hacking DVD DRM in order to get access to the contents for his personal use (January 7th 2003).

quently this sub-market is not a key issue in the war on music-file sharing. It is still of some interest. Currently, iTunes is gaining market share, which is remarkable in the light of the belief articulated by the music industry that if consumers can get it for free, they will. The phenomenon of iTune's success signals customer satisfaction with the commercial service, including the leeway provided to copy for personal use. It sheds some additional light on customer morality as well.

(2) the market for DRM-protected music-container consumption;
This is the consumption side of the market mentioned above. The most important issue concerning the primary DRM-autonomy monster seems to be the leeway the DRM-protection leaves for time- and playing-machine shifting for personal use within the personal and family spheres. Again, a sub-market outside the sphere of the war.

(3) the market for hacked DRM-protected music-container multiplication and distribution;
Apparently, too strict DRM conditions invite hacking, because buyers consider themselves to be free to play their music on various equipment. When customers start to upload hacked containers to peer-to-peer networks, this market becomes a danger to the commercial market for DRM-protected container multiplication and distribution. If hacking and uploading of DRM-protected recordings were to blossom and active sharers are not being put off by litigation, this market would be a candidate to displace music-industry control over the distribution of new recordings. Here the secondary DRM-autonomy monster comes into play. This sub-market is central to the war on music-file sharing.

(4) the market for non-DRM-protected music-container multiplication and distribution;
This is the market multiplication and distribution of legacy music-files, produced before peer-to-peer and DRM came into existence. The issue here is its sheer volume and its externality to music-industry control when peer-to-peer is employed. Virtually all music recorded before 2000 falls into this category. This market not only covers later reprints, but also many broad- and web casting channels as well as the uploading side of peer-to-peer, which is currently under heavy attack by music-industry litigation. As mentioned before more than once, there does not exist a legitimate peer-to-peer service for this market. Here the initiative-monopoly monster is at work (where customers provide a service while the industry does not), as well as the secondary DRM-autonomy monster (where intellectual property protection of unmarked files pollutes free information interchange on Internet). This sub-market also lies at the heart of the war on music-file sharing.

(5) the market for non-DRM-protected digital music-container consumption.
This is the 'audience' side of the distribution markets mentioned above. Here

> the secondary DRM-autonomy monster shows itself again. However, the real fight in the war under consideration is not in this sub-market as passive peer-to-peer consumers are not targets for litigation and as they consequently do not need to find out before listening whether or not they have the right to listen to the music files they downloaded.

Two sub-markets are central to the war on music-file sharing: the market for multiplication and distribution of hacked-DRM-protected music files and the market for multiplication and distribution of non-DRM-protected music files. Since it is not customary to name areas for war 'sub-markets' I will further refer to them as battlefields.

### 4.1.2 *Monster-management strategies*

As mentioned earlier, Douglas teaches us that communities, confronted by epistemic anomaly ('monsters') may employ interpretation, physical control, avoidance, danger attachment or meaningful projection for their protection.[106] Smits[107] refines Douglas' theory for epistemic moral anomalies. Where Douglas mentions the above five strategies for a culture's reaction to epistemic monsters, Smits identifies four: exorcism, adaptation, embracement and assimilation.[108] These strategies can be split into two categories: a closed, defensive one (including physical control, avoidance, danger attachment and exorcism) or an open, embracing one (including interpretation, meaningful projection, adaptation, embracement and assimilation). It is hardly surprising that if monsters are part of warfare, the strategies involved tend towards the closed, defensive type. The music industry can be considered to have chosen an exorcist approach on both battlefields, employing legal prosecution, combining it with danger attachment in its defamatory rhetoric and with physical control in its digital rights management approach. The sharers mainly employ avoidance and adaptation on both fronts.

Smits suggests that, in the long run, only assimilation (as an open strategy where both the cultural beliefs and the institutional interpretation of new technologies adapt themselves towards coherence) will be effective for monster domestication and I will follow her guidance. I want to note that there is a categorical shift between cultural beliefs and institutional interpretation. The institutional analysis presented earlier worked at the level of the separate institutions, embroiled in normative interpretation of each other while considering defences against perceived threats

---

[106] Mary Douglas, *Purity and Danger*, Routledge 1966

[107] Martijntje Smits, *Monsterbezwering – de culturele domesticatie van nieuwe technologie,* (tr: Taming Monsters – on the cultural domestication of new technology) Boom 2002 [In Dutch. Rumour has it, an English translation will be forthcoming in 2006].

[108] The English translations are from: Van der Sluijs, 'Uncertainty as a monster in the science policy interface: four coping strategies', *Water Sci Technol.* 2005; 52(6):87-92.

posed by the behaviour of the other. When looking for beliefs at the cultural level, those background beliefs are meant that both institutions share. In looking for cultural beliefs, I change the metaphor from a war between institutions to a war within – to a civil war within Internet as a Western[109] institution for information exchange, to a civil war between music[110] industry and sharers in our Western world. The cultural beliefs involved coincide with the relevant anthropological, IT, economic and legal 'knowledge' particles that have become generally received in Western culture. The institutional interpretations coincide with the beliefs as identified during our institutional analysis. If Smits is right, assimilation – that is: adaptation of cultural beliefs and institutional interpretations in the music industry and in the sharing communities – will help in identifying paths that will lead towards pacification of the war on music-file sharing.

### 4.2 **Institutional interpretation**

Our consideration of the war on music-file sharing has led to three mono-disciplinary Parts, as well as an institutional analysis. The complexity if it has all been reduced to two relevant battlefields, where the battles are fought. Cultural beliefs are related to these areas. I will select relevant cultural beliefs from the different disciplines, as they present themselves in relation to the disciplinary goals. Anthropology searches for a conceptualization of cultural and institutional differences in behaviour and behavioural motivation. Anthropology suggests that the practice of employing the single label of 'piracy' for different kinds of 'enemies,' as the music industry tends to do, may be a serious hindrance to assimilation. IT searches for automation of processes and thus for adequate formal descriptive and procedural representation. Economists search for efficiency and thus for institutional and individual behaviour that optimize economic welfare. Jurisprudence searches for quality legal systems and thus for a balance between freedom to transact and forbidden behaviour, setting limits to institutional and individual behaviour. The assumption is that where paths towards assimilation in war-like situations are discussed, anthropological guidance may help to adapt war rhetoric towards the employment of concepts, less prone to support contestation and its inherent tendency to prolong the warpath. And that economic guidance may help to show approaches to competitive *and* co-operative exchange that will support better welfare. And that jurisprudential guidance will help to identify conditions for institutional behaviour that will better support public order and economic, idealist and autonomous exchange as well. Fi-

[109] Of course, Internet is a global, and not a Western institution for information exchange. However, discussion of non-Western cultural beliefs would not only induce the introduction of yet another level of abstraction, it is also simply not within my capabilities.

[110] Peer-to-peer is not a problem which is exclusive to the music industry, but to the media and content industries in general. Although I think many of our results may be relevant to the media industry, I will continue to address the music industry proper.

nally, IT guidance may help to show how resulting business models may be supported by Internet services. Let us apply this approach to the two battlefields which are central to the war on music-file sharing as mentioned above.

### 4.2.1 *The battles over hacked containers: piracy and private use*

*Conceptualisation.* The first battlefield under discussion concerns multiplication and peer-to-peer distribution of hacked music containers, *i.e.* music containers stripped of their digital rights management protection. It makes sense to distinguish according to motives here and split the battlefield up into the domain for piracy (where the motive for hacking is financial gain) and the domain for private use (where the motive concerns the autonomous possibility to play and store legitimately bought music containers on the different players in use in the buyer's household). *Piracy economics*. Economically, piracy (as defined above) is a real danger. Piracy will displace regular sales and be harmful to recording-industry revenues. If piracy gets ubiquitous, the market for legitimate music sales may lose its foundation. The war against piracy is much older than the war against music-file sharing. Economically, it is of viable importance to keep piracy down. Here, economy asks for legal support: policing, prosecution and litigation are considered right on target. Freedom from piracy as defined here is to be considered a prerequisite for mass economic music-file exchange to take place. *Private-use economics.* History has shown that too restrictive digital rights management will evoke protest that may take the form of digital-rights-management hacking for personal use (considered legitimate in Norway, for instance), thus inducing the risk of hacked music files on the loose. Since the last circumstance is economically dangerous to the industry, I would suggest that the design of an appropriate leeway for a limited amount of private copies to be built into the digital rights management protection scheme might be economically feasible. Customers expect it as part of the service. Hacking for private use should be interpreted economically as unhappy customer behaviour. Two economic approaches may be valid. One seeks efficiency and welfare maximization through the market mechanism, the other allows for maximizing efficiency and welfare through price-discriminating monopoly. Both are theoretically equivalent, provided that all the services that would be supported by the market are actually provided by the price-discriminating monopoly and prices are equal to individual's willingness to pay. The recording industry has scented possibilities for refined licensing with price discrimination, in accordance with the powerful administrative possibilities of current on-line use. *Piracy law.* Piracy is unambiguously against private and criminal law in all countries under the Berne Convention and the WIPO agreements. *Private-use law.* Hacking and multiplication for private use are legally ambiguous acts because hacking digital rights management is legally forbidden under the 2001/29/EC Directive while copying for private use is generally considered either a legitimate exception to copyright or fair use – while

copying for private use is only possible without hacking when digital rights management allows it. Disambiguation is to be expected when price-discriminating policies are introduced for different licences in and excluding possibilities to copy for private use. *Digital rights management that prohibits piracy and supports private use.* Design and deployment of digital rights management schemes that prohibit piracy and support private use are utterly possible (as for instance the digital rights management design of iTunes shows). There will always remain risks, either because the protection is too strict and invites hacking for personal use, or because it is too strict to allow efficient use proper. Absolute security for Internet services is simply not practically feasible.[111] Many additional services are possible though. From the IT side it may be noted that policing may be supported by digitally watermarking[112] the content of the files that are at risk of being hacked.

*Recommendations* concerning assimilation of the hacked-containers monster are thus the following. Concerning the battles on pirate multiplication and distribution, assimilation is dependent on changed music-industry rhetoric (where a distinction is made between 'pirates' and 'hackers for personal use') together with non too strict licensing. Sharers will not take part in piracy, nor in hacking digital rights management instruments for personal use under these conditions – and if they do, they stop being sharers and become pirates. The music industry only needs to bend its relevant rhetoric and to show some licensing lenience for the assimilation of those sharers that have drifted towards piracy through autonomy-based idealism. Assimilation of veritable pirates is not an issue which is specific to the war on music-file sharing. Pirates do not share but sell counterfeit copies and have always done so. Here, every argument heads in the direction of a strategy of strict legal enforcement of anti-piracy laws. Assimilation of pirates is close to fantasy and hardly to be desired: it would require reforming them, perhaps even to employ them for the legitimate sales of the real McCoy.

*Conclusions* concerning the battle on hacked containers are simple: legal instruments are in place, economic arguments point towards employing them and IT arguments support the combined design and deployment of adequate digital-rights-management systems and piracy-policing automation. One question remains: whether it would make sense to legally limit restrictive digital rights management. The current trend seems to be supportive rather than discouraging to strict digital rights management, which is a legislative policy-break with traditional fair-use and/or legitimate exception practice. This trend goes against our recommendation.

---

[111] Bruce Schneier, *Secrets and Lies*, John Wiley and Sons 2000.

[112] Or similar techniques for authenticating the content's pedigree.

Let us proceed by looking at the second battlefield in the same multidisciplinary manner.

### 4.2.2 *The battle over unprotected containers: sharing*

Around the year 2000 a lot happened. Digital rights management did not yet protect recorded music. Virtually all personal computers contained CDROM players by default. Many of them became connected to Internet and broadband Internet access became available to the mass public and began to boom. People started to spend more and more of their time behind their PCs, much of it on Internet. On top of that, rip, mix, burn and peer-to-peer software became available. The second relevant battlefield that came into existence concerns the multiplication and distribution of music containers not protected by DRM. Let us take, for example, all music recorded and brought onto the market before 2000. If we assume that from 2001 onwards at least 5 million people have been continuously concurrently on-line, sharing music they bought and ripped or downloaded, it is self-evident that we have a very large battlefield indeed. And if we assume that the practice of producing music containers unprotected by digital rights management will stop sooner or later, it is also self-evident that this battlefield will eventually lose its urgency to the recording industry. We are not there yet, however. The battlefield over music containers unprotected by digital rights management is still the main battlefield. Let us call it the proper battlefield for sharing.

*Conceptualization.* The music industry has chosen the approach to identify sharing with piracy. Extending the 'piracy' concept so as to include sharers will confuse the issue, however, simply because sharers do not recognize themselves as pirates. Moreover, it may well be counterproductive when a turn to copyright compliance in the sharer communities is at stake (as it is). Confusing sharers with pirates (as the music industry currently tends to do) confuses the issue when different assimilation strategies might be effective for piracy and for sharing. Identification of piracy and sharing will induce the music industry to employ identical strategies (as it has done). Differentiation of concepts opens up the analysis to the differentiation of assimilation approaches (if necessary) that otherwise would remain inexpressible. And no harm will be done if differentiation into 'pirates' and 'sharers' proves unnecessary because then one strategy will be effective for both categories. Thus the first question to be answered is how we can distinguish sharers from pirates conceptually. Again it helps to look for a motive: pirates multiply and distribute for financial gain, while sharers multiply and distribute in order to get access to a better service.[113] An additional argument might be the argument of dimension. The sheer

[113] I am perfectly aware that sharing for access to a better service may be interpreted as sharing for financial gain (since procuring the better service legitimately would cost a lot of money), but I suggest postponing this argument simply because adopting it at this stage will prevent any discussion of other disciplinary arguments that may prove useful.

volume of the sharer army may call for a different strategy as compared with the (in comparison) tiny army of pirates. Another area for conceptual distinction may be the market for music consumption. As the consumption of music acquired through peer-to-peer can be assumed to take place predominantly when using computers and when being connected to Internet, the enormous boost in peer-to-peer may be related to its performance for computer users. As the amount of time spent this way has seriously grown since 1995, and as ripping and copying personal CD collections in one's computer is quite bothersome, it may make sense to face the possibility that peer-to-peer created its own additional market for computer users, concurrently with the network effects it almost immediately showed. Since this would also provide an explanation for the limited displacement effects observed in the economic literature, I find it useful to distinguish the markets for 'traditional' and 'connected' music consumption in the arguments below. Finally, it seems appropriate to solve a jurisprudential difficulty through conceptualization. Jurisprudence has spent much thought and effort on identifying minimum conditions for legal-system quality. Traditionally, these results have been considered to be exclusively operational for nation-state systems. Internet has confused the issue here: information exchange on Internet has largely freed itself from nation-state boundaries. As the previous analysis has shown however, it has not freed itself from institutions. My proposed conceptual move is to consider quality conditions for legal systems (as jurisprudential results) to be applicable to institutions. In itself, this move might and should lead to vast and hectic jurisprudential discussion. There is neither the time nor the place for it here. Consequently, I will further employ the conceptual shift mentioned as a working hypothesis.

*Sharing and economics.* On the battlefield for sharing we have distinguished a market for connected music consumption. On this market, the recording industry is reluctantly becoming active with iTunes-like services. On the same market, sharers provide peer-to-peer services, far superior not only *qua* user transaction cost and *qua* telecommunication support, but also *qua* diversity and the volume of music-files made available. On the demand side for connected music consumption there is an unfulfilled craving for legitimate services of at least peer-to-peer quality that is not made available although the customer base knows by experience that it must be possible to offer it against hardly any investment. The strong monopolist position of the recording industry might provide an explanation, as it strives for transforming into a still stronger (third degree[114]) price-discrimination monopoly. This explanation is unconvincing, however, since peer-to-peer business models, where customers would be employed by the recording industry to copy and distribute legacy music recordings while they would pay a fee for consumption would fit

[114] Terminology from Hal. R. Varian, *Intermediate Micro Economics*, seventh edition, Norton & Company 2006.

perfectly in this scheme. Since there would moreover be considerable additional profitable aspects to employing such business models (like the side-effects of supporting cultural inheritance preservation and of transforming the current war into an embracing lock-in of the sharer community with the recording-industry) it is difficult to understand why the demand mentioned is not being met on economic grounds. I do not see any other economic explanation than path dependence, concerning a once chosen defensive monster-fighting strategy. The circumstantial fact that *all* major labels have done so makes it a rather fierce example of path dependence. And this in the face of a business model that, at least for legacy music[115] – certainly for recorded but undistributed music[116] – will not show a lack of profitability, as the costs will be largely shifted to the sharers.

Liebowitz and Margolis[117] dissect path dependence into three degrees of which the third one (where inefficiency exists in hindsight, the path is chosen on imperfect information and where the error was avoidable) is considered not to be viable on analytical grounds related to the invisible hand. I would suggest that the example they are looking for in practice might well be the recording-industry approach to the market of connected music consumption in the face of illegitimate peer-to-peer. At the moment of recording now legacy music (before 2000), nobody was aware of the mass sharing to come. The business models for recorded music as employed before 2000 were tuned in to taping, burning and other small-scale forms of sharing but they were ignorant of future peer-to-peer. In 2000, we were all caught unaware by it. An example: even in 2006, Tim Kuik found no other words to describe his feelings when he recalled his first look at a peer-to-peer service than a simple 'WOW!'[118] Tim Kuik is the director of the Brein Foundation, the local Dutch association famous for its unmitigated litigation efforts against sharers on behalf of the music industry. His mind-set proves still to be completely focused on sharer-piracy identity. He did not even recognize his own genuine demand as he expressed it in this monosyllabic 'WOW!' And more in general the demand has not been picked up by the industry because it did not read customer behaviour as customer feedback, but as piracy. And when you consider your customers to be pirates, a business model based on cooperation with them will be dismissed as dangerous fantasy even before it is expressed. The recording-industry path dependence is the result of naive monster conceptualization, backed by neoclassical wonder about why people find service quality and free-information-exchange ideals sufficient incentives to take the trouble and the legal risks involved in ripping and uploading their personal

[115] As the recording industry has always separated the current, star-dominated market for (possible) hits from the legacy market for 'oldies', the content of the market for legacy music will move with time.

[116] And (off-topic but economically of more urgency) of undistributed motion pictures.

[117] S.J. Liebowitz and S.E. Margolis, Path Dependence, Lock-in and History, *Journal of Law, Economy and Organization,* Vol. 11, No. 1, 1995, p. 205-226.

[118] Interview on a Dutch Radio 1 show (Radio Online) on Tuesday, August 17th 2006.

collections.[119] From a welfare-economic perspective the path chosen by the recording industry is so inefficient that it might be worthwhile considering it as a market failure.

*Sharing and jurisprudence.* A jurisprudential perspective of the battle on sharing includes material law results, but looks for arguments in institutional quality as derived from conditions developed for the evaluation of legal-system quality. Looking at the war on music-file sharing almost naturally lures the spectator into considerations about copyright-related institutions in general. But looking at institutional aspects not directly relevant to the war will only confuse the results. So I will focus at the institution, directly operating on the sharer battlefield. I consider one single quality condition to be of relevance here, stated earlier as: *there cannot be a minimumly decent law system if it does not show at least one effective procedure for political feedback, supporting reciprocity in the relationships between the law system's elites and the law system's subjects*. Application of this condition to the informal lawsystem with the recording industry as the principle elite, setting its domain to concern licensing Internet music, its market to connected music consumption and its publics to include the sharers begs the question whether the rules of this institution support a procedure for feedback by sharers. Now as we are lucky to have an example we may conclude that it does, albeit through the background legal infrastructures. The Dutch KaZaA case from 2001 mentioned earlier shows the procedure to be available in the formal law system supporting the informal system. The judge delivered something resembling a Solomon's ruling by ordering KaZaA to remove its web site and by concurrently ordering the music industry to continue negotiations about licensing for remunerated, legitimate peer-to-peer (as requested by KaZaA). The licensing negotiations were never resumed, co-ordination by the international music industry prevented it. This case marks the path chosen by the recording and the music industries.

Thus the question remains whether the feedback procedure employed is effective. Apparently it is not. It is not effective because the court's ruling introduces an inconsistency, thus showing another failure, this time to comply with another quality condition: *there cannot be a minimumly decent law system if the enactment of rules is contradictory*. In institutional terms, the external feedback by the judge could be ignored by the addressed party because of the monopoly rights asserted by the law and by the same judge. The mainstream legal problem can be analysed as to consist in the exclusive distribution monopoly becoming available to the music industry by default as the result of copyright/licensing exchange between artists and industry, resulting in inefficient business models. In practice, the bargaining power of the industry trumps the exclusive rights of the artists. This practice is not

[119] The majority of recent economic publications concerning peer-to-peer address this economic riddle – too much (and often too myopic) to refer to anyone of them here.

against the law and neither is it, *prima facie*, against jurisprudence: a decent legal system allows freedom for economic exchange where it can and it should – as, e.g., Eastern-European economic history shows – refrain from prescribing economic business models it considers efficient. There remains one serious jurisprudential problem, however. A very basic but complex assumption in jurisprudence concerns the separation of powers. It starts by accepting the empirical fact that power (eventually) corrupts and it stops by accepting the empirical fact that in order to prevent corruption, power must be balanced institutionally by separating legislative and executive powers and by supporting controlling feedback by those regulated. My assumption is that the separation of powers is not only relevant to states but also to institutions more in general, where it is often implemented in different forms. For companies on the free market, executives and shareholders play their balancing act while an important feedback role is in the hands of customers, who can choose to further refrain from doing business with one company and choose another. When companies are monopolies, this feedback mechanism is not available and the law has introduced competition rules and consumer-protection rules to fill the gap. There are currently no legal instruments in place, however, to guard against the slippery slope sending efficient price-discriminatory recording-industry monopolies towards becoming proper (and inefficient) complex monopolies. Competition law and consumer protection are incapacitated by the monopolies'[120] legal basis.

*Digital rights management that supports legitimate sharing and prohibits piracy*. As mentioned in Part II digital rights management that supports legitimate sharing and prohibits piracy is well within IT capabilities and need not be a hindrance for the launching and exploitation of commercial peer-to-peer services. To make financial administrative matters serviceable, it would be advisable to employ data models where makers, right holders and licensing conditions are linked to the music files exchanged.

---

[120] Monopolies (plural) in an industry (the recording industry) only *seems* a *contradictio in terminis*. The product identity is firmly rooted in the artist's autonomy: whoever wishes to buy a Madonna song, a Brubeck instrumental or a Karl Böhm directed opera has only one party she can deal with: the copyright-holding company. The copyright-licensing practice in the music industry does not leave any choice to the customer but the one single offer on the market (leaving price-discriminating offers on legacy recordings aside). Replacing Brubeck by Madonna is not a choice in the sense of an economically free market. Having a choice between at least two issues by two different licensees of one specific recording of Brubeck's 'Two-part Contention' would be. But this is not the way copyrights are licensed in the recording industry. So the monopolies in the recording industry have acquired repertories of copyrighted music containers, thus bundling large amounts of individual monopolies into larger collections.

## 4.3 **Recommendations**

The main battlefield of the war on music-file sharing can pacified by the recording and music industries if they were to refrain form generalizing the piracy concept to include sharers and opened their minds to the possibilities of commercial customer-operated peer-to-peer services for selected music collections (for instance legacy music). This would lead to the reassimilation of sharers in the music industry as co-operative customers and better development of and efficiency in the market for connected music consumption.

There is no immediate need for better legislation that will end the war. However, if the war with its inherent inefficiencies continues, it may well be worthwhile for legislators to look for ways as to how they can bend the copyright transfer practices that pervert a monopoly meant to protect the artists into a monopoly that protects an inefficient industry. Much to be preferred, however, would be the design and adoption of new, distribution method-sensitive licensing practices by artists and industries in order to better support the interests of artists, consumers *and* industries. Law and jurisprudence do not prevent this from happening.[121] Perhaps another kind of path dependence has crept into the copyright transfer practices of artists. As it plays no direct role in the war at hand, I do not elaborate on it here. As it provides a way out of the deadlock, however, it needs to be mentioned.

Where part of the antagonism between the music industry and sharers concerns the difficulty to get hold of the correct information concerning maker, right-holder and applicable licensing, whereas this lack of information generates enormous transaction costs (often preventing the reuse of material) when a whish for legitimate use comes up, the legislator might reconsider – not the way how copyright is generated, but how it should be marked in order to support efficient licensing compliance on Internet and elsewhere. If the copyright sign © had not been abandoned by the USA decades ago, it might *now* have proven to be the best administrative Internet copyright eploitation tool around.[122]

## 4.4 **Conclusions**

Sharing is taboo to the music industry. There is a war on peer-to-peer music-file sharing, partly because, currently, peer-to-peer music-file sharing cannot but be illegitimate. Sharers cannot help to share illegitimately if they share at all: the music industry leaves no other options by refusing to offer appropriate licensing agreements to sharing services. The music industry thus effectively blocks co-operative commercial innovation: on the one hand, by denying consumers the possibility to

[121] 'Sellaband' is a result initiative in this area (see: <http://www.sellaband.com>).

[122] It would support a change of default very much in line with Internet ethos: unmarked digital files are not (meant to be) protected by copyright.

acquire the rights to share legitimately and, on the other, refusing to provide the service demanded. As a result the commercial development of the new (that is: new in 2000) market segment for personal computer-based music consumption has been retarded and the war with infringing peer-to-peer services has continued and deepened.

As wars do, it is escalating, fuelled on both sides by war rhetoric that exploits the risks involved out of any rational proportion. As there is no convincing economic argument for the strategy adopted, the war on music-file sharing is considered a result of third-degree path dependence in the music industry, following the unhappy choice made in the 2001 KaZaA case.

Now any industry is free to make its own economic mistakes. In general, it is assumed that innovative competition will solve the problems of consumers caused by a company's choice for an inefficient path. The basic legal and economic assumption on exchange – the assumption that free exchange will support a path to reciprocal welfare optimization – has not worked its magic thus far, however.

The law shows jurisprudential error here, since it lacks competition and consumer-protection rules that provide balance against copyright-based legal monopolies, thus (1) sustaining by law the defensive strategy chosen by the music industry, thus (2) inviting the industry to shun innovation of the market segment mentioned, thus (3) inviting the judiciary to contradictory ruling (e.g., in the pivotal KaZaA case of 2001), thus (4) supporting resistance in the consumer cummunity knowledgeable about peer-to-peer, and thus (5) supporting conflict-escalating and criminalizing rhetoric about sharers. It seems true that most of the legislative activities applicable to peer-to-peer music-file sharing during 2000-2006 have missed these main points and consequently have hardly had any beneficiary influence on the generalities in social behaviour inherent in the war on music-file sharing during that period.

Where it comes to the legal instruments of 'fair use' and 'legitimate exceptions' it is concluded that the law has not kept up with the pace Internet has set and that it has insufficiently defended its independency against heavy music-industry lobbying when working on the 1996 WIPO agreements and the 2001 EU Directive. Since history *and* social sciences show that there is always a risk that thwarted idealists will turn to 'arms' when sufficiently provoked (e.g., Richard Stallman's General Public License, Lawrence Lessig's Creative Commons) which does not always prove to be harmless (e.g., Ian Clarke's Freenet, Jon Johansen's DVD-hack), it is to be considered of public interest that legislators do refrain from allowing these legal concepts to further dwindle away on Internet. This implies sensitivity to the trend towards third-degree price discrimination based on comprehensive, IT-supplied information on individual use and the reactions it may evoke; it also implies sensitivity to the legitimation complications involved in private and public regulation by architecture; it thus also implies better sensitivity to the representation of un- or poorly represented individuals.

Finally, for the reduction of Internet copyright enforcement transaction costs, digital labelling concerning the maker, right holder and licensing particulars of protected files should be made a formal requirement by law since default protection without notice threatens to generate risk-based information exchange reduction on Internet in an unacceptable big manner.

### 4.5 **Afterthought**

Dissatisfaction with the isolationist character of our mainstream analyses has ignited the quest, secondary to the material content of this essay, for an ordered manner to approach the war on music-file sharing as a social phenomenon – an approach that will support multilevel and disciplinary heterogeneous knowledge snippets to be combined for understanding and facing it. Exposing the foundations and construction of this sideline has, on and off, consumed a good deal of the space offered by Part V. It is a popular belief that attention for method heralds the end for a discipline. However, as it represents a clear approach and as it has produced new and reasonable results on a tough and otherwise almost comprehensively researched subject, I feel no need to apologize for the attention paid. After all, the framework may prove to be a useful candidate for further validation and development. And a discipline of multidisciplinary research can hardly die anyway, as it has yet to be conceived, born and raised.

## REFERENCES


T. Adelaar, E. Wierstra and D. de Wit (2000), *De Stand van Zaken rond Electronische Handel in Nederland – Een verkenning van de muziekindustrie*. The Hague: Rathenau Instituut

Akerlof, G.A., 'The Market for 'Lemons': Quality uncertainty and the market mechanism', *Quarterly Journal of Economics*, 84(3), August 1970, 488-500

Chr. A. Alberdingk Thijm, '*Privacy vs. auteursrecht in een digitale omgeving*', IT*e*R no. 49, 's-Gravenhage: SDU Uitgevers

Brigitte Andersen, Richard Kozul-Wright and Zeljka Kozul-Wright, 'Rents, Rights n'Rhythm: Conflict and cooperation in the Music Industry', *Journal of Economic Literature*: L1; L8; O1 (to be revised)]

Ross Andersen, *Trusted Computing Frequently Asked Questions*, <http://www.cl.cam.ac.uk/~rja14/tcpa-faq.html>

Anderson, P. and M.L. Tushman (1997) 'Managing Through Cycles of Technological Change', in: M.L. Tushman & P. Anderson (eds.), *Managing Strategic Innovation and Change*. New York: Oxford University Press, pp. 45-52

Chris Anderson, *The Long Tail*, <http://www.wired.com/wired/archive/12.10/tail_pr.html>

Spencer E. Ante, *Napster's Shawn Fanning: The Teen Who Woke Up Web Music*, <http://www.businessweek.com/ebiz/0004/em0412.htm>

E.J. Arkenbout, F. van Dijk, P.W. van Wijck, 'Auteursrecht in de informatiemaatschappij. Bouwstenen voor een justitiestrategie', p. 22

Yannis Bakos, Erik Brynjolfsson & Douglas Lichtman, *Shared Information Goods,* August 1998, <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=130904>

Philip Bobbitt, *Constitutional Fate – theory of the constitution*, Oxford University Press 1982

Philip Bobbitt, *The Shield of Achilles: War, Peace and the course of history*, Knopf 2002

T.J. Bousie, 'Hugenholtz kort door de bocht. Het kan nog korter. Napster: geen probleem', *Computerrecht* 2001-1, p. 23-24

Kathy Bowry and Matthew Rimmer, 'Rip, Mix, Burn: The Politics of Peer-to-peer and Copyright Law', *First Monday – Peer Reviewed Journal on the Internet*, Vol. 7, No. 8 (August 2002), <http://www.firstmonday. org/ issues/issue7_8/bowrey>

Bradford DeLong, J. & Froomkin, A.M., 'Speculative Microeconomics for Tomorrow's Economy'*, First Monday – Peer Reviewed Journal on the Internet*, 5(2), 2000 (<www.firstmonday.org>)

J.P. Broekema, College Bescherming Persoonsgegevens, *Brief van 16 april 2004 aan Stichting Brein, Voorafgaand onderzoek; verklaring rechtmatigheid*, <http://www.cbpweb.nl/downloads_uit/z2003-1660.pdf#search=%22Brief%20van%2016%20april%202004%20aan%20Stichting%20Brein%22>

Brynjolfsson, E. & Smith, M.D. (1999), *Frictionless Commerce? – A comparison of Internet and conventional retailers.* Paper, MIT Sloan School of Management

Buchanan, J.M. (1965), 'An Economic theory of clubs', *Econometrica* 32:1-14

Bruce Buena de Mesquita & George W. Downs, 'Development and Democracy', in: *Foreign Affairs*, September/October 2005

Burke, A.E., 'How Effective Are International Copyright Conventions in the Music Industry?,' *Journal of Cultural Economics* 20(1): 51-66, 1996

Burnett, R., 'The Popular Music Industry in Transition', *Popular Music and Society* 17 (1993): 87-114

F. Cairncross (1997), *The Death of Distance*. Harvard Business School Press

Thomas Carothers, 'Promoting the Rule of Law abroad – the problem of knowledge, Democracy and Rule of Law Project', *Rule of Law series* Number 34, January 2003

R.E. Caves (2000), *Creative Industries – Contracts between Art and Commerce*. Cambridge, MA: Harvard University Press

E.F. Codd, 'A Relational Model of Data for Large Shared Data Banks', *Communications of the ACM* 13 (6): 377-387 (1970)

H. Cohen Jehoram, 'De stille strijd tegen een spookrijder', *NJB* 2002, afl. 34, p. 1690-1695

H. Cohen Jehoram, 'Verrassingen in het wetsvoorstel Toezicht collectieve beheersorganisaties', *AMI* 2001-5, p. 108-110

H. Cohen Jehoram, 'Auteursrechtenbureaus: enkele grondbeginselen', *Informatierecht/AMI* 1991-7, p. 127-138

H. Cohen Jehoram, 'De toekomst van auteursrechtenbureaus', *Informatierecht/AMI* 2000-8, p. 157

Chircu and Kauffmann (1999), 'Strategies for Internet Middlemen in the Intermediation / Disintermediation / Reintermediation Cycle', *Electronic Markets* 9(2)

Choi, S-Y, D.O. Stahl & A.B. Whinston (1997), *The Economics of Electronic Commerce,* MacMillan Technical Publishing

R.H. Coase, 'The Nature of the Firm', *Economica*, November 1937

R.H. Coase, 'The Problem of Social Cost', *The Journal of Law and Economics*, October 1960

O,-J. Dahl, E.W. Dijkstra and C.A.R. Hoare, *Structured programming*, Academic press 1972

W. Dolfsma (1998), 'Internet: De Perfecte Economische Markt?', *Economisch Statistische Berichten* 83(4157): 500-2

W. Dolfsma (1998b), 'Internet: An Economist's Utopia?', *Review of International Political Economy* 5(4)

W. Dolfsma (2000), 'How Will the Music Industry Weather the Globalization Storm?, *FirstMonday – Peer Reviewed Journal on the Internet* 5(5) May, <www.firstmonday.org.>

W. Dolfsma (2000b), 'Product Innovations in the Media Industries: Platforms, appropriability and the boundaries of the firm'. Paper presented at the EAEPE conference, Berlin, November

W. Dolfsma (2000c), 'Monopolies op het Internet', *Economisch Statistische Berichten* 2 juni, p. 451 2001

W. Dolfsma (2000d), ''Content' op het Internet - Een economische verkenning', in: L. Soete (ed.), *IT en de nieuwe economie. Preadviezen van de Koninklijke Vereniging voor de Staatshuishoudkunde*, 2000. Utrecht: Lemma, p. 177-205

W. Dolfsma (2001), 'Metaphors of Knowledge in Economics', *Review of Social Economy* 59(1): p. 71-91

Dolfsma, W. & L. Soete (2002a), 'Kennis op Markten – Verkenning en betekenis voor overheidsbeleid', in: H. Dijstelbloem & C.J.M. Schuyt (eds.), *De Publieke* Dimensie van

Kennis. WRR Voorstudie en achtergronden v110, 2002. The Hague: Sdu Uitgevers, pp. 117-170

W. Dolfsma (2004), *Institutional Economics and the Formation of Preferences,* Cheltenham: Edward Elgar

W. Dolfsma (2005), 'Towards a Dynamic (Schumpterian) Welfare Theory', *Research Policy* 34(1): 69-82

W. Dolfsma (2006), 'Collective Consuming: Consumers as Subcontractors on Electronic Markets', *The Information Society* 22(3)

Mary Douglas, *Purity and Danger*, Routledge 1962

Mary Douglas, *Natural Symbols*, Barrie & Rockliff 1970

Mary Douglas and Aaron Wildavski, Risk and culture: an essay on the selection of technical and environmental dangers, University of California Press, 1982

Mary Douglas, Risk and Blame: essays in cultural theory, Routledge 1992

Mary Douglas, *Dealing with uncertainty*, Multatuli-lecture 2001, <http://www.multatuli-lezing.be>

Dudley, L. (1999), 'Communications and Economic Growth', *European Economic Review* 43: 595-619

The Economist (1998), Wheel of Fortune – A survey of technology and entertainment. November 21

Farrell, J. and Saloner, G. (1986), 'Installed Base and Compatibility: Innovation, Product Preannouncement, and Predation', *American Economic Review*, 76, 940-955

Paul Feyerabend, *Against Method*, NLB 1972

J.A. Fodor, *Psychosemantics*, MIT press 1987

C. Freeman & C. Perez (1988), 'Structural Crises of Adjustment, Business Cycles and Investment Behaviour', in: G. Dosi, C. Freeman, R. Nelson, G. Silverberg & L. Soete (red.), *Technical Change and Economic Theory*. London: Pinter

Frey, B.S. (1997), *Not Just for the Money – An economic theory of personal motivation*. Cheltenham: Edward Elgar

Frith, S., *Sound Effects – Youth, Leisure, and the Politics of Rock*. London: Constable, 1983

Frith, S., *Performing Rites – On the Value of Popular Music*. New York: Oxford University Press, 1996

Clifford Geertz, *Local Knowledge – Further Essays in Interpretative Anthropology*, Basic Books 1983

Francis Fukuyama, *State Building: Governance and world order in the twenty-first century*, Cornell University Press, 2004

Lon L. Fuller, *The Morality of Law*, Yale University Press 1969

Ch. Gillet (1996), The Sound of the City – The Rise of Rock and Roll. New York: Da Capo

S. Graham (1998), 'The End of Geography or the Explosion of Place? Conceptualizing Space, Place and Information Technology', *Progress in Human Geography* 22(2): 165-185

Avner Greif, 'Self-enforcing Political Systems and Economic Growth: Late Medieval Genoa', *Analytic Narratives*, Princeton University Press 1998

Avner Greif, *Institutions and the Path to the Modern Economy*, Cambridge University Press 2006

F.W. Grosheide, *Auteursrecht op maat. Beschouwingen over de grondslagen van het auteursrecht in een rechtspolitieke context* (dissertation Utrecht), Deventer: Kluwer 1986, p. 135

P. Hugenholtz, L. Guibault & S. van Geffen, *The Future of Levies in a Digital Environment*, IVIR, Amsterdam 2003

P.B. Hugenholtz, 'Napster: een bliksemonderzoek', *Computerrecht* 2000-5, p. 228

Jacobson, I., Booch, G., Rumbaugh, J., *The Unified Software Development Process*, Addison-Wesley, 1999

H.L.A. Hart, *The Concept of Law*, Oxford University Press 1961

B.J. Heijdra, B.W. Lensink and E. Sterken (2001), 'Baanbrekende analyse marktimperfecties', *Economisch Statistische Berichten* 86(4330): 804-806

D. Hesmondhalgh (1998), 'The British Dance Music Industry', *British Journal of Sociology* 49, 2, p. 234-251

Hotelling, H. (1929), 'Stability in Competition', *Economic Journal* 39(March): 41-57

Michael Howard, *The Invention of Peace & the Reinvention of War* (revised and extended edition), Profile Books 2002.

Huygens, M. (1999), *Coevolution of Capabilities and Competition – A study of the music industry*. Rotterdam, dissertation

Janson, E. & Mansell, R. (1998), *A Case of Electronic Commerce: the Online Music Industry*. SPRU research paper – 25, University of Sussex

Kelly, K. (1998), *New Rules for the New Economy – 10 ways the network economy is changing everything*. London: Fourth Estate

Klaes, M., 'Sociotechnical Constituencies, Game Theory, and the Diffusion of Compact Discs', *Research Policy*, 25(8), 1997, 1221-1234

K.J. Koelman, 'De nationale drie-stappen-toets', *AMI* 2003-1, p. 3-9

K.J. Koelman, *Auteursrecht en technische voorzieningen, Juridische en rechtseconomische aspecten van de bescherming van technische voorzieningen*, Sdu: The Hague, 2003

K.J. Koelman, *Mediaforum*, 1998, p. 206-208

T. Kreutzer, 'Napster, Gnutella & Co. Rechtsfragen zu Filesharing-Netzen aus der Sicht des deutschen Urheberrechts de lege late und de lege ferenda – Teil 1', *GRUR* 2001-3, p. 200

Laing, D. 'Copyright and the International Music Industry', in: *Music and Copyright*. Edited by S. Frith, 22-39. Edinburgh: Edinburgh UP, 1993

Landes, W.M. and R.A. Posner, 'An Economic Analysis of Copyright Law', *Journal of Legal Studies* 18 (June 1989): 325-363

Leibenstein, H. (1950), 'Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand', *Quarterly Journal of Economics*. 64(2): 183-207

Philip Leith, 'Clear Rules and Legal Expert Systems'; *II Convegno Internazionale Logica, Informatica*, Diritto; Florence; 1985

Lawrence Lessig, *Code and Other Laws in Cyberspace*, Basic Books 2000

Lawrence Lessig, *The Future of Ideas*, Random House 2002

Lawrence Lessig, *The New Chicago School* (1998)

Leyshon, A. (2001), 'Time-space (and digital) compression: software formats, musical networks, and the reorganizations of the music industry', *Environment and Planning* 33: 49-77

Douglas Lichtman, 'KaZaA and Punishment', in: *The Wall Street Journal*, September 10, 2003

Douglas Lichtman, 'Property Rights in Emerging Platform Technologies', *John M. Olin Law & Economics Working Paper* No. 97 (2nd Series)

Douglas Lichtman & William Landes, 'Indirect Liability for Copyright Infringement: An Economic Perspective', in: *Harvard Journal of Law & Technology*, Vol. 16, No. 2, 2003, p. 395-410

Douglas Lichtman & Eric Posner, 'Holding Internet Service Providers Accountable', *John M. Olin Law & Economics Working Paper* No. 217 (2nd Series), July 2004

John Logie, 'A Copyright Cold War? The Polarized Rhetoric of the Peer-to-Peer Debates', *First Monday*, 8 (2003)

Victoria McEvedy, 'The dmca and the e-commerce directive', *e.i.p.r.*, 2002, p. 65-73 i.h.b. 71-73

A. Mitchell Polinsky & Steven Shavell, 'The Economic Theory of Public Enforcement of Law', *Journal of Economic Literature*

Music Business International (MBI), various years

Music & Copyright (Financial Times), various years

National Music Publishers' Association (NMPA). *International Survey of Music Publishing Revenues*. 1997. New York

Malone, T.J.; Yates, J.; Benjamin, R. (1987), 'Electronic Markets en Electronic Hierarchies', *Communications of the ACM*, 30 (6), p. 484-497

Malone, T., J.Yates and R. Benjamin, 'The Logic of Electronic Markets', *Harvard Business Review*, 1989 (May/June), 166-170

Ministry of Justice (2001), *Auteursrecht in de Informatiemaatschappij* [Copyrights in the Information Society]. The Hague, December

John von Neumann, *First Draft of a Report on the EDVAC*, <http://www.virtualtravelog.net/entries/2003-08-TheFirstDraft.pdf>

Douglass C. North, *Structure and Change in Economic History*, Norton 1981

Douglass C. North, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press 1990

Olson, M. (1965), *The Logic of Collective Action – Public Goods and the Theory of Groups*, Cambridge, Mass.: Harvard University Press

Olson, M. (2000), *Power and Prosperity*, Basic Books

O'Reilly, Ch. and M.L. Tushman (1997), 'Using Culture for Strategic Advantage: Promoting Innovation through social control', in: M.L. Tushman & Ph. Anderson (eds.), *Managing Strategic Innovation and Change*. New York: Oxford University Press, p. 200-216

G. van der Panne & W. Dolfsma (2003), 'The Odd Role of Proximity in Knowledge Relations - High-tech in the Netherlands', *Journal of Economic and Social Geography*, 94(4): 453-462

Peterson, R.A. and D.G. Berger (1975), 'Cycles of Symbolic Production: the case of popular music', *American Sociological Review* 40: 158-173

Van de Poel, I., M. Franssen and W. Dolfsma (2002), 'Technological Regimes: Taking stock, looking ahead', *International Journal of Technology Policy and Management*, forthcoming

Richard A. Posner, 'Orwell versus Huxley: Economics, Technology, Privacy, and Satire', in: *Philosophy and Literature*, 2000, 24: 1-33

Richard A. Posner, 'Intellectual Property: The Law and Economics Approach', in: *The Journal of Economic Perspectives*, 2005, Vol. 19, No. 2 p. 57-73(17)

Richard Posner, 'Grokster', *File Sharing, and Contributory Infringement*, in: The Becker-Posner Blog, July 3rd 2005, <http://www.becker-posner-blog.com/archives/2005/07/grokster_file_s.html>

Richard Posner, *Posner reply to Grokster Comments* in: The Becker-Posner Blog, July 10 2005, <http://www.becker-posner-blog.com/archives/2005/07/grokster_file_s.html>
Rappa, M. (2001), *Business Models on the Web*. (North Carolina State University; printed October 16, 2001) <www.digitalenterprise.org/models/models.html>
John Rawls, *The Law of Peoples*, Harvard University Press 1999
Reinartz, W.J. (2001), 'Customising Prices in Online Markets', *European Business Forum* 6: 35-41
J. Reinbothe & S. von Lewinski, *The WIPO Treaties 1996*, London: Butterworths 2001, p. 37-44, 80-113, 308-341, 342-373
S. Ricketson, WIPO Study on limitations and exceptions of copyright and related rights in the digital environment, p. 80-84
J.G. Riley (2001), 'Silver Signals: twenty-five years of screening and signaling', *Journal of Economic Literature* 39(2): 432-478
Rutten, P., 'Economisch Belang van de Muziekindustrie in Nederland'. 1997, Apeldoorn: *TNO, report* STB-97-38
Sadler, D. (1997), 'The Global Music Business as a Information Industry: Reinterpreting economies of Culture', *Environment and Planning* A 29:1919-1936
F.M. Scherer & D. Ross (1990), *Industrial Market Structure and Economic Performance.* Boston: Houghton Mifflin, 3rd edn.
John Searle, *The Construction of Social Reality*, Allen Lane The Penguin Press 1995
A.H.J. Schmidt, *Bedreigen Computers ons Rechtssysteem*? [Do Computers Threaten our Legal System?], Leiden University 2004
A.H.J. Schmidt, 'Napsteren mag niet', *Computerrecht* 2001-1, p. 24
A.H.J. Schmidt, 'Recht om te spelen', *JAVI* 2003/3, p. 87-100
Schreiber, G., Akkermans, H., Anjewierden, *Knowledge Engineering and Management*, MIT Press, 2001
J.M.B. Seignette, 'Napster en de controle van de rechthebbende over de distributie van zijn werk', *AMI* 2001-2, p. 29-38
J.M.B. Seignette, 'Implementatie en dan nog meer. Reactie op het conceptwetsvoorstel voor de implementatie van de Auteursrechtrichtlijn', *AMI* 2002-1, p. 6-10
J.M.B. Seignette, *Exploitatie en clearance van intellectuele eigendomsrechten*, IT*e*R no. 10, Alphen aan den Rijn: Samsom Bedrijfsinformatie b.v. 1998, p. 163-241
M. Senftleben, 'Beperkingen à la carte: Waarom de Auteursrechtrichtlijn ruimte laat voor fair use', *AMI* 2002-1, p. 10-14
M. Senftleben, *Copyright, Limitations and the Three-Step-Test*, The Hague/London/New York, Kluwer Law International, 2004
C. Shapiro & H.R. Varian (1999) *Information Rules – A strategic guide to the network economy*. Harvard Business School Press
Shuker, R. *Understanding Popular Music*. London: Routledge, 1994
N.E. Simmonds, 'Law as a Moral Idea', 55 *University of Toronto Law Journal*, 2005, p. 67
Smith, M.D., Bailey, J. & Brynjolfsson, E. (1999), 'Understanding Digital Markets: Review and Assessment'. *Working Paper, MIT*, Boston
Martijntje Smits, *Monsterbezwering – de culturele domesticatie van nieuwe technologie*, (tr: Taming Monsters – on cultural domestication of new technology) Boom 2002
Smits, M. (2002a), 'Monster ethics: a pragmatist approach to risk controversies on new technology', in: *Proceedings of the Research in Ethics and Engineering Conference*, University of Delft, April 25 - 27

Sorenson, J.R., J.T. Tschirhart & A.B. Whinston (1979), 'Private good clubs and the core', *Journal of Public Economics* 10: 77-95
Spoor/Verkade, p. 436, 438
Brian Z. Tamanaha, *On the Rule of Law*, Cambridge University Press 2004
P. Timmers (1998), 'Business Models for Electronic Markets', *Electronic Markets* 8(2): 3-8
Towse, R., 'Copyright as an Economic Incentive', *Hume Papers on Public Policy*, 5(3), 1997, 32-45
Prodromos Tsiavos, Edgar. A. Whitley, Ian Hosein, 'An exploration of the emergence, development, and evolution of regulatory characteristics of information systems'. *Proceedings of the Twenty-Third International Conference on Information Systems* 2002, p.813-816
Thomas S. Ulen, 'A Nobel Prize in Legal Science: Theory, Empirical Work, and the Scientific Method in Legal Work', *University of Illinois Law Review* 2002
Giancarlo Varanini, Q&A: Napster creator Shawn Fanning, <http://news.zdnet.com/2100-9595_22-502047.html>
H.R. Varian (1996), 'Differential Pricing and Efficiency' *FirstMonday – Peer reviewed journal on the Internet* 1(2) August (<www.firstmonday.org>)
Hal Varian, *Copying and Copyright*, revision of March 29, 2005, <http://www.ischool.berkeley.edu/~hal/Papers/2004/copying-and-copyright.pdf>
H.L. Vogel (1998), *Entertainment Industry Economics*, New York: Cambridge University Press
D.J.G. Visser, 'Napsteren, Gnutellen en de afwezigheid van legale muziek op het internet', *Computerrecht* 2001-3, p. 131-133
D.J.G. Visser, 'De beperkingen in de Auteursrechtrichtlijn', *AMI* 2001-1, p. 10-17
D.J.G. Visser, 'Enkele opmerkingen bij wetsvoorstel 28 482', *AMI* 2002-5, p. 167-172
Ernest J. Weinrib, *The Idea of Private Law*, Harvard University Press 1995
Wieringa, R.J., *Requirements Engineering: Frameworks for Understanding*, John Wiley and Sons 1995
O. Williamson (1985), *The Economic Institutions of Capitalism*. New York: Free Press
O. Williamson, 'The Economics of Governance', *American Economic Review*, 2005

*Decisions*, *Cases and Internet pages:*

A&M Records, Inc. v. Napster, Inc., 114 F. Supp. 2d 896, 912 (N.D. Cal. 2000)
A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1013-14 (9th Cir. 2001)
Article 19, first and second paragraph of the Neighbouring Rights Act and Article 5a of the Database Act
Article 29a, second and third paragraph, of the Copyright Act 1912
Besluit Nr. 854/2005/EG van het Europees Parlement en de Raad van 11 mei 2005 tot vaststelling van een communautair meerjarenprogramma ter bevordering van een veiliger gebruik van het internet en nieuwe online-technologien, Pb-EG, L 149/1
Commission of the European Communities, Commission Staff Working Document: Study on a community initiative on cross-border collective management of copyright, 7 July 2005
Commission of the European Communities, Communication to the Council, the European Parliament and the European Economic and Social Comittee: The Management of Copyright and Related Rights in the Internal Market, COM(2004) 261 final

Decision no. 2000/278 by the Council of Ministers on the 16th of March 2000, PbEG 2001, L 89/6
ECJ 6 April 1995, [1995] 4 Web JCLI
European Consumer Law Group, Copyright Law and Consumer Protection, Brussels: European Consumer Law Group 2005
European Parliament resolution on a Community framework for collective management societies in the field of copyright and neighbouring rights (2002/2274(INI)), PE 340.695\57-65, P5_TA-Prov(2004)0036
Fonovisa, Inc. v. Cherry Auction, Inc., 76 F.3d 259, 264 (9th Cir. 1996)
Gershwin Publishing Corp. v. Columbia Artists Mgmt., Inc., 443 F.2d 1159, 1162 (2d Cir. 1971)
Hof Amsterdam, 28 maart 2002, Mediaforum 2002-5, p. 190-191, m.nt. KJK
HR 18 februari 1949, NJ 1949, 357 (Staat/Bonda I)
HR 8 maart 1957, NJ 1957, 271 (Buma/De Vries)
HR 19 december 2003, AMI 2004/1, p. 9-25, m.nt. PBH
http://en.wikipedia.org/wiki/ID3
http://www.bumastemra.nl/
http://www.csszengarden.com/
http://www.dezwozhere.com/links.html
http://www.eff.org/IP/P2P/MGM_v_Grokster/030425_order_on_motions.pdf
http://www.wired.com/news/politics/0,1283,54153,00.html for information over Bermans proposal for a peer-to-peer piracy prevention act
LJN: AN7253, Hoge Raad, C02/186HR, Buma/Stemra tegen KAZAA B.V., uitspraak 19-12-2003
LJN: AO9318, Rechtbank Haarlem, 85489/HA ZA 02-99, Techno Design B.V. tegen Stichting Brein, uitspraak dd. 12 mei 2004
LJN: AT9073, Voorzieningenrechter Rechtbank Utrecht, KG-nr: 194741/KGA 05-462, Stichting BREIN e.a.tegen UPC Nederland B.V. en andere Service Providers, uitspraak 12 juli 2005
Napster, 239 F.3 at 1022
Parliamentary documents II, 1999/2000, 26 955, no. 1
Parliamentary documents II, 2001-2002, 28 482, nos. 1-25
Parliamentary documents II, 2002-2003, 28 482, no. 5
PbEC 1992, L. 346, 61
PbEC 2001, L 167, 10
Rb Amsterdam, 29 november 2001, AMI 2002-1, p. 21-25 m.nt. PBH
RIAA, 2000 Yearend Statistics
RIAA, 2002 Yearend Statistics
RIAA, 2003 Mid-year Statistics
RIAA, 2004 Mid-year Statistics
RIAA, 2004 Yearend Statistics
Supreme Court of the United States, *Syllabus Metro-Goldwyn-Mayer Studios Inc. et al. v. Grokster, Ltd., et al.,* http://www.supremecourtus.org

# ABOUT THE AUTHORS

Wilfred Dolfsma is both an economist and philosopher and holds a Ph.D. in the former. He is attached to the Utrecht School of Economics as an Associate Professor and to Maastricht University (UNU-MERIT) as a professorial fellow. He was 2005/6 research fellow at the Netherlands Institute for Advanced Studies (NIAS) and is corresponding editor for the Review of Social Economy. His research interests are the interrelations between economy, society and technology. He has published on various aspects of media industries, feminist economics as well as on globalisation, and the developments in and effects of IPR. In addition, as an institutional economist, Dolfsma does research in the history and methodology of economics, and consumption. He has co-edited Understanding the Dynamics of the Knowledge Economy (ed. with Luc Soete, 2006), Globalization, Social Capital and Inequality (ed. with Charlie Dannreuther, 2003), Ethics and the Market (ed. with Deb Figart and Jance Clary, 2006), and published Institutional Economics and the Formation of Preferences (2004). The latter monograph won him the Gunnar Myrdal Prize (2006). His articles have featured in, a.o., the Journal of Economics Issues, the Journal of Evolutionary Economics, the Journal of Economic and Social Geography, the Journal of Business Ethics, The Information Society, and Research Policy.

Wim Keuvelaar studied Dutch Law at Leiden University. He graduated in 2001 at eLaw@Leiden, Centre for Law in the Information Society, Leiden University. He wrote his graduation thesis on the European Copyright Directive and its relation to the three-step test as formulated in the Berne Convention. Since 2002 he is working in the field of E-Government. Nowadays he is one of the managing directors of Sdu E-Grant.

Aernout Schmidt read Dutch Law at Utrecht University while being professionally employed as a scientific computer programmer for various academic Social Sciences Departments during the 1970s. In 1985 he founded eLaw@Leiden, the Centre for Law in the Information Society of Leiden University. In 1987 he published his Ph.D. thesis (Pallas ex Machina) on the merits of statistical and artificial intelligence modelling for researching judicial policy development in probation decisions. He takes part in the organization of the National Dutch IT & Law Research Programme (IT*e*R). His research focus is on constitutional and institutional issues as raised by transitions towards information societies. As he does not believe that the Law provides an adequate perspective in splendid isolation, his attention is also directed towards methods for interdisciplinary work. He is a member of the Dutch Association for IT and Law (NVvIR) and a fellow of the E.M. Meijers Research Institute. Aernout Schmidt has published several books and articles, mainly in Dutch.

## INFORMATION TECHNOLOGY & LAW SERIES

1. E-Government and its Implications for Administrative Law – Regulatory Initiatives in France, Germany, Norway and the United States (The Hague: T·M·C·Asser press, 2002)
   Editor: J.E.J. Prins / ISBN 90-6704-141-6
2. Digital Anonymity and the Law – Tensions and Dimensions (The Hague: T·M·C·Asser press, 2003)
   Editors: C. Nicoll, J.E.J. Prins and M.J.M. van Dellen / ISBN 90-6704-156-4
3. Protecting the Virtual Commons – Self-Organizing Open Source and Free Software Communities and Innovative Intellectual Property Regimes (The Hague: T·M·C·Asser press, 2003)
   Authors: R. van Wendel de Joode, J.A. de Bruijn and M.J.G. van Eeten / ISBN 90-6704-159-9
4. IT Support and the Judiciary – Australia, Singapore, Venezuela, Norway, The Netherlands and Italy (The Hague: T·M·C·Asser press, 2004)
   Editors: A. Oskamp, A.R. Lodder and M. Apistola / ISBN 90-6704-168-8
5. Electronic Signatures – Authentication Technology from a Legal Perspective (The Hague: T·M·C·Asser press, 2004)
   Author: M.H.M. Schellekens / ISBN 90-6704-174-2
6. Virtual Arguments – On the Design of Argument Assistants for Lawyers and Other Arguers (The Hague: T·M·C·Asser press, 2004)
   Author: B. Verheij / ISBN 90-6704-190-4
7. Reasonable Expectations of Privacy? – Eleven Country Reports on Camera Surveillance and Workplace Privacy (The Hague: T·M·C·Asser press, 2005)
   Editors: S. Nouwt, B.R. de Vries and J.E.J. Prins / ISBN 90-6704-198-X
8. Unravelling the Myth Around Open Source Licences – An Analysis from a Dutch and European Law Perspective (The Hague: T·M·C·Asser press, 2006)
   Authors: L. Guibault and O. van Daalen / ISBN 90-6704-214-5
9. Starting Points for ICT Regulation – Deconstructing Prevalent Policy One-Liners (The Hague: T·M·C·Asser press, 2006)
   Editors: B-J. Koops, M. Lips, J.E.J. Prins and M. Schellekens / ISBN 90-6704-216-1
10. Regulating Spam – A European Perspective after the Adoption of the E-Privacy Directive (The Hague: T·M·C·Asser press, 2006)
    Author: L.F. Asscher / ISBN 90-6704-220-X
11. Cybercrime and Jurisdiction – A Global Survey (The Hague: T·M·C·Asser press, 2006)
    Editors: B-J. Koops and Susan W. Brenner / ISBN 90-6704-221-8
12. Coding Regulation – Essays on the Normative Role of Information Technology (The Hague: T·M·C·Asser press, 2006)
    Editors: E.J. Dommering and L.F. Asscher / ISBN 90-6704-229-3
13. Customary Law of the Internet – In the Search for a Supranational Cyberspace Law (The Hague: T·M·C·Asser press, 2007)
    Author: P.P. Polánski / ISBN 90-6704-230-7
14. Fighting the War on File Sharing (The Hague: T·M·C·Asser press, 2007)
    Authors: A.H.J. Schmidt, W. Dolfsma and W. Keuvelaar / ISBN 978-90-6704-238-3