# The "rise" and "fall" of the MP3scene: A Global and Virtual Organization

An organizational, social relational and technological analysis

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**Abstract.** The scene, a synonym for the 'Warez'[1] scene, is a global and virtual organization where people copy, crack and distribute copyrighted digital material. The scene is split up into different areas, each with its own specific organizational structure, genre and practice. Amongst these areas are the games, MP3 (music), movies and software scene. The scene is a quite closed and fairly unknown organization that operates on the Internet. Unique organizational structures and many complex social relational and technological processes make this organisation an interesting phenomenon to study. This research is aimed at the MP3scene and describes the development and evolution from the start until its state today from an academic point of view. The objective of this research is to gain more insights in the ongoing organizational, social relational and technological processes within a global and virtual organization like the MP3scene.

**Keywords:** community, practice, emerging, structure-agency, complex global microstructures, sociality, institutionalizing, engagement, identity, social learning, passion and anarchy

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[1] 'Warez' is a term to define pirated material. Tetzlaf, D. (2000). Yo-Ho-Ho and a Server of Warez: Internet Software Piracy and the New Global Information Economy. In A. Herman, & T. Swiss, *The World Wide Web and Contemporary Cultural Theory* (pp. 99-126). New York: Routledge.

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## 1. Introduction

Today a lot of research is being conducted on social organizations and communities that can only exist because of the Internet. Common examples of these communities are the social network site Facebook, the microblogging[2] website Twitter, the music community Last.fm and the many weblogs that can be found on the web. These websites and communities all emerged in the Web 2.0 era and they are focused upon the end user and the interactions between them. Current research is focussed on the various aspects of these new forms of organizations. Kaiser, Muller-Seitz, Lopes, & Pina e Cunha (2007) describe in their article *Weblog-technology as a trigger to elicit passion for knowledge* the community of the Microsoft Longhorn Blogosphere. Slater (2002) analyses a community that exchanges erotic material on the Internet in his article *Making things real: Ethics and order on the Internet.* Knorr Cetina (2005) defines a new form of organization in her article *Complex global microstructures: The new terrorist societies*. She uses the Islamic terrorist organization "Al Qaida" to analyze its cell-like organizational structure. Despite that the scene emerged before the Web 2.0 era, its organizational structures and social relational processes have not been extensively studied before but might reveal interesting information.

Different areas are represented within the scene and the most popular are the music, movie, software and games scene. The music scene, also known as the MP3scene, is currently the most active area of the scene. This thesis is an attempt to describe the MP3scene as an extensive, global and virtual organization that is fairly unknown to most people. This organization emerged not dependent on money as its key driver but more based on anarchic and idealistic motives. Its members have different nationalities and come from all over the world and live in different time zones. These characteristics make this type of organization an interesting phenomenon to study.

The main research objective is to explore how this self-organizing organization emerged and developed during the years and to identify its agency. To identify and capture the various organizational, technological and social aspects, the structure-agency theory of Giddens (1984) is used as a guiding framework. This framework

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[2] Microblogging is a new form of communication in which user can describe their current status. Java, A., Finin, T., Song, X., & Tseng, B. (2007). Why We Twitter: Understanding Microblogging Usage and Communities. *Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis* , 56-65.

was chosen because it is suitable to capture the dynamics and interactions between structure and agency within the MP3scene. Needs of agency are fundamental to the form of structure and its regulations and procedures. Adoption of regulations enforced by structure proves the dynamics between them. The description and analysis of this organization is an attempt to contribute to the organizational and social academic disciplines regarding this subject. The contribution lies in the assumption that the scene can be seen as a new form of organizing. It is an emergent, self-organizing form of organizing. It is a global organization with specific characters. It is informative to the topic of of subject-object relationships and it could help to find an answer to what kind of role objects play in the social relationships of people who do not meet face-to-face but solely rely on Internet communication.

## 1.1. Research questions

The main research objective is to describe the emerging and development of the MP3scene to the organization as it is today. This main objective is divided into five subjects. (1) What is the current organizational structure of the MP3scene? (2) What organizational processes can be identified within the MP3scene? (3) What social relational processes can be identified within the MP3scene? (4) What are the critical events that happened during the development of the MP3scene? (5) What is the future of the MP3scene?

Thorough knowledge of the MP3scene is needed to understand and answer these questions. To get thorough knowledge of the MP3scene explorative and descriptive research has been conducted.

## 1.2. Theoretical Framework

The research crosses the boundaries of multiple academic disciplines like social sciences, psychological sciences, organizational sciences and information sciences. To limit the scope of the research a choice had been made to use a particular theoretical framework. Giddens' (1984) theory about agency-structure is the basis of this framework that is suitable to split up and capture the various organizational and social relational processes within the MP3scene.

Agency or situated experience represents the individuals and groups participating in the MP3scene. Structure represents the framework and environment in which agency operates: guidelines, rules and procedures. The dynamics and interactions between agency and structure are caused by the practice that is being performed. Another reason to use structure-agency theory is because it is suitable to separate organizational processes from social processes. The framework is being extended with theories of Wenger, Wittel, Csikzentmihalyi, Gherardi and Knorr Cetina. Figure 1 illustrates how these theories relate to each other.
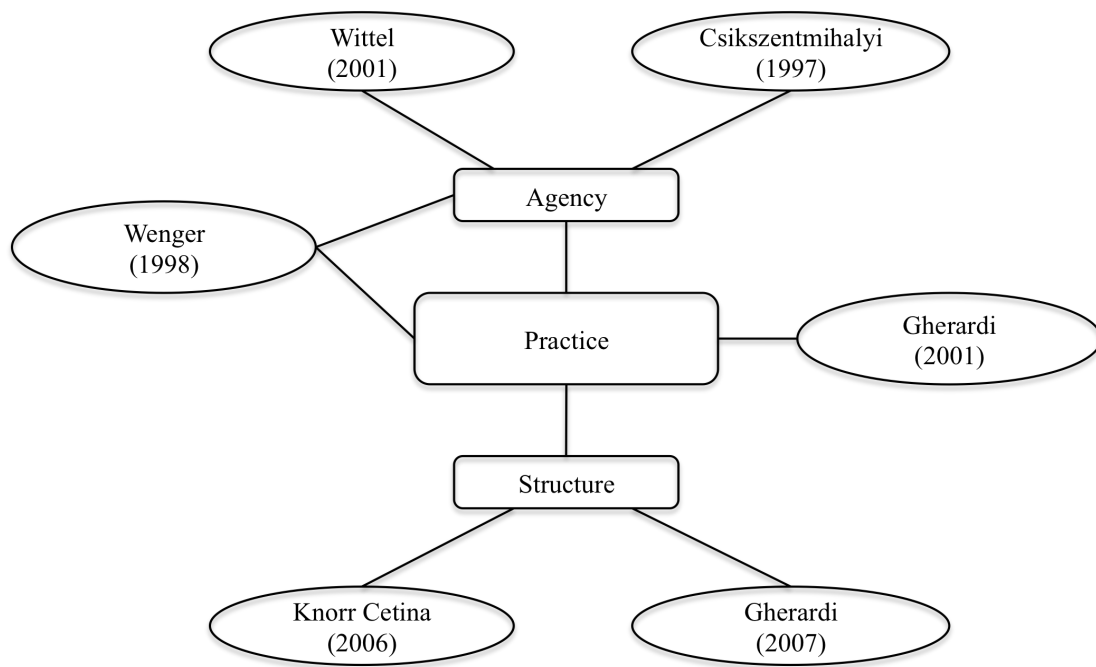


**Figure 1: Relation between theories**

Wittel's (2001) theory is used to analyze the relation between the social cohesion within a releasegroup and the lifespan of the releasegroup. Wittel published this theory in his article *Toward a Network Sociality.*

Wenger's theory (1998) about social learning is used to analyze the social learning agency experiences while participating in a community of practice like the MP3scene. This theory is published in Wenger's book titled *Communities of Practice: Learning, Meaning and Identity.*

Csikszentmihalyi's (1997) theory is used to describe the personal motivation and continuous flow of action agency experiences while participating in the MP3scene. Csikszentmihalyi has published this theory in his article *Finding Flow: The Psychology of Engagement with Everyday Life*.

Practice is explained according to Gherardi's (2007) theory. Gherardi distinguishes inner motives of practice and outer motives of practice. Inner motives can be found in the personal motivations of participation and will be explained accordingly. Outer motives are the external factors that influence the way practice is performed and being institutionalized. This theory can be found in her article *The Passion for Knowing*.

The structure of the MP3scene has many similarities with the complex global microstructures that are described by Knorr Cetina (2005). Her theory is applied to MP3scene in order to describe its organization. The theory is described in her article *Complex Global Microstructures: The New Terrorist Societies*.

Gherardi's (2007) theory about institutionalizing is used to explore the reasons for and the way in which institutionalizing took place within the MP3scene. This theory can be found in her article *The Passion for Knowing*.

## 1.3. Methodology

Four different methodologies were used in this research in an effort to get a complete and representative picture of the MP3scene as an organization. The methods used were: participant observation, literature study, interviews and statistical analysis.

Participant observation of different groups and individuals were used to get a global picture of the ongoing processes within the MP3scene. Participant observation started in November 2008, lasted for six months and ended in April 2009. IRC[3] is the place where all groups have their chat channels and it is the place where all participants in the MP3scene are connected. IRC offers the possibility to chat in channels with

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[3] Internet Relay Chat, known for short as IRC, is a popular electronic environment that people enter in order to interact with others from around the globe, at any hour of the day or night. At any given moment, the number of participants on the various channels ranges from 2,500 to 10,000. Bechar-Israeli, H. (1995). From <Bonehead> To <cLoNehEAd>: Nicknames, play and Identity on Internet Relay Chat. *Journal of Computer-Mediated Communication , 1* (2), 0-0.

groups and to chat privately in one-to-one conversations. The IRC networks EFnet[4] and LinkNet[5] were used for these observations.

The literature study served two different goals. One was to get more information about the scene itself. The second part of the literature was about the theories that could help to identify and describe the organizational structure and social relational processes within the scene.

Rau (2004) gives an extensive description of the scene in his book *Phänomenologie und Bekämpfung von "Cyberpiraterie" ein Kriminologische und Kriminalpolitische Analyse*. A similar attempt has been published on www.aboutthescene.com. This literature about the scene is combined with participant observations and interviews to get a detailed overview of the scene and to identify its organizational, technological and social processes.

Five in-depth interviews were held to enrich the picture of the MP3scene and to identify personal drivers, motivations and social relational processes. The interviews were unstructured but covered the following subjects; a personal story of participation, the development of the MP3scene, critical events within the MP3scene, personal motivation for participation, learning and a prediction for the future of the MP3scene. The interviews were all held on IRC. The use of aliases has anonymized all participants. The length the interviews vary from five hours to 30 minutes. Each interview was analysed line by line to extract useful information. Coding was used to highlight the subjects: social relational, technological and organizational. Unclear issues were afterwards discussed with the interviewees for clarification.

One interviewee, Lir, has been of great value and his quotations are most used in this thesis. Lir is an Australian male in his thirties and he owns an IT consultancy firm. He discovered bulletin board systems in the eighties at the age of 12 and he has been on IRC for over 12 years. The two interviews were held on 22:00 EST and 07:00 his time, just before he started work. His rich experience and understanding of the scene

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[4] http://www.efnet.org
[5] http://www.link-net.org

has really helped me to complete my thesis and I want to use this opportunity to thank him.

Apart from the five main interviews that were used to get a complete picture of the MP3scene at least 15 individuals have been questioned regarding small subjects that needed more understanding. These individuals were carefully selected on their experience, age and function within the MP3scene.

The final method used is a statistical analysis of a database[6] that contains information about approximately 2.6 million releases starting from January 1998 until May 2007. This database should not be publicly available but was leaked in 2007. Two PHP scripts were created and used in order to extract useful information from the database that can be used in statistical software.

The first script was used to extract the amount of releases done per releasegroup per month. The second script was used to get an overview of each group, their total releases, total nukes, their start date and the date of their last release. The output of the scripts was later converted in order to serve as a dataset for the statistical software. The source code of the scripts is attached in appendix 1 and 2.

Statistical analysis of the dataset extracted from the database was used to generate charts that showed useful information. These charts can be found in figure 8 and 9. Significant changes in the chart were later explained by outcomes of the interviews that revealed decisions made in the organization of the MP3scene.

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[6] The leaked database can be downloaded from: http://torrentfreak.com/27-years-of-warez-scene-release-info-leaked-in-giant-database/

## 2. The Scene

The scene, also known as the warez scene, is a worldwide and virtual organization where people copy, crack and distribute copyright protected material like music, movies, games and software. The scene is the source of most of the pirated material available on the Internet. The practice of the scene could be defined as to copy, crack and to distribute copyright protected material.

The scene originally started as the "PC scene" that cracked and distributed software and games for the first IBM computers and later for Commodore and Apple computers. Nowadays the scene is an umbrella term to cover many different areas, each with its own specific practice, organization and structure.
Popular areas are the game, MP3, eBook, 0day[7], console, PDA, music, television and movie scene. The scene strives to keep their releases privately available to its participants and not make them publicly available. Every release also contains a message that states if you like this particular release, then buy it.

> *"Always remember: we do this just for fun! And we are against commercialisation! In fact we buy all our own games, as we love games, and we are not joking! If you like this game, buy it, we did!" (Text found in NFO of Myth and Deviance)* (Rehn, 2004)

The scene did not succeed in keeping their releases only available to its members. The releases are slowly leaked into the public domain throughout private torrents, newsgroup binaries and eventually peer-to-peer networks. The process of distribution to the mass public is visualized in figure 2.



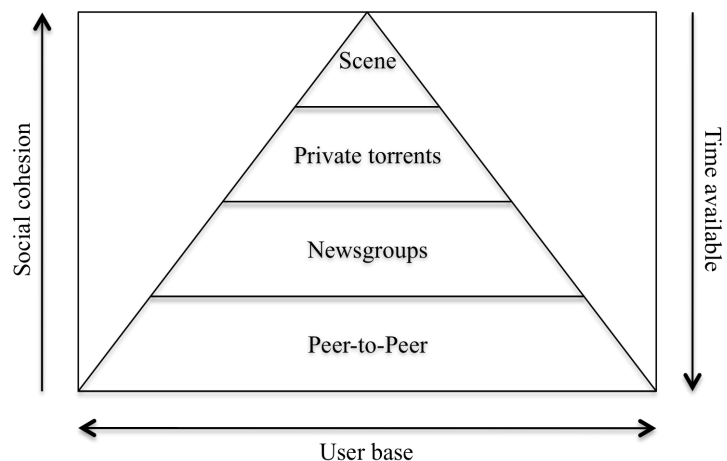**Figure 2: Pyramid of availability and dedication**

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[7] Zero-day (0day) attacks exploit an unknown vulnerability or at least a vulnerability for which no patch is available. Baecher, P., Koetter, M., Holz, T., Dornseif, M., & Freiling, F. (2006). The Nepenthes Platform: An Efficient Approach to Collect Malware. In Heidelberg, *Lecture Notes in Computer Science* (pp. 165-184). Berlin: Springer Berlin.

Figure 2 illustrates how a release becomes publicly available. It starts with the scene as the source of the release. The scene logically has the fastest access to new releases and represents the smallest user-base. Then the release becomes available on private torrent[8] sites. Then they are spread on newsgroups and eventually the release can be downloaded from peer-to-peer networks like KaZaa, eDonkey or Gnutella.

Social cohesion is the highest at the top of the pyramid, the scene. People in the scene are very dedicated and actively involved in the process of creating a release; they work together as a group and share a strong *we-commitment*.
People posting on private torrents and newsgroup binaries have a lower level of social cohesion because they are not involved in the process of creating a release; they only care about obtaining a particular release. Peer-to-peer users do not have any social cohesion at all; they just launch their favourite peer-to-peer client and start downloading releases.
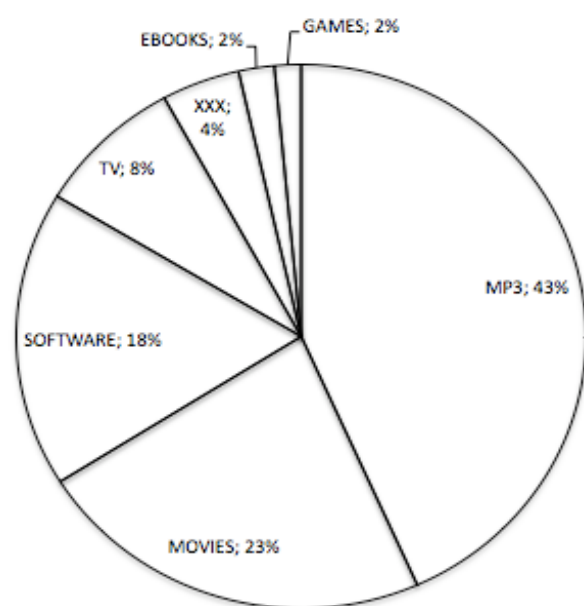


**Figure 3: Level of activity**

In order to estimate the size of the scene the leaked database provides the following facts and figures. From January 1998 until May 2007 information about approximately 2.6 million releases was stored in the database. The MP3scene has been the most active scene being responsible for about 1.2 million releases from the start until May 2007. This stands for an average of 230 releases per day. The pie chart in figure 3 gives an overview of each area and their corresponding amount of releases.

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[8] Torrent, short for BitTorrent is a second generation peer-to-peer (P2P) application. Qui, D., & Srikant, R. (2004). Modeling and performance analysis of BitTorrent-like peer-to-peer networks. *Applications, Technologies, Architectures and Protocols for Computer Communication* (pp. 367-378). New York: ACM.

## 2.1. The Scene Before the Internet

Piracy existed ever since there has been the ability to store data on a digital platform and the availability of commercial material. However the scene emerged in the begin 80's by groups who cracked and reverse engineered computer software and made this available on bulletin board systems. One of the best-known groups back then was THG that stands for The Humble Guys.

> *"I was on a THG headquarters (The Humble Guys), that was a special group, I never saw any bullshit there and everyone was very respectful. I think that group basically folded in 95/96 but they lead the way for a while." Quoted by an anonymous participant in the MP3scene.*

A bulletin board system is a computer system with special software that allows people to dial in using their telephone line and a modem and start uploading and downloading software. The first bulletin board systems were located in the United States but soon they spread to the United Kingdom, Australia and Europe. Bulletin board systems were not only used to upload en download software but to play "role playing games" or "turn based games" as well.

> *"I ran it mostly for games and newsgroups, when I say games, I don't mean pirated, I mean bbs online games. There were some great turn-by-turn games and people would dial in daily to take turns. It was a war game you could have a dozen people playing and you had to take over the world :)" Quoted by an anonymous participant in the MP3scene.*

In late 90's, activities of the scene moved from telephone lines and bulletin board systems to the Internet using more sophisticated services like "IRC" (internet relay chat), "FTP" (file transfer protocol) and the well-known "WWW" protocol. The last bulletin board system stopped in 1997. Today FTP sites are used to store and distribute releases.

The movie and music scene emerged while the old scene was moving their activities from telephone lines and bulletin board systems to the Internet. The movie scene started in 1993 after the introduction of the video-CD format. And the MP3scene

started two years later in 1995, shortly after the introduction of the MP3 file format. Both scenes emerged because of new technology became available.

## 2.2. Legal Actions Against the Scene

Due to the illegal activities being performed by participants within the scene, thorough security measures are essential and mandatory to avoid getting caught. The Recording Industry Association of America (RIAA) and the Motion Picture Association of America (MPAA) are the largest trade groups representing America's entertainment industry and they actively fight piracy. The scene is constantly subjected to police investigations and despite security measures taken by the scene these investigations have led to several international police operations. The articles below are published by the United States Department of Justice and describe a few of these operations. These articles are not an essential part of this thesis and can be skipped for reading, they just emphasize the seriousness of actions of the RIAA and MPAA against piracy.

### 2.2.1. Operation Fastlink (February 2001)

> *"CHICAGO - A former North Carolina man who was arrested last fall and eight new defendants across the United States who allegedly were associated with the underground software piracy group known as "Fastlane" have been indicted for pirating more than $1 million of copyrighted computer software, games, and movies through non-public Internet sites. All nine defendants were charged in a nine-count indictment that was returned late yesterday by a federal grand jury in Chicago, where the investigation was conducted, Scott R. Lassar, United States Attorney for the Northern District of Illinois, and Kathleen McChesney, Special Agent-in-Charge of the Chicago Field Division of the Federal Bureau of Investigation, announced today. The defendants allegedly were leaders, members or associates of the group "Fastlane," which was dedicated to illegally distributing copyrighted software, games and movies over the Internet. An undercover FBI agent infiltrated the group and was asked to provide a computer to serve as one of several Internet sites used by the group to distribute copyrighted materials; the agent agreed and then monitored the group's activities on that site. The indictment alleges that the*

*defendants used this site to upload and download copyrighted software between Jan. 7 and Sept. 20, 2000. This prosecution is believed to be the first in the nation arising from the FBI's undercover infiltration of a software piracy organization.*

*The undercover investigation ended on Sept. 20, 2000, when one of the defendants, Steve Deal, was arrested in Charlotte, N.C., and the FBI executed search warrants and seized computers at various locations in and around Boston, Charlotte, Dallas, Kansas City and Seattle. All nine defendants were charged in one count of conspiracy to commit copyright infringement, and eight of the nine were charged with one count of copyright infringement."*
*Source:* http://www.cybercrime.gov/fastlane.htm

## 2.2.2. Operation Buccaneer (December 2001)

*"Operation Buccaneer is an international piracy investigation lead by the U.S. federal law enforcement. In December 2001, a international coordinated effort the United States Customs Service and the Department of Justice executed or caused to be executed over 65 search warrants in the United States and five other countries. 16 defendants have been convicted in the United States of piracy and 13 defendants have been sentenced to prison up to 46 months. These are the longest sentences ever imposed in the United States for Internet piracy. Operation Buccaneer is the first federal investigation to successfully target the suppliers, crackers and leaders of multiple top-level releasegroups. These groups included Drink or Die, Razor1911, RiSCISO, MYTH and POPZ. In the United States, piracy is a federal crime punishable by up to three years in prison and a fine of 250000 dollar."*
*Source: http://www.cybercrime.gov/ob/OBMain.htm*

## 2.2.3. Operation Safehaven (April 2003)

*"Building off the success in Operation Buccaneer, Computer Crime and Intellectual Property Section, in conjunction with the United States Attorney's Office for the District of Connecticut, and the Bureau of Immigration and Customs Enforcement Cyber Crimes Center, conducted a 15-month investigation called operation Safehaven, which targeted additional*

*significant Internet software piracy groups. In April 2003, the investigation culminated with the simultaneous execution of over 20 search warrants nationwide, resulting in the capture of many well known and prolific members of the online piracy community and the seizure of thousands of pirated Cds and DVDs, plus dozens of computers and servers, including the largest warez site seized in the United States to date."*

*Source:* http://www.usdoj.gov/criminal/cybercrime/safehavenmain.htm

### 2.2.4. Operation Site Down (June 2005)

*"WASHINGTON, D.C. -- Attorney General Alberto R. Gonzales, Acting Assistant Attorney General John C. Richter of the Criminal Division and FBI Cyber Division Assistant Director Louis M. Reigel today announced another far-reaching and aggressive international enforcement action against criminal organizations involved in the illegal online distribution of copyrighted material.*

*Beginning yesterday morning, the FBI and law enforcement from 10 other countries conducted over 90 searches worldwide as part of "Operation Site Down," designed to disrupt and dismantle many of the leading criminal organizations that illegally distribute and trade in copyrighted software, movies, music, and games on the Internet.*

*"By dismantling these networks, the Department is striking at the top of the copyright piracy supply chain -- a distribution chain that provides the vast majority of the illegal digital content now available online," said Attorney General Gonzales. "And by penetrating this illegal world of high-technology and intellectual property theft, we have shown that law enforcement can and will find -- and we will prosecute -- those who try to use the Internet to create piracy networks beyond the reach of law."*

*Operation Site Down is the culmination of three separate undercover investigations conducted by the FBI. In the past 24 hours, more than 70 searches were executed in the United States, and more than 20 overseas. Four individuals were arrested in the United States, and searches and/or arrests*

*occurred in the following 10 countries: Canada, Israel, France, Belgium, Denmark, the Netherlands, United Kingdom, Germany, Portugal and Australia. At least eight major online distribution sites were dismantled, preventing tens of millions of further losses to the content industry. More than 120 leading members of the organized online piracy underground were identified by the investigation to date, and as the investigations continue, additional targets will be identified and pursued.*

*"The theft of this property strikes at the heart of America's economy," said FBI Assistant Director Louis M. Reigel. "It deprives many Americans and others around the globe of their right to be paid for their labor and enjoy the value of their hard work."*

*In addition to attacking piracy globally, Operation Site Down struck at all facets of the illegal software, game, movie, and music trade online, which is commonly referred to as the "warez scene." The investigations focused on individuals and organizations that were the "first-providers" of copyrighted works to the warez underground -- the so-called "release" groups that operated as the original sources for a majority of the pirated works distributed and downloaded via the Internet. Once a warez release group prepares a stolen work for distribution, the material is distributed in minutes to secure, top-level warez servers throughout the world. From there, within a matter of hours, the pirated works are distributed globally, filtering down to peer-to-peer and other public file sharing networks accessible to anyone with Internet access.*

*The release groups targeted by Site Down specialize in the distribution of all types of pirated works including utility and application software, movies, music, and games. Among the warez groups hit yesterday are: RiSCiSO, Myth, TDA, LND, Goodfellaz, Hoodlum, Vengeance, Centropy, Wasted Time, Paranoid, Corrupt, Gamerz, AdmitONE, Hellbound, KGS, BBX, KHG, NOX, NFR, CDZ, TUN, and BHP. These groups alone are allegedly responsible for stealing, cracking and distributing hundreds of well-known titles, such as Autodesk's Autocad 2006, Adobe's Photoshop, and the movies "Star Wars Episode III: Revenge of the Sith" and "Mr. and Mrs. Smith." Operation Site*

*Down is expected to dismantle many of these international warez syndicates and significantly disrupt the illicit operations of others.*

*Conservative estimates of the value of pirated works seized in yesterday's action exceed $50 million, which is only a fraction of the losses attributable to the online distribution hubs also seized in this operation. Top-level release groups like those targeted in the operation are primary suppliers to the for-profit criminal distribution networks that cost the copyright industry billions of dollars each year. Illegal warez copies of titles such as Autocad 2006 and "Mr. and Mrs. Smith" are easily and cheaply converted to optical discs and distributed throughout the world from factories in Asia and elsewhere. Spammers regularly advertise cheap software that can be downloaded from websites or shipped from overseas, usually bearing the signature mark of the warez group that released it.*

*Operation Site Down comprises three separate FBI undercover investigations run by the FBI field divisions in Charlotte, North Carolina; Chicago, Illinois; and San Francisco, California. The U.S. Attorney's Offices in San Francisco, Charlotte and Chicago assisted in the investigations and a majority of the domestic targets will be prosecuted in those districts. The*

*Justice Department's Computer Crime and Intellectual Property Section also assisted in the investigations and led the coordination of foreign enforcement actions in 10 countries.*

*Operation Site Down is the latest in a series of actions taken by the Department of Justice to crack down on illegal online piracy. In the past four years, beginning with Operation Buccaneer in 2001 through Operation Fastlink in 2004, the Department has prosecuted a number of international investigations into these top piracy organizations."*
*Source:* http://www.cybercrime.gov/OperationSiteDown.htm

## 3. The MP3scene

The music scene, better known as the MP3scene, is an organization within the scene where people, represented in groups, copy and distribute copyright protected music. Music from sources like compact discs, tapes, vinyl and radiobroadcasts are ripped and distributed in the MP3 file format. The process of copying and distributing will be referred to as "releasing", the groups are called "releasegroups" and the end product that is eventually released will be called a "release" or "rip". The people that actually copy the music are "rippers". It is not uncommon that a group in the MP3scene release albums months before their official release date and availability in stores. A news article regarding the early leak in November 2004 of Eminem's new album titled Encore proves this.

> *"Rapper Eminem's new album, Encore, which is set to be released on November 16th has appeared online today, 13 days early. The album is currently being traded and distributed in many ways online, including XDCC bots on IRC, on P2P networks and many BitTorrent sites. This is the third major item from the entertainment industry to appear online in about a month, after two major games, Halo 2 and Grand Theft Auto: San Andreas both leaked before their official release date. It seems that Internet release groups are becoming more and more of a nuisance to the entertainment industry, demonstrating their skills in beating several copy protections and acquiring works long before they are due to be released.*
>
> *It's not a major thing to see albums appear online in MP3 format, but this one in particular is interesting after rumours were circulating online that there were "plans" for this album that would prevent mass piracy of it. The group responsible for the release has left some comments packed with it...*

> *"Guess Who's Ripped, Ripped Again? It's*
> *RNS And We Bring A Friend!*
> *He is familiar to us and all of you as well.*
> *We bring you the new Eminem album*
> *to ring in the end of 2004 and the*
> *start of 2005! Consider this your early*
> *Christmas present from RNS."*



**Figure 4: RNS logo**

*As well as the main CD, the group has also released a bonus CD containing three more tracks. It will be interesting to see some later comments on this release from Recording Industry. Some have made claims that the major success of the third Eminem album, The Eminem Show was due to many of the tracks appearing on P2P networks. Downloaders who got these early tracks claim it made them go out and buy the album when it was released."*
*Source: http://www.afterdawn.com/news/archive/5752.cfm*

Most releasegroups are interested in a particular genre like dance, electronics, pop, jazz or folk. Other releasegroups can be specialized in releasing music from a particular source like, live recordings, CD's, vinyl's or tapes. But it is not uncommon for a releasegroup to release about everything thing they can get their hands on. From this point the MP3scene will be used to describe and define technological, organizational and social relational processes. The next section identifies the current structure of the MP3scene.

## 3.1. Organizational Structure

At the start of the MP3scene around 1995 there were no rules and no organization. There were only individuals and a few releasegroups who just ripped music and released it in MP3. The people in the MP3scene used different methods and quality levels. There was no system that registered which releasegroups released what music. Therefore it was not uncommon that three different releasegroups released the same album.

*"I remember BF started encoding MP3's with their info in the header so you could view the MP3 file and get group info :)" Quoted by an anonymous participant in the MP3scene.*

The MP3scene was chaos and lacked any form of organization and structure but this came to an end in 1998. It was the year of the first successful attempt to bring structure in the MP3scene. Creating an organization in the form of a MP3 council that setup rules, guidelines and procedures for releasing music did this. The goal of this organization was to increase the efficiency of the releasegroups in the MP3scene and enabling cooperation and competition between them. The greatest gain in efficiency could be found in the avoidance of duplicate releases so every releasegroup could concentrate on new and more music. Two elements were needed to create gain this efficiency. First a central system needed to be created in order to register what releasegroup did what release. Secondly a certain amount of trust between the releasegroups was essential for releasegroups accepting other releasegroups work. Enforcing a small set of rules and procedures that maintained a certain quality level created the basis of trust.
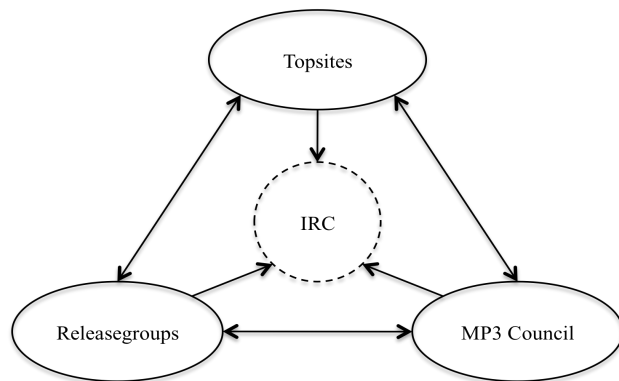


**Figure 5: Organizational schema of the MP3scene**

For example a release should be encoded and compressed in MP3 at a bit rate of 160Kbit/s by an approved MP3encoder like LAME[9]. Apart from regulations about the actual MP3 files, a release should contain an .NFO[10] file and an .SFV[11] file. Furthermore the name of a release should follow certain naming standards. Figure 5 can be used to display the MP3scene as an organization.

The MP3scene is founded on three main elements, all linked together and each playing its own specific role. Releasegroups are the groups that actually provide new releases. Topsites are FTP servers that host all the new releases. The MP3 Council is the authorized party that creates, maintains and enforces standards, rules and procedures. IRC provides the communication platform that everyone uses in the

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[9] LAME is a high quality MPEG Audio Layer III (MP3) encoder licensed under the LGPL. LAME. (sd). *The LAME MP3 encoder*. Opgeroepen op 5 11, 2009, van The LAME project: http://lame.sourceforge.net

[10] NFO files are text files that contain information about the release and general information about the group that released it.

[11] SFV stands for Simple File Verification and is used to check the validity of files after transfer.

MP3scene. The next section will be a detailed description of these three main elements.

### 3.1.1. IRC (Internet Relay Chat)

Internet relay chat is a form of real-time chat over the Internet. It is designed for group communication in channels and one-on-one communication in private messages. There are many different IRC networks and a few examples are EFnet, LinkNet and IRCnet[12]. An IRC network consists of multiple servers in different countries that are linked to each other. People can connect to an IRC network using clients like mIRC[13] or BitchX[14]. IRC is a virtual place where everything and everyone in the scene comes together and communicates. Releasegroups have their public and private channels and topsites have their announcement channels.

> *"But since I wanted not only MP3s but the videos too, I found an irc channel called #musikvideos with fserves and other weird stuff like that ;) (mid. 2001). Then I noticed that there were certain 'groups' centred in their own channels and since I was mostly downloading SE stuff, I joined that channel." Quoted by an anonymous participant in the MP3scene.*

> *"Moving forward, 97, internet, irc, MP3's. #MP3rave was a great channel for getting MP3's, open sites, xdcc bots[15], I got to know some people there." Quoted by an anonymous participant in the MP3scene.*

### 3.1.2. Releasegroups

Releasegroups usually consist of one or two founders who started the group, four or five senior members as staff and an amount of rippers that differs from group to group.

Rippers are the actual suppliers of new music and releases. Their sources can be record shops, record labels, CD-pressing factories, music studios and music events. It is not uncommon that they receive new music straight from the artists themselves.

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[12] IRCnet: http://www.ircnet.org
[13] mIRC: http://www.mirc.org
[14] BitchX: http://www.bitchx.org
[15] XDCC bots are robots in channels on IRC networks that offer downloadable content

Seniors are members who already have a few years experience in the MP3scene and enjoy a certain amount of respect because of their knowledge and skills. They fulfil a variety of tasks within the releasegroup and MP3scene. Seniors can support the releasegroup in a technological, supportive and social way. Some seniors are technological experts and able to program supportive applications, some have great managerial skills and others have a large online network. Seniors can support the group in spreading the releases, gathering more topsites and teaching new rippers how to improve their ripping skills. Examples of groups are: "Trance Galaxy (TGX)", "MindScape (MS)", "Tronik", "2 Da Beat (2DB)", "BeatForge (BF)" and "Rabid Neurosis (RNS)". RNS is probably the best-known MP3 releasegroup and is also mentioned in WikiPedia:

> *"Rabid Neurosis (RNS) was an MP3 warez release organization which was founded in 1996. In 1999, the group claimed to have released over 6,000 titles a year. RNS occasionally used the tagline "Rabid Neurosis - Spread The Epidemic." RNS were best known for releasing highly anticipated albums by hip-hop, pop, rock, and dance artists weeks and sometimes months before their official release date. RNS was sometimes believed to have started the MP3scene. After their group was mentioned in an MTV News article about the early leak of the Eminem album Encore, RNS stopped including their initials in filenames and ID3 tags. On October 12, 1996, RNS released their first MP3 rip: Metallica's Ride the Lightning. Their last was Fall Out Boy's Infinity on High on January 19, 2007."*
> *Source* http://www.wikipedia.com

### 3.1.3. Topsites

Topsites[16] are FTP servers with a fast Internet connection and lots of storage space. They are usually hosted at companies, universities or private homes. Most of these

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[16] Topsites are referring to high-speed FTP servers used by release groups and couriers for distribution, storage and archival of warez releases. Topsites have very high-bandwidth Internet connections, commonly supporting transfer speeds of hundreds to thousands of megabits per second; enough to transfer a full DVD in minutes. Bounie, D., Bourreau, M., & Waelbroeck, P. (2006). Piracy and the Demand for Films: Analysis of Piracy Behavior in French Universities. *Review of Economic Research on Copyright Issues , 3* (2), 15-27.

servers run BSD or Linux distributions as their operating system and use glFTPd[17] as their FTP server software. There are many different sites and each site has its own set of music genres, rules and affiliated releasegroups. For example a site has sections for MP3, games, movies and software and allows only new music from the current year in all genres. Another site has sections for MP3, console games and television shows and allows music from every year but only from electronic genre. Scripts are used to check the validity of the releases according to their SFV file. Eggdrop bots are used to announce any new and incoming release in its IRC channel.

A team of technicians, suppliers, operators, couriers and nukers usually manage a topsite. Site operators are often the owners of the site and responsible for its management. They decide about the rules and what kinds of sections and groups or users are allowed on the site. Technicians are responsible of the technological part of the site. They install and setup the site to make it operational. Suppliers are the people who provide the necessary hardware and the Internet connections.

Couriers are needed to get the content on the site. They have multiple sites with different sections and affiliated releasegroups and they just transfer the missing releases between the sites to gain download credits. If a courier uploads one megabyte he or she gets credits to download three megabytes, this ratio is 1:3. Couriers are often organized in groups and can be a very useful for releasegroups because of their contacts. When a releasegroups is in search of new topsites couriers can assist them.

Nukers are people that check releases for duplicates and their quality. If a release is a duplicate or has a bad quality due to hiss or jitter, they "nuke" the release. Nuking means that a release is marked as bad. This negatively affects the status of the responsible releasegroup and decreases the amount of credits of the one who uploaded the release to the site.

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[17] http://www.glftpd.com/

Figure 6 shows an old NFO file of a Spanish topsite called "Access Denied (AD)". The NFO states that it is a topsite on a 100Mbit[18] Internet connection in Europe. Furthermore it shows what groups are affiliated with the site in the sections MP3, 0day and iso. For MP3 it has RNS, WLM, iPZ, BPM, 1REAL, iDC, PMS, MiM, PULSE, CHR, KREMA, STAR, CRN, CSRMP3, JUST, LSi, 100REAL and CMC affiliated.



**Figure 6: NFO file of topsite AD**

For 0day it has VARiANCE, EQUINOX, iPA, RAiD, ViRiLiTY, ViRGiN, BliZZARD, iNTENSION and SSG affiliated. And for ISO it has JUSTiSO, RORiSO and EViLUSION affiliated.

### 3.1.4. MP3 Council

In 1998 senior members of experienced releasegroups successfully formed the council. The purpose of this council was to create order and to increase the efficiency of the MP3scene. The NFO file is scanned from Rau's (2004) book *Phänomenologie und Bekämpfung von "cyberpiraterie" ein kriminologische und kriminalpolitische Analyse* is shown on the next page in figure 7 and announces the MP3 council's existence.

---

[18] 100Mbit/s Internet connections are capable to transfer 12,5Mbytes per second, a dvd in 5 minutes.

```
Much has changed in the mp3 "scene" lately, but Let's skip the intro and history of
the music/mp3scene of the internet. Those of u who have been here since it all started
in 1995/96 know that there has been much chaos, and there still is. Any previous
attempts (mp3spa) at bringing in some organization and guidelines into the scene have
failed. The scene has always worked as every group by it self. That might have worked
fine, but we now want to move on and start appreciating other groups releases/rip, and
save our own time for ripping more. This means we have to be able to trust each other
rips. For this purpose, and nothing else, a council was set up and a name was chosen:
RIAA. The participants agreed on some easy to understand rules about how to release
music on the internet! This was done by a few big mp3 release groups, but it is the
hope of everyone that all groups and independent suppliers will use them as well. We
expect top groups like MGC, UBE, NBD, BF, TFA, WLWMP3, MS, IMPG, IDM (and others we
forgot) to be joining this council soon!

The program is as follows:
The scene will benefit from this effort, and we will respect the agreed rules.
The council name is RIAA.
The members are councils of the chosen groups and a few more selected people.
New members of this council can join on Invite / Vote-in.
Rippers/groups must produce .SFV files for crc'ing every release.
Rippers/groups must produce .NFO files for every release, and the .nfo file must
feature at least:

ARTIST NAME – TITLE – GROUP RELEASE DATE – GROUPNAME; A release without proper .nfo
AND .sfv file is a nuke on all big sites.
Files and directories must only contain a-z A-Z 0-9 _ – () and no other characters.
Underscores will be used for spaces, and double dots won't be used. i.e.
The length of filenames and directorynames must not exceed 64 chars.
Directory names must at minimum include "Artist-Album-GROUPINITIALS"
Filenames must at minimum include "Tracknumber-Songtitle-GROUPINITIALS"
The music format is MP3 until MP4 format is out, and AAC and VFQ are ignored.
The following encoders are banned because of their inability to produce good sounding
mp3s: Xing Encoder, BladeEnc, AudioActive Po -lq mode; These encoders are banned at
the moment, but it might change soon. Stay tuned.

We Also Agreed That These Changes Will Be In Effect No Later Than FEBRUARY 1ST 1999.
So Pls Be Ready With Your Sfv/Nfo Tools.. And The Characters. Happy Mp3'Ing To Us
All.. Let's Make 1999 A Better Year!

This Document Was Signed & Approved On December 17Th, 1998 By The Following
Individuals, Representing Their Respective Groups:

Vega[aPC] Aeonizer(Kain)[ATM] AlCapone[RnS] EXx[UMA] Fido[AMOK]
```

**Figure 7: MP3 Council's first rules scanned from Rau's book**

Regulation started by enforcing the usage of SFV files to enable validation and
verification of releases after transferring them between topsites. NFO files were
enforced and certain naming standards became obligatory. A few MP3 encoders were
banned because they produced low quality MP3 files. Soon after this initial attempt to
organize the MP3scene, a database was created that holds information about
everything that was being released. Then LAME was set as the standard MP3 encoder
because it produced the best MP3 files and certain bit rates became standard to
maintain a stable quality level. New rules are currently voted in or out in a democratic
matter. Each group has several votes according to their status and each group can vote
for or against a new rule. Today the council has 12 pages of rules, standards and
procedures. A copy of the rules of 2007 is attached in this research as appendix 5.

### 3.2. From an Album to MP3

A ripper receives a new album from his sources. He will rip the tracks and convert them to MP3. The next step is to query the database to check if his album has already been released by another releasegroup. If that is the case, his group cannot release it since duplicates are no longer allowed. Some groups decide to release the album for internal use in the group only. If another group has not released the album, the ripper packages the release. This packing is applying the correct filenames, filling the MP3 tags with the right information, creating an SFV and NFO file. Tools used commonly are Exactaudiocopy[19], to extract audio from a compact disc to a digital wave format (.WAV). LAME to encode and compress the WAV file to MP3. Morgoth's MP3releaser[20] to tag the MP3files, apply the right naming style and fill the groups NFO file.

When all of the above is done, the ripper uploads the release to an ftp server. This release is then checked by other members of the group and distributed to the group's private part of all sites that are affiliated with the releasegroup. If the release is complete on all sites, it will be simultaneously moved from the group's private part to the public part on all sites. This process of moving a release from a group's private part to the public part is called *"pre-ing"*. This release will be announced in the site channels and distributed by the couriers to sites that do not affiliate this releasegroup.

The following example indicates the time needed to create a release from a compact disc in the year 2000 in comparison to the time that is needed today. A typical year 2000 system could be an Intel Pentium III 600MHz processor, an 8-speed optical drive with an ISDN Internet connection with a speed of 128Kbit/s. Today we can have an Intel Core 2 Duo at 2.0GHz processor, a 40-speed optical drive and a high-speed cable Internet connection with a speed of 10Mbit/s. The first step is to insert the compact disc into the optical drive and rip the audio uncompressed to the computer's hard drive. A standard compact disc can hold 74 minutes of stereo music at a sample rate of 44.1 kHz and a sample size of 16 bits. The bit rate of uncompressed stereo music is 1,4Mbit per second.

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[19] http://www.exactaudiocopy.de
[20] Morgoth discontinued developing MP3releaser but it can still be downloaded by searching Google

Bit rate for uncompressed audio: $\dfrac{44100 \cdot 16 \cdot 2}{1000^2} \approx 1,4\,Mbit/s$

One minute of uncompressed stereo music requires approximately 10MB of space and a full compact disc requires 740Mbyte.

Size of one minute of uncompressed audio: $\dfrac{44100 \cdot 16 \cdot 2}{8 \cdot 1024^2} \cdot 60 \approx 10,1\,Mbyte$

An 8-speed optical drive indicates a reading speed of 8 times faster then normal reading for used playing. It would take ($74 \div 8 = 9,25$) 9 minutes and 15 seconds to store the audio on the hard drive in an uncompressed wave format. A 40-speed optical drive indicates a reading speed of 40 times faster then normal playing.
It would take ($74 \div 40 = 1,85$) one minute and 51 seconds to store the audio on the hard drive in an uncompressed wave format.

After ripping the music to the uncompressed wave format it needs to be encoded to MP3 using the LAME MP3 encoder at a bit rate of 192Kbit/s. This results in a total size of 101,6MByte for 74 minutes of music.

Size of 74 minutes of music compressed with MP3: $\dfrac{192000}{8 \cdot 1024^2} \cdot 60 \cdot 74 \approx 101,6\,Mbyte$

An Intel Pentium III processor at 600MHz can encode audio to MP3 at four times the actual playing speed. This would take ($74 \div 4 = 18,5$) 18 minutes and 30 seconds. An Intel Core 2 Duo processor at 2.0GHz can encode audio to MP3 at 16 times the actual playing speed. This would take ($74 \div 16 = 4,625$) four minutes and 38 seconds.

The audio is compressed to MP3 and now the right naming and tagging should be applied. On average this process would take 15 minutes on both systems.

The release should be complete and ready for being uploaded to one of the group's private FTP servers. Uploading the release of 101,6Mbyte using an ISDN[21] Internet connection with an upload speed of 128Kbit/s takes one hour and 48 minutes.

Upload time at 128Kbit/s in hours: $\dfrac{101,6 \cdot 1024}{(128 \div 8) \cdot 3600} \approx 1,8\,hours$

Uploading the same release using a high-speed cable Internet connection with an upload speed of 10Mbit/s takes one minute and 23 seconds.

Upload time at 10Mbit/s in minutes: $\dfrac{101,6 \cdot 1024}{(1000 \div 8) \cdot 60} \approx 1,39\,minutes$

The spreading process varies too much from group to group. There are releasegroups that have only a few fast affiliated sites and other groups have a lot of slow affiliated sites. Also the routing differs from country to country. For example transferring 100Mbyte from a 100Mbit/s server in Sweden to a 100Mbit/s server in The United States takes much longer than transferring the same file to a 100Mbit/s server in The Netherlands. Daytime also influence the speed. 30 minutes can be taken as an average time for the spreading process in 2000 and 20 minutes in 2009 due to faster connections and the use of prebots. If the release is complete on every affiliated site then the release will be pre'd, this takes just a minute.

Table 1 summarizes and compares the times needed for every process of releasing in 2000 and 2009. Releasing a full album containing 74 minutes of music in 2000 took approximately three hours and two minutes versus 44 minutes in 2009. These times are under ideal circumstances that not often occur, it usually takes longer because of error correction during the ripping stage and errors in the upload and spread process.

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[21] ISDN: Integrated Services Digital Network, digital telephone and data communication

| Process | Time needed in 2000 | Time needed in 2009 |
|---|---|---|
| Ripping | 00:09:15 | 00:01:51 |
| Encoding | 00:18:30 | 00:04:38 |
| Tagging | 00:15:00 | 00:15:00 |
| Uploading | 01:48:00 | 00:01:23 |
| Spreading | 00:30:00 | 00:20:00 |
| Pre-ing | 00:01:00 | 00:01:00 |
| **Total** | **03:01:45** | **00:43:52** |

Table 1: Time needed to release a full album

### 3.3. Facts and Figures

The chart in figure 8 represents the amount of unique groups that released per month in the MP3scene. The X-axis represents time per month starting from January 1999 to May 2007; the Y-axis lists the amount of unique groups that released. The chart in figure 9 represents the amount of releases that were released per month in the MP3scene. The X-axis represents time per month starting from January 1999 to May 2007; the Y-Axis is the amount of releases. These charts are derived from statistical analysis of the leaked database containing information about releases that was leaked in the second half of 2007.
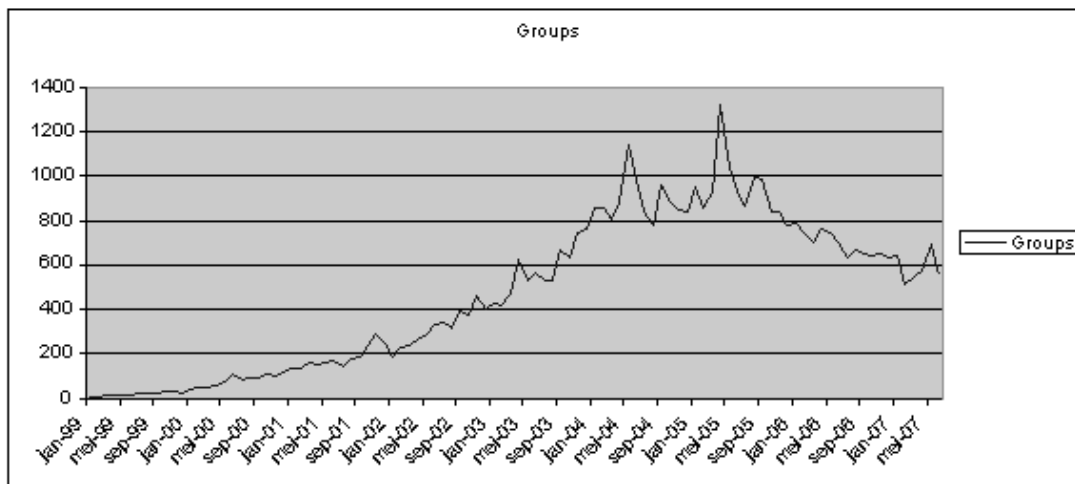


Figure 8: Amount of groups released per month
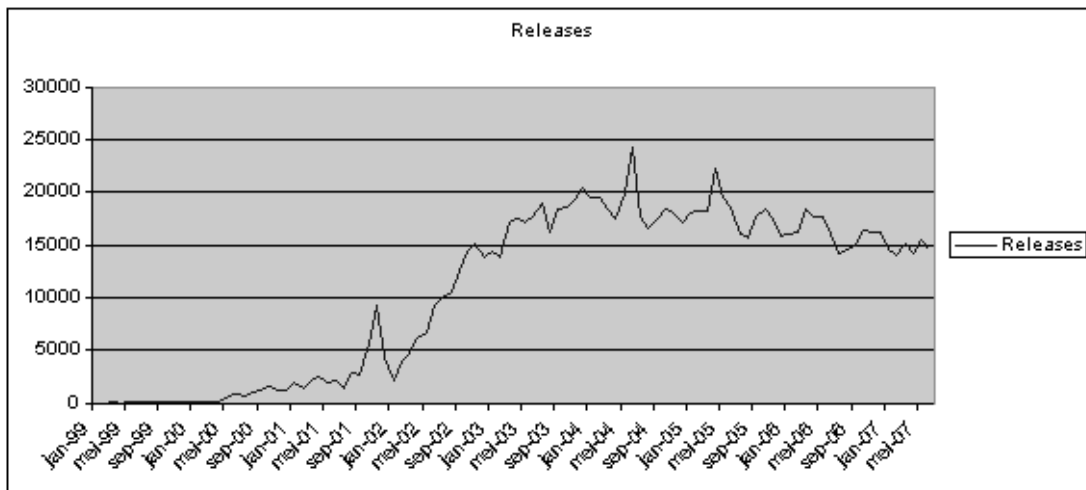
Figure 9: Amount of releases per month

The two peaks in 2004 and 2005 indicate an explosion of new releasegroups and a significant increase in the amount of releases. Technological developments and organizational processes cause the peaks. The increase in MP3 releases and releasegroups itself caused a decrease in social activity but these figures are explained in more detail in the next chapter.

## 4. Critical Events in the MP3scene

The participants in the interviews were asked to name a few critical events that occurred in the MP3scene. This information was used to create a timeline that visualizes these critical events. Figure 10 illustrates this timeline. It started with the introduction of the MP3 file format and ends with a decrease in social activity on IRC. Each event will be described shortly.
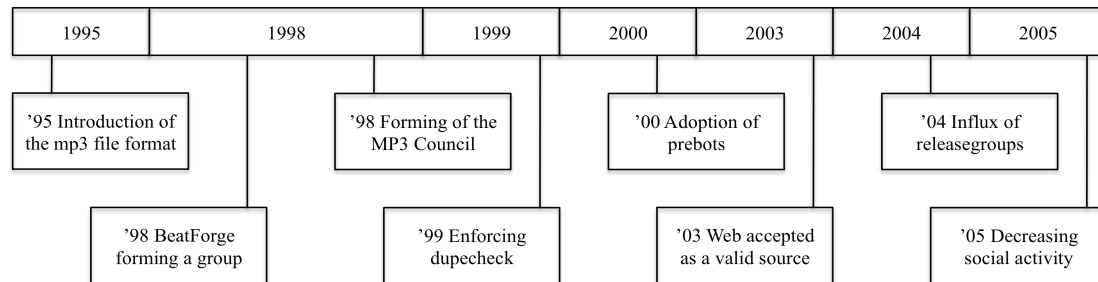


| 1995 | 1998 | 1999 | 2000 | 2003 | 2004 | 2005 |

'95 Introduction of the mp3 file format

'98 Forming of the MP3 Council

'00 Adoption of prebots

'04 Influx of releasegroups

'98 BeatForge forming a group

'99 Enforcing dupecheck

'03 Web accepted as a valid source

'05 Decreasing social activity

**Figure 10: Timeline of critical events**

### 4.1. Introduction of the MP3 File Format

In 1995 the MP3 file format was introduced and enabled people to convert analogue and digital music from a variety of sources to a standard file format that could be played on every computer. This event enabled the existence of the MP3scene and caused it to emerge.

### 4.2. BeatForge Forming into a Group

According to information of one of the interviewees, BeatForge was the first group that actually worked systematically according to certain standards.

> *"Well I see them as the first truly organized group, they started setting standards. Their existence prompted the beginnings of the MP3scene. If it wasn't for all the BF rips I think it would have taken another year or 2 to take off the way it did." Quoted by an anonymous participant in the MP3scene.*

### 4.3. Forming of the MP3 Council

The first successful attempt at organizing the whole MP3scene was done in 1998. This council's goal was to unite the MP3scene and use every group's efforts to

release more music more efficient. At the same time several procedures, rules and guidelines were enforced. See section 3.4.1 for more information on the council.


## 4.4. Enforcing Dupecheck

Dupecheck is a term used in the scene to refer to a system that can be queried to check if a particular album or track already has been released. Such a system was created in 1999 in the form of a database that listed information concerning every release. Figure 11 is a snapshot of a web interface of the database that shows what is released on May 31 2009.

| | | | | |
|---|---|---|---|---|
| 2009-05-31 02:11 Sputnik_Springbreak_Festival-The_Admirals_Live-DAB-05-31-2009-PTC | | MP3 | House | 1 134MB *nfo* |
| 2009-05-31 02:21 J_P_Cregan-Man_Overboard-2009-EGO | | MP3 | Rock | 12 56.9MB *nfo* |
| 2009-05-31 02:22 Broken_Promise_Keeper-Ice_Cold_Pop-2009-EGO | | MP3 | Pop | 12 63.8MB *nfo* |
| 2009-05-31 02:30 Jerome_Isma_Ae-Armada_Sessions_(3FM)-CABLE-31-05-2009-1KING | bad pack (missing ID3v1 tag) | MP3 | Blues | 1 37.8MB *nfo* |
| 2009-05-31 02:40 M.I.K.E-Armada_Sessions_(3FM)-CABLE-31-05-2009-1KING | | MP3 | Trance | 1 29.8MB *nfo* |
| 2009-05-31 02:58 Fabric-Bubbler_With_People-WEB-2009-CBR | | MP3 | Beat | 2 25.9MB *nfo* |
| 2009-05-31 03:00 Sputnik_Springbreak_Festival-Markus_Lange_Live-DAB-05-31-2009-PTC | | MP3 | Electronic | 1 79.0MB *nfo* |
| 2009-05-31 03:03 Dario_Marianelli-The_Soloist-(OST)-2009-MTD | | MP3 | Soundtrack | 15 59.5MB *nfo* |
| 2009-05-31 03:08 Jonathan_Allyn-Taking_Sides__Overdrive-WEB-2009-WAV | | MP3 | Trance | 2 37.3MB *nfo* |
| 2009-05-31 03:15 Ville_Lope-Passive_Attack-WEB-2009-WAV | | MP3 | Trance | 3 54.4MB *nfo* |
| 2009-05-31 03:33 Grooverider_and_DJ_Friction-Live_on_Radio_1_(Heist_Guestmix)-CABLE-05-31-2009-uC | | MP3 | Drum & Bass | 1 122MB *nfo* |
| 2009-05-31 03:40 VA-Slip_N_Slide-Home_Of_The_Hits_(15_Years)-(Promo)-2009-H3X | | MP3 | Rap | 9 40.3MB *nfo* |

**Figure 11: Snapshot of releases from May 31 2009**

Efficiency increased because groups did not need to do each others work over and over again and they could focus on more and new releases. This naturally led to rivalry and competition between the releasegroups. Before the database it was possible for every group to release every album they wanted to be released. The rule that disallowed duplicated to be released caused the effect of competition between releasegroups in order to be the first to release that new and promising album because only the first and fastest releasegroup could be credited for that release.


## 4.5. Adoption of Prebots

Prebots are used to automatically spread and distribute new releases to the different sites that are affiliated with the releasegroups. This was a major improvement that helped overcome the problems caused by globality and different time zones. A senior member in the United States did not have to set his alarm clock to spread and pre the release of a German ripper anymore. Some people argue that the introduction and adoption of prebot caused a decrease in social activity.

> *"Before the prebot, members were really excited and waited for a particular ripper to finish his upload so that the seniors could distribute it to the sites faster then another group. During that process all the members were very chatty and exited about winning this release. After I introduced the prebot, things speed up but I noticed less social activity in the channel."* Quoted by an anonymous participant in the MP3scene.

While others argued that the prebot caused an increase in social activity.

> *"I found increased interest, it was exciting. Seeing the prebots spreading all day doing release after release. It actually promoted talk about each release, as a release would be listed people would ask about it, download it, talk about how shit it was or how special."* Quoted by an anonymous participant in the MP3scene.

Taking both these perspectives into account one could conclude that the adoption of the prebot stimulated the external social activity around the group; it decreased internal social activity within the group.

## 4.6. Web Accepted as a Valid Source

In late 2003 the first online music stores started to emerge. They offer new releases that can be bought in directly in MP3. Examples of online music stores are Beatport[22], 4djsonly[23] and DisCogs[24]. In the beginning web releases were banned in the MP3scene but after lots of discussions they were eventually allowed in late 2004. This decision had a major impact on rippers. To be able to obtain the latest music and having access to exclusive suppliers like record shops, CD-pressing factories, artists and music studios soon became a commodity due to this decision. People with access to these sources were very dedicated people and real music lovers. But after this decision anyone with a credit card and PayPal could buy the latest music and become a ripper. This really changed the type of people that joined the MP3scene.

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[22] http://www.beatport.com
[23] http://www.4djsonly.com
[24] http://www.discogs.com

## 4.7. Influx of Releasegroups

In 2005 there was an explosion of new releasegroups and the amount of music being released grew exponentially. This is visualized in the two peaks in the charts in figures 8 and 9. This growth resulted in the practical problem that it was undoable to listen to everything that was being released in a day. It became impossible to keep up and listen to that large amount of new music every day. This "MP3-overload" could be the result of allowing web as a valid source. Another explanation could be the council not creating barriers of entry to the MP3scene by a trial period and a white list of accepted groups. The following quotation supports this explanation.

> *"How would u explain the decrease in social activity?"* *– "Well that's a result of dupecheck and all the new groups starting up. The biggest mistake we made in the MP3 council was not putting major restrictions on groups like we should have said these groups are accepted any others that pre - we nuke or steal and re-rip. If we had have done that, I think things would still be great in that sense of sharing. Restricting groups from joining? Yep, creating a whitelist of groups that can pre any others, they don't count. That would have stopped it though, those people would have gotten on small sites sure, but not real ones." Quoted by an anonymous participant in the MP3scene.*

## 4.8. Declining Social Activity

The interviewees had noticed a great decrease in social activity in IRC around 2005. More and more people became silent and idle in the channels and chatting about the latest music and other subjects decreased. Perhaps the entrance of new people with another set of mind shifted the MP3scene from a more social relational environment to a more economic environment. This decrease in social activity had been noticed at the time when there was an explosion of groups and allowance of web releases and is most likely related to those events.

> *"Back in 2001, in the time we've been talking there would have been 20-30 pages of chat in group channel, now there's been none. In 2001, I'd wake up*

*and read the backlogs of chat. It'd take about 30-45 minutes, used to get a great laugh out of it see people talking about good releases - so I knew what was worth getting, none of that happens anymore. Nowadays I don't even bother to scan a daydir… it started to die off in 2002-2003. I haven't downloaded a MP3 in 6 months." Quoted by an anonymous participant in the MP3scene.*

## 5. Social Relational and Organizational Processes

Gidden's (1984) theory of structure and agency is used as a basic framework to capture the most important social relational and organizational processes that can be identified within the MP3scene. Agency dynamically interacts with structure; the catalyst for this interaction is its inner and outer practice, releasing new music. This interaction can be illustrated according to the following example. Technological development caused the speed of Internet connections and size of hard drives to increase and the cost of this technology to decrease. This external force on the practice was a reason for agency to demand a higher quality MP3 files and slowly they increased the bit rate. The council or structure noticed this demand for higher quality MP3 files and eventually enforced a higher bit rate as a rule that resulted in an MP3scene-wide adoption. Hence overall quality of the music that is released in the MP3scene increased.

Wittel's (2001) theory is used to analyze the relation between the social cohesion within a releasegroup and the lifespan of the releasegroup. Wenger's theory (1998) about social learning is used to analyze the social learning agency experiences while participating in a community of practice like the MP3scene. Csikszentmihalyi's (1997) theory is used to describe the personal motivation and continuous flow of action agency experiences while participating in the MP3scene. Practice is the catalyst of dynamic interactions between agency and structure and is explained according to Gherardi's (2006) theory. Gherardi distinguishes inner motives of practice and outer motives of practice. Inner motives can be found in the personal motivations of participation and will be explained accordingly. Outer motives are the external factors that influence the way practice is performed and being institutionalized.

Structure describes the organizational processes within the MP3scene. Gherardi's (2007) theory about institutionalizing zooms in on the reasons why institutionalizing even took place in the first place and secondly the potential outcomes are discussed. Knorr Cetina's (2005) theory about complex global microstructures can be used to identify the organizational structure of the MP3scene. Figure 12 illustrates this structure, practice and agency as a framework that is used to describe its relations in the MP3scene.



**Figure 12: Theoretical framework**

### 5.1. Analysis of Agency

The individuals and groups actively participating in the MP3scene are agency. These individuals can be rippers, founders, seniors, site operators, couriers, nukers etcetera. Agency is not limited to releasegroups but all the people that participate in the MP3scene. Social relation processes within the MP3scene were discovered in interviewing the agency. Quotations should help to explain the social part of this organization.

> *"I must say tho, many people I got to know I consider very good people,probably they would be my friends if we knew each other in the 'real' life. Needless to say I got more topics to talk about with many people on irc than most of the people I know in real life. 'Real' life, because irc is real too." Quoted by an anonymous participant in the MP3scene.*

> *"There are some core people that have been round about the same length of time as me they are mostly idle now but we've built up friendships over the internet to a point where we stay in touch. New years eve we call each other every year. How would u speak of friendship with them? I consider them the*

*real people yeah they are friends we all make time for each other if one person is having a bad time we listen. It's a great thing having someone you can talk to thats totally removed from your life you don't have to mince words it's a great thing. I mean thats what defines real friendship for me, being able to be totally honest with someone and having a relationship that means you can contact them, say you need to talk and they'll make time. It goes both ways, it's kind of a special thing." Quoted by an anonymous participant in the MP3scene.*

### 5.1.1. Reasons and Motivations of Participation

Csikszentmihalyi's (1997) theory can be used to create a model that identifies personal motivation for participating in a community. This model is applied to the MP3scene in order to get a better understanding of the reasons and motivations of participation. A visualization of this model is shown in figure 13.
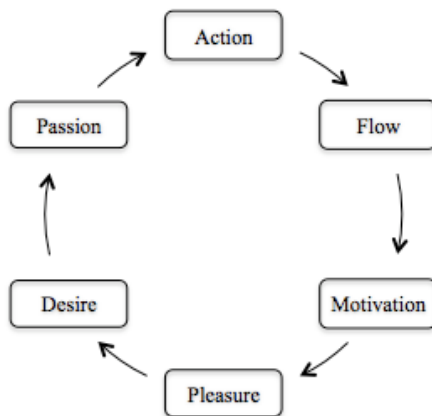


**Figure 13: Motivation on individual level**

Personal reasons of participation start with a passion that results in an action. Participants enjoy performing this action and during this action they experience various flow states that results in motivating feelings that cause pleasure or kills boredom. This pleasure results in the passion to continue or do something similar again. There are people that spend so much time in the MP3scene that it can be seen as an addiction. This model and these elements can be applied to several functions within releasegroups as explained in the next paragraphs.

1) A ripper has a passion for music and enjoys the respect because he has exclusive access to new and unreleased music. Because of this passion and access to new music he starts acting by ripping a brand new and unreleased album. During this process of obtaining and ripping he experiences various flow states like excitement and encouragement by his group members. Releasing this album before any other group

does also encourages him. These states result in a personal motivation to keep resulting in desire to continue ripping.

2) Seniors have been member of the releasegroup for a longer period of time and they developed a passion for their group and identify themselves with it. They want to increase the status of their group within the MP3scene and add more resources and sites to please the other members. His action could be finding and negotiating with site operators to get more topsites affiliated with the releasegroup. Negotiating and trying to get the most accounts on a site can be a captivating process. When successfully getting a new site results in a personal satisfaction and gratefulness by other group members. These flow states motivate and give personal pleasure to the seniors generating the desire to do it again.

3) Technical members are always looking for new ways to increase the group's efficiency and security or any other additional service. He has a passion for technology. He acts by implementing and programming useful applications or creating private ftp servers for the group. While he is programming he experiences flow states and receives encouragement from his group members that motivate him to go on. After finishing programming a new application or providing an additional service he receives pleasure from his own work. This pleasure is the basis of the desire to think up something new. Some of these new applications and innovations include prebots, advanced proxy[25] servers, zipscripts[26] for glftpd and eggdrop[27] tcl[28] scripts.

The outputs of these processes can be summarized in social recognition, reputation and overall satisfaction and it is the need for these outcomes that serve as an input for the process.

---

[25] Proxy servers are used in the scene to hide one's identity and encrypt Internet traffic
[26] See http://www.pzs-ng.com/ for zipscripts. They are used to get additional features on topsites, an example is that it automaticly shows a movie's imdb ranking upon upload.
[27] Eggdrop is an IRC robot which can be programmed to observe channels and react to triggers.
[28] TCL is a programming language used by Eggdrop bots on IRC. It can be used to script services like ripper status and private databases.

Two quotes from Kaiser's et. al (2007) *Weblog-Technology as a Trigger to Elicit Passion for Knowledge* can be used to better understand the motivations of participation.

> *"Observation shows that most sceners just like most software developers are highly idealistic, often manifested in a libertarian or anarchic way (O'Mahony, 2003). Central motive is to antagonize capitalism that huge corporations in the music industry"*

> *"Releasing can be interpreted as gift giving, which in anthropological research is known to establish status (Malinowski, 1922; Mauss, 1990)."*

### 5.1.2. Lifespan of Releasegroups and Social Cohesion

Wittel's (2001) theory is about the relation of social cohesion and lifespan of communities. The result of his research show that groups with more social cohesion would have a longer lifespan than groups with less social cohesion. This is illustrated in figure 14. Wittel's theory has been applied to the MP3scene and results show that this theory is valid for the MP3scene too.
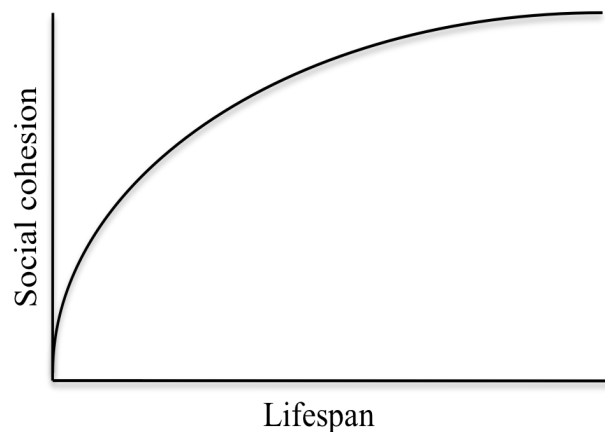


**Figure 14: Social cohesion and lifespan**

Every group is different, some are very active and release a lot of new music and some are quite inactive and do not release much new music.
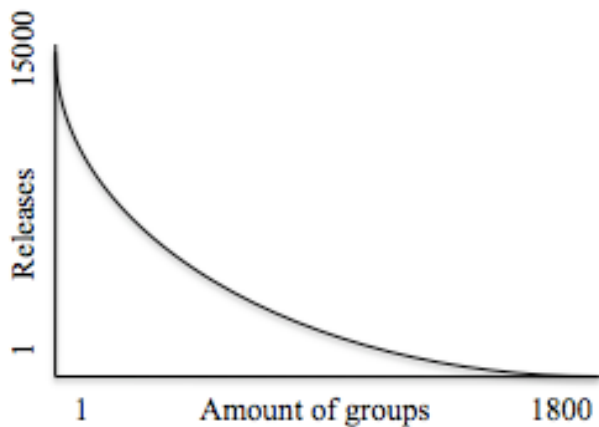
Figure 15: Releases per group

Analysis of the amount of releases and age of releasegroups is used as a factor of social cohesion and lifespan. The choice to use the amount of releases as a factor of social cohesion is justified by the previous theory about gaining social recognition in the process of releasing. The charts in figure 15 and 16 are hand drawn according to the original charts from SPSS that are appendix 3 and 4. The data for these charts were extracted from the database by using the scripts that are mentioned in the methodology.

The chart in figure 15 shows the relation between the amount of releases and the amount of groups responsible for them. There is a long tail of groups that did less then ten releases. The X-axis shows the amount of releases in total and the Y-axis shows the amount of groups responsible for them and the line indicates the relation between these variables. Top three groups are JUST with 15995 releases, 1REAL did 11280 and HSALIVE did 10586 and the last groups are hundreds of groups that released less then 10 releases. Average releases are around 500 and there are much more groups that releases less then the average than groups that released more than average.

The chart in figure 16 shows the relation between the amount of releases and age of a releasegroup. The X-axis shows the amount of releases, the Y-axis shows the age of groups in months and the line shows the relation between these variables. Some of the oldest
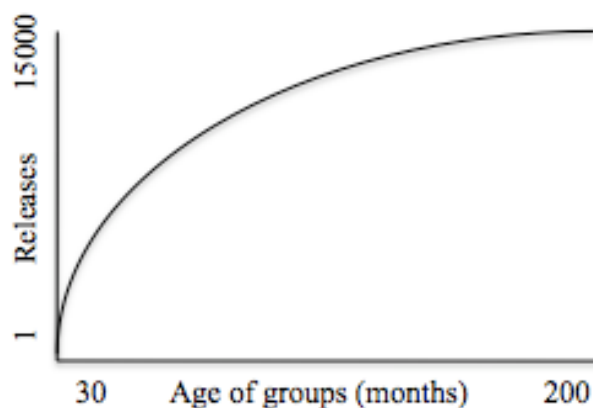


Figure 16: Relation of releases and age

groups are RNS, AMOK and EGO. There is clearly a relation between the amount of releases and the age of a releasegroup. The more a group releases the older the group becomes. Ofcourse the amount of releases cannot decrease as a group becomes older but social cohesion is essential for a group to survive and release. The long tail of groups that released less then 10 releases can be used to indicate a positive relation between social cohesion and lifespan of releasegroups, yet this link between social cohesion and amount of releases is not significant and could be analyzed in more detail.

**5.2. Analysis of Practice**
The practice of the MP3scene is to rip and release the latest music. Gherardi (2007) distinguishes two different factors or motives that influence the practice. These are inner motives or factors and outer motives or factors. Inner motives or factors are mainly personal and social and can be found in the description of the agency. Outer motives or factors are external influences that fundamental for or change the organization of how the practice is being performed.

Inner motives or factors could be its anarchic and idealistic nature, the personal motivation and social recognition and a passion for music. Apart from social factors, technology can be seen as a factor that influences the inner motive of the practice.

Technology causes the pyramid in figure 2 to collapse or shrink, faster Internet connections reduce the time when a release is available in the scene and when it is available in newsgroups and peer-to-peer networks. People in the MP3scene do not want their releases to be leaked into the public domain and this reduced time of availability negatively influences the motivation of the people in the MP3scene. Technology introduced online stores that offer web releases and the acceptance of web as a valid source for a release changed the kind of people that participate in the MP3scene.

Outer motives or factors could be technological development, the artists, the music industry and legislation. These motives or factors influence the form of the structure of the MP3scene as an organization.

Technological development can change the way the practice is being performed. It sets standards for quality and perhaps a better algorithm then MP3 will be invented and adopted in the future. New generations of artists are growing up in the Internet era and could have other ideas about piracy and MP3 downloading. It would be possible for the music industry to see the Internet as new media and adjust their business model. This could reduce their active lobby against piracy. Current legislation and operations against the scene forced adoption of security measures to hide identities and encrypt traffic.

## 5.3. Analysis of Structure

Structure represents the framework in which the MP3scene operates. It is a set of rules, procedures, guidelines and standards created by the council. People in the MP3scene are members of this council and create these rules and structure. The agency needed structure and eventually created its own structure. The organizational structure is analysed according to Knorr Cetina's (2005) global complex microstructures. The reason why and how institutionalizing took place is described according to Gherardi's (2007) theory about institutionalizing.

### 5.3.1. Complex Global Microstructures

Knorr Cetina's (2005) theory of complex global microstructures is applied to the MP3scene and explained in the four characteristics; institutional lightlyness, the relation between institutional lightlyness and the achievement of effects, not simply networks, multiple dimensions of interest. The practice of the MP3scene is global and being performed by people all over the world and in different time zones.

> *"My group had members from all over the world, the biggest percentage being from Sweden but generally all over like US, UK, Germany, Denmark, Canada and others." Quoted by an anonymous participant in the MP3scene.*

> *"Members of MiM came from Germany, The Netherlands, Canada, Italy, Sweden, England, Japan, Belgium, Poland, Norway etcetera."* Quoted by an anonymous participant in the MP3scene.

Institutional lightlyness can be seen as the degree to which institutionalizing took place in an organization. Light institutionalized organizations are for example amateur football clubs or hobby communities. Heavy institutionalized organizations are governments or large corporations. Institutionalizing took place lightly in the MP3scene to a certain level. The council is the coordinating system and the coordinating mechanisms involved are not like the ones associated with authority, complex hierarchies and rationalized procedures or deep institutional practices. The coordinating mechanisms are more like the ones used in face-to-face situations but at the same time they hold arrangements at distance and in distributed systems (Knorr Cetina, 2005). Perhaps institutionalizing was too light in the MP3scene and perhaps barriers of entry would have prevented the decrease in social activity.

Weber's notion in Knorr Cetina (2005) of rationalization was radical in that it needed a particular organizing structure composed of legitimate authority, formal expertise and rational, instrumental procedure as an effective agent of modernization. Global microstructures do not correspond to Weberian ideals of highly rationalized system but they appear nonetheless effective (Knorr Cetina, 2005). In relation to the MP3scene one could say that informal expertise lacking authority and rational procedures can be seen as the effective agent in its organization. The MP3scene did succeed in its goal to provide an environment where music enthusiasts can share releases amongst its members.

The MP3scene is not simply a network; it provides a social environment where people with a similar mindset find each other. They can have interpersonal relationships because of the anonymity and relative distance the Internet offers. Some people feel more comfortable talking about serious subjects in scene then in real life.

> *"I think the scene in some way, saved my life. It gave me a solid reliable (brick if you like) in my life while in my RL nothing positive was happening."* Quoted by an anonymous participant in the MP3scene.

Knorr Cetina explains multiple dimensions of interest according to suicide bombers of the terrorist organization Al Qaeda becoming martyrs in heaven after their attack. These people already live in another dimension in time and space after life. This temporal dimension of interest is partly applicable for participating in the MP3scene. People participating in the MP3scene experience it as living in another dimension of space but at the same time. Observing the IRC channels showed significant usage of the abbreviation "IRL" that stands for "in real life" when they talked about subjects that happened in real life. This would suggest that people experience participation in the MP3scene not as a real life but rather a virtual dimension of life.

### 5.3.2. Institutionalizing

Gherardi's (2007) theory can be used to create a model that describes the process of institutionalizing. It starts out with many individuals performing one particular practice that forms a community. This community offers social recognition and reputation to its members. Professionalizing this practice creates the need for institutionalizing. There she notes that this institutionalizing is essential to sustain the practice. Figure 17 illustrates this model.
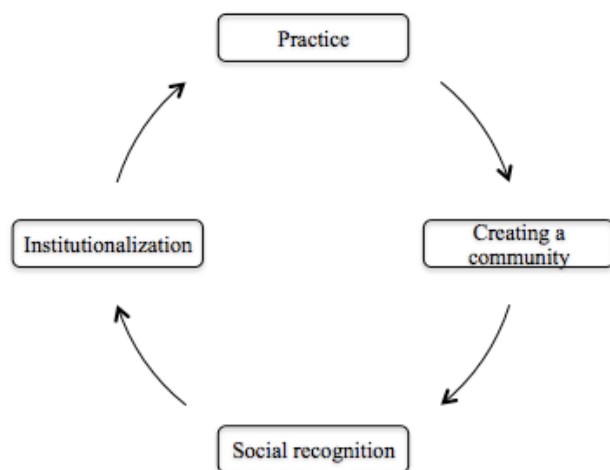


**Figure 17: Institutionalizing**

The way institutionalizing occurred within the MP3scene is similar however its shows differences. Ripping and releasing new music had been the practice of many individuals. These individuals formed releasegroups and created an online community. The individuals enjoyed social recognition and reputation from their own group, other groups and members of the MP3scene.

Chaos and inefficiency triggered the need for institutionalizing. This institutionalizing took place when a council was formed. Gherardi's theory postulates that institutionalizing sustained the practice but in the case of the MP3scene a valid question would be if it had positive or negative effects on the practice?

Institutionalizing has been positive because it increased the overall quality of the music released in the MP3scene. Institutionalizing also increased the efficiency and enabled cooperation between groups. This institutionalizing caused the MP3scene to grow and professionalize, would this be the reason that the music industry focuses on the MP3scene? Would it be different if the MP3scene did not grow that much? Did the council make the right decisions at the time they were needed? Could they prevent the social erosion and influx of new groups and web releases? In order to answer the question if institutionalizing sustained the practice, these questions should be taken into consideration.

## 5.3. Community of Practice and Learning

The MP3scene is a community of practice and this section will explain this community of practice and learning according to Wenger's (1998) theory. His theory will be used as a guiding framework and practice will be explained with three main elements; meaning, community and learning. Practice as meaning is a process about negotiating of meaning and involves two fundamental elements; participation and reification. Participation and reification are essential to the human experience of meaning (Wenger, 1998). Wenger uses Webster's definitions of participation and reification. Participation is to have or take or share with others in some activity or enterprise. Reification is to treat an abstraction as substantially existing or as a concrete material object. Regarding the MP3scene participation is essential to experience meaning. It does not matter what role someone plays in the MP3scene but active participation is needed to experience meaning. Reification in the MP3scene can be explained that having access to topsites and other resources are treated as currency. Rippers release new music for a releasegroup and receive access to topsites and other resources in exchange. Imagination is necessary to see this abstraction as concrete objects that can be traded.

> *"Sites are like currency in a lot of ways." Quoted by an anonymous participant in the MP3scene.*

Three dimensions can be used to describe the relation of practice and communities; mutual engagement, a joint enterprise and a shared repertoire. Mutual engagement is the passion for music that is shared amongst the participants in the MP3scene. IRC as the main communication platform of the MP3scene can be seen as the joint enterprise. The shared repertoire represents the set of tools, rules and procedures that participants in the MP3scene use together. Examples are the usage of LAME as the MP3 encoder, FlashFXP as a tool to upload and download releases and mIRC as the IRC client.

Practice as learning is used by Wenger to explain collective learning of the community and individual social learning. Collective learning of the community of the MP3scene occurred during the years and can be illustrated by the usage of a standard set of tools, the creation of a global database and the introduction of prebots. The interviewees also experienced individual and social learning. Every interviewee learned something because of personal experience. Things learned were social skills, technical skills and management skills. Essential to this learning was active participation. The following quotations suggest that learning is experienced in the community of the MP3scene.

> *"I wouldn't be in a position where I could have my own business if it wasn't for the experience I got there"* Quoted by an anonymous participant in the MP3scene.

> *"What I learned... Apart from the general skill sets, technical, management, you learned to deal with different egos. Different social upbring, its amazing all the differences around and how they might take offence to something I might find funny! Like in Australia we like to abuse each other a bit but when you do that with an American he will flip out."* Quoted by an anonymous participant in the MP3scene.

> *"In a classroom you are forced to feed. Here I was able to grow and learn as I needed, as I recognized the need, as I saw the opportunity to make things more efficient."* Quoted by an anonymous participant in the MP3scene.

*"Anyway, why I joined SE, it was because their releases were the best quality compared to everyone else. I wanted my rips to be the best quality too and I had to learn a lot before they were!" Quoted by an anonymous participant in the MP3scene.*

*"Rude or stupid people don't make me nervous at all now. I just don't care about them because I met a lot of such people on IRC." Quoted by an anonymous participant in the MP3scene.*

*"I acted out of intuition. It was reality, when you did something wrong you really did and had to take the consequences. In this way one learns faster, you learn because you needed to reach your goals." Quoted by an anonymous participant in the MP3scene.*

*"I learned programming in TCL for example. I learned that for the sake of my group, to make my group more efficient and to get my group higher ranked! I experienced this type of social learning in a more positive way compared to learning in dull classrooms." Quoted by an anonymous participant in the MP3scene.*

One would suggest that learning by participation in the MP3scene is experienced more positive than conventional learning methods that are used in schools and universities. Learning was more hands-on and particular knowledge was essential to increase personal efficiency and used to increase the groups' ranking.

## 5.4. Dynamics Between Processes

The model displayed in figure 18 shows the relations between the different elements that are valid for the MP3scene. Relations will be described briefly to explain the dynamics between them.

The dynamics between structure and practice is that the practice created the need for a structure and that structure changed the way practice was performed. The relation between agency and practice can be explained by looking at innovations of agency to professionalize the practice changed the practice itself as new methods were adopted by agency.
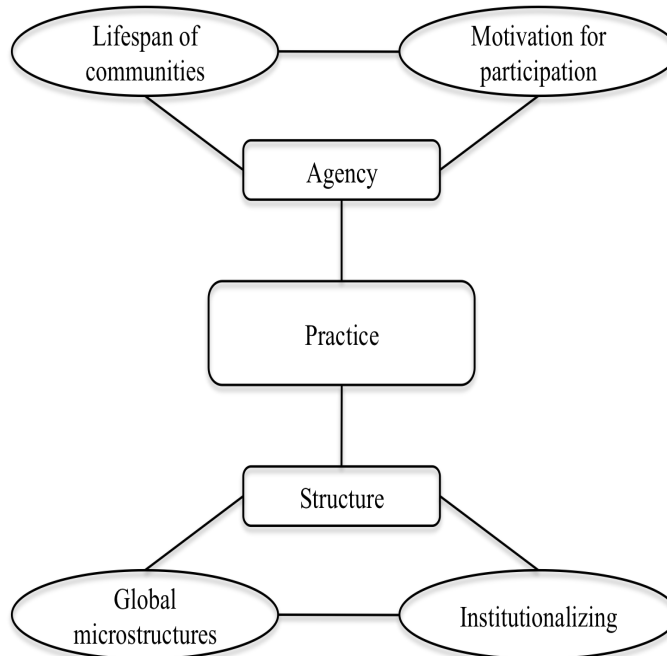


**Figure 18: Dynamic between elements**

A concrete example is the introduction of the prebot. Competition between releasegroups in the agency created the need to be able to release faster and more efficiently and this resulted in the prebot. Slowly every releasegroup in the agency adopted the use of the prebot and in this way it changed the practice in general. Another example is the allowance of Web as the source for a release.

Social recognition is offered by the agency and is the one of the key elements driving the motivation of participants in the MP3scene. The degree of social recognition is directly related to the lifespan of communities. It is shown that releasegroups with a stronger social cohesion tend to have a longer life then releasegroups that have a weaker social cohesion. Lifespan of communities also influence the agency because the oldest releasegroups are most respected within the MP3scene.

The first successful attempt of the council to organize the MP3scene created structure. The council is the result of the institutionalizing that took place within in the MP3scene to create structure. The relation between structure and institutionalizing is

that once institutionalizing was initiated it created structure and demanded for more structure and further institutionalizing. The structure of the MP3scene shows similarities with global complex microstructures. Institutionalizing is light in the MP3scene and that was the source of how it is structured today as global complex microstructures.

**6. Conclusion**

This thesis reveals the social relational and organizational processes within the MP3scene and how technology influence and change them. Mutual engagement and a passion for music were the initiators of participation in the MP3scene. They experience social recognition and a group feeling, which keeps them continuing the practice. Technological development directly influenced these social processes. The introduction of the MP3 file format enabled the MP3scene and was one of the building blocks of its social environment. Then the emerging online music stores in 2003 turned the ability of getting new music into a commodity, this not only changed the kinds of people in the MP3scene, it also decreased the overall social activity and increased the economic motives, the need to have access to resources. Apart from the social relational processes it becomes clear why institutionalizing took place the within the MP3scene and how it evolved from chaos to a complex global organization. This evolution is clearly the result of the dynamics and interactions between structure and agency. Strong hierarchies and too many rules do not heavily institutionalize the MP3scene but perhaps the institutionalization was too light to be able to protect the social and relational aspects of the MP3scene as a community?

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## Appendix 1:

The following script was used to extract the amount of releases done per releasegroup per month.

```php
<?php
# script 1
# output: month,year,group,amount (per month starting from january 1999)
#

mysql_connect("localhost","user","password");
mysql_select_db("database") or die ("error, cannot open database");

// m1 is month
// m2 is month+1
// set start year in first for loop

function count_data ($data, $i, $y) {
    $tot_grp = 0;
    $tot_rls = 0;
    foreach($data as $value){
        $tot_rls ++;
        list ($rls, $grp) = split (' ', $value);
        $grp = strtoupper($grp);
        if (!isset($group[$grp])) {
                $group[$grp] = 1;
        } else { $group[$grp] ++; };
    }
    foreach ($group as $name => $count) {
        $tot_grp ++;
        print $i . "," . $y . "," . $tot_rls . "," . trim($name) . "," .
        intval($count) .     "\n";
    }
    print "groups," . $tot_grp . "\n" . "\n";
}
for ( $y=1999; $y<2008; $y++) {
    for ( $i=1; $i<13; $i++) {
        if ($y==2007 && $i==8) { break; }
            $m1=strtotime("1-$i-$y");
            $i++;
            if ($i==13) {
                $y++;
                $m2=strtotime("1-1-$y");
                $y--;}
            else {
                $m2=strtotime("1-$i-$y");
            }
            $query = mysql_query("SELECT rlsname,grp FROM predb WHERE
            section='MP3' AND ctime > $m1 AND ctime < $m2");
            $data = array();
            while ($result = mysql_fetch_assoc($query)) {$data[] =
            $result['rlsname'] . ' ' . $result['grp'];};
            $i--;
            count_data($data,$i,$y);
        }
        print "\n";
    }
?>
```

## Appendix 2:

The following script was used to get an overview of each group and their total releases, total nukes, start date and the date of their last release.

```php
<?php
# script 2
# output: grp, total releases, total nukes, start date, end date
#

mysql_connect("localhost","user","password");
mysql_select_db("database") or die ("error, cannot open database");

$query = mysql_query("SELECT grp, count(grp) AS amount FROM predb WHERE section='MP3'
GROUP BY grp ORDER BY amount DESC");
while ($result = mysql_fetch_assoc($query)) {
        $query_time_start = mysql_query("SELECT FROM_UNIXTIME(ctime) FROM predb
WHERE section='MP3' AND grp='" . $result['grp'] . "' ORDER BY ctime ASC LIMIT 1");
        $query_time_stop = mysql_query("SELECT FROM_UNIXTIME(ctime) FROM predb
WHERE section='MP3' AND grp='" . $result['grp'] . "' ORDER BY ctime DESC LIMIT 1");
        $query_nukes = mysql_query("SELECT count(*) FROM predb WHERE
        section='MP3' AND nukereason!='NULL' AND grp='" . $result['grp'] . "'");
        print $result['grp'];
        print ",";
        print $result['amount'];
        print ",";
        print mysql_result($query_nukes,0);
        print ",";
        print substr(mysql_result($query_time_start,0),0,10);
        print ",";
        print substr(mysql_result($query_time_stop,0),0,10);
        print "\n";
}
```

**Appendix 3:**

This chart was generated by SPSS based upon the data extracted by the PHP scripts from the leaked database. The Y-axis represents the amount of releases released and the X-axis represents the number of groups that released the corresponding amount.
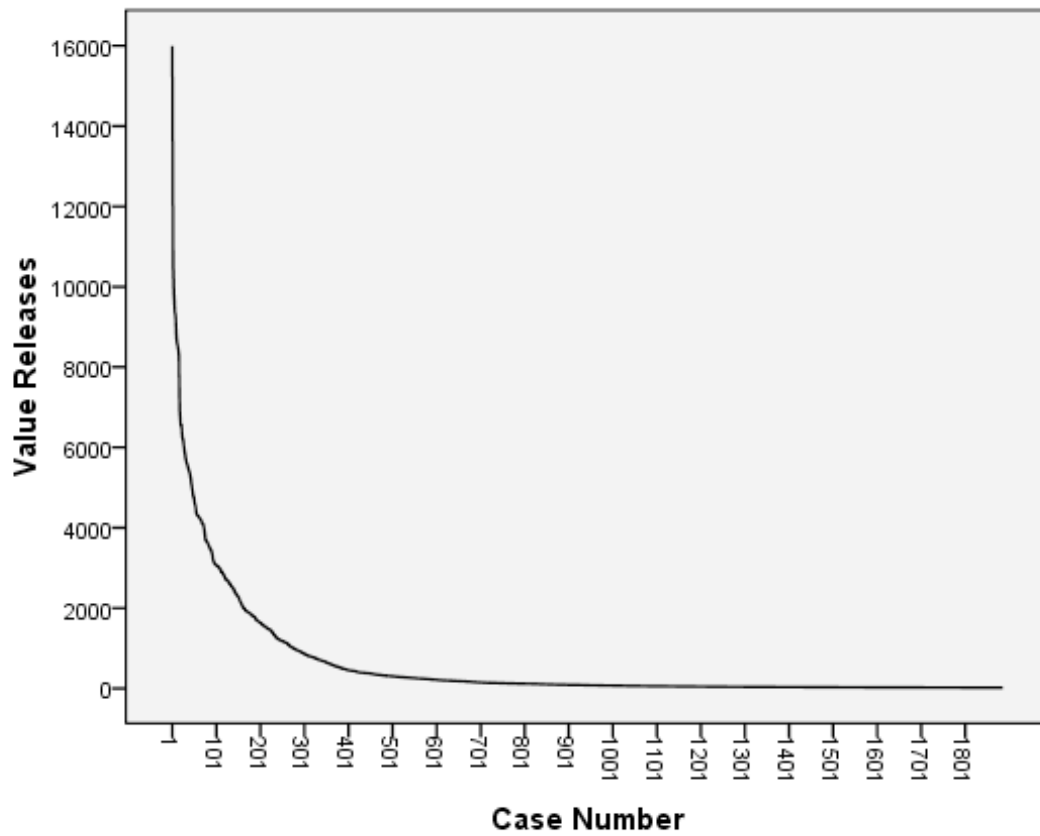
**Appendix 4:**

This chart was generated by SPSS based upon the data extracted by the PHP scripts from the leaked database. The Y-axis represents the amount of releases released and the X-axis represents the age of groups per month that released the corresponding amount.