

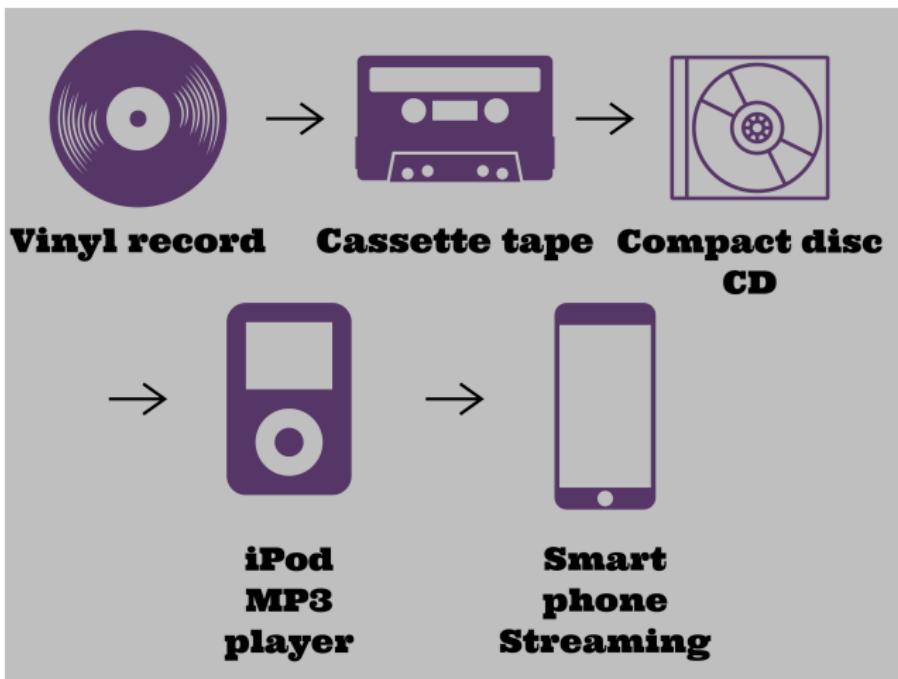
# Technology and heavy metal

**When someone asks you  
what Limewire is.**



# I. Overview

- Technology impacts the way we listen to music.



# I. Overview

- Technological advancements made music portable.
- Ford factory-installed 8-track tape players into their vehicles in 1965, paving the way for cassette decks, CD players, and now Bluetooth to be standard in every car.
- Portable tape and CD players as well as the iPod made it possible to listen to music anywhere.



## I. Overview

- Music in physical form involves maintaining the integrity of the media.



- The clunkiness of carrying around a music catalog and the expense of buying physical albums shifted consumer preferences toward digital music.

## II. File sharing and intellectual property

- The magic of listening to music in the 1990s and early 2000s included
  - Calling a radio station to request a specific song and subsequently recording it with a cassette tape recorder when the DJ played it.
  - Infecting the family computer with multiple viruses by downloading linkin\_park\_numb.mp3 on Limewire.
  - Illegally downloading a single album, which took at least 3 days, and then “burning it to a CD.”
- These examples involve violating copyright law to obtain “free music,” even though it required significant *time* and *effort*.

## II. File sharing and intellectual property

- **Napster** was a peer-to-peer file sharing application launched on June 1, 1999 by Shawn Fanning, Sean Parker, and Hugo Sáez Contreras.
- The expansion of high-speed internet, particularly on college campuses, made the program popular to search for and download MP3s.
- An MP3 is a digital music file that is compressed to allow for easy storage and transfer.

## II. File sharing and intellectual property

Napster v2.0 BETA 6

File Actions Help

Chat Library Search Hot List Transfer Help

Artist: METALLICA

Title:

Max Results: 100

Find it! Clear Fields Advanced >

Filename	Filesize	Bitrate	Freq	Length	User	Connection	Ping
Music\Metallica-The Unforgiven.mp3	2,113,536	128	44100	2:15	aek2cool	Cable	30
Music\Primus - The Thing That Should Not Be (Metallica cover).mp3	6,463,892	128	44100	6:40	karouja	Unknown	41
Music\Metallica - The Unforgiven.mp3	299,008	128	44100	0:24	sam258...	56K	50
Music\Metallica - Master of Puppets.mp3	8,268,331	128	44100	8:30	meekert...	Cable	80
Millennium\Metallica No Leaf Clover.mp3	8,237,056	192	44100	5:41	ubung	Cable	100
Music\Metallica - Enter Sandman.mp3	5,312,512	128	44100	5:30	jdbr	Unknown	100
Music\Metallica - Nothing Else Matters.mp3	6,215,096	128	44100	6:25	jdbr	Unknown	100
Metallica - The Unforgiven II.mp3	6,328,448	128	44100	6:32	Red0X...	DSL	101
Music\Metallica - Until it Sleeps.mp3	3,772,640	112	44100	4:29	10sami	Unknown	121
Music\Metallica S&M - No Leaf Clover.mp3	8,237,056	192	44100	5:41	10sami	Unknown	121
Music\Metallica - The Unforgiven II.mp3	6,328,320	128	44100	6:32	10sami	Unknown	121
Music\Metallica - Master Of Puppets.mp3	8,245,248	128	44100	8:29	medicm...	Cable	130
Music\Metallica - And Justice For All.mp3	9,414,556	128	44100	9:40	meltonjeff	DSL	131
Music\Metallica - Whiskey in the jar.mp3	4,871,860	128	44100	5:03	meltonjeff	DSL	131
Music\Metallica - Turn the Page.mp3	5,714,792	128	44100	5:54	meltonjeff	DSL	131
Music\Metallica - Stone Cold Crazy.mp3	4,120,660	128	44100	4:17	meltonjeff	DSL	131
Music\Metallica - No Leaf Clover.mp3	8,237,056	192	44100	5:41	meltonjeff	DSL	131
Music\Metallica - Kill 'em All The Four Horsemen.mp3	2,212,124	192	44100	1:36	meltonjeff	DSL	131

## II. File sharing and intellectual property

- In early December 1999, the Recording Industry Association of America sued **Napster**.
- **Metallica** launched their suit in April of 2000, after discovering an incomplete version of “I Disappear” was leaked to **Napster** and was getting radio airplay as a result.
- A separate lawsuit was filed by **Dr. Dre** weeks later.



## II. File sharing and intellectual property

- On July 11, 2001 **Napster** shut down to comply with court injunctions. The company eventually settled with **Metallica** and **Dr. Dre** and filed bankruptcy in 2002.
- **Napster** never turned a profit. The brand and logos were acquired at a bankruptcy auction.
- The service was quickly replaced by other file sharing programs such as BearShare, Kazaa, Morpheus, and Limewire.

## II. File sharing and intellectual property

- **Metallica's** drummer **Lars Ulrich** insisted that the lawsuit was about creative control, rather than money, but many metal fans viewed it as another way of “selling out.”
- Tape trading networks were an important part of the Bay Area thrash metal scene in the 1980s and **Metallica** participated in them.
- Is piracy good or bad for underground music like heavy metal?
  - File sharing helped diffuse metal globally, especially when there was no way to purchase the music.

## II. File sharing and intellectual property

- Revenue from recorded music fell by more than half from 1999 to 2015, from \$14.6 billion to \$6.7 billion in the United States.
- From 2015 to 2017, revenue increased by \$2 billion, erasing the previous ten years of declines.
- *“Technology always wins. But what if you can make a better product than piracy?”* -Daniel Ek. co-founder and CEO of Spotify
  - The cost of piracy > The cost of purchasing music
  - Streaming is possible thanks to improvements in internet speeds.

## II. File sharing and intellectual property

- Is streaming good for heavy metal artists?
  - Streaming gives a second wind to older songs (back catalog).
  - Metal songs are longer on average, and therefore generate fewer streams in a given time frame.
  - Metal receives 15% to 25% less royalties under the **pro rata model** (Meyn et al., 2023).
    - **Pro rata model:** The revenue from all subscriptions is pooled together and the percentage that artists are paid is proportional to their number of streams across the entire platform. It favors the right holders of the most listened to tracks.
    - **User-centric model:** The revenue from each single user is divided by the total number of streams generated by that user. The monthly payout per stream is based on its market share of each individual user and may vary across users. It favors smaller artists.

### III. Album art

- Technology allows for DIY recording and social media provides new revenue opportunities. How will technology impact the music industry in the future?
- What is lost when music becomes digital?
  - Listening to music is a less tangible experience and there is less emphasis on album art.
  - Album art serves as a visual representation of the band's message and aesthetic. It is also open to interpretation, just like lyrics.
  - Many fans of metal prefer listening to and collecting physical media.

### III. Album art

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BLAST  
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**SHIPS NOVEMBER 10TH**



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RECORDS

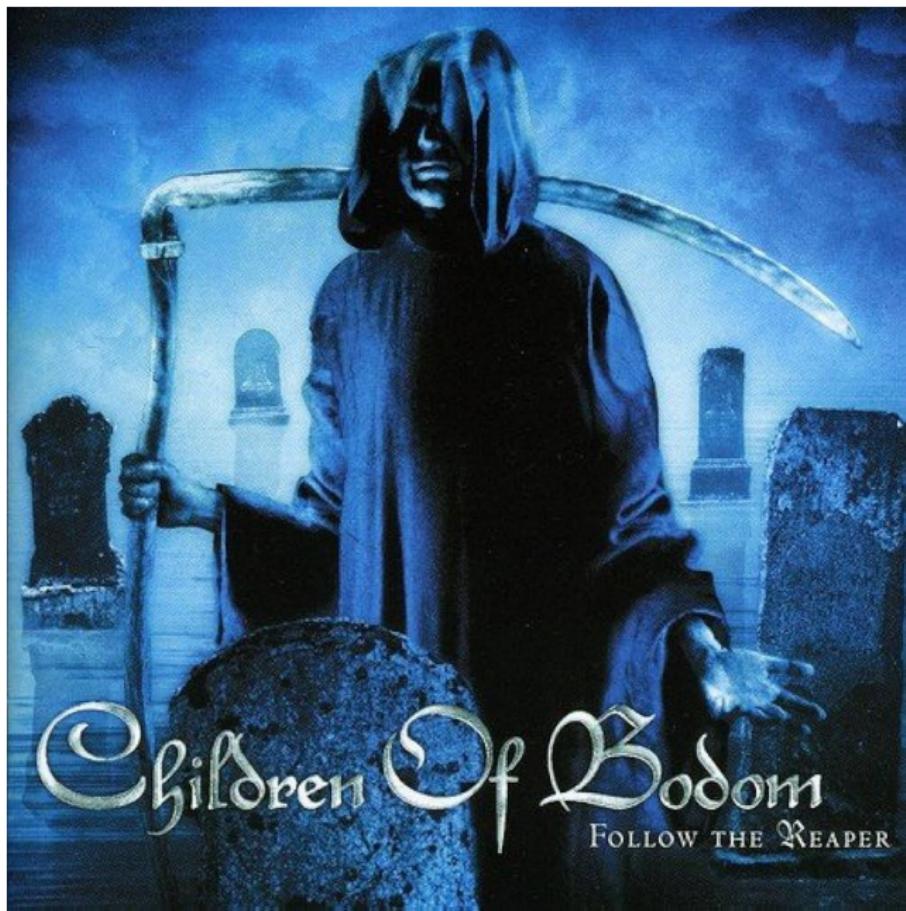
### III. Album art



### III. Album art



### III. Album art



### III. Album art



### III. Album art



### III. Album art



### III. Album art



### III. Album art



## References

- Krueger, A. B. (2019). Rockonomics: A backstage tour of what the music industry can teach us about economics and life. Penguin Random House. 177-204.
- Meyn, J., Kandziora, M., Albers, S., & Clement, M. (2023). Consequences of platforms' remuneration models for digital content: Initial evidence and a research agenda for streaming services. *Journal of the Academy of Marketing Science*, 51(1), 114-131.