

Music & the Internet

MUMT301

Gabriel Vigliensoni
Schulich School of Music
McGill University

Plan

- Syllabus and guidelines
- NIN Ghosts I-IV and the New Music Economy
- Class-by-class overview
- UNIX/Linux commands
- Questionnaire / Homework

NIN's Ghosts I-IV

- <http://ghosts.nin.com>
 - free listening and high quality partial download (email required)
 - different alternatives (formats and packages)
 - [album's art for free](#) (email required)
 - “The end result is a wildly varied body of music that we're able to present to the world in ways the confines of a major record label would never have allowed—from a 100% DRM-free, high-quality download, to the most luxurious physical package we've ever created.” (T. Reznor, March 2, 2008)

NIN's Ghosts I-IV

- “Ghosts I-IV is licensed under a Creative Commons Attribution Non-Commercial Share Alike license.”
- <http://remix.nin.com>
- remix.nin.com in [waybackmachine](#)
- <http://www.ninwiki.com/Multitracks>
- <http://www.ninremixes.com/multitracks.php>
- <https://soundcloud.com/zardonic/nine-inch-nails-35-ghosts-iv-zardonic-remix-2008>
- https://archive.org/details/10-ghosts-iinin-remix-by-antuan_graftio
 - Pioneering “stem mixing”
 - Arcade Fire’s Colin Stetson and Sarah Neufeld

NIN's Ghosts I-IV

- The Ghosts Film Festival
- Example of NIN Ghosts final submission
- NIN's business model and the future of music
- Trent Reznor Digg Dialogg interview

NIN's Ghosts I-IV

- The core of the *Ghosts I-IV* project is not the set of tracks recorded in Reznor's studio, but the **relationship of the artist with his fans**, and the thousands of remixes, videos, comments and blog posts that his community of fans uploaded to his website

Transformations in the music industry

- Several transformations in the media environment have had tremendous impact on the structure and logic of the music industry
 - Phonograph recordings by end of 19th century
 - Broadcast radio programming in the 1920s
 - Magnetic tape in the 1930s
 - Compact cassette in the 1970s
 - Deregulation of media ownership in the 1990s
 - Shift from physical to virtual in the 2000s

The “Cloud”

- Used as a metaphor to denote the Internet since the late 60s
- Used as a useful and vague enough symbol that could be used to summarize all the resources, cables and gadgets connecting computers at the nodes of a network

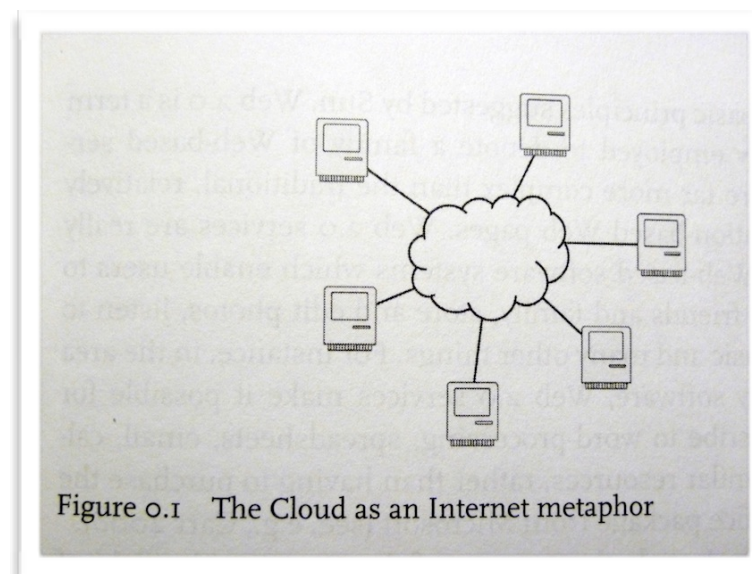


Figure taken from Wikstrom, P. 2013. The music industry. Digital media and society series. 2nd edition. Polity Press, Cambridge, UK.

- Sun Microsystems: “The Network is the Computer.”
- Web 2.0 followed the path of the Sun Microsystems’ slogan

Web 2.0

- Term usually employed to denote a family of web-based services which are more complex than the traditional, static information-based Web pages
- Fully-fledged Web-based software systems enable users to do word processing, create spreadsheets, synchronize calendars, socialize with friends, store and edit photos, and ...
- listen to and remix music, rather than purchasing standalone software packages

Web 2.0 and the music industry

- Allowed to shift the centre of gravity of the music industry from the physical to the virtual
- CDs to MP3s to Web-based music services (YouTube, Spotify, Rdio, Tidal, Pandora, Last.fm, ...)
- Music is no longer owned and collected by mainstream audiences—music is in the Cloud
- New music industry

New music economy

- Three dimensions (tensions) between the old music economy (OME) and the new music economy (NME)
 - Connectivity vs. control
 - Service vs. product
 - Amateur vs. professional

New music economy (connectivity vs. control)

- The new communication technologies have a different structure from the previous hierarchical media
- Connectivity indicates how well members of a network are connected. Higher level of connectivity in a network indicates that most of its members are connected to each other

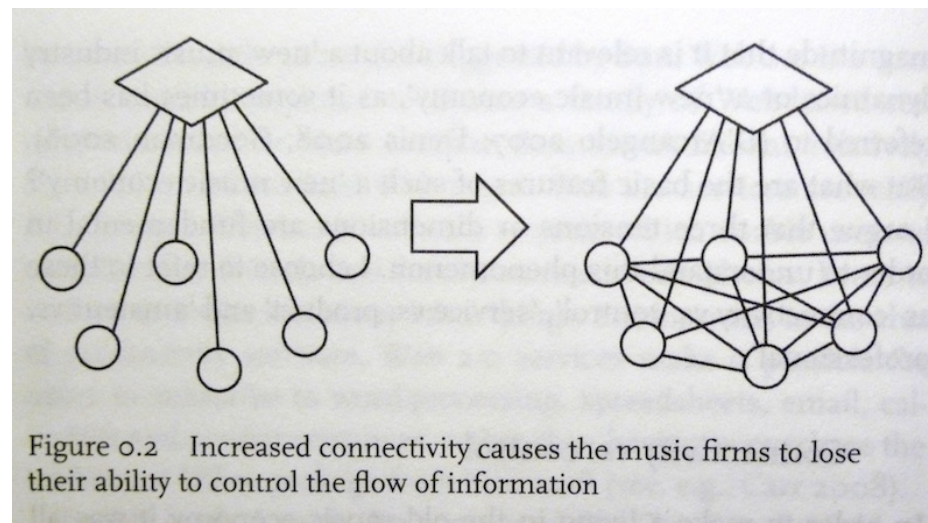


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- In the OME there was low level of connectivity, everything was about control
- The NME dynamics is characterized by high connectivity and little control

New music economy (service vs. product)

- The OME industry was clearly made up of **physical goods**. Content (music) and medium (disc) were inseparable
- In the NME, as soon as any kind of information is uploaded to the Cloud, it is instantly **universally accessible** to everyone connected to the Cloud
- In the NME, it is difficult to charge the audience for **discrete chunks of information**. The economic value of providing access to an individual track is close to zero
- However, people may be **willing to pay for services** allowing them to help in searching and discovering in large amounts of information
- Music industry nowadays can be seen as a *service* **valuable for both, audience and artists**

New music economy (amateur vs. professional)

- The talented, creative artist is still **the centre of gravity** in the music industry
- But in the NME the relation between the artists, their art, and their audience has changed
- Increased connectivity of the audience and various kinds of **music production tools** have enabled “non-professionals” to create, remix, and publish content online
- Not everyone is a musician, but there is a larger share of the **audience creating and uploading music**

New music economy

- These changes have been driven primarily by the development of **digital information and communication technologies**
- The music industry entered into the “digital age” by means of digital technologies introduced:
 - in music production and recording during the 70s
 - in music distribution, i.e., the compact disc in the 80s
 - in music promotion, talent development, and every remaining part of the music business during the last part of the 90s and 2000s by means of web-based technologies

Course outline

- [MyCourses](#)
- Final project
 - Software project with description (1–2 pages)
 - Music project with description (2–3 pages)
 - Research paper (4–6 pages)
- Review of some previous final projects
 - Chris Middleton's Drum Sequencer: [site](#)
 - Jackson Hoffart's Soundcloud Mixer: [site](#)
 - Cole Barbour's EP with Internet music tools: [release](#)
 - Ben Miller's algorithmic composition project: [description](#)
 - Kaz Takasugi's research paper on Intellectual Property: [paper](#)
 - Saul Backer's database of hip-hop instrumentals: [site](#)
 - Nehir Akdag's audio visualizer suite: [site](#)

BREAK

UNIX introduction

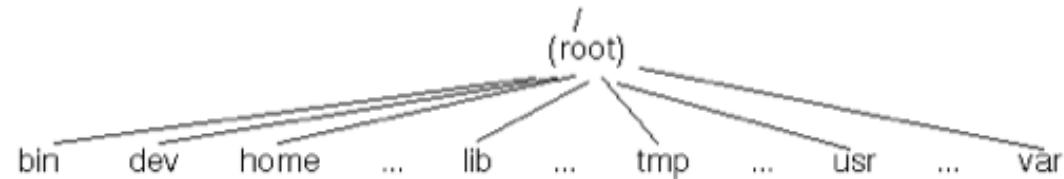
- Operating system first developed in the 60s and under constant development since
- Suite of programs which make the computer work
- Many different versions: Sun Solaris, GNU/Linux, and MacOS X
- Made of three parts: the kernel, the shell, and the programs

UNIX hierarchical structure

- The UNIX/Linux Directory/File Hierarchy
 - UNIX/Linux maintains directories and files in a **hierarchical structure**, called a tree structure.
- When you first open a terminal window, the UNIX shell expects that you are in your home directory. At the start, this is called your current "**working directory**" (i.e., your position within the directory tree)
- Pathnames can be **relative** or **absolute**
 - An *absolute pathname* includes the file's **complete path** starting with the system's "root" directory, which is always named "/"
 - A *relative pathname* for a file is a name that is given **relative to your current working directory**
- Each directory in a Linux system contains two special files "." and ".." that can be useful when constructing relative pathnames. The file named "." means "**the current directory**," and the file named ".." means "**the parent directory**"

UNIX hierarchical structure

- Is organized by a root directory and its subdirectories
 - taking a look at the files in a Linux root directory “/”



- Each subdirectory is organized by having files and folders for different purposes:
 - `/bin`: these are the executable programs that comprise the GNU/Linux utilities.
 - `/lib`: home of many libraries
 - `/usr`: application programs and libraries not part of the UNIX/Linux system
 - `/home`: user accounts
 - ... and many other folders

UNIX command line crash course

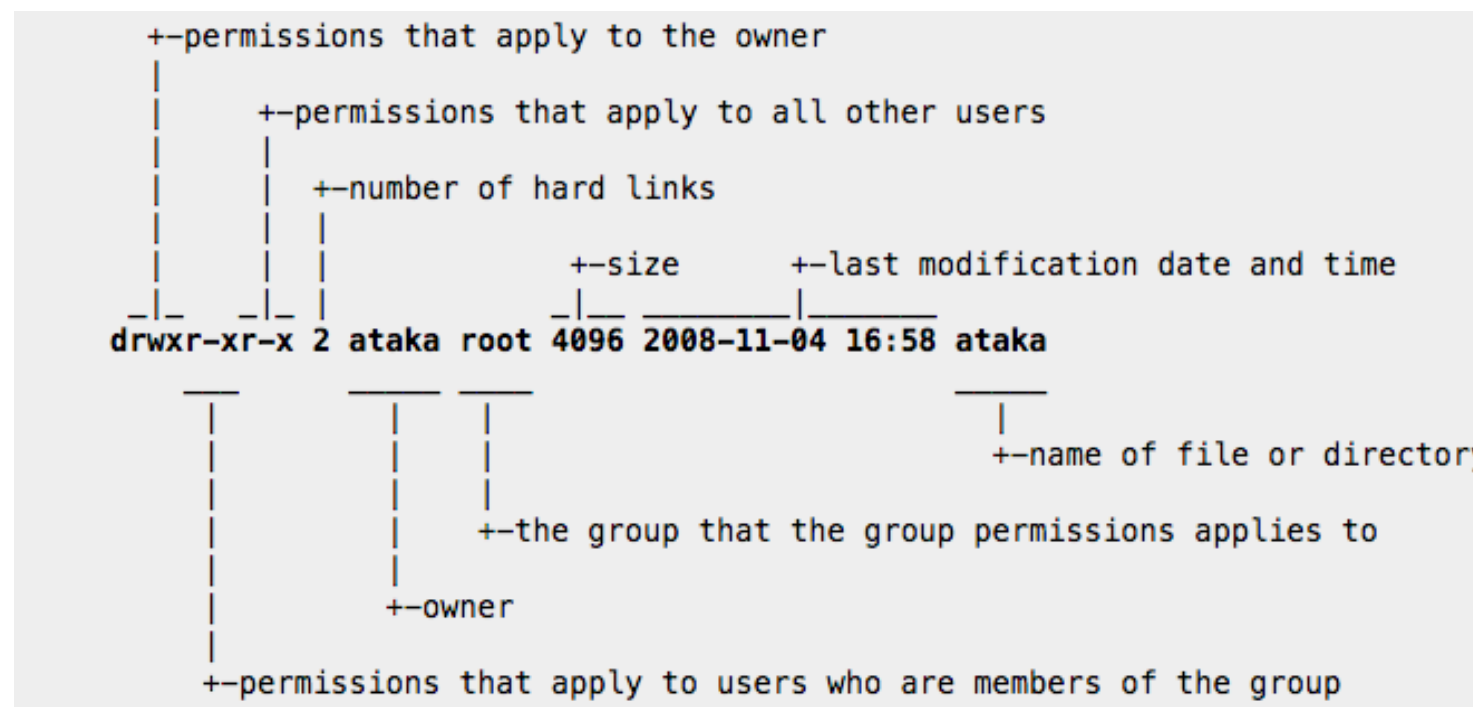
(for those who never have used a command line)

- OS with a set of simple tools that each perform a limited, well-defined function, with a unified filesystem, and a shell command language
- `ssh` is a program (short for Secure Shell) for logging into a remote machine and for executing commands on a remote machine. Logging in using SSH:
 - `ssh yourusername@www.xxx.yyy.zzz`
 - `ssh gvigliensoni@132.206.14.130 pass: changeme`
- `passwd` is a tool on most Unix and Unix-like operating systems used to change a user's password
 - `passwd`
- `man` A man page (short for manual page) is a form of online software documentation
 - `man command`
- `pwd` the `pwd` command (print working directory) is used to output the path of the current working directory
 - `pwd`

UNIX command line crash course

(for those who never have used a command line)

- `ls` list directory contents, the “-a” flag list all files in the current directory, the “-l” flag shows the contents as a list
 - `ls`; `ls -a`; `ls -al`; `ls -alh`



- `cd` also known as `chdir` (change directory), is a command-line OS shell command used to change the current working directory
 - `cd dirname`; `cd .`; `cd ..`; `cd ~`; `cd /`

UNIX command line crash course

(for those who never have used a command line)

- `mkdir` The `mkdir` (make directory) command is used to make a new directory.
 - `mkdir dirname`
- `rmdir` (short for remove directory) is a command which will remove an empty directory
 - `rmdir dirname`
- `mv` (short for move) is a Unix command that moves one or more files or directories from one place to another.
 - `mv myfile mynewfilename`
- `cp` (short for copy) copies files and directories.
 - `cp sourcefile targetfile`
 - You can copy entire directory trees with a single command using the '-r' flag
 - `cp -r Folder1/ Folder2/`
- `rm` (short for remove) is a basic UNIX command used to remove objects such as files, directories, device nodes, symbolic links, and so on from the filesystem.
 - `rm filename; rm -i filename`

UNIX command line crash course

(for those who never have used a command line)

- `cat` (short for catenate) is a standard utility that outputs the contents of a specific file and can be used to concatenate and list files.
 - `cat questionnaire.txt; cat questionnaire.txt questionnaire2.txt`
- a pipeline is the original software pipeline: a set of processes chained by their standard streams, so that the output of each process (stdout) feeds directly as input (stdin) to the next one.
 - `command1 | command2`
 - `ls -l | grep gabriel`
- The character `>` will redirect input into or output from a command
 - `command > outfile`
 - `cat questionnaire.txt questionnaire2.txt > all_questionnaires.txt`
- `scp` (secure copy) allows to securely transfer files between a localhost and a remote machine, or two remote machines
 - `scp SourceFile user@host:directory/TargetFile`
- Text Editors: `nano`, `vim`

Review

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- Course outline
- UNIX/Linux commands
- Resource links in MyCourses
- Assignment1 / Questionnaire