

::: CMS.801 :: fall 2004 :: instructor.jeff ravel

[class presentation]

::: marianthi liapi :: sound :: the making of the phonograph

source 01

▣ Patrice Flichy (1995) "Collection and Souvenir: Photography and the Gramophone", in *Dynamics of Modern Communication: The Shaping and Impact of New Communication Technologies*. Trans. Liz Libbrecht. London: Sage, pp. 60-81.

□ **image recording [photograph] :: an introduction**

All projects and techniques were developed concurrently.

▪ "Description of a procedure for copying paintings onto glass and for making silhouettes by the effect of light on silver nitrate." [Thomas Wedgwood, 1802]

▪ **Heliography** - First photograph [Nicéphore Niepce, 1826]

▪ **Daguerrotype**. Production of unique copies on a copper plate coated with iodine-sensitized silver. No reproduction possible. [Louis-Mandé Daguerre, 1839] {Flichy, 61-62}

▪ **Positive photography directly onto paper**. The result was a unique photograph that could not be reproduced. World's first public exhibition of photographs on June 24, 1839. [Hippolyte Bayard, 1839]

▪ **Calotype or talbotype process**. Development of several positive proofs on paper from a negative: the calotype. [William Fox Talbot, 1839]

▪ **Photolithograph**. A lithograph made from a photographic impression on a sensitized stone or plate. [Alphonse Louis Poitevin, 1848]

▪ **Heliographic Engraving**. The first photographic technique on glass. [Claude Félix Abel Niepce de Saint-Victor, 1853]

▪ **Mass Photography-Kodak**. Dry plates, film with flexible backing, roll holders for the flexible film, Kodak camera. [George Eastman, 1888]

□ sound recording [phonograph]

■ Description/definition of the phonograph <write/record(graph~) the voice/sound(phon~)>

▪ "...an acoustic daguerrotype which faithfully and tirelessly reproduces all sounds subjected to its objectivity" [**Gaspard-Felix Tournachon Nadar, 1856**] {Flichy, 63-64}

▪ "...a box in which melodies could be caught and fixed, like the camera obscura captures and fixes images" [**Gaspard-Felix Tournachon Nadar, 1856**] {Flichy, 63-64}

▪ "An instrument for the mechanical registration and reproduction of audible sounds, as articulate speech, etc. It consists of a rotating cylinder or disk covered with some material easily indented, as tinfoil, wax, paraffin, etc., above which is a thin plate carrying a stylus. As the plate vibrates under the influence of a sound, the stylus makes minute indentations or undulations in the soft material, and these, when the cylinder or disk is again turned, set the plate in vibration, and reproduce the sound." {<http://www.dictionary.com>}

▪ Phonographs both reproduce and conserve, able to reproduce again and again "at any future time." {Gitelman, 3}

⇒ phonograph_INTRODUCTION

[**Gaspard-Felix Tournachon Nadar, 1856**]

- The first to describe a device with the function of the phonograph and then name it as such.

<some things to remember about Nadar>

▪ He entered the world of photography with a project he called the *Pantheon*, which was a planned series of lithographic caricatures illustrating the 1000 most prominent personalities of his era.

▪ In April, 1874 he lent his photo studio in Paris to a group of painters who wished to bypass the Salon in order to exhibit their work, thus making possible the first exhibition of the Impressionists.

▪ His last photographic innovation was the development of a photo interview, opening up the way for picture-journalism. {http://masters-of-photography.com/N/nadar/nadar_articles.html}

[**Léon Scott de Martinville, 1857**]

▪ The first documented machine to record sound waves was the **phonautograph** of the Frenchman, Léon Scott de Martinville, in 1857. The phonautograph recorded sounds graphically, but it could not reproduce those sounds. {Flichy, 64}

[**Charles Cros, 1877**]

▪ Charles Cros was a poet and teacher, and enjoyed tinkering with ideas. He devised on paper an idea on how to record the human voice. He called his theoretical machine "A Device to Record and Reproduce that Phenomenon Perceived by the Ear" or a '**paleophone**'. {Flichy, 64}

⇒ phonograph_PHASE A

[**Thomas Edison, 1877 - the "Wizard of Menlo Park"**]

"I was never so taken aback in my life--I was always afraid of things that worked the first time."

--*Thomas A. Edison on hearing his voice play back to him from his first tin foil phonograph.*

{<http://memory.loc.gov/ammem/edhtml/edsndhm.html>}

▪ Although the phonograph was an original invention, it was not a virgin birth. It was a product that emerged from the union of the telephone and the telegraph.

[motivation to build the product]

- The Western Union Telegraph Company wanted to use a device like the telephone to transmit messages that would be written down and delivered to the customer just like a telegram.

{<http://memory.loc.gov/ammem/edhtml/edcyldr.html>}

- Deal with the time factor when dictating texts.
- (Improve) and facilitate shorthand writing. A business machine for the conversion of aural experience into records –permanent, portable, reproducible inscriptions.

[description of the product]

- Initially, Edison experimented with a diaphragm which had an embossing point and was held against rapidly-moving paraffin paper. The speaking vibrations made indentations in the paper. Edison later changed the paper to a metal cylinder with tin foil wrapped around it that rotated by a hand crank. The machine had two diaphragm-and-needle units, one for recording, and one for playback. When one would speak into a mouthpiece, the sound vibrations would be indented onto the cylinder by the recording needle in a vertical (or hill and dale) groove pattern. It was difficult to operate except by experts, and the tin foil would last for only a few playings.

[marketing techniques]

- Ever practical and visionary, Edison offered the following possible future uses for the phonograph in North American Review in June 1878:

01. Letter writing and all kinds of dictation without the aid of a stenographer.
02. Phonographic books, which will speak to blind people without effort on their part.
03. The teaching of elocution.
04. Reproduction of music.
05. The "Family Record"--a registry of sayings, reminiscences, etc., by members of a family in their own voices, and of the last words of dying persons.
06. Music-boxes and toys.
07. Clocks that should announce in articulate speech the time for going home, going to meals, etc.
08. The preservation of languages by exact reproduction of the manner of pronouncing.
09. Educational purposes; such as preserving the explanations made by a teacher, so that the pupil can refer to them at any moment, and spelling or other lessons placed upon the phonograph for convenience in committing to memory.
10. Connection with the telephone, so as to make that instrument an auxiliary in the transmission of permanent and invaluable records, instead of being the recipient of momentary and fleeting communication. {<http://memory.loc.gov/ammem/edhtml/edcyldr.html>}

[public reaction]

- People were amazed. Many believed that recording a voice and playing it back was impossible and that the phonograph was a fraud. They could not grasp the idea that a voice was coming from a machine. They thought that it was the work of a very clever ventriloquist.

- In April of 1876 Edison traveled to Washington to demonstrate the phonograph to the American Academy of Sciences. By the time he was finished he was demonstrating it to the President of the United States - President Hayes.

- Witnesses reported that they were most fascinated by the simplicity of the machine rather than the complicated machine with "rubber larynx and lips" they might have imagined. {Gitelman, 22}

[media reaction]

- Refer to the expert from "The Talking Phonograph". {Gitelman, 21}
- The media turned Edison into a celebrity. Edison took his new invention to the offices of Scientific American in New York City and showed it to staff there. As the December 22, 1877, issue

reported, "Mr. Thomas A. Edison recently came into this office, placed a little machine on our desk, turned a crank, and the machine inquired as to our health, asked how we liked the phonograph, informed us that it was very well, and bid us a cordial good night." Interest was great, and the invention was reported in several New York newspapers, and later in other American newspapers and magazines.

- Eventually, the novelty of the invention wore off for the public, and Edison did no further work on the phonograph for a while, concentrating instead on inventing the incandescent light bulb.

➡ phonograph_PHASE B

[Alexander Graham Bell and Charles Sumner Tainter, 1886]

- In the void left by Edison, Alexander Graham Bell and Charles Sumner Tainter moved forward to improve the phonograph. On May 4, 1886 they were awarded a patent. The machine was exhibited to the public as the **graphophone**.

➡ phonograph_PHASE C

- Edison refused possible collaboration with Bell and Tainter and determined to improve the phonograph himself. His initial work, though, the **New Phonograph**, followed closely [*piracy?*] the improvements made by Bell and Tainter.

- The Edison Phonograph Company was formed on October 8, 1887, to market Edison's machine. He introduced the **Improved Phonograph** by May of 1888, shortly followed by the **Perfected Phonograph** on June. He tried to push the invention to market much faster than the reliability of the machine warranted. {<http://inventors.about.com/library/inventors/bledisondiscphgraph.htm>}

➡ phonograph_PHASE D

- Bell and Tainter in turn "stole" [*piracy?*] Edison's reformed phonograph. Both firms strived for leadership in a non-existent market for office sound-recording devices. On July 14, 1888, just as lawsuits threatened to eliminate one or the other machine, businessman Jesse H. Lippincott brought the competing sides of Thomas Edison and Bell/Tainter together and formed the North American Phonograph Company.

- Lippincott saw the potential use of the phonograph only in the business field and leased the phonographs as office dictating machine. Unfortunately, this business did not prove to be very profitable, receiving significant opposition from stenographers.

- He also tried to lease the machines to businesses via a franchise system. To Edison's chagrin, the biggest customers were drug stores, who turned the phonographs into "jukeboxes".

- By 1894, the company was liquidated. That enabled Edison to buy back the rights to his invention. It took two years for the bankruptcy affairs to be settled before Edison could move ahead with marketing his invention. {<http://inventors.about.com/library/inventors/bledisondiscphgraph.htm>}

➡ In the mean time...

[1889] the “phonographic juke-box” or the “coni-in-the-slot”

- This variation of the phonograph was **installed in public places** where people could pay a few cents to listen to a piece of music. **SOCIAL INNOVATION-ENTERTAINMENT.**

[1890] Edison’s “talking dolls”

The first phonograph marketed for home entertainment, with a pre-recorded cylinder.

- The phonograph inside the body of the doll was tiny, with a small horn pointing up toward holes in the doll's chest. Unfortunately the delicate mechanism was too fragile for rough usage, and the steel stylus caused the wax record to wear out extremely rapidly.

- The first dolls were offered for sale on April 7, 1890, at the Lenox Lyceum in New York.

Although 2,500 had been shipped by Edison to the Toy Manufacturing Company in March, less than 500 completed dolls were actually sold and most of those were returned by unhappy customers.

{<http://members.aol.com/rondeau7/doll.htm>}

[Emile Berliner, 1888]

- inventor of the **gramophone** <line(gramo~) the voice/sound(phon~)>

- A sound recording and playback device consisted of a turntable for a disc record, a sound box mounted on a pivot (allowing the record groove to guide the stylus), and a conical sounding-horn, mainly designed for **domestic function**.

- Initially, no duplication of the disc record was possible. Later, the **pantograph** system was introduced, that produced 25 copies from an original.

➡ phonograph_PHASE E

- In 1895, the **Edison Spring Motor Phonograph** appeared, even though technically Edison was not allowed to sell phonographs at this time because of the bankruptcy agreement.

- In January 1896, he started the National Phonograph Company, which would manufacture phonographs for **home entertainment use**. Within three years, branches of the company were located in Europe.

- A year later, the **Edison Standard Phonograph** was manufactured, and then exhibited in the press in 1898. This was the first phonograph to carry the Edison trademark design.

[other resources]

- Gelatt, Roland. *The Fabulous Phonograph: From Tin Foil to High Fidelity*. Philadelphia: J. B. Lippincott Company, 1955.
- Koenigsberg, Allen. *Edison Cylinder Records, 1889-1912*. New York: Stellar Productions, 1969.
- Marco, Guy A., ed. *Encyclopedia of Recorded Sound in the United States*. New York: Garland Publishing, Inc., 1993.
- Millard, Andre. *America on Record: A History of Recorded Sound*. Cambridge University Press, 1995.
- Read, Oliver, and Walter L. Welch. *From Tin Foil to Stereo: Evolution of the Phonograph*. Indianapolis: Howard W. Sams & Co., Inc., 1959.

- [Edison National Historic Site]

<http://www.nps.gov/edis/home.htm>

- [Links to other Antique Phonograph Websites]

<http://members.aol.com/rondeau7/phonolinks.htm>

- [Antique Phonograph Gallery]

<http://members.aol.com/rondeau7/index.htm>

- [The History of the Edison Cylinder Phonograph]

<http://inventors.about.com/library/inventors/bledisondiscphgraph.htm>

- [The Birth Place of Recorded Sound]

<http://www.edisonnj.org/menlopark/>

- [The History of Sound Recording Technology]

<http://www.recording-history.org/index.htm>

■ Gitelman L. (1999) *Scripts, Grooves, and Writing Machines. Representing Technology in the Edison Era*. Stanford: Stanford University Press.

Lisa Gitelman is a professor of Media Studies at Catholic University and the author of Scripts, Grooves, and Writing Machines (Stanford 1999). She is currently working on a book about the ways that media are experienced and studied as historical subjects. {<http://faculty.cua.edu/gitelman/>}

NOTE: The book is gravitating towards the significance of inscriptions in technological innovations (e.g. the phonograph) rather than sound. The message of the book is to point out the forgotten role of inscriptions, texts and literature in the conception, production and marketing of every technological innovative media.

■ introduction [*the book's orientation*]

□ Writing and reading are culturally and historically contingent experiences. {1}

□ Technology is related to textuality. {1}

□ Nothing is foisted on a blank public. **Nothing emerges from virgin birth.** Culture insinuates itself within technology at the same time that technology infiltrates culture. {7} Isolating and centering machines (e.g. the phonograph, the computer) is misleading and denies their history....Technology should be explored as plural, decentered, indeterminate, as the reciprocal product of textual practices, and not as a causal agent of change. {2}

□ (mechanized) Inscription as an integral aspect to representation – The rhetoric of technology

- Technology involves a lot of paper. Machines get some of their meaning from what is written about them (genres, specialized vocabularies)...in research plans, patent applications...Writing machines get some of their meaning from both the way there are used and the writings they produce. {6}

- Inscriptions have a twofold character: material and semiotic.
- The study of inscriptions shows the realm of writing and reading, of symbolic action and experience, in its proximity to objects and machines.

□ “The history of technology is also the history of ‘man,’ the programmed/programming machine: the human written” {3}

□ Writing machines and other textual devices can be located in the instance of invention. If the suggested new model of writing is too eccentric, then the invention may not work. If the model is negotiable within or against existing models, then the invention has a chance of appropriation and dissemination. {4}

□ The physical and commercial shape of (past inventions, such as) the pen is excised from memory...and this amnesia is itself forgotten in direct relation to the seriality, the Progress, unthinkingly ascribed to present and future inventions. {5-6}

□ The circulation of print as socially constitutive and transformative. {10}

■ Chapter [01]. Backgrounds [*the shorthand manuals*]

The dream of legible representation and legible reproduction of aural experience. In this chapter Gidelman outlines the history of phonetic shorthand in order to demonstrate how inventors and consumers tested and experienced the characteristics of textuality and therefore created the conditions that fostered the invention of the phonograph. There is an evident analogy between shorthand alphabets and literacy.

■ Chapter [02]. Imagines [“idea letters”]

In this chapter the author presents the preconceptions and the inevitable misconceptions of the Merlo Park team in the invention of the phonograph. Their misconceptions are mostly gravitating around the stenographic function of the device as well as the textual representation of the machine-written inscriptions and the machine-read reproductions. Gidelman also dives into the Edison archives to find a group of letters addressed to Edison from inventors around the country that were striving to succeed and “go public”. Their proposals ranged from phonograph variations to other devices that altogether, according to Gidelman, demonstrated assumptions about the character of language and textuality.

■ Chapter [03]. Authorizes [“patents”]

In this chapter Gidelman locates the phonograph inside the U.S. Patent Office. She presents patents as the official text-based identity of technological inventions. The language being used in patents assumed a distance from the scientific jargon in order to be objective, sufficient and transparent in the description of the invention. Moreover this language needed to be able to avoid any possible infringement complaints. Gidelman also refers to the fact that laws needed to be redefined, in terms of copyright facts, to follow “infant” cases around technological innovations. As the author puts it, affirmation seemed possible amid the technological artifacts, judicial decisions, and business structures of the day, but it was further enabled by much broader and more diffuse aspects of cultural change. Amid all this, there is an extensive reference of the displacement of visuality in the music-record industry and its consequence in the American experiences of racial, ethnic or class difference.

■ Chapter [04]. Labels [product labels]

Chapter 4 describes the technological process that takes place during the conversion of an invention into a consumer product. There are two performers participating in this process, the inventor and the invention, both intimately connected with the bureaucratic paperwork necessary prior to entering the market. The second textuality evident in this case is located on the labels of the products, as emerging articles of trade and mass consumption. Labels narrate the intended meaning of the product, its recognizably salient features as produced, saleable, and consumable.

■ Chapter [05]. Supplements [“automatic writings”]

This chapter presents the phonograph and the typewriter as concurrent machines that intervened into the experience of reading and writing. More specifically, the phonographs are considered here to be everyday “reading” machines where as the typewriter is regarded as a more aggressive means of writing. Both inventions though engaged the same categories of aurality, orality and textuality, reinforcing by that way the subjectivity of authorship and publication. In this chapter the author also introduces the aspect of “noise”, either in the form of a recording, in the case of the phonograph, or in the form of a static keyboard hit in the typewriter case.

■ McLuhan M. (1994) *Understanding Media*. Cambridge: MIT Press. (first print: New York, 1964) Chapters 27, 28, 30.

The major point of McLuhan's argument is that electric media enhanced our perceptive abilities. The media act as extensions, providing an *extra sensory perception*.

Space has also changed. The vernacular walls collapsed as follows:

The telephone: speech without walls

The phonograph: music hall without walls

The photograph: museum without walls

The electric light: space without walls

The movie, radio and TV: classroom without walls

[...on the telephone (Sounding Brass or Tinking Symbol?)]

- Social practices changed since anyone could converse and communicate without place constrictions. The position of women in society shifted.
- Telephone demands complete participation from its users, unlike the written page or an image. This kind of commitment is difficult to be adapted since people are accustomed to fragmentary attention. It can not be used as background
- Telephone creates a sense of invasive urgency that makes everyone uneasy. When the telephone rings everybody jumps. It is an *irresistible intruder*. It abolishes private space
- The notion of telephone came with the research for Visible Speech to help the impaired.
- Telephone and other electrical devices create a societal implosion after years of mechanical advancements that created explosion.
- A shift of authority made evident. *Delegated authority is lineal, visual, hierarchical. The authority of knowledge, that the telephone provided through multiple links of information, is nonlineal, nonvisual, and inclusive*. A web of knowledge was formed and decentralization logic emerged

[...on the phonograph (The Toy That Shrunk the National Chest)]

- The phonograph was presented as a threat to individual vocal activity
- It was formed as a "talking machine" and *store-house repeater*.
- Edison failed to see the entertaining side of phonograph because of the strong impulsion for practical inventions. (Entertainment was a luxury or a game, unworthy of proper attention)
- The phonograph as electric medium eliminated fragmented specialties of form and function that exist text or mechanical logic
- The new horizons of an electric metropolis created a climate of melancholy for the "lost romanticism" that helped the emergence of jazz
- Notions of automation at speech and dance led to efforts for automation at the work force

- The relation between *phonograph and dance is no less deep than its earlier relation to telegraph and telephone.*
- The world of phonograph came through several transitions. It was boosted with the emergence of radio at 1924 but led to decrease of home use. After WWII the tape recorder reinstated the popularity of a personal recording/playing medium and the real brake came with Hi-Fi at 1947

[...on the radio (The Tribal Drum)]

- Societies long exposed to literacy and industrialism involve an intense visual organization of experience that made them critical to the adaptation of an aural medium
- Societies in which families are decentralized are less prone to the explosive change that radio brings.
- Radio is *Hot* medium where TV is a *Cool* medium. With radio people get immersed and create visualizations of their own. With only one sense receiving the other senses rush to close the gap creating rich feelings
- Radio was a communal (*tribal*) experience. People gathered to listen. Yet it remained private because there is a unique link between every listener and the “electric” speaker. *This is inherent in the very nature of this medium, with its power to turn the psyche and society into a single echo chamber.*
- Radio provided the first massive experience of electronic implosion
- Radio, as every medium, works in an invisible way. It comes as personal every day apparatuses, *private and intimate*, while they have the ability to change the basic functions of social activity with the ability to touch *remote and forgotten chords*
- Radio became an instant “book” deployed on air waves.
- Radio became entertainment medium to avoid conflict with the literature nomenclature and gain an instant commercial value
- *Radio provides a speed-up of information that also causes acceleration in other media.*
- Radio shifted from group listening to private. TV became the group activity while radio became reclusive. The TV freed radio from its central position as the bringer of news or entertainment and allowed it to diversify.
- The radio could expand the Platonic ideal of public democratic structure on a world scale.

□ to think about...

- sound recording [phonograph]
- image recording [photograph]
- text "recording" [inscription/printing]

□ **What are their similarities? What are their differences?**

⇒ Copy, reproduce, record reality

[When (and why) did these mediums invade and represent an "imaginary", non-realistic world?]

⇒ Perfection and/or multiplicity

⇒ They are all instruments of expression

⇒ Economy and durability {Gitleman, 3}

⇒ They are all brokers among accultured practices of seeing, hearing, speaking and writing {Gitleman, 3}

⇒ They are modest, local, and often competitive embodiments of the way people wrote, read, and interacted over the perceived characteristics of writing and reading {Gitleman, 4}

⇒ They are changing the experiences of public knowledge, public space, self and community {Gitleman, 10}

⇒ They encourage a feeling of finality {Ong suggests that mainly for print}

⇒ The phonograph could be considered as a member of Ong's second orality wave (along with telephone, radio and television), for it introduced "a strong sense of membership in a group." "Unlike primary orality, however, secondary orality is "essentially a more deliberate and self-conscious orality, based permanently on the use of writing and print," and the groups produced by second orality are much larger than any produced by primary orality. {Ong, 136}

⇒ Control of public memory?

⇒ How do we perceive them as extensions of our sensory ability? {McLuhan}

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□ **What are the social conditions that gave birth to these inventions?**

Where does this urge to record things come from?

⇒ **the need for objectivity**

[Nadar] "acoustic daguerrotype which faithfully and tirelessly reproduces all sounds subjected to its objectivity" [Do we trust media today for their objectivity?]

[Gidelman] phonographs were introduced as objective instruments of public knowledge...

[Gidelman] the conversion from experience to evidence (first exhibited in the dualism orality and literacy)

[Gidelman] Reporters wanted to be accepted as objective, even as mechanical agents of representation.

[Gidelman] Accuracy and impartiality

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⇒ **the need to verify existence**

"Scripta Manent. Verba Volant"

People want to leave a "permanent" piece/mark off their existence behind...

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⇒ **the need for memory**

[Flichy] Preserving the memory of that which had disappeared {Flichy, 64}

[Cros] (Phonograph) Machine for memorizing {Flichy, 65}

[Figuier] It will not be one of the lesser prodigies of the future, that of making the dead speak {Flichy, 65}

[Gitelman] The present could be stored up and never left behind.

[Gitelman] Without the notion of verbatim memory, “preliterate” societies exist in a dynamic soup of tradition, as present judgments slip into hazy precedents and are released into the habits of cultural identity.

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⇒ **the need to challenge time – to make history**

[Gitelman] Culture insinuates itself within technology at the same time that technology infiltrates culture.

[Gitelman] The invention [phonograph] was a “collective enregistration” that serves to make everyday life “more historic”. Before the mechanical media, making history was unquestionably done on paper.

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⇒ **the need for entertainment**

(private sphere) Before the phonograph, there was no mass media available for public consumption. The home entertainment “system” was a family member playing the piano! There is so much available today that it sometimes seems that it has always been there. Well, it has not.

(public sphere) “**phonographic juke-box**”

This variation of the phonograph was **installed in public places** where people could pay a few cents to listen to a piece of music. **SOCIAL INNOVATION**

[Gitelman] new popular culture forms

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⇒ **to make art**

⇒ **to support the sciences**

⇒ **to educate**

□ **Do you believe that textuality (inscriptions, texts, narratives) is underestimated? Where and in what way?**

□ **“verbatim memory”. Does it exist?**

⇒ We might all have the same point of reference, but we will all form different points of view, based on our individual, unique background.

□ **Dualisms:**

ear – eye,

mouth – page,

private – public,

experience – evidence,

“man” – machine.

What is their connection with the modern moment? Is it textuality?

□ **Who has authorship? The one who envisions or the one who materializes?**