GRAMOPHONE, FILM, TYPEWRITER

INTRODUCTION

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Optical fiber networks. People will be hooked to an information channel that can be used for any medium—for the first time in history, or for its end. Once movies and music, phone calls and texts reach households via optical fiber cables, the formerly distinct media of television, radio, telephone, and mail converge, standardized by transmission frequencies and bit format. The optoelectronic channel in particular will be immune to disturbances that might randomize the pretty bit patterns behind the images and sounds. Immune, that is, to the bomb. As is well known, nuclear blasts send an electromagnetic pulse (EMP) through the usual copper cables, which would infect all connected computers.

The Pentagon is engaged in farsighted planning: only the substitution of optical fibers for metal cables can accommodate the enormous rates and volumes of bits required, spent, and celebrated by electronic warfare. All early warning systems, radar installations, missile bases, and army staffs in Europe, the opposite coast,[1] finally will be connected to computers safe from EMP and thus will remain operational in wartime. In the meantime, pleasure is produced as a by-product: people are free to channel-surf among entertainment media. After all, fiber optics transmit all messages imaginable save for the one that counts—the bomb.

Before the end, something is coming to an end. The general digitization of channels and information erases the differences among individual media. Sound and image, voice and text are reduced to surface effects, known to consumers as interface. Sense and the senses turn into eyewash. Their media-produced glamor will survive for an interim as a by-product of strategic programs. Inside the computers themselves everything becomes a number: quantity without image, sound, or voice. And once optical fiber networks turn formerly distinct data flows into a standardized

series of digitized numbers, any medium can be translated into any other. With numbers, everything goes. Modulation, transformation, synchronization; delay, storage, transposition; scrambling, scanning, mapping— a total media link on a digital base will erase the very concept of medium. Instead of wiring people and technologies, absolute knowledge will run as an endless loop.

But there still are media; there still is entertainment.

Today's standard comprises partially connected media links that are still comprehensible in McLuhan's terms. According to him, one medium's content is always other media: film and radio constitute the content of television; records and tapes the content of radio; silent films and audiotape that of cinema; text, telephone, and telegram that of the semi–media monopoly of the postal system. Since the beginning of the century, when the electronic tube was developed by von Lieben in Germany and De Forest in California, it has been possible to amplify and transmit signals. Accordingly, the large media networks, which have been in existence since the thirties, have been able to fall back on all three storage media—writing, film, and photography—to link up and send their signals at will.

But these links are separated by incompatible data channels and differing data formats. Electrics does not equal electronics. Within the spectrum of the general data flow, television, radio, cinema, and the postal service constitute individual and limited windows for people's sense perceptions. Infrared radiations or the radio echoes of approaching missiles are still transmitted through other channels, unlike the optical fiber networks of the future. Our media systems merely distribute the words, noises, and images people can transmit and receive. But they do not compute these data. They do not produce an output that, under computer control, transforms any algorithm into any interface effect, to the point where people take leave of their senses. At this point, the only thing being computed is the transmission quality of storage media, which appear in the media links as the content of the media. A compromise between engineers and salespeople regulates how poor the sound from a TV set can be, how fuzzy movie images can be, or how much a beloved voice on the telephone can be filtered. Our sense perceptions are the dependent variable of this compromise.

A composite of face and voice that remains calm, even when faced during a televised debate by an opponent named Richard M. Nixon, is deemed telegenic and may win a presidential election, as in Kennedy's
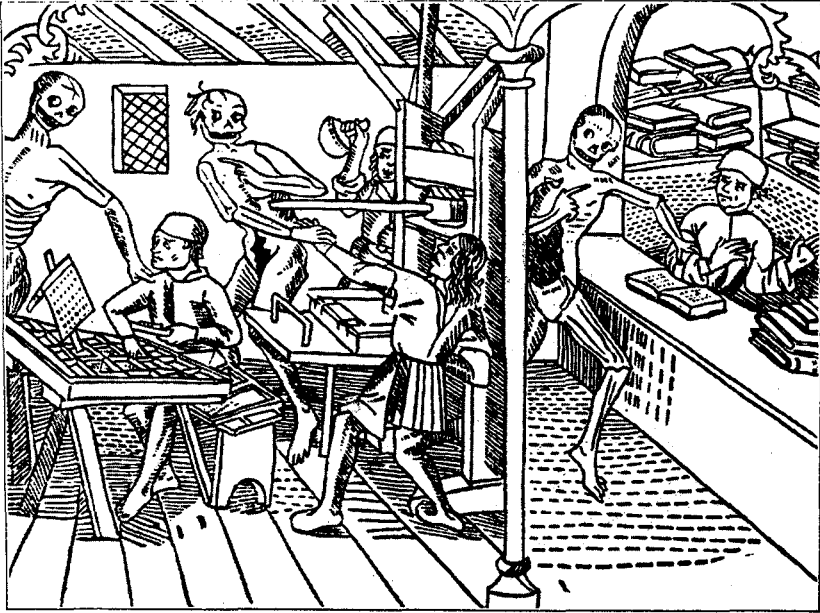
case. Voices that an optical close-up would reveal as treacherous, however, are called radiogenic and rule over the VE 301, the *Volksempfänger* of the Second World War. For, as the Heidegger disciple among Germany's early radio experts realized, "death is primarily a radio topic."[2]

But these sense perceptions had to be fabricated first. For media to link up and achieve dominance, we need a coincidence in the Lacanian sense: that something ceases not to write itself. Prior to the electrification of media, and well before their electronic end, there were modest, merely mechanical apparatuses. Unable to amplify or transmit, they nevertheless were the first to store sensory data: silent movies stored sights, and Edison's phonograph (which, unlike Berliner's later gramophone, was capable both of recording and reproducing) stored sounds.

On December 6, 1877, Edison, lord of the first research laboratory in the history of technology, presented the prototype of the phonograph to the public. On February 20, 1892, the same lab in Menlo Park (near New York) added the so-called kinetoscope. Three years later, the Lumière brothers in France and the Skladanowsky brothers in Germany merely had to add a means of projection to turn Edison's invention into cinema.

Ever since that epochal change we have been in possession of storage technologies that can record and reproduce the very time flow of acoustic and optical data. Ears and eyes have become autonomous. And that changed the state of reality more than lithography and photography, which (according to Benjamin's thesis) in the first third of the nineteenth century merely propelled the work of art into the age of its technical reproducibility. Media "define what really is";[3] they are always already beyond aesthetics.

What phonographs and cinematographs, whose names not coincidentally derive from writing, were able to store was time: time as a mixture of audio frequencies in the acoustic realm and as the movement of single-image sequences in the optical. Time determines the limit of all art, which first has to arrest the daily data flow in order to turn it into images or signs. What is called style in art is merely the switchboard of these scannings and selections. That same switchboard also controls those arts that use writing as a serial, that is, temporally transposed, data flow. To record the sound sequences of speech, literature has to arrest them in a system of 26 letters, thereby categorically excluding all noise sequences. Not coincidentally, this system also contains as a subsystem the seven notes, whose diatonics—from A to G—form the basis of occidental music. Following a suggestion made by the musicologist von Hornbostel, it is possible to fix the chaos of exotic music assailing European ears by first

interpolating a phonograph, which is able to record this chaos in real time and then replay it in slow motion. As the rhythms begin to flag and "individual measures, even individual notes resound on their own," occidental alphabetism with its staffs can proceed to an "exact notation."[4]

Texts and scores—Europe had no other means of storing time. Both are based on a writing system whose time is (in Lacan's term) symbolic. Using projections and retrievals, this time memorizes itself—like a chain of chains. Nevertheless, whatever ran as time on a physical or (again in Lacan's terms) real level, blindly and unpredictably, could by no means be encoded. Therefore, all data flows, provided they really were streams of data, had to pass through the bottleneck of the signifier. Alphabetic monopoly, grammatology.

If the film called history rewinds itself, it turns into an endless loop. What will soon end in the monopoly of bits and fiber optics began with the monopoly of writing. History was the homogenized field that, as an academic subject, only took account of literate cultures. Mouths and graphisms were relegated to prehistory. Otherwise, stories and histories (both deriving from *historia*) could not have been linked. All the orders and judgments, announcements and prescriptions (military and legal, religious and medical) that produced mountains of corpses were communicated along the very same channel that monopolized the descriptions of

The oldest depiction of a print shop, 1499—as a dance of death.

those mountains of corpses. Which is why anything that ever happened ended up in libraries.

And Foucault, the last historian or first archeologist, merely had to look things up. The suspicion that all power emanates from and returns to archives could be brilliantly confirmed, at least within the realms of law, medicine, and theology. A tautology of history, or its calvary. For the libraries in which the archeologist found so much rich material collected and catalogued papers that had been extremely diverse in terms of addressee, distribution technique, degree of secrecy, and writing technique—Foucault's archive as the entropy of a post office.[5] Even writing itself, before it ends up in libraries, is a communication medium, the technology of which the archeologist simply forgot. It is for this reason that all his analyses end immediately before that point in time at which other media penetrated the library's stacks. Discourse analysis cannot be applied to sound archives or towers of film rolls.

As long as it was moving along, history was indeed Foucault's "wave-like succession of words."[6] More simply, but no less technically than tomorrow's fiber optic cables, writing functioned as a universal medium—
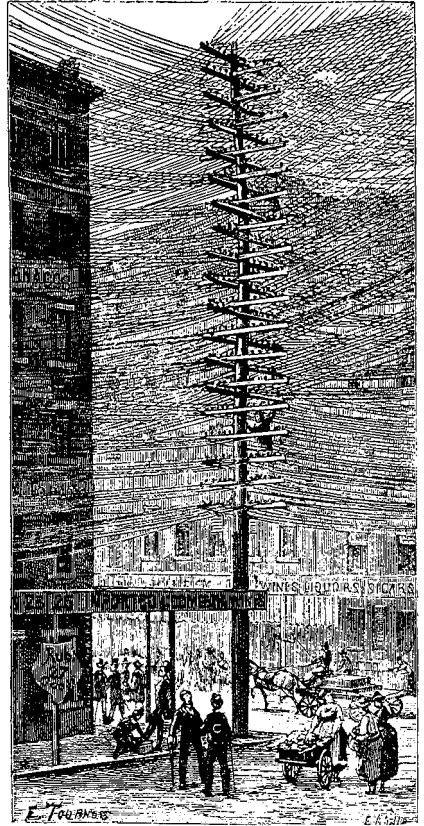
Telephone lines, New York, 1888.

in times when there was no concept of medium. Whatever else was going on dropped through the filter of letters or ideograms.

"Literature," Goethe wrote, "is a fragment of fragments; only the smallest proportion of what took place and what was said was written down, while only the smallest proportion of what was written down has survived."[7]

Accordingly, oral history today confronts the historians' writing monopoly; accordingly, a media theoretician like the Jesuit priest Walter J. Ong, who must have been concerned with the spirit of the Pentecostal mystery, could celebrate a primary orality of tribal cultures as opposed to the secondary orality of our media acoustics. Such research remained unthinkable as long as the opposite of "history" was simply termed (again

following Goethe) "legend."[8] Prehistory was subsumed by its mythical name; Goethe's definition of literature did not even have to mention optical or acoustic data flows. And even legends, those oralized segments of bygone events, only survived in written format; that is, under pretechnological but literary conditions. However, since it has become possible to record the epics of the last Homeric bards, who until recently were wandering through Serbia and Croatia, oral mnemotechnics or cultures have become reconstructible in a completely different way.[9] Even Homer's rosy-fingered Eos changes from a Goddess into a piece of chromium dioxide that was stored in the memory of the bard and could be combined with other pieces into whole epics. "Primary orality" and "oral history" came into existence only after the end of the writing monopoly, as the technological shadows of the apparatuses that document them.

Writing, however, stored writing—no more and no less. The holy books attest to this. Exodus, chapter 20, contains a copy of what Yahweh's own finger originally had written on two stone tablets: the law. But of the thunder and lightning, of the thick cloud and the mighty trumpet which, according to scripture, surrounded this first act of writing on Mount Sinai, that same Bible could store nothing but mere words.[10]

Even less is handed down of the nightmares and temptations that afflicted a nomad called Mohammed following his flight to the holy mountain of Hira. The Koran does not begin until the one God takes the place of the many demons. The archangel Gabriel descends from the seventh heaven with a roll of scripture and the command to decipher the scroll. "Rejoice in the name of the Lord who created—created man from clots of blood. Recite! Your Lord is the Most Bountiful One, who by pen taught man what he did not know."[11]

Mohammed, however, answers that he, the nomad, can't read; not even the divine message about the origin of reading and writing. The archangel has to repeat his command before an illiterate can turn into the founder of a book-based religion. For soon, or all too soon, the illegible scroll makes sense and presents to Mohammed's miraculously alphabetized eyes the very same text that Gabriel had already uttered twice as an oral command. Mohammed's illuminations began, according to tradition, with this 96th sura—in order then to be "memorized by the faithful and written down on primitive surfaces such as palm leaves, stones, wood, bones, and pieces of leather, and to be recited, again and again, by Mohammed and select believers, especially during Ramadan."[12]

Writing therefore merely stores the fact of its authorization. It cele-

brates the storage monopoly of the God who invented it. And since the realm of this God consists of signs that only nonreaders can't make sense of, all books are books of the dead, like the Egyptian ones with which literature began.[13] The book itself coincides with the realm of the dead beyond all senses into which it lures us. When the Stoic philosopher Zeno asked the oracle at Delphi how he should best lead his life, he was given the answer "that he should mate with the dead. He understood this to mean that he should *read* the *ancients*."[14]

The story of how the divine instructions to use quills extended beyond Moses and Mohammed and reached simpler and simpler people is a lengthy one that nobody can write, because it would be history itself. In much the same way, the storage capacities of our computers will soon coincide with electronic warfare and, gigabyte upon gigabyte, exceed all the processing capacities of historians.

Suffice it to say that one day—in Germany, this may have already been the case during the age of Goethe—the homogenous medium of writing also became homogenous in the social sphere. Compulsory education engulfed people in paper. They learned a way of writing that, as an "abuse of language" (according to Goethe), no longer had to struggle with cramped muscles and individual letters, but rather proceeded in rapture or darkness. They learned to read "silently to one's self," a "sorry substitute for speech"[15] that consumed letters without effort by bypassing oral organs. Whatever they emitted and received was writing. And because only that exists which can be posted, bodies themselves fell under the regime of the symbolic. What is unthinkable today was once reality: no film stored the movements they made or saw, no phonograph, the noise they made or heard. For whatever existed failed before time. Silhouettes or pastel drawings fixed facial expressions, and scores were unable to store noise. But once a hand took hold of a pen, something miraculous occurred: the body, which did not cease not to write itself, left strangely unavoidable traces.

I'm ashamed to tell of it. I'm ashamed of my handwriting. It exposes me in all my spiritual nakedness. My handwriting shows me more naked than I am with my clothes off. No leg, no breath, no clothes, no sound. Neither voice nor reflection. All cleaned out. Instead, a whole man's being, shriveled and misshapen, like his scribble-scrabble. His lines are all that's left of him, as well as his self-propagation. The uneven tracings of his pencil on paper, so minimal that a blind man's fingertips would hardly detect them, become the measure of the whole fellow.[16]

Today, this shame, which overcomes the hero of Botho Strauss's last love story, *Dedication*, whenever he sees his handwriting, is no more than an anachronism. The fact that the minimal unevenness between stroke and paper can store neither a voice nor an image of a body presupposes in its exclusion the invention of phonography and cinema. Before their invention, however, handwriting alone could guarantee the perfect securing of traces. It wrote and wrote, in an energetic and ideally uninterrupted flow. As Hegel so correctly observed, the alphabetized individual had his "appearance and externality"[17] in this continuous flow of ink or letters.

And what applied to writing also applied to reading. Even if the alphabetized individual known as the "author" finally had to fall from the private exteriority of handwriting into the anonymous exteriority of print in order to secure "all that's left of him, as well as his self-propagation"— alphabetized individuals known as "readers" were able to reverse this exteriorization. "If one reads in the right way," Novalis wrote, "the words will unfold in us a real, visible world."[18] And his friend Schlegel added that "one believes to hear what one merely reads."[19] Perfect alphabetization was to supplement precisely those optical and acoustic data flows that, under the monopoly of writing, did not cease not to write themselves. Effort had been removed from writing, and sound from reading, in order to naturalize writing. The letters that educated readers skimmed over provided people with sights and sounds.

Aided by compulsory education and new alphabetization techniques, the book became both film and record around 1800—not as a media-technological reality, but in the imaginary of readers' souls. As a surrogate of unstorable data flows, books came to power and glory.[20]

In 1774 an editor by the name of Goethe committed handwritten letters or *Sorrows of Young Werther* to print. The "nameless throng" (to quote the dedication of *Faust*), too, was to hear an "early song" that, like "some old half-faded song," revived "old griefs" and "old friends."[21] This was the new literary recipe for success: to surreptitiously turn the voice or handwriting of a soul into Gutenbergiana. In the last letter he wrote and sealed but did not send off before committing suicide, Werther gave his beloved the very promise of poetry: during her lifetime she would have to remain with Albert, her unloved husband, but afterwards she would be united with her lover "in the sight of the Infinite One in eternal embraces."[22] Indeed: the addressee of handwritten love letters, which were then published by a mere editor, was to be rewarded with an immortality in the shape of the novel itself. It alone was able to create the

"beautiful realm"[23] in which the lovers of Goethe's *Elective Affinities*, according to the hope of their narrator, "will waken together once more."[24] Strangely enough, Eduard and Ottilie had one and the same handwriting during their lifetime. Their death elevated them to a paradise that under the storage monopoly of writing was called poetry.

And maybe that paradise was more real than our media-controlled senses can imagine. Reading intently, Werther's suicidal readers may well have perceived their hero in a real, visible world. And the lovers among Goethe's female readers, like Bettina Brentano, may well have died with the heroine of his *Elective Affinities* only to be "reborn in a more beautiful youth" through Goethe's "genius."[25] Maybe the perfectly alphabetized readers of 1800 were a living answer to the question with which Chris Marker concludes his film essay *Sans Soleil*:

Lost at the end of the world on my island, Sal, in the company of my dogs strutting around, I remember that January in Tokyo, or rather I remember the images I filmed in Tokyo in January. They have now put themselves in place of my memory, they *are* my memory. I wonder how people who do not film, take photos, or record tapes remember, how humankind used to go about remembering.[26]

It is the same with language, which only leaves us the choice of either retaining words while losing their meaning or, vice versa, retaining meaning while losing the words.[27] Once storage media can accommodate optical and acoustic data, human memory capacity is bound to dwindle. Its "liberation"[28] is its end. As long as the book was responsible for all serial data flows, words quivered with sensuality and memory. It was the passion of all reading to hallucinate meaning between lines and letters: the visible and audible world of Romantic poetics. And the passion of all writing was (in the words of E. T. A. Hoffmann) the poet's desire to "describe" the hallucinated "picture in one's mind with all its vivid colors, the light and the shade," in order to "strike [the] gentle reader like an electric shock."[29]

Electricity itself put an end to this. Once memories and dreams, the dead and ghosts, become technically reproducible, readers and writers no longer need the powers of hallucination. Our realm of the dead has withdrawn from the books in which it resided for so long. As Diodor of Sicily once wrote, "it is no longer only through writing that the dead remain in the memory of the living."

The writer Balzac was already overcome by fear when faced with photography, as he confessed to Nadar, the great pioneer of photography. If (according to Balzac) the human body consists of many infinitely thin

Spirit photography, 1904.

layers of "specters," and if the human spirit cannot be created from noth-
ingness, then the daguerreotype must be a sinister trick: it fixes, that is,
steals, one layer after the other, until nothing remains of the specters and
the photographed body.[30] Photo albums establish a realm of the dead in-
finitely more precise than Balzac's competing literary enterprise, the *Co-
médie humaine*, could ever hope to create. In contrast to the arts, media
do not have to make do with the grid of the symbolic. That is to say, they
reconstruct bodies not only in a system of words or colors or sound in-
tervals. Media and media only fulfill the "high standards" that (accord-
ing to Rudolf Arnheim) we expect from "reproductions" since the inven-
tion of photography: "They are not only supposed to resemble the object,

but rather guarantee this resemblance by being, as it were, a product of the object in question, that is, by being mechanically produced by it—just as the illuminated objects of reality imprint their image on the photographic layer,"[31] or the frequency curves of noises inscribe their wavelike shapes onto the phonographic plate.

A reproduction authenticated by the object itself is one of physical precision. It refers to the bodily real, which of necessity escapes all symbolic grids. Media always already provide the appearances of specters. For, according to Lacan, even the word "corpse" is a euphemism in reference to the real.[32]

Accordingly, the invention of the Morse alphabet in 1837 was promptly followed by the tapping specters of spiritistic seances sending their messages from the realm of the dead. Promptly as well, photographic plates—even and especially those taken with the camera shutter closed—furnished reproductions of ghosts or specters, whose black-and-white fuzziness only served to underscore the promise of resemblance. Finally, one of the ten applications Edison envisioned for his newly invented phonograph in the *North American Review* (1878) was to record "the last words of dying persons."

It was only a small step from such a "family record,"[33] with its special consideration of revenants, to fantasies that had telephone cables linking the living and the dead. What Leopold Bloom in *Ulysses* could only wish for in his Dublin graveyard meditations had already been turned into science fiction by Walter Rathenau, the AEG chairman of the board and futurist writer.[34] In Rathenau's story "Resurrection Co.," the cemetery administration of Necropolis, Dacota/USA, following a series of scandalous premature burials in 1898, founds a daughter company entitled "Dacota and Central Resurrection Telephone Bell Co." with a capital stock of $750,000. Its sole purpose is to make certain that the inhabitants of graves, too, are connected to the public telephone network. Whereupon the dead avail themselves of the opportunity to prove, long before McLuhan, that the content of one medium is always another medium—in this concrete case, a *déformation professionelle*.[35]

These days, paranormal voices on tape or radio, the likes of which have been spiritistically researched since 1959 and preserved in rock music since Laurie Anderson's 1982 release *Big Science*,[36] inform their researchers of their preferred radio wavelength. This already occurred in 1898, in the case of Senate President Schreber: when a paranormal, beautifully autonomous "base or nerve language" revealed its code as well as its channels,[37] message and channel became one. "You just have to

choose a middle-, short-, or long-wave talk-show station, or the 'white noise' between two stations, or the 'Jürgenson wave,' which, depending on where you are, is located around 1450 to 1600 kHz between Vienna and Moscow."[38] If you replay a tape that has been recorded off the radio, you will hear all kinds of ghost voices that do not originate from any known radio station, but that, like all official newscasters, indulge in radio self-advertisement. Indeed, the location and existence of that "Jürgenson wave" was pinpointed by none other than "Friedrich Jürgenson, the Nestor of vocal research."[39]

The realm of the dead is as extensive as the storage and transmission capabilities of a given culture. As Klaus Theweleit noted, media are always flight apparatuses into the great beyond. If gravestones stood as symbols at the beginning of culture itself, our media technology can retrieve all gods. The old written laments about ephemerality, which measured no more than distance between writing and sensuality, suddenly fall silent. In our mediascape, immortals have come to exist again.

War on the Mind is the title of an account of the psychological strategies hatched by the Pentagon. It reports that the staffs planning the electronic war, which merely continues the Battle of the Atlantic,[40] have already compiled a list of the propitious and unpropitious days in other cultures. This list enables the U.S. Air Force "to time [its] bombing campaigns to coincide with unpropitious days, thus 'confirming' the forecasts of local gods." As well, the voices of these gods have been recorded on tape to be broadcast from helicopters "to keep tribes in their villages." And finally, the Pentagon has developed special film projectors capable of projecting those gods onto low-hanging clouds.[41] A technologically implemented beyond . . .

Of course the Pentagon does not keep a handwritten list of good and bad days. Office technology keeps up with media technology. Cinema and the phonograph, Edison's two great achievements that ushered in the present, are complemented by the typewriter. Since 1865 (according to European accounts) or 1868 (according to American ones), writing has no longer been the ink or pencil trace of a body whose optical and acoustic signals were irretrievably lost, only to reappear (in readers' minds) in the surrogate sensuality of handwriting. In order to store series of sights and sounds, Old Europe's only storage technology first had to be mechanized. Hans Magnus Malling Hansen in Copenhagen and Christopher Latham Sholes in Milwaukee developed mass-producible typewriters. Edison commented positively on the invention's potential when Sholes visited him in

Newark to demonstrate his newly patented model and to invite the man who had invented invention to enter a joint venture.[42]

But Edison declined the offer—as if, already in 1868, the phonograph and kinetoscope preoccupied their future inventor. Instead, the offer was grabbed by an arms manufacturer suffering from dwindling revenues in the post–Civil War slump. Remington, not Edison, took over Sholes's discourse machine gun.

Thus, there was no Marvelous One from whose brow sprang all three media technologies of the modern age. On the contrary, the beginning of our age was marked by separation or differentiation.[43] On the one hand, we have two technological media that, for the first time, fix unwritable data flows; on the other, an "'intermediate' thing between a tool and a machine," as Heidegger wrote so precisely about the typewriter.[44] On the one hand, we have the entertainment industry with its new sensualities; on the other, a writing that already separates paper and body during textual production, not first during reproduction (as Gutenberg's movable types had done). From the beginning, the letters and their arrangement were standardized in the shapes of type and keyboard, while media were engulfed by the noise of the real—the fuzziness of cinematic pictures, the hissing of tape recordings.

In standardized texts, paper and body, writing and soul fall apart. Typewriters do not store individuals; their letters do not communicate a beyond that perfectly alphabetized readers can subsequently hallucinate as meaning. Everything that has been taken over by technological media since Edison's inventions disappears from typescripts. The dream of a real visible or audible world arising from words has come to an end. The historical synchronicity of cinema, phonography, and typewriting separated optical, acoustic, and written data flows, thereby rendering them autonomous. That electric or electronic media can recombine them does not change the fact of their differentiation.

In 1860, five years before Malling Hansen's mechanical writing ball (the first mass-produced typewriter), Gottfried Keller's "Misused Love Letters" still proclaimed the illusion of poetry itself: love is left with the impossible alternatives of speaking either with "black ink" or with "red blood."[45] But once typing, filming, and recording became equally valid options, writing lost such surrogate sensualities. Around 1880 poetry turned into literature. Standardized letters were no longer to transmit Keller's red blood or Hoffmann's inner forms, but rather a new and elegant tautology of technicians. According to Mallarmé's instant insight, literature is made up of no more and no less than twenty-six letters.[46]
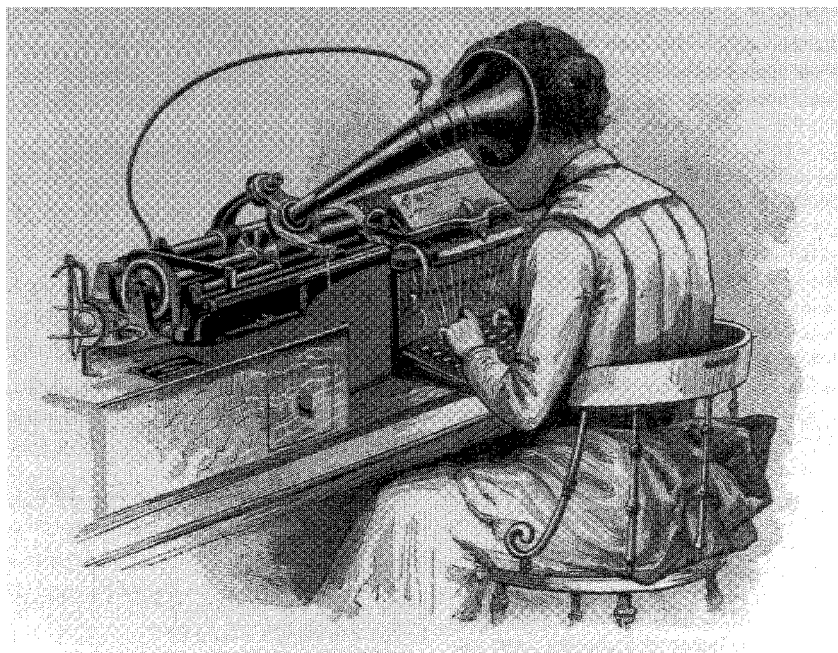
Lacan's "methodological distinction"[47] among the real, the imaginary, and the symbolic is the theory (or merely a historical effect) of that differentiation. The symbolic now encompasses linguistic signs in their materiality and technicity. That is to say, letters and ciphers form a finite set without taking into account philosophical dreams of infinity. What counts are differences, or, in the language of the typewriter, the spaces between the elements of a system. For that reason, Lacan designates "the world of the symbolic [as] the world of the machine."[48]

The imaginary, however, comes about as the mirror image of a body that appears to be, in terms of motor control, more perfect than the infant's own body, for in the real everything begins with coldness, dizziness, and shortness of breath.[49] Thus, the imaginary implements precisely those optical illusions that were being researched in the early days of cinema. A dismembered or (in the case of film) cut-up body is faced with the illusionary continuity of movements in the mirror or on screen. It is no coincidence that Lacan recorded infants' jubilant reactions to their mirror images in the form of documentary footage.

Finally, of the real nothing more can be brought to light than what Lacan presupposed—that is, nothing. It forms the waste or residue that

neither the mirror of the imaginary nor the grid of the symbolic can catch: the physiological accidents and stochastic disorder of bodies.

The methodological distinctions of modern psychoanalysis clearly co-incide with the distinctions of media technology. Every theory has its historical a priori. And structuralist theory simply spells out what, since the turn of the century, has been coming over the information channels.

Only the typewriter provides writing as a selection from the finite and arranged stock of its keyboard. It literally embodies what Lacan illustrated using the antiquated letter box. In contrast to the flow of handwriting, we now have discrete elements separated by spaces. Thus, the symbolic has the status of block letters. Film was the first to store those mobile doubles that humans, unlike other primates, were able to (mis)perceive as their own body. Thus, the imaginary has the status of cinema. And only the phonograph can record all the noise produced by the larynx prior to any semiotic order and linguistic meaning. To experience pleasure, Freud's patients no longer have to desire what philosophers consider good. Rather, they are free to babble.[50] Thus, the real—especially in the talking cure known as psychoanalysis—has the status of phonography.

Once the technological differentiation of optics, acoustics, and writing exploded Gutenberg's writing monopoly around 1880, the fabrication of so-called Man became possible. His essence escapes into apparatuses. Machines take over functions of the central nervous system, and no longer, as in times past, merely those of muscles. And with this differentiation—and not with steam engines and railroads—a clear division occurs between matter and information, the real and the symbolic. When it comes to inventing phonography and cinema, the age-old dreams of humankind are no longer sufficient. The physiology of eyes, ears, and brains have to become objects of scientific research. For mechanized writing to be optimized, one can no longer dream of writing as the expression of individuals or the trace of bodies. The very forms, differences, and frequencies of its letters have to be reduced to formulas. So-called Man is split up into physiology and information technology.

When Hegel summed up the perfect alphabetism of his age, he called it Spirit. The readability of all history and all discourses turned humans or philosophers into God. The media revolution of 1880, however, laid the groundwork for theories and practices that no longer mistake information for spirit. Thought is replaced by a Boolean algebra, and consciousness by the unconscious, which (at least since Lacan's reading) makes of Poe's "Purloined Letter" a Markoff chain.[51] And that the sym-

bolic is called the world of the machine undermines Man's delusion of possessing a "quality" called "consciousness," which identifies him as something other and better than a "calculating machine." For both people and computers are "subject to the appeal of the signifier"; that is, they are both run by programs. "Are these humans," Nietzsche already asked himself in 1874, eight years before buying a typewriter, "or perhaps only thinking, writing, and speaking machines?"[52]

In 1950 Alan Turing, the practitioner among England's mathematicians, gave the answer to Nietzsche's question. He observed, with formal elegance, that there is no question to begin with. To clarify the issue, Turing's essay "Computing Machinery and Intelligence"—appearing in, of all places, the philosophical periodical *Mind*—proposed an experiment, the so-called Turing game: A computer *A* and human *B* exchange data via some kind of telewriter interface. The exchange of texts is monitored by a censor *C*, who also only receives written information. *A* and *B* both pretend to be human, and *C* has to decide which of the two is simulating and which merely is Nietzsche's thinking, writing, and speaking machine. But the game remains open-ended, because each time the machine gives itself away—be it by making a mistake or, more likely, by not making any—it will refine its program by learning.[53] In the Turing game, Man coincides with his simulation.

And this is, obviously, already so because the censor *C* receives plotter printouts and typescripts rather than handwritten texts. Of course, computer programs could simulate the "individuality" of the human hand, with its routines and mistakes, but Turing, as the inventor of the universal discrete machine, was a typist. Though he wasn't much better or skilled at it than his tomcat Timothy, who was allowed to jump across the keyboard in Turing's chaotic secret service office,[54] it was at least somewhat less catastrophic than his handwriting. The teachers at the honorable Sherborne School could hardly "forgive" their pupil's chaotic lifestyle and messy writing. He got lousy grades for brilliant exams in mathematics only because his handwriting was "the worst . . . ever seen."[55] Faithfully, schools cling to their old duty of fabricating individuals (in the literal sense of the word) by drilling them in a beautiful, continuous, and individual handwriting. Turing, a master in subverting all education, however, dodged the system; he made plans for an "exceedingly crude" typewriter.[56]

Nothing came of these plans. But when, on the meadows of Grantchester, the meadows of all English poetry from the Romantics to Pink

Floyd, he hit upon the idea of the universal discrete machine, his early dreams were realized and transformed. Sholes's typewriter, reduced to its fundamental principle, has supported us to this day. Turing merely got rid of the people and typists that Remington & Son needed for reading and writing.

And this is possible because a Turing machine is even more exceedingly crude than the Sherborne plan for a typewriter. All it works with is a paper strip that is both its program and its data material, its input and its output. Turing slimmed down the common typewriter page to this little strip. But there are even more economizations: his machine doesn't need the many redundant letters, ciphers, and signs of a typewriter keyboard; it can do with one sign and its absence, 1 and 0. This binary information can be read or (in Turing's technospeak) scanned by the machine. It can then move the paper strip one space to the right, one to the left, or not at all, moving in a jerky (i.e., discrete) fashion like a typewriter, which in contrast to handwriting has block caps, a back spacer, and a space bar. (From a letter to Turing: "Pardon the use of the typewriter: I have come to prefer discrete machines to continuous ones.")[57] The mathematical model of 1936 is no longer a hermaphrodite of a machine and a mere tool. As a feedback system it beats all the Remingtons, because each step is controlled by scanning the paper strip for the sign or its absence, which amounts to a kind of writing: it depends on this reading whether the machine keeps the sign or erases it, or, vice versa, whether it keeps a space blank or replaces it with a sign, and so on and so forth.

That's all. But no computer that has been built or ever will be built can do more. Even the most advanced Von Neumann machines (with program storage and computing units), though they operate much faster, are in principle no different from Turing's infinitely slow model. Also, while not all computers have to be Von Neumann machines, all conceivable data processing machines are merely a state n of the universal discrete machine. This was proved mathematically by Alan Turing in 1936, two years before Konrad Zuse in Berlin built the first programmable computer from simple relays. And with that the world of the symbolic really turned into the world of the machine.[58]

Unlike the history to which it put an end, the media age proceeds in jerks, just like Turing's paper strip. From the Remington via the Turing machine to microelectronics, from mechanization and automatization to the implementation of a writing that is only cipher, not meaning—one century was enough to transfer the age-old monopoly of writing into the

omnipotence of integrated circuits. Not unlike Turing's correspondents, everyone is deserting analog machines in favor of discrete ones. The CD digitizes the gramophone, the video camera digitizes the movies. All data streams flow into a state n of Turing's universal machine; Romanticism notwithstanding, numbers and figures become the key to all creatures.

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