Gramophone, Film, Typewriter

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October, Vol. 41. (Summer, 1987), pp. 101-118.

Stable URL:

http://links.jstor.org/sici?sici=0162-2870%28198722%2941%3C101%3AGFT%3E2.0.CO%3B2-F

October is currently published by The MIT Press.

Gramophone, Film, Typewriter

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Optical fiber networks. Soon people will be connected to a communication channel which can be used for any kind of media — for the first time in history or for the end of history. When films, music, phone calls, and texts are able to reach the individual household via optical fiber cables, the previously separate media of television, radio, telephone, and mail will become a single medium, standardized according to transmission frequency and bit format. Above all, the optoelectronic channel will be immunized against disturbances that might randomize the beautiful patterns of bits behind the images and sounds. Immunized, that is, against the bomb. For it is well known that nuclear explosions may send a high intensity electromagnetic pulse through traditional copper cables and cripple the connected computer network.

The Pentagon is capable of truly far-sighted planning. Only the substitution of optical fibers for conducting cables can accommodate the enormous rates and volume of bits that are presupposed, produced, and celebrated by electronic warfare. Then all early warning systems, radars, missile bases, and army headquarters on the opposite coast, in Europe,[1] will finally be connected to computers, safe from an electromagnetic pulse and able to function when needed. And for the intervening period there is even the by-product of pleasure: people can switch to any medium for their entertainment. After all, optical fibers can transmit any imaginable message but the one that counts — the one about the bomb.

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1.   Karl Haushofer — who, "though not the author of the technical term *geopolitics*," was nevertheless "its main representative in its German version" — prophesized: "After the war, the Americans are going to appropriate a more or less wide strip of the European west and south coasts, and simultaneously annex England, thus fulfilling Cecil Rhodes's ideal from the opposite coast. They will thereby act in accordance with the age-old ambition of every naval power to gain control over the opposite coast(s) in order completely to dominate the ocean in between. The opposite coast is at least the entire east coast of the Atlantic, and — in order to round off the domination over the 'seven seas' — possibly also the entire west coast of the Pacific. In so doing, America wants to connect the outer crescent to the 'axis'" (Karl Haushofer, "Nostris ex ossibus. Gedanken eines Optimisten" [1944], in Hans-Adolf Jacobsen, *Karl Haushofer. Leben und Werk,* Boppard,/Rhein, 1979, vol. II, pp. 635, 639).

But even now, before the end, something is coming to an end. The general digitalization of information and channels erases the difference between individual media. Sound and image, voice and text have become mere effects on the surface, or, to put it better, the interface for the consumer. Sense and the senses become mere glitter. Their media-produced glamour will last throughout the transitional period as a waste product of strategic programs. In computers everything becomes number: imageless, soundless, and wordless quantity. And if the optical fiber network reduces all formerly separate data flows to one standardized digital series of numbers, any medium can be translated into another. With numbers nothing is impossible. Modulation, transformation, synchronization; delay, memory, transposition; scrambling, scanning, mapping—a total connection of all media on a digital base erases the notion of the medium itself. Instead of hooking up technologies to people, absolute knowledge can run as an endless loop.

But right now there are still media; there is still entertainment. One is informed—mainly, unfortunately, thanks to jumbo jets. In the jumbo jet, media are more densely connected than in most places. They remain separate, however, according to their technological standard, frequency, user allocation, and interface. The crew is connected to radar screens, diode displays, radio beacons, and nonpublic channels. The crew members have deserved their professional earphones. Their replacement by computers is only a question of time. But the passengers can benefit only from yesterday's technology and are entertained by a canned media mixture. With the exception of books, that ancient medium which needs so much light, all the entertainment techniques are represented. The passengers' ears are listlessly hooked up to one-way earphones, which are themselves hooked up to tape recorders and thereby to the record industry. Their eyes are glued to Hollywood movies, which in turn must be connected to the advertising budget of the airline industry—otherwise they would not so regularly begin with takeoffs and landings. Not to mention the technological medium of the food industry to which the mouths of the passengers are connected. A multi-media embryonic sack supplied through channels or navels that all serve the purpose of screening out the real background: noise, night, and the cold of an unlivable outside. Against that there is muzak, movies, and microwave cuisine.

The technological standard of today, and not only of the jumbo jet, can be described in terms of partially connected media systems. All can still be described in the terms McLuhan provided. According to him, the contents of one medium are always other media: film and radio constitute the content of television; record and tape the content of radio; silent movie and magnetic sound that of cinema; text, telephone, and telegram that of the semi-media monopoly of the postal service.[2] Since the beginning of this century, when Lieben in Germany and

2.   In West Germany, in contrast to the U.S., telephone and telegraph services are subject to the federal postal service. — trans.

deForest in California developed the electronic tube, it has become possible, in principle, to amplify and transmit signals. The vast systems of connected media that have come to exist since the '30s can tap into writing, film, and phonography — the three storage media — and connect and emit their signals at will.

But between those systems of connected media there are incompatible data channels and differently formatted data. Electrotechnics and electronics are not quite the same. Within the spectrum of the general data flow, television and radio, cinema and the postal service function like individual windows for one's sense perception. In contrast to the perfected optoelectronic future, today infra-red radiation or radar echoes of approaching missiles are still sent over separate channels. Our systems of connected media can only distribute words, sounds, and images as they are sent and received by people. Above all, the systems do not compute data. They do not produce an output which, under computer control, would transform any algorithm into any interface effect, to the point at which people will no longer be able to make sense of their senses. Right now only the transmission quality of the storage media, which in the connected media systems represents the content, is being computed. A compromise between engineers and sales people regulates the degree to which the sound from a television set can be poor, the pictures in the cinema can be fuzzy, or a beloved voice on the telephone can be filtered. The dependent variable of this compromise is what we take for our sense perception.

A composite consisting of a face and a voice, which, as in the case of Kennedy, remains calm during a TV debate, even when faced by someone like Richard Nixon, is telegenic and wins presidential elections. Voices which would become traitors in an optical close-up, however, are called *funkisch* ("radiogenic") and rule over the VE301, the *Volksempfänger* of World War II. For, as a student of Heidegger, one of Germany's early commentators about radio, remarks, "Death is primarily a radio topic."[3]

But what we take for our sense perception has to be fabricated first. The domination and the connection of technical media presuppose a particular kind of coincidence, in Lacan's terms: something had to stop not writing itself. Long before the electrification of the media, that is, even before their electronic end, there were modest, merely mechanical apparatuses. Those apparatuses could neither amplify nor transmit, but they could still store data for our sense perception: there was the silent movie for sights and Edison's phonograph for sounds. (Note that Edison's apparatus — in contrast to Berliner's later gramophone disk — could also be used for the recording of sound.)

On December 6, 1877, Thomas Alva Edison, lord of the first research laboratory in the history of technology, presented the prototype of the phono-

3.   Wilhelm Hoffmann, "Vom Wesen des Funkspiels" (1933), in Gerhard Hay, ed., *Literatur und Rundfunk 1923–1933*, Hildesheim, 1975, p. 374.

graph. In the same town of Menlo Park, on February 20, 1892, the so-called kinetoscope was completed. Thus, three years later the Lumière brothers in France (or the Skladanowsky brothers in Germany) only had to provide a means of projection for this apparatus in order to turn Edison's kinetoscope into our cinema.

Since this epoch-making event storage systems have been developed that can record and reproduce the temporal flow of acoustic and optical data. Ear and eye have become autonomous. This has brought about a far more radical change than have lithography and photography, which in the first third of the nineteenth century merely propelled the work of art into the age of mechanical reproduction (according to Walter Benjamin's thesis). Media "define what constitutes reality"[4]; they are always already ahead of aesthetics.

What was new about the storage capability of the phonograph and cinematograph—and both names refer, not accidentally, to writing—was their ability to store time: as a mixture of audio frequencies in the acoustic realm, as a movement of single picture sequences in the optic realm. Time, however, is what determines the limits of all art. The quotidian data flow must be arrested before it can become image or sign. What is called style in art is only the switchboard of these scannings and selections. The same switchboard also controls those arts that administrate in writing a serial, that is, a temporally transposed data flow. In order to store the sound sequences of speech, literature has to arrest them in the system of twenty-six letters and thereby exclude noise sequences from the beginning. It is no coincidence that this system includes, as a subsystem, the seven tones, the diatonic system from a to h that forms the foundation of occidental music. In order to fix an acoustic chaos assaulting European ears as exotic music—according to the suggestion of the musicologist von Hornbostel—one first of all interpolates a phonograph, which can record the chaos in real time and reproduce it in slow motion. When the rhythms then become paralyzed and the "individual measures, even individual sounds resound," occidental alphabetism, with its staves, can proceed to an "exact notation."[5]

Texts and scores were Europe's only means to store time. Both are based on writing; the time of this writing is symbolic (in Lacan's terms). This time memorizes itself in terms of projections and retrievals—like a chain of chains. Nevertheless, whatever runs 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, if they were real streams of data, had to pass through the defile of the signifier. Alphabetic monopoly, grammatology.

If the film called history is wound back, it will become an endless loop. What soon will end in the monopoly of bits and fiber optics began with the

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4.   Norbert Bolz, "Die Schrift des Films," in *Diskursanalysen 1: Medien*, Wiesbaden, 1986, p. 34.
5.   Otto Abraham and Erich Moritz von Hornbostel, "Über die Bedeutung des Phonographen für vergleichende Musikwissenschaft," *Zeitschrift für Ethnologie*, no. 36 (1904), p. 229.

monopoly of writing. History was that homogenous field which, as a subject in school curricula, included only cultures with written language. Mouths and graphisms dropped out into prehistory. Otherwise events and their stories could not have been connected.[6] The commands and judgments, the announcements and prescriptions that gave rise to mountains of corpses—military and juridical, religious and medical—all went through the same channel that held the monopoly on the descriptions of those mountains of corpses. This is why anything that ever happened ended up in libraries.

And Foucault, the last historian or the first archeologist, had only to look it up. The suspicion that all power comes from archives to which it returns could be brilliantly illustrated, at least within the legal, medical, and theological fields. This is the tautology of history or merely its calvary and tomb. For libraries, the archeologist's rich places of discovery, gathered and catalogued papers which differed greatly according to address, degree of secrecy, and writing technique: Foucault's archive as entropy of a post office.[7] Before it falls into libraries, even writing is a communication medium of which the archeologist only forgot the technology. That is why his analyses end immediately before that point in time when other media penetrated the library's stacks. For sound archives or towers of film rolls, discourse analysis becomes inappropriate.

Nevertheless, as long as there was history, it was indeed Foucault's "endless bleating of words."[8] More simply, but not less technically than the fiber optics of the future, writing functioned as the general medium. For that reason the term *medium* did not exist. For whatever else was going on dropped through the filter of letters or ideograms.

"Literature," Goethe wrote, "is the fragment of fragments; the least of what had happened and of what had been spoken was written down; of what had been written down, only the smallest fraction was preserved."[9]

Accordingly, today oral history confronts the writing monopoly of the historians; accordingly, a media theoretician like Walter J. Ong, who, particularly in his function as a Jesuit priest, must take a professional interest in the spirit of the Pentecostal mystery, celebrates a primal orality of tribal cultures, as opposed to the secondary orality of our media acoustics. But that kind of research was inconceivable as long as the opposite of "history" used to be simply (again in Goethe's terms) "legend."[10] Prehistory disappeared in its mythical name; Goethe's definition of literature did not even have to mention optical or

6.   *Geschichte*, the German word for history, means both "story" and "history."—trans.
7.   See Rüdiger Campe, "Pronto! Telefonate und Telefonstimmen," in *Diskursanalysen 1: Medien*, Wiesbaden, 1986, pp. 70ff.
8.   Michel Foucault, *Schriften zur Literatur*, Munich, 1974, p. 101.
9.   J. W. Goethe, *Wilhelm Meisters Wanderjahre!* (1829), *Sämtliche Werke*, Jubiläums-Ausgabe, Eduard von der Hellen, ed., Stuttgart and Berlin, 1904, vol. XXXVIII, p. 270.
10.   J. W. Goethe, *Die Farbenlehre* (1810), *Sämtliche Werke*, vol. XXXX, p. 148. (The German word for legend, *Sage*, derives from *sagen*, "to say."—trans.)

acoustical data flows. And under pretechnical, though literary, conditions even legends, those spoken segments of what had happened, could last only when they had been fixed in writing. Since it has become possible, however, to record on tape the epics of those last Homeric bards, who until recently were wandering through Serbia and Croatia, oral mnemotechniques or cultures can be reconstructed in an altogether new way.[11] Then even Homer's rosy-fingered Eos is transformed from a goddess into a piece of chrome dioxide, which used to be stored in the memory of those rhapsodists and could be combined with other pieces into whole epics. Primal orality or oral history are technological shadows of the apparatuses which they can document, only, however, after the end of the writing monopoly.

Writing can store only writing, no more, no less. The holy books testify to this fact. The second book of Moses, chapter twenty, fixes a copy of what Jaweh originally had written with his own finger on two stone tablets: the law. Of the thunder and lightning, the dense cloud and very powerful trumpet that accompanied the writing-down on the holy mountain of Sinai, the Bible could store nothing but mere words.[12]

Even less is handed down of the nightmares and visitations that came to a nomad called Mohammed after his flight to the holy mountain of Hira. The Koran does not begin until, in place of the many demons, the one God rules. Archangel Gabriel descends from the seventh heaven with a roll of scripture and the command to decipher it. "Read," he says to Mohammed, "read in the name of your Lord, who has created all and made man out of his own coagulated blood. Read, in the name of your Lord, the glorious, who taught man the use of the quill and all he did not know before."[13]

But Mohammed answers that he, the nomad, does not know how to read, not even the divine message about the origin of writing and reading. The archangel has to repeat his command before this illiterate man can become the founder of a book religion. For soon, or all too soon, the illegible roll starts making sense and offers to Mohammed's magically alphabeticized eyes exactly that text that Gabriel already uttered twice as the oral command. It is the twenty-sixth sura that, according to all traditions, was at the beginning of Mohammed's enlightenment—a beginning which then has "to be learnt by heart by the believers, to be written down on primitive surfaces such as palm leaves, stones, wood, bones, and leatherpieces, and to be recited again and again by Mohammed and elect believers, especially during Ramadan."[14]

11.   See Walter J. Ong, *Orality and Literacy: The Technologizing of the World*, London and New York, 1982, p. 27, and, more clearly, p. 3.
12.   See the second book of Moses, 24:12 to 34:28.
13.   *Koran*, 96, V. 1–6.
14.   L. W. Winter, ed., *Der Koran. Das Heilige Buch des Islam*, Munich, 1959. p. 6.

Thus, writing stores only the fact of its authorization. It celebrates the storing monopoly of the god who has invented it. And because this god rules over signs that are not meaningless only for readers, all books are books of the dead, like those from Egypt that stand at the beginning of literature.[15] The realm of the dead beyond the senses to which they lure us coincides with the book itself. When Zeno asked the delphic oracle what was the best way to live, the answer he was given was: "'To mate with the dead.' Which he understood as the equivalent of to *read* the *ancients*."[16]

How the teaching of a god who taught the use of quills went from Moses and Mohammed to simpler and simpler people — this tedious history can be written by no one, since this would be history itself. Comparable to how, in electronic warfare, the memory capacities of the computers will soon coincide with the war itself, gigabyte upon gigabyte shall exede all the processing capacities of historians.

Suffice it to say that one day — in Germany, perhaps, this was already so at the time of Goethe — the homogenous medium of writing was additionally homogenized by the state apparatus. General compulsory school attendance pulled a hide of paper over everyone. No longer a "misuse of language" (according to Goethe) struggling with cramped muscles and individual letters, they learned a way of writing which went on even in darkness or intoxication. They learned a "silent and private way of reading" which, as a "sad surrogate of speech,"[17] could easily consume letters, bypassing the oral organs. Whatever they were emitting or receiving was writing. And since whatever exists depends on what can be posted, the bodies themselves were submitted to the regime of the symbolic. This is unthinkable today, but it was once a reality: no movie stored the movements that they produced or perceived, no phonograph the noises they uttered or heard. For whatever existed failed before time. Silhouettes or pastel drawings fixed the play of features, and the staves failed before the noise. But whenever a hand would take the quill a miracle occurred. Then that body that had not yet stopped not writing itself would curiously, unavoidably leave traces.

> I am ashamed to admit it. I am ashamed of my handwriting. It exposes my naked mind. In that handwriting I am more naked than when I get undressed. No leg, no breath, no dress, no sound. Neither a voice nor an image. Everything is emptied out. Instead the full man is shriveled, shrunk, and stunted into his scribbling. His lines are all that is left of him and his propagation. The unevenness between the upstroke and the blank paper, minimal and hardly to be felt by the fingertips of a

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15.   See Aleida and Jan Assman, eds., *Schrift und Gedächtnis. Archäologie der literarischen Kommunikation I*, Munich, 1983, p. 268.
16.   Friedrich Nietzsche, *Geschichte der griechischen Literatur* (1874), *Sämtliche Werke*, Musarion-Ausgabe, Munich, 1922–29, vol. V, p. 213.
17.   J. W. Goethe, *Aus meinen Leben. Dichtung und Wahrheit* (1811–14), *Sämtliche Werke*, vol. XXII, p. 279.

blind man, forms the last proportion that comprises the fellow once
again in his totality.[18]

The shame that overcomes the hero of Botho Strauss's *Widmung* whenever
he sees his own handwriting exists only as an anachronism. The fact that the
minimal unevenness between upstrokes 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, without any competition, hand-
writing could guarantee the perfect securing of traces. It wrote and wrote, in an
energetic and ideally uninterrupted flow. For in this continuous flow of ink or
letters the alphabetic individual had, as Hegel correctly observed, "its appear-
ance and exteriority."[19]

And what applies to writing also applies to reading. Even if the alphabeti-
cized individual of the "writer" finally had to fall out of the private exteriority of
his handwriting into the anonymous exteriority of print in order to secure
beyond distance and death "what is left of him and his propagation" —
alphabeticized individuals called "readers" could nevertheless reverse those ex-
teriorizations. "If one reads correctly," Novalis wrote, "the words in us will be
unfolded into a visible world."[20] And his friend Schlegel added that "one be-
lieves one hears what one merely reads."[21] Perfect alphabetism was supposed to
supplement precisely those optical and acoustical data flows which refused to stop
not writing themselves under the monopoly of writing. In order to naturalize
writing, writing had to be made painless, and reading had to become silent.
Educated people who could skim letters were provided with sights and sounds.

Around 1800 the book became both film and record simultaneously — not,
however, as a media technological reality, but only in the imaginary of readers'
souls. General compulsory school attendance and new technologies of alphabeti-
zation helped to bring about this new reality. As a surrogate of unstorable data
flows the book came to power and glory.[22]

In 1774 an editor named Goethe had the handwritten letters or *The Sorrows
of Young Werther* printed. Even the "unknown masses" (as they are called in the
Dedication of *Faust*) "should have the chance to hear a song," which, "like an old,

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18.   Botho Strauss, *Die Widmung. Eine Erzählung,* Munich, 1977, pp. 21ff.
19.   G. W. F. Hegel, *Phänomenologie des Geistes* (1807), *Gesammelte Werke,* Hamburg, 1968ff., vol. 8,
p. 42. Kittler uses the neologism *alphabetisiert* (literally "alphabeticized") to refer to a literate
individual. German has no precise word meaning "literate," whereas it does have the noun *Analpha-
bet* which means "illiterate" — ed.
20.   Friedrich von Hardenberg (Novalis), *Das allgemeine Brouillon* (1798–99), *Schriften,* Paul
Kluckhohn and Richard Samuel, eds., Stuttgart, Berlin, Cologne, Mainz, 1960–75, vol. III, p. 377.
21.   Friedrich Schlegel, *Über die Philosophie* (1799), *Kritische Ausgabe,* Ernst Behler, ed., Munich,
Paderborn, Vienna, 1958ff., vol. VIII, p. 42.
22.   See Friedrich Kittler, *Aufschreibesysteme 1800/1900,* Munich, 1985, pp. 115–130.

almost forgotten legend," evoked "first love and friendship."[23] This exactly describes poetry's new road to success: voices or handwritings are unnoticeably turned into Gutenbergiana. For the same reason, we find Werther's last letter before his suicide still sealed, though not yet mailed off, giving his lover the promise of poetry itself: during their lifetime she would have to remain the wife of the unlovable Albert, but thereafter, "before the eyes of the infinite being," she would be united with her lover in an "eternal embrace."[24] And indeed, that addressee of the handwritten love letters which were given into print by a mere editor/author was to be rewarded with the same kind of immortality as the novel itself. The novel, and only the novel, will constitute that "beautiful world"[25] in which, also in 1809, the lovers in Goethe's *Elective Affinities* "will once reawaken united" according to the hopes of the novelist.[26] During their lifetime Eduard and Ottilie already had a marvellously similar handwriting. Therefore, their death had to take them into a paradise which, under the storage monopoly of writing, used to be called poetry.

And it might very well be that that paradise was more real than our media-manipulated senses can imagine. The suicides among *Werther's* readers might have perceived their hero, if they only read correctly, in a real, visible world. And the lovers among Goethe's female readers, like Bettina Brentano, might very well have died with the heroine of his *Elective Affinities* in order to be reborn through "Goethe's genius" "into a more beautiful youth."[27] Possibly the perfect readers of 1800 were a living answer to the question with which, in 1983, Chris Marker ends 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 January in Tokyo, or rather I remember the images that I filmed in January in Tokyo. They have put themselves in the place of my memory, they *are* my memory. I ask myself how people remember if they do not make movies, or photographs, or tapes, how mankind used to go about remembering.[28]

It is the same with language in which one has merely the choice of remembering the words and losing the meaning or, vice versa, of remembering the

23.   J. W. Goethe, *Zueignung* (1797), *Sämtliche Werke*, vol. XIII, pp. 3ff. For the reasons why even a fully alphabetized literature simulated orality, see Heinz Schlaffer, introduction to Jack Goody, Ian Watt, and Kathleen Gough, *Entstehung und Folgen der Schriftkultur*, Frankfurt/Main, 1986, pp. 20–22.
24.   J. W. Goethe, *Die Leiden des jungen Werther* (1774), *Sämtliche Werke*, vol. XVI, p. 137.
25.   Walter Benjamin, *Goethes Wahlverwandtschaften* (1924–25), *Gesammelte Schriften*, Rolf Tiedemann and Hermann Schweppenhäuser, eds., Frankfurt/Main, 1972–85, vol. I, part 1, p. 200.
26.   J. W. Goethe, *Die Wahlverwandtschaften* (1809), *Sämtliche Werke*, vol. XXI, p. 302.
27.   Bettina Brentano, *Goethes Briefwechsel mit einem Kinde* (1835), *Bettina von Arnim, Werke und Briefe*, Gustav Konrad, ed., Frechen, 1959–63, vol. II, p. 222.
28.   Chris Marker, *Sans Soleil. Unsichtbare Sonne. Vollständiger Text zum gleichnamigen Film-Essay*, Hamburg, 1983, pp. 23ff.

meaning and losing the words in doing so.[29] As soon as optical and acoustical data can be put into some kind of media storage, people no longer need their memory. Its "liberation" is its end.[30] As long as the book had to take care of all serial data flows, however, words trembled with sensuality and memory. All the passion of reading consisted of hallucinating a meaning between letters and lines: the visible or audible world of romantic poetry. And all passion of writing was (according to E.T.A. Hoffmann) the poet's wish "to pronounce the inner being" of these hallucinations "in all its glowing colors, shadows, and lights" in order to "hit the favorable reader as if with an electric shock."[31]

Electricity itself has brought this to an end. If memories and dreams, the dead and the specters have become technically reproducible, then the hallucinatory power of reading and writing has become obsolete. Our realm of the dead is no longer in books, where it was for such a long time. No longer is it the case that "only through writing will the dead remain in the memory of the living," as Diodor of Sicily once wrote.

The writer Balzac was already overcome by fear when faced with photography, as he confessed to Nadar, the great pioneer of photography. If the human body (according to Balzac) on the one hand consists of infinitely thin layers of "specters," and if on the other hand the human spirit cannot be made of nothing, then the daguerreotype must be a shady trick: it fixes, that is, steals those layers, one after the other, until finally nothing remains of those "specters" and of the human body itself.[32] Photo albums establish an infinitely more precise realm of the dead than Balzac's *Comédie humaine*, the competing literary enterprise. In contrast to the arts, the work of media is not limited to the grid of the symbolic. Media can reconstruct bodies beyond the systems of words, colors, or sound intervals. It is only media that can fulfill the "high standards" which we have applied to the "image" since the invention of photography. According to Rudolf Arnheim: "It [the image] is not only supposed to resemble the object, but it is also supposed to guarantee this resemblance by being the product of this object itself, i.e., by being mechanically produced by it — in the same way as the illuminated objects in reality mechanically imprint their image onto the photographic layer";[33] or, as the frequency curves of noises inscribe themselves onto the phonographic plate.

A reproduction authenticated by the object itself has physical precision. This kind of reproduction refers to the real of bodies which necessarily slips

29.   See Gilles Deleuze, "Pierre Klossowski ou les corps-language," *Critique*, no. 21 (1965), p. 32.
30.   See André Leroi-Gourhan as quoted in Jacques Derrida, *Of Grammatology*, trans. Gayatri Chakravorty Spivak, Baltimore, 1976.
31.   E.T.A. Hoffmann, *Der Sandmann* (1816), *Späte Werke*, Walter Müller-Seidel, ed., Munich, 1960, p. 343.
32.   See Nadar, "My Life as a Photographer," *October*, no. 5 (Summer 1978), pp. 7–28.
33.   Rudolf Arnheim, "Systematik der frühen kinematographischen Erfindungen" (1933) in Helmut H. Dieterichs, ed., *Kritiken und Aufsätze zum Film*, Munich, 1977, p. 27.

through all the symbolic grids. Media always already provide the appearances of specters. For, according to Lacan, in the real even the word *corpse* is already a euphemism.[34]

And the tapping specters of the spiritistic séances, with their messages from the realm of the dead, appeared quite promptly at the moment of the invention of the Morse alphabet in 1837. Promptly, photographic plates—even and especially with the camera shutter closed—provided images of ghosts or specters which, in their black-and-white fuzziness, only emphasized the moments of resemblance. Finally, one of the ten uses Edison predicted (in 1878, in the *North American Review*) for the recently invented phonograph was to preserve the "last words of the dying."

From those kinds of "family archives,"[35] with their special attention to the returning dead, it was only a small step to fictions which connect the living and the dead via telephone cables. This was something wished for by Leopold Bloom on the occasion of his visit to the Dublin cemetery.[36] It had already been turned into science fiction by Walther Rathenau in his double role as chairman of the board of AEG and as a writer. In his story *Resurrection Co.*, the cemetery administration of a town—Necropolis, Dakota, USA—reacts to the scandal of people being buried alive by founding a daughter company, the Dakota and Central Resurrection Telephone and Bell Co., with a capital stock of $750,000 and the sole purpose of ensuring that even the inhabitants of graves are connected to the public telephone network. Whereupon the dead take advantage of their opportunity and, long before McLuhan, proceed to prove that the content of each medium is another medium—which is, in this concrete case, a specific professional deformation.[37]

Paranormal voices on tape or radio, as they have been spiritistically researched since 1959 and preserved even in rock music since Laurie Anderson's 1982 release, *Big Science*, tend to tell their researchers only their preferred

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34. Jacques Lacan, *Le séminaire, livre II: Le moi dans la théorie de Freud et dans la technique de la psychanalyse*, Paris, 1978.

35. Thomas Edison, quoted in Roland Gelatt, *The Fabulous Phonograph 1877–1977: From Edison to Stereo*, New York, 1977, p. 29. Phonograph recordings of last words presuppose that "physiological time *is not reversible*" and that "in the realm of rhythm and time there is absolutely no symmetry" (Ernst Mach, *Beiträge zur Analyse der Empfindungen*, Jena, 1886, p. 108).

36. See John Brooks, "The First and Only Century of Telephone Literature," in Ithiel de Sola Pool, ed., *The Social Impact of the Telephone*, Cambridge, Massachusetts, 1977, pp. 213ff.

37. Walther Rathenau, *Gesammelte Schriften*, Berlin, 1918–29, vol. IV, p. 347. Two examples of professional deformation among the dead of Necropolis: "A writer is not content with his epitaph. An employee of the telephone company rings in short and long intervals, signaling, in a kind of Morse code, a criticism of his successor." King Alexander, the protagonist of Bronnen's *Ostpolzug*, says all there is to say about telephonitis and Hades while, according to the stage directions, the telephone is ringing: "Oh, you black beast, growing on fatty brown stems, you flower of untimeliness, you rabbit of dark rooms! Your voice is our beyond, and it has displaced heaven" (Arnolt Bronnen, *Ostpolzug* (1926), *Stücke*, Hans Mayer, ed., Kronberg, 1977, vol. I, p. 133.

wavelengths.[38] This is quite comparable to the case of Judge Schreber, in which, in 1898, a paranormal "base or nerve language" of beautiful autonomy revealed its code and channels,[39] that is, when channel and message became one. "You just have to choose a talk show station of the middle, short, or long wave, or the so-called white noise, a noise in between two stations, or the "Jürgenson wave," which, depending on your location, is to be found between 1450 and 1600 kHz, between Vienna and Moscow."[40] You then connect a tape recorder to the radio and, when you replay the tape, you will hear ghost voices which do not originate from any known station, but which will, like any official newscaster, result in sheer advertising for the radio. For the location and the existence of such a "Jürgenson wave" has been pinpointed by "Friedrich Jürgenson, the nestor of vocal research."[41]

The realm of the dead has the same dimensions as the storage and emission capacities of its culture. Media, as you can read in Klaus Theweleit, are always already flight apparatuses into the other world. If grave stones stood as symbols at the beginning of culture,[42] our media technology can bring back all the gods. The old lamentations about temporality that always used to measure the distance between writing and sensuality have been suddenly silenced. In the media land-scape immortals have come to exist again.

War on the Mind is the title of a book on psychological strategies of the Pentagon. In it we are told that the planning staff for electronic warfare, which is merely continuing the battle of the Atlantic,[43] has already made lists of those days that mean luck or mishap for other peoples. This allows the U.S. Air Force "to choose the time of a bomb attack in accordance with the predictions of some local god." Voices of those gods have been tape recorded in order to be able "to frighten primitive native guerillas and confine them to their villages" when played from a helicopter. And finally, the Pentagon has had developed special film projectors which can project those tribal gods on low-hanging clouds.[44] The technologically implemented beyond. . . .

There is no need to mention that the lists of those good and black days are not kept in the Pentagon in the form of manuscripts. Office technology keeps up with media technology. Cinema and phonograph, Edison's two great develop-ments, which inaugurated our present, have their third term in the typewriter.

38.   Indeed, the song "Example #22" montages the announcements and sound of "Beispiels Nr. 22" ("Hier spricht Edgar" [Hildegard Schäfer, *Stimmen aus einer anderen Welt*, Freiburg, 1983, p. 11]), which must have wandered on a paranormal cassette-to-book from Freiburg to the U.S.
39.   See Jacques Lacan, *Ecrits: A Selection*, trans. Alan Sheridan, New York, 1977, p. 184.
40.   Schäfer, p. 3.
41.   *Ibid.*, p. 2.
42.   See Jacques Lacan, *Ecrits*, Paris, 1966.
43.   See Don E. Gordon, *Electronic Warfare: Element of Strategy and Multiplier of Combat Power*, New York, 1981, *passim*.
44.   Peter Watson, *War on the Mind: The Military Uses and Abuses of Psychology*, New York, 1978.

The authors of books and their publishers, however, have become so accustomed to dealing with typescripts that cultural histories, which recently have regained so much popularity, generally tend to forget about the typewriter. Since 1865 (in Europe) or 1868 (in America) writing has no longer consisted of those ink or pencil traces of a body, whose optical or acoustical signals were irretrievably abandoned in order that the readers, at least, might flee into the surrogate sensuality of handwriting. In order to allow for a series of sounds and sights to be stored, the old European storage technique had first of all to be mechanized. Hans Magnus Johan Malling Hansen in Copenhagen and Christopher Latham Sholes in Milwaukee developed typewriters that could be mass-produced. Edison thought highly of the potential of this invention at the time when Sholes went to see him in Newark to show him his recently patented model and to invite the man who had invented invention itself to cooperate with him.[45]

But Edison turned the offer down—almost as if the phonograph and the kinetoscope had, already in 1868, been waiting for their inventor, thus limiting his time. Instead, the offer was accepted by an arms manufacturer that had been suffering from a loss in sales since 1865. Remington, and not Edison, took over the discourse machine-gun from Sholes.

Finally, it was not the marvellous One from whom the three media of our age would have sprung. At the beginning of our age there is quite the opposite situation: there is division or differentiation.[46] On the one hand there are two technical media which can, for the first time, fix unwritable data flows; on the other hand there is "something in between tool and machine," as Heidegger wrote so precisely about the typewriter.[47] On the one hand there is the entertainment industry with its new forms of sensuality; on the other hand there is a writing which already separates body and paper in the process of production, not just in the process of reproduction (as in the case of Gutenberg's movable type). The letters and their order are standardized from the beginning as type and keyboard, while media are placed in the noise of the real—as the fuzziness of the pictures in the cinema, as the hissing on tape.

In a standardized text, paper and body, writing and soul fall apart. Typewriters do not store an individual, their letters do not transmit a beyond which could be hallucinated by perfect alphabets as meaning. Everything which, since Edison's two innovations, can be taken over by the technical media disappears

45.   See Alfred Walze, "Auf den Spuren von Christopher Latham Sholes. Ein Besuch in Milwaukee, der Geburtsstätte der ersten brauchbaren Schreibmaschine," *Deustche Stenografenzeitung*, 1980, p. 133.
46.   See Niklas Luhmann, "Das Problem de Epochenbildung und die Evolutionstheorie," in Hans-Ulrich Gumbrecht and Ulla Link-Heer, eds., *Epochenschwellen und Epochenstrukturen im Diskurs der Literatur- und Sprachhistorie*, Frankfurt/Main, 1985, pp. 20–22.
47.   Martin Heidegger, *Parmenides* (1942–43), *Gesamtausgabe*, Manfred S. Frings, ed., Frankfurt/Main, 1982, part 2, vol. 54, p. 127. The professionalism of this assertion is confirmed by Erich Klockenberg, *Rationalisierung der Schreibmaschine und ihre Bedienung*, Berlin, 1926, p. 3.

out of the typescripts. The dream of a real, visible, or audible world arising from the words is over. The historical synchronicity of cinema, phonography, and typewriter separated the data flows of optics, acoustics, and writing and rendered them autonomous. The fact of this differentiation is not altered by the recent ability of electric or electronic media to bring them back together and combine them.

In 1860, five years before Malling Hansen's mechanical writing ball, this first typewriter that could be mass-produced, Keller's *Missbrauchte Liebesbriefe* announced the illusion of poetry: love had only the impossible alternative either to "speak with black ink" or "to let the red blood speak."[48] When typing, filming, and taking photographs become three equal options, however, writing loses those aspects of a surrogate sensuality. Around 1880 poetry becomes literature. It is no longer the red blood of a Keller or the inner forms of a Hoffmann that have to be transmitted by standardized letters; it is a new and beautiful tautology of technicians. According to Mallarmé's instant insight, literature does not mean anything but that it consists of twenty-six letters.[49]

Lacan's "methodological distinction" between the real, the imaginary, and the symbolic is the theory (or merely a historical effect) of this differentiation. The symbolic includes the signs of language in their materality and technicity; that is, they form, as letters and ciphers, a finite set which does not address the philosophical dream of an infinity of meaning. What counts are only differences (or in terms of the typewriter) the spaces between the elements of a system. For that reason the world of the symbolic, in Lacan, is already called "the world of the machine."[50]

The imaginary, however, is constituted as the mirror image of a body which appears to be more perfect as regards its motor control than the body of an infant.[51] The imaginary thereby implements precisely that optical illusion which was being explored at the birth of film. A body that is fragmented or (in the case of the film) cut apart is confronted by the illusory continuity of movements in the mirror or movie. It is not merely accidental that the euphoric reactions of infants at the sight of their double in the mirror were fixed by Lacan in a documentary film.

From the real, nothing more can be brought into the daylight than what Lacan had presupposed in its being given—nothing. It forms that residue or waste which can be caught neither in the mirror of the imaginary nor in the grids of the symbolic: physiological accident, stochastic disorder of bodies.

48.   Gottfried Keller, *Die missbrauchten Liebesbriefe* (1865), in *Die Leute von Seldwyla. Gesammelte Gedichte*, Munich, 1961, p. 376.
49.   See Stéphane Mallarmé, *La littérature. Doctrine* (1893), *Oeuvres complètes*, Henri Mondor and G. Jean-Aubry, eds., Paris, 1945, p. 850.
50.   Lacan, *Le séminaire, livre II*.
51.   Jacques Lacan, "The mirror stage as formative of the function of the I," in *Ecrits: A Selection*, pp. 1–7.

Methodological distinctions of modern psychoanalysis and technical distinctions of the modern media landscape coalesce very clearly. Each theory has its historical a priori. And structuralism as a theory only spells out what has been coming over the information channels since the beginning of this century.

Only the typewriter provides a writing which is a selection from the finite and ordered stock of its keyboard. The typewriter literally illustrates what Lacan shows in terms of the antiquated letter-box. In contrast to the flow of handwriting, here discrete elements separated by spaces are placed side by side. The symbolic has the status of block letters. — Film was the first to store a moving double in which men, as opposed to all other primates, misrecognize their bodies. That is to say that the imaginary has the status of cinema. — And the phonograph was the first to fix what is being produced by our larynx as noise before any semiotic order or semantic units. To obtain pleasure, Freud's patients need no longer want the good of the philosophers; they just have to babble.[52] The real—particularly in the talking cure of psychoanalysis—has the status of phonography.

The technical differentiation of optics, acoustics, and writing around 1880, as it exploded Gutenberg's storage monopoly, made the fabrication of so-called man possible. His essence runs through apparatuses. Machines conquer functions of the central nervous system, not merely the muscular system as they did previously. And it is only then—not yet with the steam engine and railroad— that we have a clean division between matter and information, between the real and the symbolic. In order to invent phonography and cinema, the ancient dreams of mankind do not suffice. The physiology of the eye, ear, and brain have to become objects of research. In order to optimize writing for machines, it must no longer be dreamt of as an expression of individuals or as a trace of bodies. The forms, differences, and frequencies of letters have to be reduced to formulas. So-called man becomes physiology on the one hand and information technology on the other.

When Hegel summed up the perfect alphabetism of his time, he called it spirit. The readability of all history and all discourse transformed man or the philosopher into god. The media revolution of 1880, however, laid the grounds for all theories and practices which could then avoid the confusion of information and spirit. In place of thinking we have Boolean algebra; instead of consciousness we have an unconscious which is transformed from "The Purloined Letter" (at latest with Lacan's reading) into a Markoff-chain.[53] The fact that the symbolic is called the world of the machine liquidates the megalomaniacal assumption of so-called man that he is distinguished by the "quality" of having a "consciousness" and that he is anything more than a computer. For both people

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52.   Jacques Lacan, *Le séminaire, livre XX: Encore*, Paris, 1975, pp. 53, 73.
53.   See Jacques Lacan, "The Seminar on 'The Purloined Letter,'" *Yale French Studies*, no. 48 (1973).

and computers are subject to interpellation by the signifier, that is, both are
programmed. Already in 1874, eight years before he decides to buy a typewriter,
Nietzsche asks himself whether these are still men or simply thinking, writing,
and computing machines.[54]

In 1950 Alan Turing, the practitioner among England's mathematicians,
will answer Nietzsche's question. With formal elegance he shows that the ques-
tion is not a real question. Turing's essay, "Computing Machinary and Intelli-
gence," which appeared in the philosophical periodical *Mind*, of all journals,
proposes an experiment, the so called Turing game:

A computer A and a man B communicate data via some interface connec-
tions of some sort of telewriter. The exchange of texts is monitored by a censor
C that also receives merely written information. A and B pretend to be men. C
has to decide which of the two does not simulate and which of the two is merely
Nietzsche's thinking, writing, and computing machine. But because the machine,
each time it gives itself away by making a mistake or rather by not making any,
can improve its program through learning, the game remains open ended.[55] In
the Turing game man and his simulation coalesce.

This is already the case because the censor C receives no manuscripts, but
plotter outprints or typescripts. Certainly computers could also simulate human
hands, with their routines and occasional mistakes, their so-called individuality,
but Turing, as the inventor of the universal discrete machine, was a typist. He
was not a particularly good typist — not much better than his tom cat, Timothy,
who was allowed to jump on the key board of his typewriter in his chaotic secret
service office[56] — but nevertheless, his typing was less catastrophic than his
handwriting. Already the teachers of the honorable public school Sherborne
could hardly forgive their pupil his chaotic lifestyle and messy handwriting. He
got bad grades for brilliant exams in mathematics only because his "handwriting
was worse than ever seen before."[57] This shows how faithfully schools cling to
their old duty of fabricating quite literally in-dividuals by drilling them in a
beautiful, continuous, and individual handwriting. But Turing, a master in sub-
verting all kinds of discipline and self-cultivation, escaped. He made plans for the
invention of an "incredibly primitive" typewriter.[58]

Those plans were not realized. But when on the meadows of Grantchester,
the meadows of all English lyrics from the romantics to Pink Floyd, he came

54.   Friedrich Nietzsche, *Unzeitgemässe Betrachtungen* (1873–76), *Werke*, Kritische Gesamtausgabe,
Giorgio Colli and Mazzino Montinari, eds., Berlin, 1967ff., vol. 3, part 1, p. 278.
55.   See Alan Turing, "Computing Machinery and Intelligence," *Mind: A Quarterly Review of
Psychology and Philosophy*, no. 59 (1950); see also Andrew Hodges, *Alan Turing: The Enigma*, New
York, 1983, pp. 415–417.
56.   Hodges, p. 279.
57.   *Ibid.*, p. 30.
58.   *Ibid.*, p. 14.

across the idea of the universal discrete machine, the student's dream was real-
ized and transformed. The principle of Sholes's typewriter, patented in 1868, has
survived until today. Only the man or stenotypist who was needed by Remington
& Son for writing and reading has been rendered obsolete by Turing.

And this is so because a Turing machine is even more incredibly primitive
than the Sherborn plan for a typewriter. All it has to deal with are a paper
ribbon, which is at once its program and its data material, its input and its output.
Turing has slimmed down the common typewriter page to this one-dimensional
ribbon. But there are even further economizations: his machine no longer needs
those many redundant letters, cyphers, and signs of a typewriter keyboard; all it
needs is one sign and its absence, 1 and 0. The machine can read this binary
information, or (in Turing's technical word) can *scan* it. It can move the paper
ribbon a space to the right, or a space to the left, or not at all. It moves by jerks
and therefore discretely, like typewriters, which have, in contrast to handwriting,
block letters, back spacers, and space bars. (In a letter to Turing we find:
"Pardon the use of the typewriter: I have come to prefer discrete machines to
continuous ones."[59]) The mathematical model of 1936, however, is no longer a
hermaphrodite between a machine and a mere tool; as a feedback system it beats
all the Remingtons. For the sign on the paper ribbon, or respectively its absence,
which is read, steers the next step, which is a kind of writing: it depends on the
reading whether the machine keeps the sign or erases it or, vice versa, whether it
keeps a space blank or puts a sign on it. And so on, and so on.

That is all. But no computer that will ever be built can do more. Even the
most advanced Von-Neumann machine (with program storage and computing
unit), though faster, is in principle no different from Turing's infinitely slow
model. Furthermore, not every computer has to be a Von-Neumann machine,
while all imaginable computers are only a state n of the universal discrete
machine. In 1936 Turing proved it mathematically, two years before Konrad
Zuse built the first programmable computer out of simple relays.[60] At that point
the world of the symbolic really turned into the world of the machine.

The age of media — as opposed to the history that ends it — moves in jerks,
like Turing's paper ribbon. From the Remington, via the Turing machine, to
microelectronics; from mechanization, via automatization, to the implementa-
tion of a writing which is cypher and not sense — one century sufficed to trans-
form the ancient storage monopoly of writing into the omnipotence of integrated
circuits. Like Turing's correspondents, everything goes from the analogous ma-

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59.   Quoted in Hodges, p. 387.
60.   See Konrad Zuse, *Der Computer. Mein Lebenswerk*, Berlin 1984, p. 41: "Decisive thought, June
19, 1937. There are elementary operations to which all computing and thinking operations can be
reduced. A primitive type of mechanical brain consists of a storage system, a dialing system, and a

chine to the discrete. The compact disc digitalizes the gramophone, the video camera the cinema. All data flows end in a state n of Turing's universal machine; numbers and figures become (in spite of romanticism) the key to all creatures.

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simple apparatus which can treat conditional chains of two or three links. With this form of brain it has to be theoretically possible to solve all puzzles that can be mechanically dealt with, regardless of the time required. More complex brains are merely a matter of the faster accomplishment of those processes.''

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[Footnotes]

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