Friedrich Kittler, Gramophone, Film, Typerwriter, translated by Geoff Winthrop-Young and Michael Wutz (Stanford: Stanford University Press, 1997).

PREFACE

Tap my head and mike my brain,

Stick that needle in my vein.

Pynchon

Media determine our situation which--in spite or because of it--deserves a description.

Situation conferences were held by the German General Staff, grand ones around noon and smaller ones in the evening: in front of sand tables and maps, in war and so-called peace. Until Dr Gottfried Benn, writer and senior army doctor, also charged literature and literary criticism with the task of recognizing the situation. His rationale (in a letter to a friend): "As you know, I sign: On behalf of the Chief of the Army High Command: Dr Benn."[1]

Indeed: in 1941, with the knowledge of files and technologies, enemy positions and deployment plans, and located at the center of the Army High Command in Berlin's Bendlerstraße, it may still have been possible to recognize the situation.[2]

The present situation is more obscure. For one, the pertinent files are kept in archives which will all remain classified for exactly as many years as there still is a difference between files and facts or planned objectives and their realization. Secondly, even secret files suffer a loss of power when real streams of data, bypassing writing and writers, turn out to be unreadable series of numbers circulating between networked computers. Technologies that not only subvert writing but also engulf it and carry it off together with so-called Man render their own description impossible. Increasingly, data flows once confined to books and later to records and films are disappearing into black holes and boxes which, as artificial intelligences, are bidding us farewell on their way to nameless high commands. In this situation we are left with reminiscences only, that is to say, with stories. How it came to pass what is written in no book, books may still be able to record. Pushed to their margins even obsolete media become sensitive enough to register the signs and clues of a situation. Then, as in the case of the sectional plane of two optical media, patterns and moirés emerge: myths, fictions of science, oracles...

This book is a story made up of such stories. It collects, comments and relays passages and texts that show how the novelty of technological media inscribed itself into the old paper of books. Many of these papers are old or maybe even forgotten; but in the founding age of technological media their terror was so overwhelming that literature registered it more acutely than in today's alleged media pluralism in which anything goes, provided it does not disturb the circuits of Silicon Valley assuming global dominance. An information technology, however, whose monopoly is now coming to an end, registers this very information: an aesthetics of terror. What writers astonished by gramophones, films, and typewriters--the first technological media--committed to paper between 1880 and 1920 amounts, therefore, to a ghostly image of our present as future.[3] Those early and seemingly harmless machines capable of storing and therefore separating sounds,

sights and writing, ushered in a technologizing of information which, in retrospect, paved the way for today's self-recursive stream of numbers.

Obviously, stories of this kind cannot replace a history of technology. Even if they were countless they would remain numberless and thus fail to capture the real upon which all innovations are based. Conversely, number series, blueprints, and diagrams never turn back into writing, only into machines.[4] Heidegger said as much with his fine statement that technology itself prevents any experience of its essence.[5] However, Heidegger's textbook-like confusion of writing and experience does not have to be; simple knowledge suffices, instead of philosophical inquiries into the essence of things.

We are able to provide the technological and historical data upon which fictional media texts, too, are based. Only then will the old and the new, books and their technological successors arrive as the information they are. Understanding Media remains--despite McLuhan's title--an impossibility precisely because the dominant information technologies of the day, in turn, control all understanding and its illusions. But blueprints and diagrams, regardless of whether they control printing presses or mainframe computers, may yield historical traces of the unknown we call body. What remains of people is what media can store and communicate. What counts are not the messages or information technologies with which they equip so-called souls for the duration of a technological era, but rather (and in strict accordance to McLuhan) their circuits, the very schematism of perceptibility.

Whosoever is able to hear or see the circuits in the synthesized sound of CDs or in the laser storms of a disco finds happiness. A happiness beyond the ice, as Nietzsche would have said. At the moment of merciless submission to laws whose cases we are, the phantasm of man as the creator of media vanishes. And the situation becomes recognizable.

Already in 1945, in the half-burnt typed minutes of the Army High Command's final conferences, war was named the father of all things: it spawns (in a very free paraphrase of Heraclitus) most technological inventions.[6] And since 1973, when Thomas Pynchon's Gravity's Rainbow was published, it has become clear that real wars are not fought for people or fatherlands, but take place between different media, information technologies, data flows.[7] Patterns and moirés of a situation which has forgotten us...

But in spite or because of it: without the research and contributions of Roland Baumann this book would not have been written. And it would have not have come about without Heidi Beck, Norbert Bolz, Rüdiger Campe, Charles Grivel, Anton (Tony) Kaes, Wolf Kittler, Thorsten Lorenz, Jann Matlock, Michael Müller, Clemens Pornschlegel, Friedhelm Rong, Wolfgang Scherer, Manfred Schneider, Bernhard Siegert, Georg Christoph (Stoffel) Tholen, Isolde Tröndle-Azri, Antje Weiner, David E. Wellbery, Raimar Zons and

Agia Galini, September 1985

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INTRODUCTION

(Illustrations and notes to be added later)

Optical fiber networks. People will be hooked to an information channel which can be used for any kind of media--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 according to transmission frequencies and bit format. The optoelectronic channel in particular will be immune against disturbances that might randomize the pretty bit patterns behind the images and sounds. Immune, that is, against 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 far-sighted 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] will finally be connected to computers safe from EMP and thus remain operational in wartime. In the meantime, pleasure is produced as a by-product: people are free to channel-surf between 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 difference between 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 period as a by-product of strategic programs. Inside the computers themselves everything becomes a number: quantities 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 another. 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; and there still is entertainment.

Today's standard are partially connected media links that can still be described in McLuhan's terms. According to him, the contents of one medium are always other media: film and radio constitute the content of television; records and tapes the content of radio; silent films and audio tape that of cinema; text, telephone and telegram that of the semi-media monopoly of the postal system. Since the beginning of the century, when von Lieben in Germany and deForest in California developed the electronic tube, it has becomes possible to amplify and transmit signals. Accordingly, the large media networks which have been in existence since the thirties can fall back on all three storage media--writing, film, and photography--in order to interface and send their signals at will.

But these links are separated by incompatible data channels and differing data formats. Electric technology 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. Unlike the optical fiber networks of the future, infrared radiations or the radio echoes of approaching missiles are still

transmitted through other channels. 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 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. At this point, only the transmission quality of storage media, which in the media links appear as the content of the media, is being computed. A compromise between engineers and salespeople regulates the degree to which the sound from a TV set can be poor, movie images can be fuzzy, or a beloved voice on the telephone can be filtered. Our sense perceptions are the dependent variable of this compromise.

A composite image made up of a face and voice which remains calm during a televised debate, even when faced by an opponent by the name of Richard M. Nixon, is deemed telegenic and may win a presidential election, as in the case of Kennedy. Voices, however, which an optical close-up would reveal as treacherous, 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. In order for media to link up and achieve dominance, we need a coincidence in the Lacanian sense of the word: that something ceases not to write itself. Prior to the electrification of the media, and well before their electronic end, there were modest, merely mechanical apparatuses. Unable to amplify or to 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 Menlo Park unveiled the so-called kinetoscope. Three years later, the LumiPre brothers in France and the Skladanowsky brothers in Germany merely had to add a means of projection in order to turn Edison's invention into cinema.

Ever since that epochal change we are 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. This 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 mechanical reproduction. 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: 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. In order to record the sound sequences of speech, literature has to arrest them in a system of twenty-six letters, thereby categorically excluding all noise sequences. Not coincidentally, this system also contains, as a subsystem, the seven notes, whose diatonics--from a to h--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

[Insert illustration p. 11]

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 staves 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 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, provided they really were streams of data, had to pass through the bottleneck of the signifier. Alphabetic monopoly, grammatology.

[Insert illustration page 12: The oldest depiction of a print shop (1499) -- as a dance of death]

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 military, religious and medical orders, judgments, announcements and prescriptions, which produced mountains of corpses, were communicated along the very same channel that monopolized the descriptions of 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 in terms of addressee, distribution technique, degree of secrecy and writing technique had been extremely diverse -- 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 "wavelike succession of words."[6] More simply, but no less technical than tomorrow's fiber optic cables, writing functioned as a universal medium--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 such as the Jesuit priest Walter J. Ong, who must have been be concerned with the spirit of the Pentecostal mystery, celebrates a primary orality of tribal cultures as opposed

[Insert caption p. 14: Telephone lines, New York 1888]

to the secondary orality of our media acoustics. Such research remained unthinkable as long as the opposite of "history" was (again in Goethe's terms) simply termed "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 can be reconstructed in a completely different way.[9] Even Homer's rosy-fingered Eos changes from a Goddess into a piece of chrome dioxide, which was stored in the memory of the bard and could be combined with other pieces into whole epics. "Primary orality" or "oral history" came into existence only after the end of the writing monopoly, as the technological shadows of the apparatuses which document them.

Writing, however, stored writing -- no more and no less. The holy books attest to this. The second Book of Moses, chapter 20, contains a copy of what Jahwe'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. It is the 96th sura, with which, according to tradition, Mohammed's illuminations began--in order to then 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]

Thus, writing merely stores the fact of its authorization. It celebrates the storage monopoly of the God who invented it. And since the realm of this God consists of signs that only non-readers can't make sense of, all books are books of the dead, like the Egyptian ones with which literature began.[13] The realm of the dead beyond all senses, into which they lure us, coincides with the book itself. 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] which consumed letters without effort by bypassing oral organs. Whatever they emitted and received was writing. And because only that exists which can be posted, the 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, shrivelled 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 'author' finally had to fall from private exteriority into the anonymous exteriority of print in order to secure "his remains and his propagation"--alphabetized individuals known as 'readers' were able to reverse this exteriorization. "If one reads in the right way," Novalis wrote, "the words in us will unfold 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 which, 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 which educated readers skimmed over provided people with sights and sounds.

Aided by compulsory education and new alphabetisation 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 the 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 to his beloved the very promise of poetry: during her lifetime she will have to remain with Albert, her unloved husband, but afterwards she will 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 which under the storage monopoly of wring was called poetry.

And maybe that paradise was more real than our media-controlled senses can imagine. Reading intently, those among Werther's readers who committed suicide 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" by virtue of 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 the January in Tokyo, or rather I remember the images I filmed in Tokyo in January. They have now put themselves in the place of my memory, they are my memory. I wonder how people remember who do not film, take photos, or record tapes, 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, the memory capacity of humans 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 (in the words of E.T.A. Hoffmann) the passion of all writing was the poet's desire to "describe" the hallucinated "picture in your 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 are no longer in need of the powers of hallucination. Our realm of the dead has withdrawn from 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,"

Balzac the writer 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 layers of "specters," and if the human spirit cannot be created from nothingness, then the daguerreotype must be a sinister trick: it fixes, i. e., 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 infinitely more precise than Balzac's competing literary enterprise, the Comédie 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 intervals. Media, and media only, fulfill the "high standards" which

(according to Rudolf Arnheim) we expect from "reproductions" since the invention 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, i.e., 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.

[Insert illustration p. 22 with caption: spirit photography <1904>]

A reproduction authenticated by the object in question is one of physical precision. It refers to the real of the bodies, which of necessisity 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 spectres 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 ghost 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 1878 in the North American Review, 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 can only wish for in his Dublin graveyard meditations,[34] Walter Rathenau, the AEG chairman of the board and futurist writer, had already turned into Science Fiction. Following a series of scandalous premature burials in 1898, the cemetery administration of Necropolis, Dacota,USA, featured in Rathenau's story "Resurrection Co.," 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 deformation professionelle.[35]

These days, paranormal voices on tape or radio, the likes of which have been spritistically 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 the President of the Senate Schreber: when a paranormal, beautifully autonomous "base or nerve language" revealed its code as well as its channels, message and channel became one. "You just have to choose a talk show station of the middle, short, or long wave, or the so-called 'white noise' between two stations, or the 'Jürgenson wave,' which, depending on where you are, is located around 1450 and 1600kHz between Vienna and Moscow."[38] If you replay a tape that has been connected to the radio, you will hear all kinds of ghost voices which do not originate from any known radio station, but which, 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."[29]

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 grave stones stood as symbols

at the beginning of culture itself,[40] 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 relates that the staffs planning the electronic war, which merely continues the Battle of the Atlantic,[41] have already compiled a list of the propitious and non-propitious days in other cultures. It enables the US 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 in order "to keep tribes in their villages." And finally, the Pentagon has developed special film projectors capable of projecting those gods onto low-hanging clouds.[42] 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, the two great achievements of Edison that ushered in to the present, are complemented by the typewriter. Since 1865 (according to European accounts) or 1868 (according to American), writing is no longer 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 for series of sights and sounds to be stored, Old Europe's only storage technology first had to be mechanized. Hans Magnus Malling Hansen in Copenhagen and Christopher Latham Sholes in Milwaukee developed typewriters ready to be mass produced. Edison thought highly of the potential of this invention when Sholes visited him in Newark to demonstrate his newly patented model and invite the man who had invented invention to enter a joint venture.[43]

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

Thus, there was no Marvellous 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.[44] On the one hand, we have two technological media that, for the first time, fix unwritable data flows, on the other, there is an ">intermediate' thing, between a tool and a machine," as Heidegger wrote so precisely about the typewriter.[45] On the one hand, we have the entertainment industry with its new sensualities, on the other, there is a writing which (unlike Gutenberg's movable types) separated paper and body already during the production of texts. From the beginning, the letters and their arrangement are standardized in the shape of types and keyboard, while media are engulfed by the noise of the real--the fuzziness of cinematic picutres or the hissing of tape recordings.

[Insert illustration p. 26]

In standardized texts, paper and body, writing and soul fall apart. Typewriters do not store individuals, their letters do not communicate a hereafter that perfectly alphabetized readers could subsequently hallucinate as meaning. Everything which since Edison's invention has been taken over by technological media 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. The ability of electric or electronic media to 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 proclaim the illusion of poetry itself: love is left with the impossible alternative of speaking either with "black ink" or with "red blood."[46]But once typing, filming and phonography become equally valid options, writing loses such surrogate sensualities. Around 1880 poetry turns into literature. Standardized letters are no longer to transmit Keller's red blood or Hoffmann's inner forms, but rather a new and elegant tautology of technicians. According to MallarmJ's instant insight, literature is made up of nor more and no less than twenty-six letters.[47]

Lacan's "methodological distinction"[48] between the real, the imaginary, and the symbolic is the theory (or merely an historical effect) of that differentiation. From now on, the symbolic 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 desigantes "the world of the symbolic the world of the machine."[49]

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.[50] Thus, the imaginary implements precisely those optical illusions which 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 the infants' jubilant reactions to their mirror images in the form of documentary footage.[51]

Finally, of the real nothing more can be brought to light than what Lacan presupposed in its being given--that is, nothing.[52] It forms the waste or residue that neither the mirror of the imaginary nor the grid of the symbolic can catch: physiological accidents and stochastic disorder of bodies.

The methodological distinctions of modern psychoanalysis clearly coincide 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 a writing which is a selection from the finite and arranged stock of its keyboard. It literally embodies what Lacan illustrated using the antiquated letter-box.[53] 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, which 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 records all the noise produced by the larynx prior to any semiotic order and linguistic meaning. In order to experience pleasure, Freud's patients no longer have to desire what/ philosophers consider good. Rather, they are free to babble.[54] Thus, the real--especially in the talking cure known as psychoanalysis--has the status of phonography.

Around 1880, once the technological differentiation of optics, acoustics and writing exploded Gutenberg's writing monopoly, 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 the muscles. And it as at this point--and not with steam engines and railroads--that 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. In order to optimize mechanized writing, writing can no longer be dreamt of 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 practises 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.[.55] And the fact that the symbolic is called the world of the machine undemines the delusion of so-called Man to possess 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 apeal of the signifier"[56]; that is to say, they are both are run by programs. "Are these humans," Nietzsche already asks himself in 1874, eight years before he buys a typewriter, "or maybe just thinking, writing and speaking machines?"[57]

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, Turning's essay "Computing Machinery and Intelligence"--appearing, of all places, in the philosophical periodical Mind-- proposes an experiment, 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 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 through learning.[58] In the Turing game, so-called Man coincides with his simulation.

And this is, obviously, already the case because the censor C receives plotter printouts and typescripts rather than handwritten texts. Of course, computer programs could simulate the so-called 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,[59] it was at least somewhat less catastrophic than his handwriting. The teachers at the honorable public school of Sherborne could hardly "forgive" their pupil's chaotic life-style and messy writing. He got lousy grades for brilliant exams in mathematics, only because his handwriting was "the worst...ever seen."[60] 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, however, a master in subverting all education, dodged the system; instead, he made plans for an "exceedingly crude" typewriter.[61]

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 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 so because a Turing machine is even more exceedingly crude than the Sherborne plan for a typewriter. All it works with is a paper strip which is both its program and its data material, its input and its output. Turing slimmed down the common typewriter page to this paper strip. But there are even more economisations: 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 capital letters, 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 continuos ones."[62]) The mathematical model of 1936 is no longer a hermaphrodite between a machine and a mere tool. As a feedback system it beats all the Remingtons, for the scanning of the sign, or its absence, on the paper strip controls the next step, which is a kind of writing: and 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 unit), 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 proven mathematically by Alan Turing in 1936, two years before Konrad Zuse in Berlin built the first programable computer from simple relays. And with that the world of the symbolic really turned into the world of the machine.[63]

Unlike the history it put an end to, 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 cypher, 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 of n of Turing's universal machine; notwithstanding Romanticism, numbers and figures become the key to all creatures.