

Impossible People

Some Thoughts on the Cultural History of the Android

It's not pleasant to discover you were invented. (Jack Slater alias Arnold Schwarzenegger alias Arnie Schwarzenegger in LAST ACTION HERO)

Technical inventions do not simply make work easier, they also allow their constructor to gain an understanding of himself, of how he functions. This human impulse to explore internal connections by projecting external mechanisms onto them is nowhere more evident than in the automaton (Greek: “that which acts of itself”). Be it by the ancient Chinese, by the contemporary Japanese in their factories, by the chip-smiths Silicon Valley, automatons have always been constructed to act as useful helpers, slaves, no less — the word robot originally signified laborer — but also as “useless playthings.” Automatons today are in the process of undoing the Babylonian linguistic confusion as computer translation programs. Moreover, they have been disguised as nightingales or ducks, have entertained royalty at the Baroque courts in complete automaton theaters, and these days constitute one of the industrial branches with the largest turnover, as Nintendo, Sony or Sega systems. In this very tradition a new self-image of the individual and his social body has always been playfully documented, as if in passing. In his book “L’Homme machine” (Man a Machine) of 1747, the notorious 18th century philosopher Julien Offray de La

Mettrie made perhaps the most disputed proposal for a new image of man disconnected from traditional metaphysical foundations, an image which, in its basic elements, finds its continuation today in proposals by biologists to improve the human genome.

Some years before La Mettrie Jacques de Vaucanson is someone who vigorously promoted the “isolation” of the spiritual powers and the expansion of the circles of knowledge, plus the subsequent “segregation of professional occupations,” that is to say, someone who warmly welcomed and ingeniously furthered the technologies of the division of labor. Like no others before them, his automata, the “[Flute Player](#)” (1738), the “[Tambourine Player](#)” and the “[Duck](#)” (both 1739), stimulated the mechanical fantasies of the 18th century and beyond—from La Mettrie to Reimarus and Goethe.¹² What is less well known, though, is just how closely connected work and play were for Vaucanson, the interplay of skillfulness and ingenuity, which were concentrated in his main obsession: to isolate or separate the controls or steering force from the movement of the body/machine parts, to transfer these to their own steering/control sector or organs, and to divide them up into the process sections controls/transmission/operation, enclosed in flexible hollow bodies — a technique we today would call module or black box systems.

Vaucanson was appointed director of silk manufacture in Lyon in 1740. Here, long before Jacquard, he developed

automatic controls for looms.¹³ To do this, he transferred the cam controls used in mechanical toys and musical boxes to the work machines, reversing the principle and thus developing perforated disc controls.

One could regard this expansion of the circles of knowledge and the isolation or segregation —later McLuhan would call this extension — of the effectiveness of spiritual powers as also being responsible for the technical *inventio*. Social differentiations go hand in hand with greater demands on the individual spiritual powers, resulting in an overtaxing of those powers. On the one hand, this very pressure on the individual capacities leads to the invention of technical aids, from Vaucanson to the current programs of Artificial Intelligence, irrespective of whether they control washing machines, prostheses, or whole factories.¹⁴ On the other hand, and in interaction with this, aesthetic perception, the perception of perception, is worn down: what happens to sensations, how are senses expanded, filtered, intensified, shaped or tinted,¹⁵ when the body that thus perceives itself is extended or restructured by technical artifacts? The fantasies about machine-men entertained by writers from E.T.A. Hoffmann to Asimov or Gibson can be seen as a direct reaction to this. Indirectly the various 18th century literatures, cults or cultures of *Empfindsamkeit* (Sensitivity) can be regarded as in a way articulating the internal reactions to the external aids. It is no coincidence that as early as 1777 Goethe, who had contributed considerably to this culture with his “Leiden des jungen Werther”(Sorrows of Young

Werther) of 1774, distanced himself in his “Triumph der Empfindsamkeit” (Triumph of Sensitivity) from such inwardness: from that “theatrical whim” (Goethe) about love, i.e., “the electricity of tender hearts,” for an artificial woman, surely the direct model for Hoffmann’s famous doll Olimpia in the story “Der Sandmann” (The Sandman) of 1815.

Another direct reaction to this can be found in the so-called literature of horror, the terrifying visions of the Gothic novel, an aestheticization of the experience of the individual and social division of labor, from Wackenroder’s “Märchen von einem nackten Heiligen” (Tale of a Naked Saint) to Mary Wollstonecraft Shelley’s “Frankenstein, or The Modern Prometheus” — still one of the most frequently filmed stories in cinema history: What else do these literary works articulate but the sudden terror in the face of amputations, the destruction of physical wholeness, of the possibility of undivided sensations?

La Mettrie’s “L’Homme machine” (1747) declares man to be a “very enlightened machine”; man is the inspired, the enlightened machine, as opposed to all other machines, the animal-plant-heaven-machines. This recourse taken by the man of the Enlightenment to his own body, this application of rationalism’s main mechanical metaphors to the organic, was encouraged by an 18th century preoccupation that is still vexing today, the emphatic fascination with this watch, i.e., the human body, “constructed with such skill and ingenuity” that, astonishingly, it winds itself up, or stops other clocks, apparently with just as much passion. What is it that draws

our attention to our own material composition, what makes the doctor or philosopher claim that the light of reason is both *the* principle differentiating us from the non-human machines as well as the principle of *every* living cohesion in any being whatsoever—thereby embroiling him in the real problem of the consciousness debate: Does consciousness exist to greater or lesser degrees?¹⁶ Inspired by La Mettrie and Vaucanson, one could formulate a thesis, which though impossible to prove here, might, if padded out with some material, be a useful basis for some further thoughts on already existing or possibly imminent substitutes for man: mechanizations of the body, from the restructuring of the individual body with the help of prostheses to its integration into large — for example military — machine systems, could go – sometimes - hand in hand with the amputation of the respective organs and their functions. These in turn produce phantom pains¹⁷, sensations in no longer existing organs. Art, literature and their diverse media, among other things, come to terms in a particular way, i.e. aesthetically, with this manifold process of substitution or transference.

One consequence of this claim would be that civilizatory, disciplinary, and industrial processes are always reflected in the history of the arts. Not directly or simply, however, but rather in pain, that is to say, in the highly varied forms in which phantom pains are processed, among other things, in a historically very diverse aesthetic production and in ever new phantomatic objects articulated in ever new media. Such a thesis inspired by La Mettrie could be pursued in three

different discourses:

Bellmer's surrealistic discourse, Freud's psychoanalytical discourse, and McLuhan's media-theoretical discourse. In the thirties, Hans Bellmer conceived a very peculiar counterpart in the history of artificial man by varying and transforming what he called the "doll." He accompanied his construction of the doll with extensive notes, commentaries, and interpretations. He understood "the various expressive categories: physical pose, movement (...), tone, word, graphics, design of objects (...) as born of one and the same mechanism," in keeping with the model of the "reflexes provoked by a toothache," a technique of pain mastery, the re-routing and thus control of an original sensation of pain, a kind of cramped hand. The "cramped hand is an artificial excitation center, a 'virtual tooth' that diverts the stream of blood and nerves from the real center of the pain, directing it to itself in order to cancel it out." In Bellmer's view, all aesthetic production comes about as a reaction to a too intense impression, a pain, a disruption of perception and of inner homeostasis. The fantasies that then ensue create their own "excitation centers," self-made phantom pains. He understands their various material manifestations — for example, his "doll" — as "a consequence of liberating transferals that lead from the suffering to its image. The expression, and what it contains in the way of pleasure, is a pain that has been displaced, a liberation."¹⁸

What he was attempting was nothing less than to continue

to reformulate the pleasure principle, or the functioning of the psychic apparatus, which Freud undertook in his study “Beyond the Pleasure Principle.”

The persistent dreams and fantasies of traumatic events related in analytical practice by war invalids or train accident victims — the loss of an arm or leg — cannot really be understood with the help of the wish fulfillment model put forward in the “Interpretation of Dreams.” Freud structures the apparatus in a more complex way. According to him, the dream/trauma repeats the experience that has come over the subject suddenly or violently from outside— “the main thrust of the cause (seems) to lie in the moment of surprise, the shock”¹⁹ — and destroys the subject’s psycho-physiological integrity, but the dream repeats it as self-inflicted injury, though staged by the dreamer himself. In his way, physical wholeness is reconstructed phantasmagorically.

The third continuation of the thesis comes from the father of current media theories, Marshall McLuhan. If his concept of all technology, from the wheel to the processor, as “extensions of men” were to adhere to a simple logic of extension and intensification, we could safely leave it to the optimists or pessimists of the digital age. In his “Understanding Media” McLuhan first formulates the effects of such extensions on the psyche and on society, the main focus of his investigation. “Any extension, whether of skin, hand, or foot, affects the whole psychic and social complex.”²¹ He then expands on this concept. With reference

to the kind of medical research that looks upon every extension of the person as “auto-amputation,” as a means of maintaining inner balance, he construes technical systems as results of disruptions. “In the physical stress of superstimulation of various kinds, the central nervous system acts to protect itself by a strategy of amputation or isolation of the offending organ, sense, or function. (...) Physiologically, the central nervous system, that electric network that coordinates the various media of our senses, plays the chief role. Whatever threatens its function must be contained, localized, or cutoff, even to the total removal of the offending organ.”²²

So art (Bellmer’s) “takes pain in hand,” the dream (Freud’s) enables the Ego to reconstruct itself, the external media (McLuhan’s) rescue the internal media from superstimulation and contain the pain. If one understands pain as nothing more than the signal for the severance of representations in the neuronal system from their matter, from cells to organs, and as the destruction of the close cohesion between signified and signifier in the individual body, then there are in fact two possible consecutive effects: The first is that the signal-sign complex — the phantom pain in the sensitive virtual organ — becomes independent. The second is its extension, the placing of the organ outside the body, liberation from the phantom pain by a kind of manifestation of the phantom. The construction of aesthetic objects or technical systems — the two cannot be separated here — goes hand in hand with the anesthetization of the corre-

sponding individual organs. By being transferred to the outside, the functions of the organs order, extend, and intensify the capacities of the individual, and the species, both to perceive and to act.

All three proposals attempt to explain very different modes of expression — art, dream/trauma, (media) technology — by means of a virtual, not immediately visible, but very effective object, as a processing of phantom pains concentrated in this object, as a thus regulated interplay between inside and outside.²⁴ These attempts are to be continued here, and technical constructions and aesthetic perceptions are to be seen in certain respects as parallel phenomena.

In 1760 Friedrich von Knaus presented his “miraculous writing machine” to the public. “The desired text is transferred onto a horizontally positioned cylinder by means of tiny pins. These pins strike keys which move the curved disks of the desired letters by means of a lever.”²⁶ This technology was developed to temporary perfection in the androids produced by the Jaquet-Droz family and their mechanic Jean-Frédéric Leschot: the “[Draftsman](#),” the “[Musician](#),” and the “[Author](#).”²⁷ The latter was able to combine up to forty characters so as to produce any desired text. The free programming of the automatons thus achieved reveals the cultural orientation and social models of the

respective historical periods all the more clearly. If the “Author” writes “Long live the city of Albrecht Dürer” during a presentation in Nuremberg in 1800, and if the “Draftsman” portrays mainly such high-ranking personalities as Louis XV, it is evident that this representation of feudal power has today given way to a catchy salute of welcome in the advertising world. While the clockwork automatons in the early modern era were modeled on the myths of the gods or the history of Christian salvation, and in the 18th century served to represent the power of the sovereign and at the same time the universal craftsmanship of the middle-class citizen, this technical skill becomes the real object of the man-machine constructions in the 19th and finally the 20th century: to reproduce the whole complex apparatus called man, albeit free of pain and defects, in a state of equilibrium. Engineers and artists, scientists and writers — significantly enough, mainly men — now work uninterruptedly on this project of the species, as if they somehow wanted to catch up with women’s natural productivity and finally overtake it some day, with beings that are naturally more faultless than those to date, thereby eliminating the difference between the sexes.²⁸ However, these constructions initially differed from the “full-bodied automatons,” which now tend to drift into the toy production sector: series productions of talking dolls or quick little fighting robots for under the Christmas tree. In the wake of the inventions of Reis, Bell, Edison, Marconi, and many others toward the end of the 19th century, the individual senses, their perceptions and forms of articulation,

are reproduced, specialized or intensified in technical systems; speech and hearing, projection and vision are transformed, and the system of the technical media is further developed. Society is not just trying to maintain itself at a new level or to expand its productivity through these projections and extensions. It is moreover attempting to redefine itself, from the tiniest element to the largest system, from the individual to the state itself. By thus effectively transforming the individual senses into technical media, sensor systems for example, however, the two disintegrate, both individual and state. The technical reproduction, storage, and transport of voice and ear, eye, nose, and skin, divides the individual up into a field of sensory exchange processes. When national institutions are networked and coupled with global information processes, vital economic, political, and social decisions are transferred from the traditional legislative and executive “bodies” to dynamic, re-coupled media processes which are no longer localizable in space or time. In order to be somehow able to grasp this disintegration and reformation, which run counter to a traditional understanding of decision-making processes, and get an impression of the new bodies and their new communities, there are probably only these two figures which in equal measure awaken both technical euphoria and culture-critical yet in the early 21th century: the android, robot, cyborg, or whatever the new individual is called – “[I, robot](#)”, the film based on Asimov's stories, was catching our attention the last year - and his state supervisor, Big Brother,

the Securitate, the intelligence services, the CIA... or the Internet, the greatest conspiracy medium of all Lime.

In the early 19th century Joseph Faber built his famous talking machine “[Euphonia](#),” which imitated human speech better than all prior attempts. It could well be the model, utilized by the cultural critics, for the many artificial women that populate literature. Faber’s talking woman did not bring him anything like the luck, fame, and money that, for example, Kempelen’s “[Chess Player](#)” had brought its owner, Maelzel, who even had it challenge Napoleon to a game of chess.²⁹ Faber destroyed his machine and committed suicide, a fate prefigured in Hoffmann’s story about the “Sandman” and repeated in Villiers de L’Isle Adam’s “L’Eve future” (1886), and in 20th century science fiction literature, Lawrence Durrell’s “Nunquam” from 1970, for example – today “the [stepford wives](#)”/[trailer einblenden](#)/ are giving an another one. Here literature is just continuing the work on that vexing “phantom” which holds societies and cultures together at their core: that material-immaterial system of signs, language’s possibilities for combination. These stories, which have long since moved from the medium of the book to the theatre, cinema, and the latest media, there to be further processed, really have only one positively fixed idea: that it should be possible to talk to a self-steered machine, that the human Ego and the technical Id should be able to enter into communication with one another. Long before Turing’s test —which tries to prove that when a technical medium is interposed, machine communication is

indistinguishable from human communication on the basis of the data sent and received alone — writers, artists, and philosophers were working on this idea, doubtless in the interests of their own peculiar productivity. The idea that a wonderful machine — *the machine* — might one day be able to answer these lonely artists as they shape their texts, pictures, and sculptures, and might in fact be able to enter into an open dialogue with their creators, this displacement of the self, is surely their most irresistible temptation. The creators are not interested in passive partners, but want an active, interactive as we say today, counterpart that is unexpectedly independent, something whose movements, replies, actions are completely unpredictable.³⁰

Consequently, the idea thus far pursued with the help of Bellmer, Freud, and McLuhan that technical artifacts are widening and replacing or even amputating the human apparatus might have to be extended, possibly even canceled out or better rethought from a new level. This new level is provided by developments in information technology and neurological research that have begun to reconnect those elements which they at one time had divided, expanded or replaced, namely artifact and nature. By directly coupling them they are now questioning the opposition artificial vs. natural or human in general.

A long tradition of theories is questioned here, theories that regard technology (especially in self-directed, automated systems) only as a mechanism of replacement or support, as liberation from heavy work, or as management of overly

complex processes as mentioned above. It is questioned, however, in a rather playful manner, exchanging thoughts with chat boxes, dialogue-systems and software-agents. It is **not** the machine-like, standardized or calculable aspect of human beings that is exteriorized here, thereby functionalizing or economizing it. It is rather coincidence, surprise, emergence, risk or illusion, in a word: it is the unexpected that becomes conceivable in the 'dialogues' mentioned above; ones own and the others' ideas begin a new type of playful conversation with each other.

Until now only a well-formulated share, a limited mode of those processes was transferred from the mind to the computer that create sentences, ideas or images. Everything else was happening within the body, not only in the mind. Consequently, the exchange between inside and outside on whichever interface only aligned two automated processes or internal routines with calculated or calculating algorithms. Even the offer on a chatter/box/bot for lovers' conversations between boyfriend or girlfriend worked in just this way:

<http://www.liebste.de/>

(Ill. Liebste.de)

Probably the most advanced partner seems to be

Kaily.

>> [More](http://www.nice-interactive.de/)“ (<http://www.nice-interactive.de/>, 24.12.2005)

All these processes of exchange between man and machine however retain a boundary – a boundary of the skin, of the retina, or of the eardrum. Even though the computer increasingly approaches this boundary through more precise

sensors it does not yet cross it.

Nevertheless, the evolutionary process is continuing; the small but decisive step towards a revolution is probably done at the point at which the direct connection between computer and brain is passing into both directions, where the one-directional connections change into bi-directional ones.

The December 2004 issue of a Berlin magazine

(Ill. Berlin 2)

reports of a computer "that works without a mouse since it can receive commands directly from the brain. This time a woman, Verena Araghi, starts the conversation with the machine:

"You are waiting for my thoughts. You'll be able to see them on the monitor immediately. My scalp is cooled down by the gel on 128 electrodes; every one of them is a little guardian scanning a part of the cerebral cortex under my cranium."ⁱ

A paraplegic has been enabled to raise himself (quite laboriously) through the collaborative efforts of a German-French team of neuromedical specialists who implanted a chip. At least wheelchairs will soon be controlled like this and intense research is going into the direction of prosthetics. Machines can process thoughts much faster than the body, since the brain initiates movements almost half a second before the arms or the legs react. Neurophysicists want to take advantage of this. For example cars that are equipped with the brain-computer-interface BCI could be able to tighten the safety belts just before an accident. The scientists will also develop an electrode-cap without cables with which

one can move around freely.

Whether we are talking of implanted chips or, as above, of sensors attached to the skin: the boundary is becoming permeable.

In other words: The game of imagination, the internal process of projections that only needed stimulation in order to be set in motion by itself, as well as communicative devices like literature, images, and films are suddenly skipped. To rephrase: Whereas the inner and the outer world could previously communicate only via complex detours, via whole series or layers of ever-new codes in a contradictory and paradoxical way now this communication is replaced by a bi-directional exchange. Even though it is still a very weak bi-directionality since the computer actually cannot say more than R, L or F (right/left for the hands and F for feet) nevertheless a new conversational game has been initiated which is a game of ideas of the other kind.

"The machine knows me now. It reacts best to my thoughts for the right hand and the right foot. We are ready for the <brain pong>. My pong-racket is a flat black bar. With that I have to fend off a small green ball from the lower edge of the monitor thrown by the computer from the upper edge. My thoughts of a movement of my right hand pull the racket to the right, those of the right foot pull it left. If I am catching the ball, I'm getting the point, if I miss it it counts for the computer. I want to win this game at all cost. But the racket all of a sudden is dancing from one side to the other and does not reach the ball any more. The machine is rebelling. Or is

ambition blocking my brain? I am fighting tensely but without success. On the upper left the monitor is showing that I'm already behind 4:11. I'll loose heavily. But I don't care any more."ⁱⁱ

In view of the defeat the test person is becoming indifferent, thereby relaxing and finally winning 20:18.

Certainly this is not the last word spoken. For now, I'm going to leave it to VODER, a speech synthesis device that was developed by Homer Dudley and presented to the public at the World Exhibition in New York in 1939.

"Good afternoon, Radio audience"ⁱⁱⁱ

Footnotes

- 1 Alex Sutter: Göttliche Maschinen. Die Automaten für Lebendiges bei Descartes, Leibniz, La Mettrie und Kant. Frankfurt am Main: Athenäum 1988, p.144
- 2 Julien Offray de La Mettrie: Man a Machine. Ed. by Gertrude C. Bussey. Chicago: Open Court Press 1912, without pagination
- 3 Sutter, op. cit., p.143
- 4 La Mettrie, op. cit.
- 5 Ibid.
- 6 Ibid.
- 7 Ibid.
- 8 Sutter, op. cit., p.142
- 9 La Mettrie, op. cit.
- 10 Ibid.
- 11 Friedrich Schiller: Sämtliche Werke. Ed. by Gerhard Fricke, Herbert

G(eorg) Göpfert, 5 vols., Munich: Hanser 1958/59, Vol.5, p.951

12 Dieter Mathhes: Goethes Reise nach Helmstedt und seine Begegnung mit Gottfried Christoph Beireis. In:

Braunschweigisches Jahrbuch, Vol. 49, Wolfenbüttel

1968, pp. 121ff.

13 Cf. Hans H. Hiebel (ed.): Kleine Medienchronik. Von den ersten Schriftzeichen zum Mikrochip. Munich: Beck 1997. Hiebel also mentions the French mechanician P. Falcon, who used sets of small perforated wooden slats to guide looms; he refers to Vaucanson only as a builder of automatons. The imaginative interaction between work and play is closer in inventors, engineers, and artists.

14 On prosthesis see Marie-Anne Berr: Technik und Körper. Berlin: Reimer 1990

15 As with the corresponding metaphor in Heinrich von Kleist's famous Kant crisis, which refers to nothing more than a technical "support" instrument, i.e. spectacles.

16 Which has not yet been solved. Heinz von Foerster made an interesting if equally inadequate suggestion at a congress in Berlin early in 1997. With reference to Kant, for whom consciousness is that alertness, attentiveness or brightness that ought to accompany all our thoughts and emotions, he defines consciousness as a certain break in the inner neuronal routines. Consciousness, he argues, emerges the moment they are interrupted, when they do not simply run on, but run wrongly, when functions oppose one another, that is to say, have to be reorganized. If one wants to understand consciousness as light, as the Enlightenment did, then here in this context more as a will-o'-the-wisp in search of new exits. The difference between animals, men, and machines would in fact then be only a gradual one, measured according to the number and diversity of strategies available for mastering disruptions.

17 "Phantom-limb pain, sensation of pain in an amputated limb. The

phantom-limb pain is caused by the fact that the nerve fibers responsible for the sensations in the amputated limb are still present in the main nerve. When the nerve stump is stimulated at the point of the amputation (where the amputated nerve strands are not insulated), sensations are triggered which the brain ‘projects’ onto the missing part of the extremities.” (Translated from: Der große Brockhaus, 1992, Vol. 14 p. 141)

18 Hans Bellmer: *Die Puppe*. Frankfurt am Main, Berlin Vienna: Ullstein 1976, p.73

19 Sigmund Freud: *Jenseits des Lustprinzips*. In: Studienausgabe. Ed. by Alexander Mitscherlich, Angela Richards, James Strachey. Frankfurt am Main: Fischer 1975, vol. III, *Psychologie des Unbewussten*, p. 222. For a discussion of this model see Jacques Derrida: *Freud and the Scene of Writing*. In: *Writing and Difference*. London: Routledge 1978, pp. 196—231; Wolfgang Schivelbusch: *Geschichte der Eisenbahnreise*. Munich, Vienna: Ullstein 1977

20 Marshall McLuhan: *Understanding Media: The Extensions of Man*. New York: Signet Books 1964, p.91

21 *Ibid.*, p. 19.

22 *Ibid.*, p. 52. McLuhan too refers to the toothache, illustrating his theory with an apparatus that technically implements Bellmer’s and Freud’s theses: “Battle shock created by violent noise has been adapted for dental use in the device known as *audiac*. The patient puts on headphones and turns a dial raising the noise level to the point that he feels no pain from the drill.” (p.54)

23 *Ibid.*, p.53

24 This is to be understood literally. Freud illustrates his theory with the so-called “Fort-Da” (gone-back) game played by his grandchild, who used a wooden spool on a string to transform the disappearance/appearance of his mother into a game and thus make it more bearable. One can therefore read every “Once upon a time” in lit-

erature as an aestheticization or anesthetization of an injury or pain and its transformation into a game or story. Freud could have found one of the most amusing transformations in Kafka's story about Blumfeld, the "older bachelor" who fails to attach the little hopping balls to a string, unlike Freud's grandchild. Literature thus adopts psychoanalysis, while at the same time distancing itself from it.

25 Johann Heinrich Moritz von Poppe: Wunder der Mechanik oder Beschreibung und Erklärung der berühmten Tendlerschen Figuren, der Vaucansonschen und anderer merkwürdiger Automate. Tübingen: Osiander 1824,p.53

26 Annette Beyer: Die faszinierende Welt der Automaten. Uhren, Puppen, Spielerehen. Munich: Callwey 1983, p. 57

27 They can still be viewed today at the historical museum in Neuchâtel in Switzerland, and every Sunday morning they are in action.

28 Even the authors of the extensive literature on this project are mainly male, cf. Bernhard J. Dotzler, Peter Gendolla, Jörgen Schafer (eds.): MaschinenMenschen. Eine Bibliographie, Frankfurt am Main: Lang 1992. Only when feminist cultural criticism became established was women's attention drawn to this attempt to eliminate them, recently, for example, by Donna J. Haraway:

Simians, Cyborgs, and Women: The Reinvention of Nature. New York: Routledge 1991

29 The "Chess Player" was so famous around the world that E.A. Poe felt called upon to prove, merely on the basis of the newspaper reports on its presentation that an intelligent dwarf must have been hidden in the man-machine. Cf. Edgar Allan Poe: Maelzel's Chess Player. In: Southern Literary Journal. April 1836

30 On other aspects of this unpredictability see Peter Gendolla, Thomas Kamphusmann (eds.): Die Künste des Zufalls. Frankfurt am Main: Suhrkamp 1999

ⁱ Verena Araghi. "Man-Machine." *Berlin. The Magazine From The Capital* December 1, 2004. 30.

ⁱⁱ Ibid.

ⁱⁱⁱ Listen to: <http://www.ling.su.se/staff/hartmut/kempln.htm>, (December 24, 2005)