MEDIA ART HISTORIES

EDITED BY
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new media

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6

Duchamp: Interface: Turing: A Hypothetical Encounter between the Bachelor Machine and the Universal Machine

Dieter Daniels

Translated by Jeanne Haunschild and Dieter Daniels

Can Marcel Duchamp's ideas and the discourse he opened on an art that goes beyond the "retinal" be extended to include the so-called new media and further on media art? In a collection of essays, I have worked out multiple affinities between the work of Marcel Duchamp and the effects of the media on art and society.[1] This may, not least of all, show the personal passions of the author, for these two fields have been the focus of my academic work up to now. For this reason it should be obvious that in the present text, I felt the need to look for something beyond my individual obsessions by searching for a possible, deep-rooted common ground between the two fields—and for a new perspective on the basic questions of the relevance of the arts and the technical media in today's world.

Does art merely react to what media technology has developed, whether accepting it as a working medium or countering it with art-inherent strategies? Or does art offer still other models and insights that oppose the actual pressure of technical progress and have other assets that perhaps even surpass it, thus contributing to an understanding or even to a formulation of our media-sated world? These questions are posed in the field of media art even more urgently. Does an art that deploys technical means simply supply an illustration or, at best, a subversively ironic misappropriation of a technological potential, whose power over, and repercussions on, our life today are barely comprehensible and, even more so, unassailable in an art context? Such an

impotence of art in the age of the media has been propagated, for instance, by Friedrich Kittler: "Certainly, art has historically been a highly efficient method of signaling the presence of omnipotence. But as, already in Hegel's time, it ceased to be the highest form of mind, so it is today that art under computer conditions is replaced by a sorcery that no longer swears to omnipotence but to reality. . . . And artists, unless they themselves have become engineers or programmers, have been cut off from this power over reality."[2]

The actual distribution of power between art and the media may be indisputable. But does this not amount to a confusion between cause and effect, to making the power of the factual the yardstick for the imagination? And do not media technology and art equally find their roots in models, sketches, and blueprints—in the imagination of things that do not yet exist—before they become concrete as apparatuses and art works? In my considerations I would like to proceed from two cases in point, that of Alan Turing, the mathematician and most important co-inventor of the computer, and Marcel Duchamp, perhaps the most influential artist of the twentieth century. You may well ask why it is that two individuals and their respective biographies should be at all useful in the investigation of such a comprehensive theme, particularly since neither during his lifetime had any contact with the other, or possibly even knew of the other's existence. But the following is not meant to prove anything, but only sound out the range of a hypothetical encounter between two concepts. The method is experimental, in the sense of trying to follow a hypothesis as far as possible, without hesitating to touch upon the absurd.

In the first part of my essay, by a partly ironic expansion of art historical terminology, I would like to attempt to apply concepts from new technologies to Duchamp's work. In the second part, parallels will be drawn between Duchamp and Alan Turing; the third will present works by Duchamp in analogy to current media techniques; the fourth will conclude by investigating the common structural grounds between today's media practice and the designs drafted by Duchamp and Turing.

The element that links these four parts is the convergence of man and machine. The point of man–computer communication is generally called an interface.[3] It sets up a relationship between the two information structures and to a certain extent it defines the parameters of interaction between two immaterial settings through the material world. Available for input are switch, keyboard, mouse, joystick, dataglove; for output, screens, loud-

speakers, projectors, or virtual reality glasses. Corresponding on the side of the human body are fingers, eyes, and ears; examples of other body parts will be cited later.

Because of the way we today commonly speak of interactivity as a technical achievement, we all too easily forget that similar principles existed long before digital technology was ever introduced, though this was an interactivity between man and man and not between man and machine. A good example is a chessboard: a board with 64 squares and 32 pieces functions as a direct man–man interface. The game rules, as well as the chess pieces and the coded display of the "user interface" or chessboard, determine the course of the interaction. The "interface" or chessboard is meant to serve as an exchange between the thoughts of two people, thoughts that are, however, not altogether mutually readable, but whose possible intentions can be deduced from the moves each player makes. In other words, despite a clearly coded system, there is a degree of interpretation needed that can be compared to the interpretation of an artwork, at least insofar as we follow Duchamp's approach.

Art History

There is an entire series of Duchamp's drawings and two oil paintings on the subject of chess, in which he works out this process of "interpretation." In *La Partie d'échecs* from August 1910 he painted, in a style still firmly in line with Cézanne, his two older brothers Jacques Villon and Raymond Duchamp-Villon in the garden at Puteaux playing chess. But in 1911 the twenty-three-year-old Marcel made his entry into the Paris avant-garde, thanks to his brothers' mediation and, using the same motif in *Étude pour les joueurs d'échecs* (1911), manifested his personal encounter with the formal vocabulary of cubism. Counter to the basic realistic elements, the picture plane is strikingly divided into two halves, as if the two conceptual systems of the chess-playing brothers were separated by a slash. Shortly afterward, *Étude pour portrait des joueurs d'échecs* (1911, fig. 6.1) took a decisive step toward a reduction to a few formal elements. The dissolution of perspectival space corresponds to the doubling of the two faces, in which the chess piece itself becomes the physical location where the two profiles meet. And, in fact, the chess game is set directly between the two countenances, becoming a literal "inter-face." What is striking is the emphasis given the hands of the players, one of them in action, the other making a thoughtful gesture. On the whole it

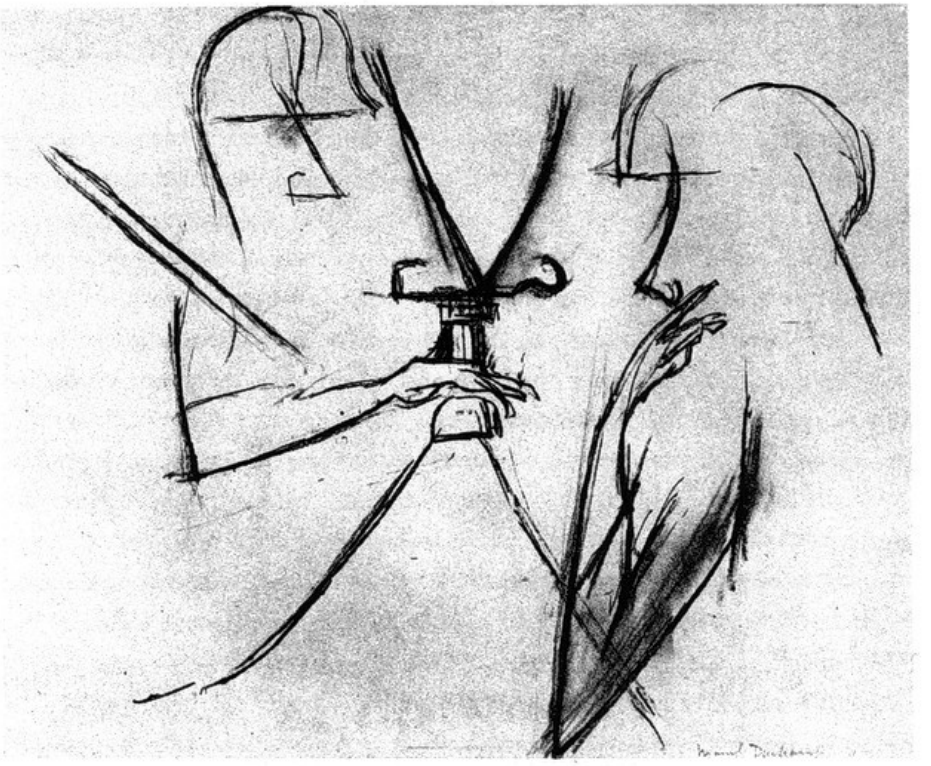

Figure 6.1 Marcel Duchamp, *Étude pour portrait des Joueurs d'Échecs*, 1911. Philadelphia Museum of Art, Collection Arensberg.

is made clear that, through eye and hand, the two heads, that is, the thinking that takes place within them, are linked across the chessboard. These sketches eventually led to the oil painting *Portrait de joueurs d'échecs* (1911), a piece that perhaps shows Duchamp's obligation to cubism the most clearly and yet takes his work a step further. He, in fact, carries over the cubist perceptual space into the chess game's conceptual space. Again our attention is called to the active hand holding the chess piece in the lower left that has been strangely and very pointedly set into the picture.

For Duchamp chess was always a metaphor for art, and these two passions were always meant as complementary, just as much as they were also in competition. Their rivalry went so far as to inspire the myth that he had given up art in favor of chess. As a French master Duchamp played successfully at international tournaments and wrote a book on recherché endgame variations.[4] "Through my close contact with artists and chess players I came to

the conclusion that while all artists are not chess players, all chess players are artists."[5]

Under the leitmotif of the interface, an analogy between painting and chess could be spun further. The easel painting and the chessboard are both a user interface, and the thought constructs that are represented by manual proceedings (applying the paint, moving the pieces) invite interpretation. But of course the comparison is a lame one. The transmission in art only goes in one direction, from painter to the viewer—and that, in part, over a distance of centuries. In chess and in the electronic media, the exchange is interactive and takes place in real time, as we say in current terms. It is via media art that such interactions first begin to cross-pollinate.

Duchamp expands the theme of chess with the mysterious painting *Le roi et la reine entourés des nus vites* (1912). The king and the queen are still a part of the chessboard, but the "fast nudes" that surround them come from another world. They move between the static figures, perhaps like the two naked hands of both the chess players, which carry out the symbolic movements of the pieces and never come in physical contact with each other. At the same time the king and queen, via the "fast nudes," are also in a potentially erotic relationship. This painting spans a bridge from the chess studies to the erotic machinery of the *Large Glass*. That becomes clear in the compositionally related first sketch on the subject of the *Large Glass, La mariée mise à nu par les célibataires*, also from 1912. Instead of an *intellectual unveiling* of the player's intentions manifested in the chessboard, a *physical exposure* of a woman's body takes place between the two bachelors.

The arc that Duchamp spanned from chess to sex in the successive transformation of this series of pictures is the leitmotif for the following considerations. It is the passage between two extreme forms of interhuman relations: here, the complete reduction to the intellect and a strictly formalized exchange of information via a system of codes and rules; there, complete physicality with all its sensual components. Chess and sex serve Duchamp as the cornerstones for investigating the function of the pictorial artwork that, quite in the sense of classical aesthetics, links physical expression with intellectual content. For Duchamp the artwork is, so to speak, a sensual interface between the intellect of the artist and of the viewer; the message must pass through the physical stage. The original work would thus be the physical trace of an individual's mental act. The most radical culmination of this concept is Duchamp's *Paysage fautiv* (1946), a drawing that consists of nothing more than an

ejaculation of sperm, whereby he anticipated Warhol's piss paintings in a more subtle form.

The tie-in between chess and sexuality, also found with other artists (Max Ernst, Dalí), was later summed up by Duchamp in a famous photo showing him playing chess with a young naked woman in 1963 at his first large retrospective in the Pasadena Museum. On the other hand, the game between Marcel Duchamp, his wife Teeny, and John Cage entitled *Reunion* in Toronto 1968 shows that a chessboard can also serve as a technical interface (fig. 6.2). Every move made on the chessboard's electrical contacts triggered a change in the electronic sound structure. This pioneering, interactive media artwork is not

Figure 6.2 Marcel Duchamp, his wife Teeny, and John Cage at "Reunion," Toronto, 1968. Photo by Shigeko Kubota. The chess board is wired as an interface to generate a composition by Cage.

unconditional evidence of Duchamp's intentions, since he only appeared here as an accomplice in Cage's musical concept, but the work was undoubtedly inspired by Duchamp and composed for him.[6]

Media Theory

From the notes in Duchamp's *Green Box* we learn that the complex apparatus of the *Large Glass* served only to transmit the sexual desire of the bachelors in the lower half to the bride in the upper half. The nine bachelor forms called *Moules mâlic* are comparable to chess pieces and the clearest relic left from the game of chess to be found in the Glass. The bachelors' lust remains unfulfilled, since it is only technically transmitted to the bride, without ever resulting in a physical encounter. Thus Duchamp insists in his very first drafts that there is no real contact between the bachelors and the bride, only an "electric link" and a "short circuit on demand."[7] The lower half of the glass is the driving force of the whole erotic mechanism that Duchamp coined a "bachelor machine."

The term "bachelor machine," since its first appearance in the cryptic notes of the *Green Box*, has had an amazing career that made it known far beyond the framework of the *Large Glass*. It served in 1954 as the title of a book by Michel Carrouges that, according to André Breton, rattled surrealism, was taken up in 1972 by Gilles Deleuze and Félix Guattari in *L'anti-Oedipe*, and made into the theme of a large exhibition curated by Harald Szeemann in 1975.[8] Carrouges reaches far back into the nineteenth century and, in the series of bachelor machines that he presents, the *Large Glass* is one of the last examples and, above all, the only pictorial one among otherwise purely literary descriptions of such machines.

Yet to say this is to ignore the fact that glass and box, that is, picture and text, were given the same title by Duchamp: *La mariée mise à nu par ses célibataires, même*; they are two halves of *one* work. The *Large Glass* shows the blueprint of a machine, a construction rendered as a "precision painting, and beauty of indifference" that only becomes comprehensible and begins to ferment in our minds via its workings described in the *Green Box*.[9] The *Large Glass* and the *Green Box* stand in the same relation to each other as a chessboard to its game rules, or as a computer to its program.[10] No part makes sense without the other; only in concert do they become a functioning unity (fig. 6.3). Carrying this analogy further would make the *Large Glass* the

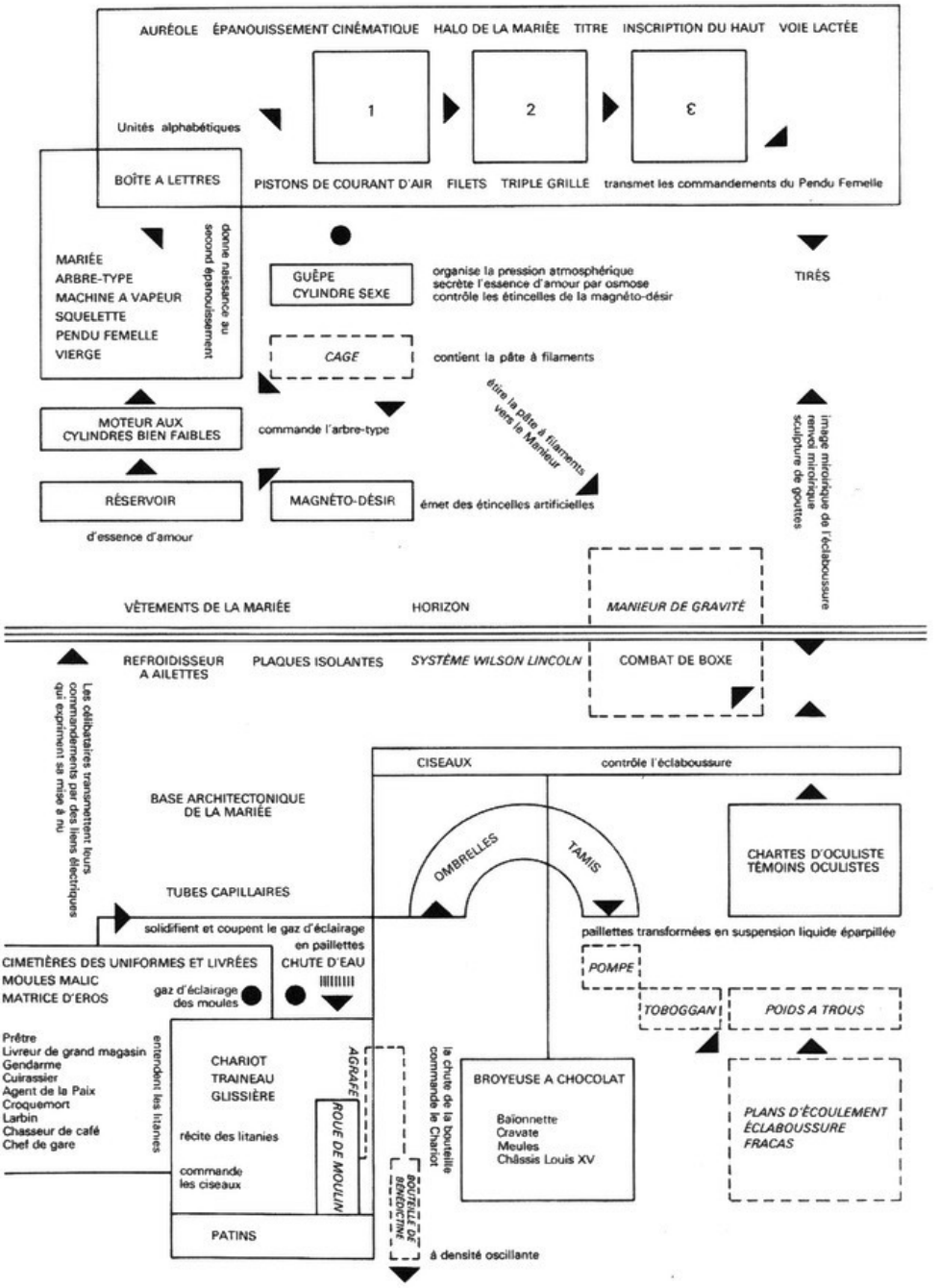

Figure 6.3 Diagram of the *Large Glass* according to the notes from the *Green Box*, by Richard Hamilton, published in *L'Oeuvre de Marcel Duchamp*, Centre Pompidou, Paris 1977, p. 108.

hardware and the *Green Box* the software of the bachelor machine. Yet instead of a computer we should perhaps speak more correctly of a blueprint for a computer. Just as in the *Large Glass*, in a computer design and description, construction schema and program language are developed in parallel and mutually determine each other.

In the books of Poe, Villiers, Verne, Jarry, Roussel, and Kafka we find imaginary machines, which Carrouges also considers to be bachelor machines. Some can talk and some can write, yet they cannot take that one more decisive step: their language remains descriptive, it is not operational. For a computer, however, the program language is part of its function; it no longer describes, it acts. When I type in "delete," I do in fact delete data. This switch from description to command can never be reached through literature alone. In the fields of art and literature, language cannot be made operational; this is first possible only when they join forces with the technology of an apparatus.[11]

This ontological turning point in language's function is possible only through the division between machine and program, between hardware and software. The *Large Glass* and the *Green Box* portray such a relation of machine and program and go a crucial step further than all other literary bachelor machines.[12] Even if its function remains an imaginary one, that is, remains art, it points to the possibility of a machine consisting of hardware and software, together forming what Alan Turing defines as a "universal machine" that provides the theoretical basis for all computers: "The importance of the universal machine is clear. We do not need to have an infinity of different machines doing different jobs. A single one will suffice. The engineering problem of producing various machines for various jobs is replaced by the office work of 'programming' the universal machine to do these jobs."[13] Yet there is one important difference between Duchamp and Turing: the *Large Glass* portrays the complex inner-psychic course of unfulfilled sexual desire via technical metaphors; the universal machine, as the beginning of artificial intelligence, does the opposite in that it portrays an otherwise human activity, thinking, as now predominantly performable by a machine.

Since all machines, including the universal machine of the computer, have up to now been built by humans, the *Large Glass* could specify the reasons *why* we at all bother to design and manufacture such machines. Such is a first thesis on the relation between the bachelor and the universal machines, which may still sound somewhat off the wall. In order to underpin it there are various strategies available. We could draw on the authorities of postmodernism,

Figure 6.4 Bachelor Mouse Pad, ca. 1994, advertisement.

such as Jean Baudrillard, who writes: "Artificial intelligence is a bachelor machine," without, however, even mentioning either Duchamp or Turing.[14] A glance at the "collective unconscious" would be just as good, where the tie between the bachelor and the universal machine seems already firmly anchored. It is manifest in many trivial everyday metaphors for the man–machine interface, such as the "bachelor mousepads," which transform everyday work onscreen to a symbolic, erotic potential for fondle-bytes (fig. 6.4).[15]

The world of geeks, nerds, and hackers provides the most drastic examples for psychic effect of computer technology and thus for the status of the universal machine as a bachelor machine. The almost entirely male community of hackers thrives in what they call "bachelor mode" because nights at the computer allow no room for contact with the opposite sex.[16] One of them says: "I think of the world as divided between flesh things and machine things. . . . I stay away from the flesh things. . . . I often don't feel like a flesh thing myself. I hang around machines, but I hate myself a lot of the time. In a way it's like masturbating."[17] There is not much to add to such statements.

The attempt to get to the bottom of the tie-in between the bachelor and the universal machine takes us to the latter's originator, Alan Turing, the

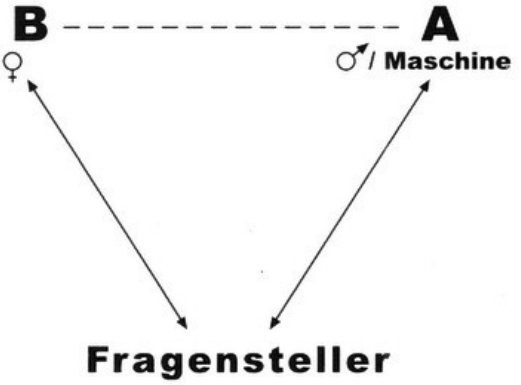

Figure 6.5 Diagram of the Turing test.

English mathematician, who already in 1935–1936 described the essential features of a computer *cum* universal machine in his paper "On Computable Numbers." He did a trial run with a "paper machine," that is, he simulated it per written calculation, even before the first programmable device was built. The acid test came with World War II, whose outcome is intertwined with the fact that Turing's meanwhile functional machine broke the code of the German Enigma cipher. A universal machine can, according to Turing, imitate all other machines, and the case of the mechanical Enigma cipher machine provided the practical evidence to prove this. But what does this mean in reference to other, specifically human functions?

In a 1950 paper that was as philosophical as it was mathematical, Turing posed the question: "Can a Machine Think?"[18] To answer this he suggested what is today known as the Turing test. This paper is cited in almost all academic literature (and even in practical tests) in what is only a very abridged version: a test person must discover via a written dialogue whether he or she is "talking" with a machine or a person. However, Turing's original concept is much more complex. He called his test an "imitation game" that consisted of a threefold arrangement. A man and a woman in separate rooms must answer an interrogator via a teleprinter. The interrogator is given the task of finding out which one is the man and which the woman. Then in the second phase, the machine replaces *the man* and the error quota in the interrogator's replies are compared to the previous results (fig. 6.5).[19]

The purpose of the test, according to Turing, lies in "drawing a fairly sharp line between the physical and the intellectual capacities of a man."[20]

The interrogator is supposed to try to determine the gender of his opposite number without seeing or touching his two coplayers, solely by means of verbal communication. The proof that the machine can think does not lie in the resolution of practical questions but in an imitation of a gender-specific communication without physical contact. Turing was convinced that a machine could assume all human qualities not only in purely intellectual fields but, as he said in a radio interview in 1951, for example, those "influenced by sex appeal."[21] The crucial criterion of successfully replacing a man by a machine in Turing's test is, therefore, the ability to confuse the interrogator by means of the sexual identity of his or her counterpart. Though sexuality is not an explicit theme, Turing's entire text reads like a perfect psychograph of Turing himself, who was not only highly intelligent but also a homosexual and who, at a time when being the latter was still a criminal offense in England, made no effort to conceal it.

Electronic networks today actually correspond to a globally expanded reconstruction of the Turing test. The Internet takes up the function of Turing's communication via teleprinter and makes the decoupling of corporeality and verbal dialogue through a technical medium an everyday mass phenomenon. And should it in the least surprise us that gender swapping is a popular game in Internet chats: "60% of those who pose on the cyberboard as libidinous women are in reality men," a popular magazine reported already in 1994, at the very beginning of the Internet boom.[22]

It is indeed absolutely amazing that as early as 1950, long before online sex was ever heard of, the goal of the man in Turing's imitation game was to deceive the test person as to his sexual identity, while the woman is meant to help him or her identify the genders of the two partners correctly. Quoting Turing: "I am the woman, don't listen to him!"[23] This allocation of roles seems at first to reflect the conventional schema of the helpful female and the combative male. Likewise, the second phase of the test, when the man is replaced by the machine, seems to correspond to the usual pattern of masculine self-identification with technology. But the test goes deeper, for its real goal is to decouple all physical and biological sexual characteristics from the psychic-intellectual forms of speech that, if the test is to succeed, must likewise be determinable as specifically masculine or feminine.

Thus Turing's test implicitly contains a thesis that forty years later Judith Butler supported in a feminist context: gender identity is not a physical category but a discursive construct that first comes to light in performative acts

through language.[24] Strangely enough, Butler does not go into the phenomenon of gender-swapping over the electronic nets and the virtual communities of MUDs (multi-user domains) and MOOs (MUD-object-oriented), although it arose simultaneously with her theses and could serve as their ideal evidence. Inversely, Sherry Turkle thoroughly studies these virtual gender constructions on the Internet from a sociological viewpoint and refers specifically to the Turing test, but completely ignores the sexual dimension of Turing's original paper.[25] Only by going back to the origins of the universal and bachelor machines can we find the common basis for these postmodern gender- and cybertheories. And against the background of these theories, the two machines imagined by Duchamp and Turing become, at the same time, recognizable as specifically masculine scenarios that revolve around an insurmountable distance from the female and, as a result, install a media-technical communication as a replacement for a physical encounter.

It is more to the point I am making here when Donna Haraway, the pioneer of cyberfeminism, in 1985 describes cyborgs as creatures in a postgender world.[26] The relationship of Butler's theses to Turing's test is made clear by Juliane Rebentisch: "By the imitation in play here, the imitative structure of the so-called feminine and the so-called masculine is shown up as such, as is also its contingent."[27] I would like to go even further by presuming that Turing left it to the reader's logic to conclude what he expressly never allowed himself to write. If a machine can "imitate" thinking so successfully that no difference from a human can be detected in the dialogue, then we must characterize this feature as thinking, since no criterion can be cited that would define the difference from an imitation of thinking—which means that when a machine successfully "imitates" a gender identity, this must then be accorded. With this, any prerequisite of a natural, unalterably binary gender division among humans is obsolete. For Turing and Butler the consequences are similar: the idea of sex as predetermined by nature is replaced by gender identity as individual performative construction, reacting to a set of society's conventions.

However, Turing was to experience personally the conventional inflexibility and mercilessness of society versus any difference between the physical sex and the mental gender. In 1952, that is, soon after he published his paper on the Turing test, he was forcibly given hormone injections to "cure" his homosexuality.[28] Marcel Duchamp tried a more playful way: he bridged the insurmountable separation of the sexes shown in the *Large Glass* with an "imitation

game" slipping into the role of his alter ego Rrose Sélavy. She appears as the authoress of some of his works' plays on words, and, in the famous transvestite photos by Man Ray, Duchamp is reincarnated in her image.

The overall constellation of the Turing test and the *Large Glass* are comparable, since in both there is a technically transmitted discourse between the sexes that is kept in play by the fact that no actual physical encounter can occur. Turing's paper contains such cryptic formulations as: "Finally, we wish to exclude from the machines men born in the usual manner." Or: "One might for instance insist that the team of engineers [who build the machine] should be all of one sex."[29] All this is supposed to exclude a "biological," that is, heterosexual, solution to the generation of intelligence, but at the same time it confirms the status of *the universal machine* as a *bachelor machine* in that sexuality can no longer lead to procreation. Again statements by hackers are today the most explicit ones on this track: "Men can't have babies, and so they go to have them on the machine. Women don't need a computer, they have them the other way."[30]

Michel Carrouges defined the bachelor machine as "a fantastic imaginary picture that transforms love into a lethal mechanism." And it is surprising how close he comes to Turing's universal machine when he calls it an "improbable machine," but simultaneously declares: "This machine's main structure is based on mathematical logic."[31] A psychoanalytical correspondence to the Turing test is provided by Deleuze and Guattari's definition. They borrow "the term of 'celibate machine' to designate a machine that produces a new link between wish machines and organ-less bodies for the purpose of a new humanity or of a glorious organism."[32] In 1972 they described psychophysical processes with media-technical metaphors, even before the debate on cyborgs ever took place.

It is possible that all who have followed this train of thought up to now will no longer be surprised that most computer inventors have been interested in chess and have tried to solve chess problems with their machines: Babbage, Turing, Zuse, Shannon, and Wiener.[33] Turing, even before his test, saw the game of chess as the best opportunity "to have a machine show its intelligence."[34] For this he developed a preliminary version of the test in which one test subject plays against two invisible opponents in separate rooms, one of which is a "paper machine," that is, a program prescribing firm rules written by hand that calculate the chess positions. "A man provided with paper, pencil and rubber, and subject to strict discipline, is in effect a universal ma-

chine," as Turing expresses it. The test subject "may find it quite difficult to tell" which of his invisible opponents is a "rather poor chess player" and which is the "paper machine," Turing continues, for: "Playing against such a machine gives a definite feeling that one is pitting one's wits against something alive."[35] This experience is based on experiments Turing carried out himself.

Duchamp's *Green Box*, the origin of the term bachelor machine, has remained in the stage of a "paper machine" that, although it demands no such "strict discipline" from the user, captivates him via its countless links through the notes, within which he moves in no firm sequence as through a hypertext. Machines, science, and sexuality overlap here in the same way they do in the subtexts of Turing's investigations.

In Duchamp's sequence of pictures from the years 1911 to 1912, which led to the *Large Glass*, and in the two different versions of Turing's test, first chess and then sex serve as a model of interpersonal connection or man–machine interchangeability. Turing was to be proved right in his prognosis in the case of chess. The interface of the chessboard can serve in a game between humans exactly the same as in communication with a machine, while the rules of chess, in principle, form a calculable multiplicity of game combinations. This is why chess was the first domain of interpersonal activity in which the computer became a serious rival to man. On May 10, 1997, the IBM computer Deep Blue beat the world champion Garry Kasparov with a score of 3.5 to 2.5. It won $700,000 and IBM stock soared.[36]

Today's practical trials of the borderline between media, men and machines do indeed touch on the same cornerstones that already played a key role in the creation of the *Large Glass* and the development of the Turing test: chess and sex.[37] Could it be that the actual significance of Duchamp's and Turing's machine models will thus evolve within the current testing of the limits of media-technical experience and at the same time herald their potential synthesis?

Technological Imagination

"How is it possible that a common basic structure is part of all bachelor machines?" Michel Carrouges asks in retrospect of his case studies from the nineteenth and twentieth centuries. Like Jean Suquet or Thomas Zaunschirm he has no answer.[38] All of them have noted a broad correspondence between

themes from Duchamp's *Large Glass* and other works of literature and art. In the continuation of this puzzle I will juxtapose post–*Large Glass* works by Duchamp with popular depictions of media technology. I don't want to conceal the fact that it was the coincidence of these pictures that inspired this essay.

I'll begin again with the game of chess. Duchamp's *Pocket Chess Game* from 1944 is for him first of all a practical device with no claim to art. Fifty years later, comparable travel sets are available as pocket chess computers or as software for the laptop. The wooden chessboard is replaced by a peripatetic game for bachelor globetrotters. In both cases, a game between two people is turned into a solitary engagement with an imaginary opponent. And while Duchamp played long-distance chess preferably by mail, Internet chess has become today's great success story.

For his biographer Robert Lebel, Duchamp added a rubber glove and thus expanded his travel chess set to an assemblage, making it into an artwork (fig. 6.6). But why the glove? We'd do well to remember the hand that is placed so

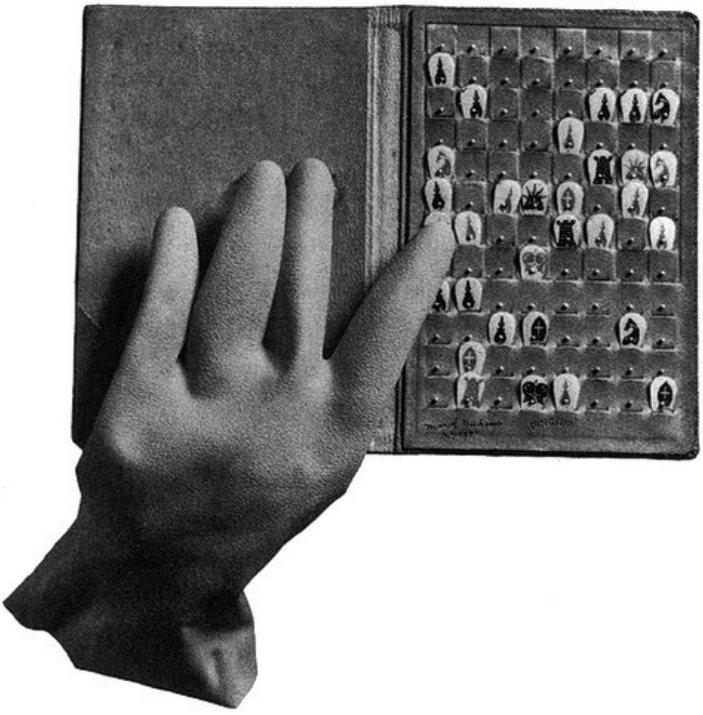

Figure 6.6 Marcel Duchamp, *Pocket Chess with Rubber Glove,* 1944. Collection Lebel, Paris.

strikingly in Duchamp's chess drawing and painting, both from 1911 (see fig. 6.1). The hand as a physical element intrudes into the mental space of chess. In the same way the dataglove intrudes into the dataspace, which it thus makes physically tangible instead of only manipulable via keys and signs. In today's digital technology, the size of the human finger is a physical limitation in humanity's continual attempt to miniaturize the interface of the keyboard. This limit to the manual access of immaterial information is what Duchamp seems to investigate in his assemblage with a rubber glove and a pocket chess game—in his own way.

By means of interfaces with physical references like the dataglove, movement within dataspace approaches natural movement. In this way cyberspace becomes a place of physical experience and is given a potentially erotic dimension, exactly as Turing had foreseen in the still thoroughly nonsensual computer era of punched cards and endless columns of numbers (fig. 6.7). This opposition between tactility and reading (that is, that a text only works in the imagination whereas the haptic finds a direct path to consciousness) may be one aspect of the book cover that Duchamp designed for Le Surréalisme en 1947 under the motto "Please touch" (fig. 6.8).

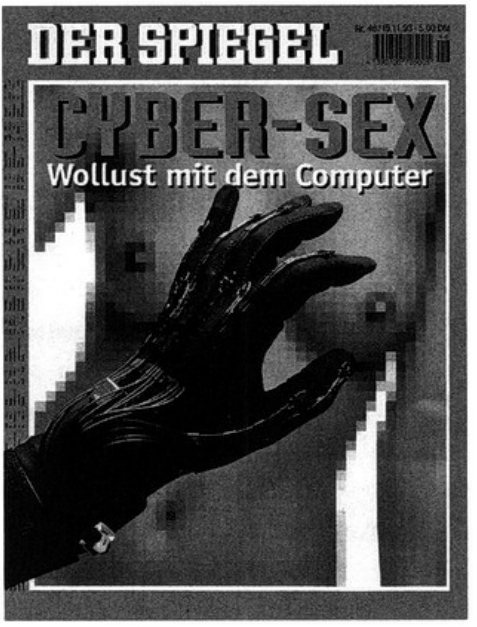

Figure 6.7 *Cybersex*, cover of the magazine *Spiegel*, 1993. Copyright: Der Spiegel.

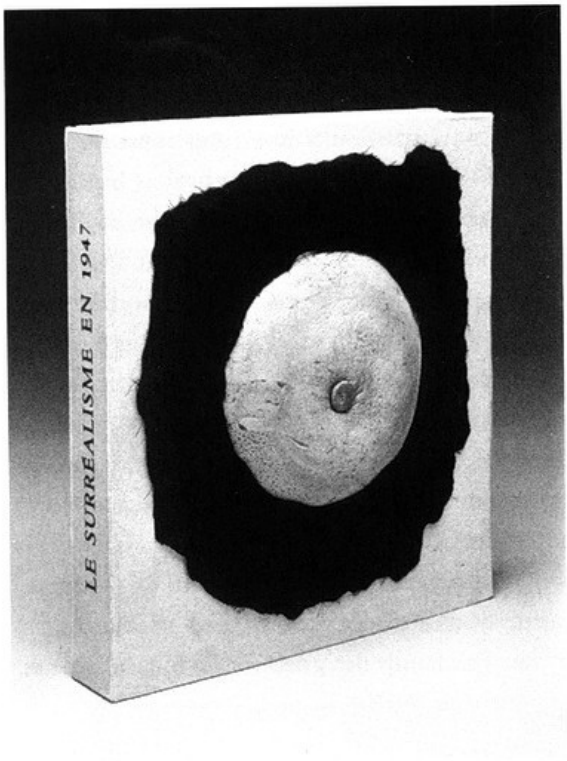

Figure 6.8 Marcel Duchamp, *Prière de toucher,* cover for *Le Surréalisme en 1947,* Museum Ludwig, Cologne.

In comparison to Turing's purely verbal test structure, the bachelors in Duchamp's *Large Glass* have the media-technical luxury of an electric visual link to their bride; according to the notes in the *Green Box*, what is transmitted are the "cinematic effects of the electric stripping bare."[39] This imaginary apparatus of the *Large Glass* could well correspond in some of its essential elements to the media-technical devices that since the 1990s have been designed around the theme of cybersex. The dataglove has been expanded to include the whole body and tactile impulses are added to the optical signals. Like the artificial women of nineteenth-century science fiction novels, cybersex has remained a mostly imaginary practice; it never took off in real life the way it was expected at the time of the virtual reality euphoria. Like some pieces of media art, cybersex is a hypothetical incarnation of inherent motives of the universal machine. This is made even clearer by the fact that some of the most discussed examples of cybersex devices are developed in an art context.[40] They

pretend to be real machines, simulating a physical encounter by means of media-technical apparatuses, but most of their erotic attraction is born in sexual fantasy instead of physical experience.

With Duchamp, too, fifty years after the *Large Glass*, the previously imaginary bride goes concrete in *Étant donnés.* Instead of a technosexual metaphor only comprehensible via the *Green Box*'s operating instructions, we, through two eyeholes in a door, gaze at a perfect illusion whose effect, without any textual explanation, is direct. A comparison to virtual reality discloses the fact that the illusion of the object of desire can always only be seen by one viewer who is obliged to turn away from the real world and look through two peepholes at a perfect simulation, whether the ocular device is two holes in a door or virtual reality glasses. But where are the bachelors who were linked media-technically to their virtual bride in the *Large Glass?* In *Étant donnés* as in cybersex we as viewers take up their position.[41] While in the *Large Glass* a text-based metaphor is still in operation, we are now in the position of those to whom a virtual bride appears in absolute perfection while remaining absolutely out of reach.

The immense interest today in the possibility of teledildonics is evidenced by the success of the website "FuckU-fuckme," which claimed worldwide interest with several thousand hits daily.[42] The product offered here is, however, a fake, launched in 1999 by the Moscow Internet artist Alexei Shulgin.[43] The direct casts of the primary sex organs necessary for such interfaces are also found in Duchamp's works that lead up to *Étant donnés*, such as the *Female Figleaf* from 1950. Duchamp's entire love of detail is also dedicated to the perfect depiction of skin in the preliminary models and the end version of *Étant donnés*. The first model for *Étant donnés* from 1948–49 has an inscription on the reverse side that expressly states that the female dummy may not be touched even in the case of repairs or a new frame for the work, since otherwise the sensitive shading of the skin would be destroyed.[44] We see that even when dealing with concrete material, the contradiction is maintained between perfect illusion and untouchability.

Here we must once again quote Turing: "No engineer or chemist claims to be able to produce a material which is indistinguishable from human skin. It is possible that at some time this might be done, but even supposing this invention available we should feel there was little point in trying to make a 'thinking machine' more human by dressing it up in such artificial flesh."[45] Behind these reflections stands the question as to whether something like a

tactile illusion can even exist. The relation between verbal imagination and tactility is also what Duchamp deals with in the rubber breasts as book cover under the motto "Please touch." He had already confided to Julien Levy in 1927 ever-wider-reaching speculations: "He said jokingly he was thinking of contriving a mechanical woman whose vagina would be made up of interconnected springs and ball bearings and be contractile, possibly self-lubricating and activated by a remote control, perhaps located in the head." Duchamp illustrated his explanation of a striking anticipation of present-day cybersex designs by bending two wires: "When these wire lines are formed in such a way that the exact effect is triggered and you then extract them from their function as message transmission, they become abstractions."[46] The technical function of the "Network of Stoppages," which connects the bachelors to the bride, could hardly be more exactly described, since they too are an abstraction of a randomly formed cord that serves as the means of transporting masculine desire. At the same time, five years after ending work on the *Large Glass*, Duchamp announced the incarnation of the imaginary bride that was to end forty years later in *Étant donnés.*

But the bride in *Étant donnés* will remain for the viewer just as untouchable as for the bachelors in the *Large Glass*, for whom according to Duchamp they long only "negatively" while suffering the torture of Tantalus.[47] The unattainability of what seems close enough to touch is in *Étant donnés* not made any less urgent by "artificial flesh" in Turing's sense. The question of whether a technical surrogate for a physical encounter is possible is denied by both Duchamp and Turing. This has not prevented present-day media technology from developing a material called "cyberflesh" that, in its tactile feel, comes very close to the mucous membrane that lines the inner body.

En Route to the Universal Bachelor Machine

Long before the existence of blueprints for cybersex, Turing's test as well as Duchamp's *Large Glass* point out the consequences of synthesizing telematics and artificial intelligence. This leads to the actual goal, not yet redeemed, but seemingly subliminally present: the machine as perfect sexual partner. This goal would be reached in merging Turing's and Duchamp's models to become the *universal bachelor machine*.[48] This would be, however, no longer a construct stemming from an artistic or mathematical imagination, but would follow

from the practice of dealing with media techniques, which have already been prefigured in the cited examples.

What would this practice look like? Do I perhaps always lose against my new Internet chess opponent because he is a computer with even more power than Deep Blue? And when I want to have intercourse with my distant partner per data suit, how will I know that I am actually linked to him or her and he or she is not just running my known favorite software while finding amusement elsewhere? Such fictions are a vital part of current media developments, which are working toward the goal of a universal bachelor machine. This means that media technology turns Turing's and Duchamp's models into reality—*without ever having heard of them*!

What does this mean in regard to the "power over reality" that Friedrich Kittler claimed for technology and not for art (quoted at the beginning of this essay)?[49] As to the factual situation, the difference between art and technology seems to be clear. Duchamp's bachelor machine can be found stored in a safe place, the Philadelphia Museum of Art. On the other hand, we sit opposite umpteen copies of Turing's universal machine daily. Put even more simply: Duchamp's machine remains a model, that is, art, while Turing's machine is in operation; a theory has become a technology. In this respect, the "power over reality" could hardly be more different: comprehensively in Turing's case, negligibly in Duchamp's case. But is this the last word on the impotence of art versus technology?

Duchamp's and Turing's machine models each stem from a deeply individual imagination. In both cases the technical model can be understood as a substitute for the solution to a difficult or even hopeless sexual and emotional situation. Expressed in the words of Friedrich Nietzsche: "The degree and the type of a person's sexuality reach into the highest pinnacle of his mind."[50] This is at least claimed by their biographers who pinpoint the decisive impulse for the step to a new conceptual approach as stemming from an incisive personal and sexual loss.[51] In both cases the interchangeability between man and machine provides a substitute for a physical and emotional deficit.

The universal machine and the bachelor machine both made their first appearances in the form of "paper machines." Up to this point there was no question of a difference in power between them. Both are "atremble with reflections on the future," as André Breton, and with him Walter Benjamin, formulates as the only value of an artwork.[52] But here ends the factual

analogy. Despite the meticulous technical details, no functioning machine could be built using the directions given in the *Large Glass* and the *Green Box*. Their technical features and imagined functions do not result in an operative system, but their associative ambivalence and multiplicity correspond to a psychic feedback that lies between a "wish machine" and a genuine technical machine. It is from this that the psychic motifs and connections come about that lead to the construction of real apparatuses. Duchamp's *Large Glass* shows how closely the wish to build machines is linked to becoming a machine oneself.

Turing's machine, on the other hand, was built. It has become an indispensable part of everyday life. Most machines are built to take over the tasks of humans. But the universal machine has no special purpose; its functions are as varied as human thought, with which it now competes. In so doing it surmounts the individual as well as the imaginary. By becoming technical practice, the universal machine as a veritable apparatus in all fields of life lays the foundation for the generalization of the psychical aspiration, that is, the wish for a man–machine replacement. Paradoxically, its individual motif of origin, which resulted from Turing's most profound personal loss, *remains "inscribed" in the universal machine* beyond his person. What else shows the use of the computer in the noted examples from gender-swapping to cybersex?

But how can something be "inscribed" in a universal machine, since it is characterized by the fact that it can imitate all other machines, even including humans, and consequently does not dispose of any unchanging capacities of its own? This claim to universality would then be its only specification. But again, what does universality mean here? Turing as mathematician stepped over a boundary line that was previously taboo: the mental purity of *mathematical function* is transmitted via the computer to the world of things, that is, it becomes a *real, technical function*.[53] Thus, from the hypothetical universality of his theoretically rendered machine, an actual universal use develops for the apparatus based on it. In today's factually universal deployment of computers, as proven by the examples of machine-chess and machine-sex, (which have no connection to Turing), the same motifs become manifest that had occupied him when he developed his theory of the universal machine. Parallel to the technical universality of the function of the apparatus actually built, the psychic universality of the motives behind its invention becomes evident. And it is exactly for this reason that the universal machine can be aligned with the series of bachelor machines that, mysteriously, all have a common basic struc-

ture, although they crop up in extremely diverse forms and, above all, among different authors. The psychic universality of the bachelor machines corresponds to the functional universality of Turing's machine.

The machine's claim to universality is, at the same time, the touchstone for its "power over reality." For the definition of this power depends on how far the substitution and the accessibility of all areas of reality go that are reached by the machine. Only when all areas of life can become operational does the universal machine also represent "omnipotence."[54] And it is exactly here that the *decisive difference between Turing and Duchamp* becomes apparent. Turing seems to consider an absolute man–machine exchangeability possible and almost inevitable. For him there is no "special human feature" that "can never be imitated by a machine."[55] Duchamp's *Large Glass*, in contrast, remains in an onanistic cycle of frustration with a "short circuit on demand."[56] Like all bachelor machines it stands for the unattainability of a perfect substitute—and thus for the *suffering from the phenomenon* it describes.

This suffering from the phenomenon, which the *Large Glass* as well as *Étant donnés* describes, seldom becomes very explicit with Duchamp. But as is sometimes the case with such complex trains of thought, the initial idea can clearly outline the core of what then becomes the basis of a larger-scale construction. Thus Duchamp's *Box of 1914*, the predecessor to the *Green Box*, already contains such a central note whose meaning first becomes visible and understandable through the later, more complicated structure. He writes very cryptically of "L'électricité en large" as the "only possible use of electricity 'in the arts.'" This widespread electrification "in the arts" (the quotation marks doubtless signal irony) follows immediately after: "Given the fact . . . ; if I assume I would suffer very much" and a very unambiguous, even onomatopoetic allusion to onanism. I do not want to go into this first hint of the later title *Étant donnés*, but into what for Duchamp is a very unusual, even unique confession of suffering from the phenomenon described. It is the sole occasion in all Duchamp's notes on the *Large Glass* where the word "I" is used. And on one of the copies of the box he has added by hand on this note: "Given . . . ; if I assume that I would suffer very much (express it like a mathematical theorem)."[57] This is exactly what *Alan Turing was successful in doing, expressing his suffering in a mathematical theorem.* Because of its "widespread electrification," this machine has established itself in today's society. More and more this universal technology is taking over the role that was once reserved for the arts, creating a suprapersonal expression of suffering, love, and desire.

Despite this, the omnipotence of the machine runs into clear limitations, which in turn can be marked by exactly those two test fields that Turing and Duchamp had invoked: chess and sex. In the case of chess the equality of the machine was proved no later than Deep Blue's victory over Kasparov. In the area of general, interhuman communication, however, there is no serious competition of the machine in sight. In 1950 Turing had predicted that his test would be passed by a machine by the end of the century.[58] In 1991 the Loebner Prize announced that it will award $100,000 to the first program that passes Turing's criterion for a five-minute dialogue.[59] Up to now the results of the annual tests are far removed from the short examples of dialogues cited by Turing in 1950, in which, among other things, poetry is spoken of.[60] The theme of sex has several times played a central role in the programs that turned out to be the best, but has proved a far cry from an erotic irritation.[61] By means of an unequivocal interface and the game's set rules, chess has become operational. On the other hand, "sex appeal" (which Turing believed machines also susceptible to), as a game of rules and a game of overstepping those rules, has eluded all operational capacities.

The flexible rules of interhuman communication, according to Turing, can be learned by the machine only through longer exchanges with people. As a prerequisite he names the capacity of the machine to feel pleasure and frustration. Only in this way can the machine be educated, since reward and punishment is the only way to learn and the only means by which the machine can become comprehensively intelligent in a human sense.[62] A capacity for pleasure would thus be one of the prerequisites for thinking in its fully developed form. This is exactly what in today's research for simulating emotions in artificial intelligence seems to be so difficult to program.[63] That is why machines up to now have neither convinced us of their "sex appeal" nor produced art.[64]

Phone sex and the countless new forms of sexual encounter and identity-change on the Internet—forms of an sexuality, stimulated by media without any physical encounter—are only acted out between humans up to now and are much further developed than any man–machine exchange. The human imagination and the will to realize it in this field is still far beyond the capacity of the machine. Exactly this human wish to play the part of a machine, even perhaps to become one, in order to dispose of the incapacity for physical fulfillment in a sexual encounter, in order to encompass it in a form that is separable from one's own agony of impotence—that is the theme that Duchamp so meticulously depicts in the *Large Glass*. But today the bachelor ma-

chine has left the field of art and literature far behind and instead become a motif of the omnipresent practice of media technology. The universal machine of the computer serves as a means to realize these wishes, but its capacity does not suffice to fulfill them completely, nor to replace the human counterpart.

This as-absurd-as-it-is-significant contest between the operational capacity of the universal machine and the imaginative capacity of the bachelor machine comes down to the question of who can better imitate whom: whether the machine a man or whether the man a machine.[65] The universal machine is one in a series of bachelor machines, but it at the same time *claims to be their ultimate end*, since its principle has become a technical, factual reality, independent of any individual and beyond any imagination. It is sometimes called the "Turing machine" and in this way one could say that Turing "lost his name to a machine."[66] But countless nameless people follow his highly individually motivated wish of replacing a human by a machine, because his machine has put this seemingly within our reach. Only from a synthesis of the psychic universality of the bachelor machine in tandem with the mathematic and technical universality of Turing's machine does a steady expansion in the technological "power over reality" result.

From a technical viewpoint, this contest will continue into the future, its result open to all comers. But up to now, the above examples show that the bachelor machine, having started out as an artistic vision, has turned into a way of embracing and developing technologies. As such, it is still miles ahead of the universal machine, which started out from technology so as to maybe one day equal man.

Notes

1. See Daniels 2003. The present essay is based on a chapter from this book and was reworked in many parts for this first English publication.

2. Kittler 1993, 47, 51.

3. Use of the word "man" throughout this essay is intentional, as it indicates the gender issues involved.

4. See Strouhal 1994, *Duchamps Spiel*, an informative study which, at least as concerns chess, also deals with Turing.

5. Duchamp in a talk at the chess congress in Cazenovia (Strouhal 1994, 11).

6. See the photo and audio documentation in the book by Shigeko Kubota, *Marcel Duchamp and John Cage* (n.p, n.d.).

7. Duchamp 1975, 59. On the countless references to the technology of the telegraph and radio concerning the link between bachelors and bride see the very detailed studies made by Linda Dalrymple Henderson, above all, the section "Wireless Telegraphy, Telepathy, and Radio Control in the Large Glass" (Henderson 1998, 103–115).

8. See Carrouges 1954; Deleuze and Guattari 1974; Clair and Szeemann 1975.

9. Duchamp 1975, 46.

10. This division into physical schema and formal rules in chess corresponds to two ways of experiencing the world, according to Duchamp: "I think that every chess player experiences a mixture of two aesthetic pleasures: first the abstraction of the delineation that is similar to the idea of poetry when writing, second, the sensuous pleasure in physically executing the delineation on the chess board." (Speech at the chess congress in Cazenovia 1952, in Strouhal 1994, 19.) Similar things could be said of the aesthetic experience of working with a computer.

11. Cf. Friedrich Kittler, "Es gibt keine Software," in Kittler 1993a, 229ff.

12. Jean Suquet writes on the *Large Glass* along these lines: "The machine runs only on words." Jean Suquet, "Possible," in de Duve 1991, 86.

13. Turing 1992, 7.

14. Baudrillard 1989, 128.

15. This corresponds to an action by the Hamburg female artists group "—innen," who in 1996 handed out men's mouse pads at the CeBit computer fair printed with the slogan: "Has your computer ever feigned an orgasm?"

16. Levy 1994, 83.

17. Statement by hacker Burt in Turkle 1984, 198.

18. Alan M. Turing, "Computing Machinery and Intelligence," in *Mind* 59 (1950). Reprinted in Turing 1992, 133–160.

19. It is surprising that the sexual components of the test have gone unnoticed by authors who otherwise very exactly register the gender-specificity of the media. See, e.g., Kittler 1986, 30; Wiener 1990, 93; and even in explicitly feminist studies on gender and computers, e.g., Kirby 1997, 136, 177. On the other hand, the Turing biographer Andrew Hodges, for example, finds the test a "bad analogy" that shows the "definitely camp humour in Turing's paper, reflecting his gay identity," which moreover encourages a "wild misinterpretation of what he had in mind." See Andrew Hodges, "The Alan Turing Internet Scrapbook," with links to other texts on the theme, at http://www.turing.org.uk/turing/scrapbook/index.html/. A more profound analysis of the gender-specific implications of the test is given by Rebentisch 1997.

20. Turing 1992, 134.

21. Hodges 1983, 540.

22. *Stern*, May 5, 1994, p. 56.

23. Turing 1992, 134.

24. Butler 1990.

25. Sherry Turkle, *Life on the Screen* (1995). Note the flirt of a student with the program Julia that he took for a girl (chapter 3, "Julia").

26. Haraway 2000, 292.

27. Rebentisch 1997, 29.

28. Cf. Hodges in Herken 1994, 12.

29. Turing 1992, 135–136. A certain irony can be seen in play here in Turing's formulations.

30. Statement by hacker Anthony in Turkle 1984, 235.

31. Carrouges in Clair and Szeemann 1975, 21.

32. Deleuze and Guattari 1974, 25.

33. Pias 2002, 198. According to Claus Pias, chess can be seen as a mental image (*Denkbild*) of the computer. It is almost a matter of course that hackers also develop chess programs, whose aim is to have the machine beat the human player. See Levy 1994, 89ff.

34. Turing's ACE report from 1945, according to Hodges 1983, 333.

35. Turing 1992, 127, 113, 109. It may today seem absurd or ironic to have a person "play" a machine in order to deceive another person into thinking he or she is playing against a person instead of against a machine. But this reflects only the phase of the pre-apparatus thought experiment.

36. Garry Kasparov later insisted that Deep Blue must have secretly received human assistance. However, in the meantime, even standard chess programs are able to beat grand masters; thus in May 1999, a "Fritz," version 5.32, available on CD-ROM beat Judith Polgar (Elo 2677) by 5.5 to 2.5. And in October 2002, the two-week match between the upgraded version "Deep Fritz" and chess world champion Wladimir Kramnik ended in a draw.

37. "The milieu of chess players is far more sympathetic than that of artists. These people are completely cloudy, completely blind, wearing blinkers. Madmen of a certain quality, the way the artist is supposed to be, but isn't, in general." (Duchamp, quoted in Cabanne 1987, 19.) This statement by Duchamp could today easily be applied to the phenotype of the computer hacker, whereby the celibate tendency in both milieus is clear.

38. Carrouges in Clair and Szeemann 1975, 44. See also Jean Suquet on Duchamp's *Large Glass* and Herman Melville's tale "The Paradise of Bachelors and the Tartarus of Maids" from 1852, in which nine bachelors meet nine lonely, freezing virgins who are operating a large machine that produces a kind of spermatic liquid out of old clothes. This enigma of a coincidence, which goes as far as "a correspondence of names and numbers," Suquet calls the actual reason for his book (Suquet 1974, 229ff). Thomas Zaunschirm (1982) comes to similar far-reaching conclusions in *Robert Musil und Marcel Duchamp*.

39. Duchamp 1975, 62.

40. At the Art Academy for Media, Kirk Woolford and Stahl Stenslie developed a cybersex suit that drew a lot of attention in the media, but whose function was more symbolic (see, e.g., "Prinz Reporterin testete Cyber-Sex, Orgasmus und Computer, Wie war's?," in *Prinz*, May 1994). Compare also the statements of artists in *Lab 1, Jahrbuch der Kunsthochschule für Medien*, Cologne (1994), 40ff, 74ff.

41. See Daniels 1992, 288–289.

42. Cf. Howard Rheingold, "Teledildonics," chapter 4 in Rheingold 1991.

43. See http://www.fu-fme.com/. According to Alexei Shulgin there were many orders for the nonexistent product, and on his website, in the meantime, the traffic was so high that it would have been possible to run ad banners bringing in several thousand dollars a month.

44. For the inscription, see Schwarz 1997, 794, cat. no. 531.

45. Turing 1992, 134.

46. Levy 1977, 20. From 1925 Duchamp several times collaborated with Frederick Kiesler, whose designs for audiovisual depiction techniques in part approach concepts of today's virtual reality. See Daniels 1996.

47. Duchamp, *Notes*, 1980, note 103. According to Greek mythology, Tantalus is punished by the gods and made to suffer hunger and thirst while water and the most luscious fruits are held before his eyes but withdrawn at his every attempt to reach them.

48. Jean Baudrillard developed theses on the sexual dimension of media technology that come very close to the ones represented here: "The relationship to a discussion partner via telecommunication is the same as that to input knowledge in data processing: tactile and groping. . . . That is why electronic data processing and communication, in a kind of incestuous convolution, always fall back on each other" (Baudrillard 1989, 121, 122).

49. See Kittler 1993b, 47, 51.

50. Friedrich Nietzsche, *Jenseits von Gut und Böse*, part 4, epigram 37.

51. Andrew Hodges draws a direct connection between the death of Chris Morcom, the young Turing's first love, and the notion of the universal machine, claiming that

the idea was born out of Alan Turing's personal loss. The transformation of love into a death mechanism as a principle of the bachelor machine fits in when he goes on to write: "Christopher Morcom had died a second death, and *Computable Numbers* marked his passing" (Hodges 1983, 110, 108, 45ff). Arturo Schwarz sees Duchamp's unfulfilled, incestuous love for his sister Susanne as an explanation for almost everything in his work (Schwarz 1969). Such interpretations are always one-dimensional and, as concerns Arturo Schwarz, clearly exaggerated. Yet nothing speaks against their having a true core.

52. Benjamin 1989, 500.

53. Andrew Hodges writes about Turing's first, still mechanical machine experiments from 1939: "The machine seemed to be a contradiction," because "a pure mathematician worked in a symbolic world and not with things. . . . For Alan Turing personally, the machine was a symptom of something that could not be answered by mathematics alone." The machine was a way "of making some connection between the abstract and the physical. It was not science, not 'applied mathematics,' but a sort of applied logic, something that had no name" (Hodges 1983, 157). Duchamp's work aims exactly in the same direction of something not yet named—beyond painting, literature, or technology.

54. See Kittler 1993b, 47, 51.

55. Turing in Hodges 1983, 539–540.

56. Duchamp 1975, 59.

57. The wording in the note: "L'électricité en large—Seule utilisation possible de l'électricité 'dans les arts' Étant donné . . . ; si je suppose que je sois souffrant beaucoup (énoncer comme un théorème mathematique)" (Duchamp 1975, 36–37; Suquet's addition to this in Suquet 1974, 191).

58. Turing 1992, 142.

59. Compare the transcripts of the tests at http://www.loebner.net/Prizef/loebner-prize .html/.

60. Turing 1992, 146.

61. See, e.g., the Turing test transcript on the winner of the Loebner Prize 1995 by Joseph Weintraub. The tests were, however, carried out only in the reduced version of man vs. machine, not in the man–woman–machine constellation of the imitation game suggested by Turing.

62. Turing 1992, 118ff, 121ff, 154ff.

63. For Baudrillard the machine's inability to feel pleasure is exactly the last defense in man's assurance of not being a machine: "What will always distinguish the functioning of even the most intelligent machines from man is the ecstasy, the pleasure, of functioning.... All kinds of artificial props can contribute to securing man pleasure, but he cannot invent anything to feel pleasure in his place" (Baudrillard 1989, 130). But, according to Turing, such a position leads to a vicious solipsistic circle (Turing 1992, 146). In analogy to Ludwig Wittgentstein's study on conveying pain, he put it this way: Only I can know if I feel pleasure (cf. Ludwig Wittgenstein, *Philosophical Investigations*, no. 244ff). Turing went to Wittgenstein's seminars in Cambridge, and on a conceptual relation between them there would be at least as much to say as on that between Duchamp and Turing (Hodges 1983, 152ff).

64. Turing investigates the question of whether art production is a criterion for thinking within the framework of arguments on consciousness. See Turing 1987, 164ff.

65. At the Turing test competition for the Loebner Prize in 2000, the testers had, at least once, mistaken all human opponents for a computer, but no computer was mistaken for a human.

66. Bernard Dotzler and Friedrich Kittler, in Turing 1987, 5.

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