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Media Metaphorology: Irritations in the Epistemic Field of Media Studies (2002)[1]

With the evolution of the "new media," the question of a specific epistemic place of the media has undeniably gained in urgency for the history of the discipline.[1] But it was only the ubiquity of computers in almost every area of society that made it possible to talk about an inclusive "universal medium" that could integrate all media in one digital code.[2] And with the revaluation of the "personal computer" as an interactive multimedium, its cultural significance gave rise both to media euphoria and media skepticism. Yet the polarization of critical and affirmative discourse is nothing new. The tendency of cultural critique to demonize technical innovation as life-threatening artificiality can be found in Rousseau and in Romanticism, where it is based on assumptions of lost immediacy. Inversely, celebrating the artifacts of technology as means of salvation also promises a paradise of transparency - without mediation and delay. But the metaphors that restrict the "Ersatzwelt" of technical media to bodily extension or amputation (hammer equals reinforced fist, camera equals enlarged eye, radio equals amplified ear, and so on) now experience another irritation due to the unspecified and manifold capabilities of digital media, beyond mechanic and organic models. The validity and limitations of any supposed similarity between man and machine are no longer determined by functions of motion and intelligence, as they were introduced in artificial intelligence research, which of course never achieved complete identity of computer and brain.

Nowadays, the arbitrariness of metaphors is owed to the many different possible applications of digital media, since the definitions of their use seem looser and more arbitrary than the precisely defined media of storage or transmission. This ateleologic openness of digital code - heuristically we might call it universal for now - applies to more than just local transformations of how we act with tools. Symbolic acts as such -including language and thought, depiction and representation - are mediatized to the extent of raising

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the question of the constitutive place of the media. The potential validity of media studies as an independent inquiry therefore depends on coming to terms with the permissiveness of digital technology regarding its use for text, image, or sound, a fact that necessitates theoretical reflections on indifferent transmissibility as such (Übertragbarkeit).[3]

As a first step, I would like to demonstrate how the circumscription of this "new" epistemic field layers metaphoric and conceptual interpretations of what decides the mediality of media. The multiplicity of images and concepts applied to the media stems not only from theoretical or methodological preferences that situate the medium according to the relevant perspective as means of (self-referential) communication, as instrument of information processing, or as its own message. The variability of such metaphors is not limited to the respective range of signification. Rather, it is questionable whether the choice between means, instrument, or message denotes the proper core of the medium, in the Aristotelian sense of a clear and simple idea, or whether these words only represent provisional metaphoric expressions. The question is whether their as-if status is simply the application - innovative, but soon worn - of a meaning that itself stems from other semantic areas (for instance, that of mechanic tools) and is only borrowed for explication's sake. A metaphorology of the conceptual history of the media will be able to distinguish the epistemic fields that remain virulent for contemporary media theories.[4] By the same token, there are plenty of indications that an investigation into the place of media also affects the question regarding the relation of concept and metaphor. In this sense, we will sketch out a metaphorology of media.[5]

First, it is impossible to overlook that the digitalization of media made metaphoric asif descriptions proliferate. Yet this proliferation correlates with a strange fuzziness concerning the ontological status of the media "themselves": for if one seeks to describe the apparent specificity of a medium more precisely in the context of its digital resolution and reproducibility, one encounters a seemingly unfettered disruption by as-if options that undermine the distinction between concept and metaphor itself. Furthermore, there are additional aspects, less to do with the media themselves, that come to puncture and dissolve the epistemic borders of the mediality of media: with the advent of digital coding, the intermingling of singular modes of storage and transmission (associated for example with photography, cinema, television) becomes technically possible. The global acceleration of

digital networks makes it less plausible to describe such phenomena in spatiotemporal or sociogeographic terms. Even the common discourses of one-way and two-way media and their respective paradigms of communication that served as the basis for theories of mass media appear questionable, not only sociologically, due to the tele-technological extension of the Internet. From the telephone to the Internet, the effect of a distancing, or resolution, of bodily proximity evidently leads up to the inherent aporia of communication, namely the immediate communion suggested in face-to-face contact. The interstice of the mediatic frame of communication becomes more apparent with the diffusion of spatial relations between proximity and distance on the Internet.[6]

The heterotopia between real and virtual spaces, such as virtual communities, digital cities, or interactive marketplaces, is addressed by analyses of the media in terms of theater or performance. No doubt the bots, artificial constructs, and personae of those environments demonstrate that traditional ideas of identity associated with bodily presence are insufficient.[7] In translating the oscillations of such role-play between presence and absence in the categories of metapsychology, we arrive at the sobering insight that intersubjectivity is always already mediated in language, and thus the supposition of a monad that, in the face-toface, would mirror the other, is merely owed to the imaginary pull of the communication paradigm. In virtual masquerades, speaking subjects imagine a union with the ego ideal that always remains barred, as speaking subjects are constituted in reference to the other. Thus in its subjectivity, the subject is always already heterotopic, never immediately at one with itself, never completely identical with itself.

Yet this diagnosis, as Sherry Turkle has emphasized, only becomes more evident when telematic interaction multiplies the imaginary figures in their intercorporal divergence.[8] In this sense, the manifold concepts of self in cyberspace, in the role-play of MUD and MOO as Sherry Turkle described them, prove the nonunitary partiality of what such patterns of identification provide. The only new thing about them is that in the asynchronous and disembodied telecommunication of the Internet, they emerge as truly virtual objects instead of false real objects, and communicate among themselves thus.[9] However, the inaccessible place of the other, the absent who simultaneously opens and disrupts the fictional space of imaginary unity and completion, is not in reality translatable or transferable into a fictional

space where the distinction of self-reference and other-reference would be sublated: "The space where cyberspace is installed is as much or as little a cyberspace as the bed where the dreamer lies is a dreamt bed."[10]

All three traits mentioned so far - the transparency of the digital medium, the absent presence of telematic space, and the diffusion of roles in cyberspace - are part and parcel of a permissive sphere of the as-if, a pretence that warrants further discussion. This permissiveness, I will show, is owed to the play of metaphoric and conceptual distinctions in defining the mediality of media. I use only a limited number of these distinctions to demonstrate that the detour of a metaphorology of media could be worthwhile.
The most general description that would be valid for all media could be summed up as follows: "Mediality expresses how our understanding of our world, and with it all our activities and experiences with access to, not merely construction of, that world are determined by the possibilities of distinction which the media offer."[11] In other words, mediality functions as a fragmentary disclosure of our world. This can be extended in allusion to the well-known axiom of Gregory Bateson, a medium is a difference that makes a difference.[12] This constructivist thesis certainly has the advantage that it shores up the "ontological fuzziness" of mediated access to the world, and it comprehends the constitutive instability and variablity of media presentations as a function of the proliferating differences that media initiate. Yet the question remains whether the fundamental difference of binary code that is at its core can account for the relation of intentionality and reality. In other words, if the integrated computer, for instance, is understood to merely exacerbate our troubles with self-comprehension and self-division, without itself bringing about a change in our culture and our idea of ourselves, then how does this model account for historic change, and how does it theorize intentionality?[13]

In the field of systems theory and constructivism, the question about the possibility of a horizon of systemic self-reference is replaced with the assumption of a strictly causal iteration of system-context interactions, or observations of observations. Even if these (self-) observations remain fragmentary, an intentionality that is always already transparent to itself has no blind spot. It is conceived as a self-sufficient, continuous transparency of cognitive decisions. This observation enjoys the privilege of the divine eye in platonic epistemology. Thus the metaphors of systems theory are those of communication, and media are means of

communication: "People cannot communicate, not even their brains can communicate, not even consciousness can communicate. Only communication can communicate."[14] And what comes in between is, in Aristotelian teleology, a means of self-preservation above all: "A medium therefore is only a medium for one form, only as observed by one form."[15]

Likewise, the constructivist definition which follows these presuppositions preserves autopoetic, intentional, given cognition and communication and translates them onto the process of social self-renewal: "We consider 'media' all materialities which can be used systematically for a regulated and socially relevant semiotic (or symbolic) coupling of living systems."[16] Just as in the theory of generalized media of communication, the metaphorics of intransparency and transparency remains uninterrogated. Instrumental metaphors of media as means are the counterpart to anthropological metaphors, and supplement them. We will only highlight a few tropes and figures of this discourse, for two reasons: one, the following examples show that the classic metaphoric patterns of substitution and similarity remain valid for contemporary media theories; and two, trying to replace "man" with "technology" as some expressly nonmetaphoric media theories do will always result in an involuntary continuation of the imaginary mirror-symmetry and binarism of anthropological and instrumental discourses.

To consider technical media replacements or extensions of organs is the metaphor of bodily projection, which rhetorically opposes natural and artificial functions. After Arnold Gehlen, it is above all Jürgen Habermas who falls for the same circular arguments in his book Technik und Wissenschaft als Ideologie (1968) that also organizes theories of artificial intelligence. The "technical project of humanity," defined as a "functional circle of rational acts," is projected, over the course of time, from the body onto the world of "technical means." Marshall McLuhan's popular rhetorical figure of media as amputations and extensions of man, and Derrick de Kerckhove in his footstep, repeat that same equation of brain and technology, as well as the opposition of sensual and the abstract.[17] This amalgamation results in the familiar structure of the anthropological critique of the media. The rhetoric of a loss of immediacy tips into the promise of a planetary consciousness.[18]

The "Doppelgänger" of such holistic organ-metaphors, which defines humans as quasimachines (so the anthropological discourse), is the universalization of the machine as the

inhuman that will at least partially replace humans (instrumental or materialistic discourse). Even a discourse-analytical definition such as Friedrich Kittler's, taking technical codes for bearers of media, cannot avoid metaphors of imitation and implementation, simulation and substitution (for instance, of subjectivity and intelligence).[19] The claim to replace human language, or, more precisely, to replace the metaphoric logic of substitution in language (that irritating chasm between the symbolic and the real, in the Lacanian sense), with a purported materialism of technology - this claim merely transfers the alleged immediacy of the subject onto technology. Any ontological realism that pretends to avoid the detours of metaphor leads to the positing of concepts as "absolute metaphors."[20] Consequently, a "purely" technical (or even mathematical) discourse on media must consider human language, understood as merely "natural," a dwindling moment in the materiality of communication, and thus posits something very akin to Hegelian "Geist." The comparison with Hegel's concept of absolute knowledge not only serves as a metaphor, but also claims the same validity as the concept of spirit while replacing it with that of the machine or of calculability. The dialectical movement of the concept and its sublation is transferred onto the movement of media and their sublation by the Turing machine: "With the Universal Discrete Machine, the media system is closed. Media of storage and transmission both dissolve into the simulation of all information machines, simply because it stores, transmits, and calculates in each and every loop of its program. A depopulated bureaucracy assumes all functions sufficient and necessary for a formal definition of intelligence."[21] Apart from presupposing "functional" achievements of intelligence, a move that repeats the instrumental metaphors of artificial intelligence in its equation of brain and computer and overlooks that human subjectivity may not be fully circumscribed by intelligence, this attempted "closure" of the genealogy of media in the code differs from Hegelian dialectics only insofar as the "idea" or the "concept" is here dressed, or camouflaged, as the Turing machine.

The commingling of the diverse and differing categorical status of mimesis, imitation, or simulation turns the "as-if" of the Turing machine, as a machine of complete calculability of the calculable, into an ontological statement that would fixate the essence of man anthropologically in order to sublate it: the calculation machine is the "paper machine," which is man. However, Turing always insisted on the metaphoric chasm without which the famous comparison of his imitation game would not be a comparison.[22] And it is only when

metaphors of the comparability or similarity of humans and machines are taken to be ontological determinations that one can speak of "the end of man," which the axiom of bodily projection for the sake of completion, completeness, closure cannot avoid doing.[23] The apocalyptic figure of speech that would reveal the "essence" of man as "come to itself" in the universal calculation machine merely dissembles and hides its own metaphor or revelation. We can also observe a tendency to anthropomorphizing metaphors in the field of software history.[24] The beginning of programming languages in the 1950s does not start a pure or linear story of its ideas and concepts; a babylonian chain of interrupted developments, partial continuations, and paradigm shifts allows a history to be recorded in the sense of metaphorology or discourse analysis.[25] Regardless of whether one describes programming languages according to their functional, structural, or object-oriented style and compares them with historic tendencies, or whether one situates an atopical space of different imperatives, oriented toward the machine or toward communication, the dynamics of modular approaches and applications owes itself to the openness of the digital medium for different uses, even if it forgets its own origins. Especially since object-oriented computing in connection with direct manipulation of user interfaces carried the day, one should beware of strictly contrasting the "authentic" code and its "inauthentic" metaphors.

Instead it can be demonstrated that programming and the history of its styles follows procedures similar to linguistic ones. While initially the algorithms were given and programming was mainly a syntagmatic business that had to adhere to the connections of machinic logic, structural programming proposed the paradigmatic specification of a complete problem space that is inherent to the matter at hand rather than up to the programmer to determine. Object-oriented programming acknowledges that software development is mainly a syntagmatic process of moving without holistic vision from component to component. The "objectivized" fragments then serve as metaphoric markers that help orient their metonymic combination.[26] Here metaphoricity is not exhausted in a supporting role toward developing concepts. Its nonconceptual character is systemic, as Hans Blumenberg demonstrated regarding the paradigm shifts of the concept of technology itself, especially from mechanistic to pragmatic metaphors.[27] And it is not because of used-up metaphors, but because there is no simple concept of the digital that one may use to sum up software engineering as a kind of "information hiding": each module should hide what it does.[28] This dissimulation opens to a

limitless metaphorization where a description of the interfaces of human – machine - communication, and in particular the design of multimedia user interfaces, is attempted. The most common metaphors represent well-known models: dialogue, interaction, role-play, theatrality, performance. Taking computer as theater, we encounter mediators and agents as metaphors of performance. On the foil of the metaphorical world-theater in which we all play our roles, virtual agents may take our roles on the World Wide Web: "An agent is one who initiates and performs actions."[29] In trying to decide whether artificial agents, softbots, or userbots on the net only improve the filtering of information or whether they can "replace" the intentionality and identity of the individual, the newest cyborg debates are not dissimilar from earlier literature on the automaton, and share with them certain prophesies of a cybernetic symbiosis of man and machine.[30]

After such a brief and incomplete overview of the metaphoric field, which lends epistemological contours to media studies and media theories, I would like to return to the question of the place of the medium. The definition of the digital medium as universal medium of transmission or simulation of signs and media generalizes the process and status of semiosis. What is the condition of such a transfer, for the history of science? And how does the metaphoricity of the "as-if" figure as its pivot? Martin Burckhardt and others have traced its emergence in media history: if the "electromagnetic writing" of the digital code has opened the metaphoric and "trans-anthropological" horizon of media theory, then the concept of information is situated as an a priori of modernity. The computer as Turing machine relies on a historic mix of discourses and inventions, including Jacquard's punch cards, Babbage's analytic machine, and George Boole's algebra.

Burkhardt is right to point out that Boole's Investigations on the Laws of Thought (1854) take pride of place here. Once "0" and "1" no longer represent something, but become markers of a system within which something appears, it makes possible not only the alternating oscillation of presence and absence but also "the universal medium of the electric current" as a carrier that stays neutral as to its message.[31] This signals a transition of the understanding of metaphor from a merely figural expression to a means of transportation. But what meaning does this trace of difference of the electromagnetic binary code or "metawriting" have? Should the paradox of the nature of the electric sign be understood

ontologically or metaphorically - or neither? Burckhardt's definition approaches the tipping point between metaphor and concept, and in the transition from the alphanumeric to the electric sign, everything is on the same level: "For the computer could care less whether it is a voice, an x-ray of a tooth, or the hyperlinked version of the Apocalypse of St. John. The message of the computer is always Everything is the same, and: Nothing in the computer is what it is."[32]

And yet, for media metaphorology in all its multiplicity, despite all the inflation and proliferation of expression, everything is not the same. What all of these different approaches have in common is that they rely on a concept of metaphor that is founded on a fundamental difference, namely the difference between concept and metaphor, which in turn is based on the metaphoric opposition of authentic and inauthentic meaning. Any attempt to determine metaphor without metaphors will result in the attempt to distinguish between a pure and an impure metaphor. This is not the place to rehearse the philosophical aporia from Plato and Aristotle to the present day, as Jacques Derrida demonstrated it.[33] Nor is the elective affinity between metaphor and technology news: but without problematizing the hierarchy of figural and proper meaning, of concept and metaphor and the like in media studies, one would be stuck repeating the same structures and considering them the proper meaning of media or man.

Only the determination of metaphor as transferability as such allows a withdrawal of metaphor from itself, which allows us in turn to withdraw the mediality of the media from anthropological or instrumental interpretations. The interference between old and new media, and particularly the technically possible but aesthetically not yet fully comprehended simultaneity of heterogeneous modes of audibility, visibility, and so on disperses not only the referential horizon of pragmatic media use, but also the space of mediality itself. The structure of digital metaphorics that can transmit different modes of transmission is articulated as interruption and deferral of media metaphorizations, which are equally valid and equivalent to the transmitting binary code. Even the most general, tool-like definition of the computer as a universal medium of symbolic processing of data and symbolic "machines" points toward a metaphoric field that is at odds with the traditional understanding of metaphor. It not only contains the multiple uses, but also brings to the fore the metaphoricity of the metaphor in the word "as":

the computer as calculator has no different attributes from the computer as typewriter or as

means of telecommunication. In other words, the play of the "as-if" is neither inherent nor external to the digital medium - rather it marks the indifference of purely combinatory options in intermedial representation. It is possible to relate this to the disinterested technology of art, but the freedom from instrumentalizing references as they are alleged about the realm of disinterested pleasure are not simply given. At least under digital conditions it is not a matter of an aesthetic discourse of genius, creator, or author. The oscillation between presence and absence may help rearticulate the relationship between art and technology: the indifference of the digital medium to signs, sounds, images, poetics, and so forth points to a technology that is in difference itself - points to its interstice, which aesthetics reconfigures anew, again and again.

Now what would a metaphorological determination of the computer as medium look like? Does the computer become the integrator of all other media, and is it transferred into all other media? When something other is transported by something other to another place, then we have an atopical space of transferability without which the transfer would not take place.[34] But how would the nonmetaphoric transfer of the computer "as such" be distinct from the mere metaphoric transfer that proliferate in its multimedia representations? The computer as medium only exists in differing from itself -that is to say, in deferring its "authentic" meaning in all its interfaces, programmable entities, and user surfaces. The digital medium only exists in its manifold metaphoricity. And if it is not possible to deal with metaphorology unmetaphorically, then each and every concept of metaphor can itself be metaphorized. No metametaphor, no metaphorology will ever be shored up against the strong pull of signification; metaphors happen -by way of a reserve, a withdrawal, a turn on themselves. Metaphoricity in the determination of the computer as medium shows itself as transferability of (neither authentic nor inauthentic) metaphors without which multimedia representation would be mere apparition. Programming languages as well as the source code are representations of the processor, not the processor itself. In this sense, they are, along with the operating systems and applications they make possible, fragmentary dissimulations. The mediatic noncoincidence of the digital medium with itself is repeated on the metaphoric levels of graphic user interfaces and their iconic appearance. And its metaphoricity increases when the digital representation of

earlier storage and transmission media, because it means the simulation not only of their apparatus but also of their specific forms - which are intermingled into hybrids that, beyond mere recycling, try out new forms and techniques of perception, composition, and montage.[35]

Even under digital conditions, the interface between humans and media remains accessible only by way of imaginary interfacing. It would be a metaphoric short circuit to talk about a symbiosis of technology and subject, and the same goes for the apocalyptic image of humans losing themselves by removing themselves from themselves with the help of electronic media and prostheses. In the applications of new media, that is to say in the miseen-scène of simulated surfaces, observations, and points of view, certain epic forms of closed and continuous narration are dispersed and interrupted in the disseminating performance of theater, installation, and dance, because their theatrality takes place as mediatic exposition of "inauthentic" gestures and utterances. McLuhan's claim that what appears in media is other media can only become readable when the status of this appearing itself turns into the focus of media theory. Media metaphorology directs us to understand them as neither means nor milieu, but as partial framing and skewing of the perceptible and the communicable. If it is true that contemporary art -from early video installation to nonclassical dance performance to postdramatic montage onstage - asks the question of the place of the body anew and differently, then such practice constitutes a consciously hybrid performance and perforation of the supposed immediacy of the body. Performance here means reflection and displacement of phantasmatic self-images and human ideals, insofar as they are increasingly staged by the media as body-centric -from the endless confessionals of the talk shows to the dream bodies in cyberspace. Performance art would be the art of breaking, ironically or grotesquely, with the traditional narration of self-identity. At the same time, the artistic experiment of shifting horizons also fragments the telematically spreading identification with globalized and globalizing norms of a homogenous culture, by reminding us of the differences they would make us forget. The transmission of this decentering intervention within the global net of communication itself can only be achieved in exposing the homogenizing metaphor of connected, "social" communication, and especially as the interruption of that message which would tell us that the medium itself is good tidings.

Notes

1 A good overview can be found in Sybille Krämer, ed. Medien, Computer, Realität: Wirklichkeitsvorstellungen und Neue Medien (Frankfurt: Suhrkamp, 1998).

2 Martin Seel, "Medien der Realität und Realität der Medien," in Krämer, Medien, Computer, Realität, 244–68, quotation from 258.

3 For a systematic and historic analysis of the technical openness of transmission uses, see Hans-Dieter Bahr, Über den Umgang mit Maschinen (Tübingen: Konkursbuchverlag C. Gehrke, 1983); to what extent the concept of style refers to semiotic reference in languages and machines, which in turn refer, in the context of uses of digital media, to the chasm between signifier and signified - that is the subject of Winfried Nöth and Karin Wenz, eds., Medientheorie und die digitalen Medien (Kassel: Kassel University Press, 1998).

4 Hans Blumenberg, Paradigmen zu einer Metaphorologie (Frankfurt: Suhrkamp, 1998).

5 See Hans-Dieter Bahr, "Medien und Philosophie. Eine Problemskizze in 14 Thesen," in Sigrid Schade and Georg Christoph Tholen, ed., Konfigurationen: Zwischen Kunst und Medien (Munich: Fink, 1998), 50–68; as well as Hans-Joachim Lenger, "Lenger, Host–Point–Poll: Ist Medientheorie 'ontologisch'?" ibid., 69–79, and Samuel Weber, "Virtualität der Medien," ibid., 35–49.

6 Wolfgang Hagen has demonstrated this self-deception for the example of empirical media sociology and its exclusion of the war horizon of media technology: Wolfgang Hagen, "Mediendialektik: Zur Archäologie eines Scheiterns," in Rudolf Maresch, ed., Medien und Öffentlichkeit: Positionierungen, Symptome, Simulationsbrüche (Munich: Boer, 1996), 41–65. Albeit in contrast with pragmatic acceptance of technology and its mass media effects, the "critique of the consciousness industry," which wants to understand media only as manipulative or emancipatory means, marks another blind spot in the historiography of media.

7 Sherry Turkle, Life on the Screen (New York: Simon and Schuster, 1995); Elena Esposito, "Fiktion und Virtualität," in Krämer, Medien, Computer, Realität, 269–96; also the contributions by Slavoj Žižek, "Cyberspace: Von der Möglichkeit, die Phantasmen zu durchqueren," in Schade and Tholen, Konfigurationen, 104–21; and Victor Burgin, "Jennis Zimmer," ibid., 94–103.

8 Bernhard Waldenfels, "Experimente mit der Wirklichkeit," in Krämer, Medien, Computer, Realität, 213–43, quotation from 213.

9 Esposito, "Fiktion und Virtualität," 270.

10 Waldenfels, "Experimente mit der Wirklichkeit," 239.

11 Sybille Krämer, "Was haben die Medien, der Computer und die Realität miteinander zu tun?" in Medien, Computer, Realität, 9–26, quotation from 15.
12 Seel, "Medien der Realität und Realität der Medien," 245.

13 Regarding the inheritance of Husserl's eidetics in the systemic communication theory, see

also G. C. Tholen, "Platzverweis. Unmögliche Zwischenspiele von Mensch und Maschine," in Norbert Bolz, Friedrich Kittler, and Georg Christoph Tholen ed., Computer als Medium. Literatur- und Medienanalysen (Munich: Fink, 1996), 11–138, in particular 23–28.

14 Niklas Luhmann, "Wie ist Bewußtsein an Kommunikation beteiligt?" in Hans Ulrich Gumbrecht, ed., Materialität der Kommunikation (Frankfurt: Suhrkamp, 1988), 884–908, quotation from 884.

15 Ibid., 891–92.

16 S. J. Schmidt, "Medien: Die Kopplung von Kommunikation und Kognition," in Krämer, Medien, Computer, Realität, 55–72, quotation from 57.

17 Marshall McLuhan, Understanding Media (New York: McGraw-Hill, 1968), 63.

18 Derrick de Kerckhove, Schriftgeburten: Vom Alphabet zum Computer (Munich: Fink, 1995), 29.

19 Friedrich Kittler, Draculas Vermächtnis: Technische Schriften (Leipzig: Reclam, 1993), 8.

20 For example, Bernhard Dotzler and Friedrich Kittler, eds., Alan M. Turing: Intelligence Service: Schriften (Berlin: Brinkmann and Bose, 1987), 5; also Friedrich Kittler, Grammophon, Film, Typewriter (Berlin: Brinkmann and Bose, 1986), 8.

21 Friedrich Kittler, "Die künstliche Intelligenz des Weltkriegs: Alan Turing," in Kittler and Tholen, Arsenale der Seele: Literatur- und Medienanalyse seit 1870 (Munich: Fink, 1989), 187–202, quotation from 196.

22 Alan Turing, "Über berechenbare Zahlen mit einer Anwendung auf das Entscheidungsproblem," in Dotzler and Kittler, Alan Turing, 17–60, quotation from 20; Alan Turing, "Intelligente Maschinen," in Dotzler and Kittler, Alan Turing, 81–114, quotation from 86 and 91.

23 G. C. Tholen, "Ende des Menschen?" Lab. Jahrbuch 1995/96 für Künste und Apparate (Cologne: Walter Konig, 1996), 320–24.

24 In addition to Sherry Turkle, see Wolfgang Hagen, "Computerpolitik," in Bolz, Kittler, and Tholen, Computer als Medium, 139–60, and "Der Stil der Sourcen," in Martin Warnke, Wolfgang Coy, and Georg Christoph Tholen, eds., HyperKult: Geschichte, Theorie und Kontext digitaler Medien (Frankfurt: Stroemfeld/Nexus, 1997), 33–68; Peter Schefe, "Prolegomena zu einer Agentologie," in Warnke, Coy, and Tholen, HyperKult, 411–32; Jörg Pflüger, "Über die Verschiedenheit des maschinellen Sprachbaus," in Bolz, Kittler, and Tholen, Computer als Medium, 139–60, and "Distributed Intelligence Agencies," in Warnke, Coy, and Tholen, HyperKult, 433–60.

25 Wolfgang Hagen, "Die verlorene Schrift: Skizzen zu einer Theorie der Computer," in Kittler and Tholen, Arsenale der Seele, 187–202.

26 Pflüger, "Distributed Intelligence Agencies," 441.

27 Blumenberg, Paradigmen zu einer Metaphorologie, 91

28 Pflüger, "Distributed Intelligence Agencies," 442.

29 Brenda Laurel, Computers As Theatre (Reading, MA: Addison-Wesley, 1991), 47. Jörg Pflüger has precisely traced the genealogy of the metaphor of interaction: "Agents are computer programs that simulate a human relationship, by doing something that another

person could otherwise do for you." Instead of hierarchy and delegation, as Patti Maes records, we now also have the metaphor of collaboration: "The metaphor used is that of a personal assistant who is collaborating with the user in the same work environment" (Patti Maes, "Agents That Reduce Work and Information Overload," Communications of the ACM 37.7 [July 1994]: 30–40).

30 Hans-Dieter Bahr, Über den Umgang mit Maschinen (Tübingen: Konkursbuchverlag C. Gehrke, 1983), and Peter Galison, "Die Ontologie des Feindes: Norbert Wiener und die Vision der Kybernetik," in Hans-Jörg Rheinberger, Bettina Wahrig-Schmidt, and Michael Hagner eds., Räume des Wissens: Repräsentation, Codierung, Spur (Berlin: Akademie-Verlag, 1997), 281–324.

31 Jacques Lacan, Le Seminaire II [1954–1955] (Paris: Seuil, 1988); Martin Burckhardt, "Unter Strom: Der Autor und die elektromagnetische Schrift," in Krämer, Medien, Computer, Realität, 27–54, quotation from 44; see also Jens Schreiber, "Stop Making Sense," in Bolz, Kittler, and Tholen, Computer als Medium, 91–110.

32 Martin Burckhardt, "Unter Strom," 43–44.

33 Jacques Derrida, "The White Mythology: Metaphor in the Text of Philosophy," New Literary History 6.1 (1974): 7–74; and Jacques Derrida, "The Retrait of Metaphor," enclitic 2.2 (1978): 5–34. Following him is Anselm Haverkamp, ed., Theorie der Metapher (Darmstadt: Wissenschaftliche Buchgesellschaft, 1996), and Christiaan L. Hart Nibbrig, ed., Was heißt "Darstellen"? (Frankfurt: Suhrkamp, 1996).

34 See Samuel Weber, "Virtualität der Medien," in Schade and Tholen, Konfigurationen, 35–49.

35 Case studies of this art of intermedial intersection can be found in Barbara Naumann, ed., Vom Doppelleben der Bilder (Munich: Fink, 1993); Yvonne Spielmann, Gundolf Winter, eds., Bild, Medium, Kunst (Munich: Fink: 1999); and Schade and Tholen, Zwischen Kunst und Medien.