HENNING SCHMIDGEN

HOT

OR THE COUNTERSIDE OF MEDIA

Horn,

OR

THE

COUNTERSIDE

OF

MEDIA

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HENNING SCHMIDGEN

Translated by Nils F. Schott

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This is an experimental book. In two earlier volumes, I discussed connections between humans and machines. *The Unconscious of Machines* was devoted to Félix Guattari's philosophy, which conceives of the subliminal commonalities between technics and body as a creative resource. *Brain and Time* reconstructed the scientific and technological history of experimental psychology in the nineteenth and early twentieth centuries to show how the combination of and confrontation between laboratory instruments and test subjects drove the epistemic process.[1]

Horn takes up this theme but shifts the focus to the terrain of media theory. This book is concerned not with connections between human and machine but with the in-between itself, that is, with the faces, surfaces, and interfaces that separate body and technics to reestablish contact between them in a different way. In rather unexpected ways, the COVID-19 crisis has underscored the importance of this problem. While the matter of touch and its multifaceted manifestations—from physical contact to transmissions through aerosols—is a core problem in all infectious diseases, innovative smartphone technologies can now be used for tracing and tracking potentially harmful encounters and meetings between their users. This is just one example illustrating the relevance of this book, whose central aim is to rethink the sense of touch in the age of ubiquitous computing.

I would like to thank the VolkswagenStiftung for supporting my work on this project within its funding initiative, "'Original—Isn't It?' New Options for the Humanities and Cultural Studies" in 2016. Wherever they could, Vera Szöllösi-Brenig and Sebastian Schneider provided friendly and unbureaucratic help—even when it became clear that this project would considerably outgrow its originally envisaged scope.

Support from the VolkswagenStiftung also allowed me to present the major findings of this work at an international workshop, "Symmetries of Touch," in October 2016 and discuss them with colleagues from media studies, the history of science, art history, computer science, literary studies, and sociology. I am grateful to Hanjo Berressem, Lorenz Engell, Mechthild Fend, Andrew Goffey, Eva Hornecker, Rebekka Ladewig, David Parisi, Mark Paterson, Chris Salter, Elisabeth von Samsonow, Max Stadler, Charles

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I owe a debt of gratitude to a number of people. Rebecca Horn graciously allowed me to screen several of her very early films. Andrew McLuhan and Ellen Fernandez-Sacco helped out with information on André Girard. Moreover, I would like to thank Bernhard Dotzler in Regensburg, Simon Frisch in Weimar, and Pamela Kort in Berlin (now in Zurich) for stimulating conversations and critical discussions.

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"A motorcycle mechanic," Robert M. Pirsig writes in *Zen and the Art of Motorcycle Maintenance*, "who honks the horn to see if the battery works is informally conducting a true scientific experiment."[2] It is my hope that the experiment conducted here on the horn conveys a series of interesting, stimulating, and perhaps even touching insights.

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Introduction

> The new universe is neither imaginable nor conceivable, it is only touchable. The mode of action appropriate to it is fingertips pushing down on keys.
>
> VILÉM FLUSSER

> I had an idea in those days that textures should be very much thicker, and therefore the texture of, for instance, a rhinoceros skin would help me to think about the texture of human skin.
>
> FRANCIS BACON

> DON'T EVER ANTAGONIZE THE HORN.
>
> THOMAS PYNCHON

First, it was just telephones, then TVs with remote control, finally computers, and today smartphones and tablets, as well as watches: our daily dealings with media are characterized by a remarkable turn to the tactile. Thanks to the massive diffusion of portable touch screens, holding, pressing, and typing may not have become the dominant modes of interaction with media, but they are now certainly on the same level as hearing and seeing. In practically all places, at practically all times, we touch and handle media devices, we hold them, we fasten or in some way bring them close to our bodies, we carefully swipe across their surfaces, and in return, as it were, are attentive to their vibrations.

Yet it is not just we who increasingly touch media devices. Conversely, these devices touch and scan us—and increasingly so. We have gotten

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used to pressure sensors in car seats and to motion detectors in front of automatic doors or in dark stairwells as much as we have gotten used to stationary and mobile body scanners in airports, courthouses, and other public places. Today, however, we are entering a society of portable and networked media that are downright crammed with sensors: from cars and bikes via fitness trackers to glasses and shoes. Ever smaller and more lightweight, such devices are literally moving in on us, and the more they do so, and the more they are, in so doing, connected, the more intensely they scan us and our surroundings, track and trace our movements through real and virtual spaces.

At the moment, we cannot predict where the aggregation, analysis, and deployment of the immense masses of data generated by media's expanding sense of touch will lead. Yet there have long been critical voices. Long before the internet advanced to become a new mass medium, Gilles Deleuze sketched the dark vision of a control society, in which massive "electronic tagging" is combined with centralized computers. At any moment, Deleuze predicted, any person could then be located with precision and granted or denied access to certain areas of public space. The result would be a control society, in which all environments of enclosure (factories, prisons, schools, etc.) are replaced by numerical sieves whose meshes are variable, continually changing the distance between the nodes.[1]

As would be expected, today's commentators are hardly impressed by such scenarios. They depict recent developments in digital technologies as the beginning of an "age of context" full of promise. In this new age, companies no longer need to bother potential customers with unwanted advertising because, thanks to eye trackers, they can literally read their every wish in their eyes. Patients are said to be taken care of better and more quickly because wristbands, shoes, and other wearables transmit physiological data (number of steps, heart and respiratory rate, etc.) directly to hospitals, insurers, and pharmaceutical companies. And an increasing number of organisms classified as endangered or unreliable (crabs, birds, children, etc.) are to be fitted with sensors that allow for determining their locations and tracking their movements in order to, on that basis, "take better care" of them.[2]

Media theory cannot simply resolve this disproportionate relationship between two perspectives, the threatening society of control on the one hand, the promising age of context on the other. It can, however, contribute to sketching a new image of what media are or are about to become. In this regard, the recent upsurge of the tactile opens up a number of instruc-

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tive perspectives. Above all, it reminds us that our dealings with media are never limited to single sense organs. They always concern the entire body. Classical media such as radio or TV might still primarily address the ear or the eye. Today's media devices, however, leave no doubt that they involve their users literally from tip to toe, from the head down to the feet, from hands and wrists via the chest to the neck and forehead.

The surface of media multiplies accordingly. It is no longer limited to speakers and screens but continues in clothes and seats, glass plates and rubber bands, walls and floors, and begins to embrace entire apartments and cities. This makes *situated relationships between technical and bodily surfaces*—what Vilém Flusser once called the encounter between the "opposing skins" of technics and body, machine and organism[3]—the concrete starting point for the work of media theory.

The productivity of an approach that seeks to rethink the concept of media starting from the sense of touch is borne out by a large number of recent studies. They range from theoretical work on the influence of remote controls on TV watching habits to historical studies on the keyboard and the mouse as the essential interfaces of computers to contributions in cultural studies on the history of the sense of touch, which also discuss the technicization of touch.[4]

Case studies on the use of scanning and sensor technology in security checks, on the automatic identification and localization of objects by means of radio waves (RFID), or on the emergence and development of haptic feedback in video game consoles and smartphones also contribute to new ways of understanding media under the auspices of the tactile. It has even been suggested that we summarize the current configuration of portable and networked media technologies under the heading "sensor society."[5]

The recent studies published by Rachel Plotnick and David Parisi confirm and reinforce the productivity of this development. From their respective points of view, Plotnick and Parisi offer substantial contributions to the emerging field of "haptic media studies." Focusing on the period between 1880 and 1925, Plotnick reconstructs the social history of pushing buttons. She shows that the rapid spread of these devices restructured human–machine relations in fundamental ways that masked both technological complexity and power relations.[6] Parisi's *Archaeologies of Touch* reconsiders the entire history of modernity, from the eighteenth to the late twentieth century, and reconstructs a wide range of scientific and technological "apparatuses" (*dispositifs*) that contributed to create the *haptic subject*. According to Parisi, the haptic subject of our present is characterized

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by multiple interactions with computer technology and ever more frequent experiences of vibrational feedback, which leads to further knowledge concerning the phenomenon of touch.[7]

The present book draws inspiration from these two studies, from their critical focus on human–machine relations as well as from their detailed discussion of haptic media theories in Walter Benjamin and Marshall McLuhan. At the same time, *Horn* places the emphasis on other aspects implied in the phenomenon of touch. Whereas Plotnick highlights the tactile activity of human actors and Parisi is mostly interested in feedback signals emitted by nonhuman actors, that is, reactions of media devices as they are triggered by the movements of human users, the present book is crucially interested in the *tactile agency of media technologies*.

Its ultimate goal is to sketch what, borrowing from Bruno Latour, might be called a *symmetrical theory of the tactile*.[8] This theory sets out to situate the sense of touch no longer exclusively on the side of human actors but equally also on the side of nonhuman actors, on the side, that is, of the technical objects we usually call *media*. Touch, accordingly, would not be, or at least not primarily or exclusively, a human capacity but a function increasingly taken over by scanners, trackers, and similar terminal equipment.

Symmetry here, I should emphasize, does not mean identity. Despite all progress in the field of soft robotics, most technical objects still touch and scan what they confront differently from the ways human subjects do so. While scanners' and sensors' sense of touch is usually based on light rays, X-rays, and electromagnetic waves, human touch remains committed to comparatively common conceptions of the corporeal and the material. Similarly stark is the disequilibrium between the economic, political, and administrative interests behind the scanning done by various media devices on the one hand and the motives that make individuals look at and touch the surfaces of media on the other.

These observations, however, do not change the fundamentals of the issue. "Media determine our situation." Long ago, this was the programmatic cliché in media studies.[9] Only in the age of GPS and internet are we able to attribute concrete meaning to this cliché. Today, in fact, it is media devices and infrastructures that position us, that locate and track us without our consent or contribution and, precisely in so doing, manifest their tactile agency. It is time that we take seriously and analyze this *counterside of media*.

That is the goal pursued in this experimental book, which is meant to be as much theoretically reflective as it is historically informed. This

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book's particular ambition is to explore and develop the symmetry of the tactile just sketched by building several bridges between media theory and media art. The technological, social, and economic conditions of the age of context thus do not occupy center stage. Instead, beginning with the phenomenology of this touch-intensive age, this study seeks to open up a simultaneously reflective and imaginative potential for engaging with a current constellation in which the things of media are ever more closely moving in on us.

To this end, the chapters that follow investigate established media theories with regard to whether and to what extent they provide concepts that facilitate the exploration of media tactility. The question of the sense of touch, of course, has been discussed exhaustively by the classic authors of media theory. As early as the 1920s, Walter Benjamin pointed to an increase in "gestures of switching, inserting, pressing" and, partly by taking up psychoanalytic insights, emphasized the transformation in modernity of all "haptic experiences."[10] Some decades later, Marshall McLuhan, in a different but similar context, gave a detailed description of "tactile man," a type produced by television, and at the same time suggested an intimate connection between tactilization and digitization.[11]

What has largely gone unnoticed in all this, however, is that Benjamin and McLuhan also thematized the tactile agency of media. In Benjamin, this is the case, for example, with the shock-like effects of film that audiences can absorb only by deploying their eye muscles as "shock absorbers" and with Dada photomontages that act like a "projectile" on the observer.[12] McLuhan uses similar terms to describe the effect of television images. The light emitted from these images "bombard[s]" viewers in their living rooms such that they themselves turn into screens. Moreover, according to McLuhan, a tactile mechanism is already at work in the TV studio, where cameras record their images by means of a "scanning finger." In this respect too, then, the sense of touch seems no longer tied exclusively to the human body.[13]

In parallel with this engagement with the classics of media theory, this book examines artistic and literary practices that have thematized the symmetry of touch in different ways. In confronting the flatness of pictorial media like photography and film, modern art has repeatedly taken up the notion, dating back to antiquity, that in the system of the senses, touch comes before and/or stands above seeing. In the late nineteenth century, this was the case for sculptor Adolf von Hildebrand, who developed a widely accepted conception of "looking [*Schauen*]" as "actual touching [*wirkliches Abtasten*]"[14]—a conception largely inspired by von Hildebrand's

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critique of the allegedly false depth created by the mass media of his day (photography, stereoscopy, panorama, etc.). Shortly after, painter Wassily Kandinsky depicted the artist in his entirety as transformed into a hand that in striking the keys of the scale of colors "causes the human soul to vibrate." In the early 1920s, the futurist Filippo Marinetti in his manifesto "Tactilism" even propagated a new art form centered on feeling different materials ("Rough Iron. Light brush bristles. Sponge. Wire bristles").[15]

In what follows I will show that those forms of advanced art and literature after 1945 that engaged with what in their time were new media also reflected intensively on the relationship between sight and touch. This is true for Salvador Dalí, as it is for Rebecca Horn or William Kentridge. Rebecca Horn's early performances and installations are of particular interest here. On the one hand, she implements McLuhan's thesis that media are "extensions of man" in concrete practices of producing objects and instruments meant to "extend" and "enhance" the human body and its functions. Examples include *Arm-Extensionen* (*Arm Extensions*, 1968) and *Kopf-Extension* (*Head Extension*, 1972). On the other hand, these works thematize the partly protective, partly stifling, partly downright restraining aspects of the media world thus produced. Much can also be learned from Dalí's works and performances in the 1950s, which, starting with the leitmotif of the rhinoceros, explore media surfaces with a view to biology and morphology.

Aligning media theory and media art might seem arbitrary. Yet there are many points of contact between the two fields to justify this approach. It might not be surprising that artists evoked media theory as soon as such a discourse existed, especially if they were working with new media themselves. Dalí's conception of image surfaces, for example, is indeed informed by cybernetics, while Rebecca Horn's concept of "interpersonal perception" refers, at least implicitly, to Fritz Heider's theory of media. It may then be all the more striking that inversely, classic texts in media theory pick up and work closely with artistic and art historical discourses. Benjamin, in describing the tactile agency of media, refers to Dada and to constructivism, while McLuhan in this context time and again invokes pointillism and the Bauhaus.

Combining and confronting theory and art is thus not an end in itself. It reflects the fact that media theory is not a "discipline" that, influenced by post-structuralism, simply developed from literary, especially German, studies or other humanities disciplines. Instead, this segment of theoretical work picks up substantially on the creative and experimental ways of dealing with media that are particularly salient in the field of art.[16] Today's

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media theory is thus confronted with the task not only of observing and processing current developments in media technology and media studies, but also of acknowledging art as an important resource—especially when it comes to outlining a new image of media in a "sensor society."

The horn serves as leitmotif for this attempt. Indeed, horns reappear in ever new variants and variations in the work of the artists considered here: in Dalí's multimedia "rhinoceros phase" in the 1950s; in the early work of Rebecca Horn, who of course is playing on her own name as well, in performances such as *Einhorn* (*Unicorn*), *Schwarze Hörner* (*Shoulder Extensions* [lit., *Black Horns*]), or *Cornucopia*; and in Kentridge, both in his drawings on Dürer's *Rhinocerus* and in his installations, which are crammed with megaphones and wind instruments.

Horns function as a simple *and* a complex motif in media art. They are evoked, in different contexts, as a natural phenomenon and as an artificial object, as a peculiar form as well as a specific material that serves a broad range of purposes: from magical symbol to animist decoration and technological object. But it is not just the history of the horn as a motif that has much to tell us. In a broader sense, horn can be conceived as something that exemplarily marks an *intermediary*. It is thus particularly suitable for guiding an investigation of the encounter of the "opposing skins" of technics and body.

On the one hand, horn is situated between the living inner world and the material outer world. As we all know, calluses (in German called *Hornhaut*, "horn skin") form on those areas of the human body where strain on the epidermis is particularly pronounced, on the palms or the heels, for example. Just as calluses, hair, and nails consist of keratin (from Greek *keras*, "horn"), so do birds' feathers and beaks and porcupines' spines.

While horn does communicate tactile sensations, it simultaneously shields the organism from the intrusion of foreign bodies. It acts as a protective shell and armor, functions as ornament and decoration, but it can also serve as tool and weapon. And although horn firmly belongs to the living body, it is not itself alive in any way. At least in humans, it is nothing but dead skin.[17]

On the other hand, "horn" stands not only for a natural material but also for an artificial object, an instrument. Naturally existing animal horns were used first as trophies, as charms, or—ground into powder—as medicine. (The powder obtained from the horns of rhinoceroses continues to be regarded in many countries as an aphrodisiac and a drug. Hunting for rhinoceroses has become a brutal business that threatens the very existence

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of entire species.) Formally switching between masculine tip and feminine hollow, the horns of cattle were also used as drinking vessels and wind instruments.

These latter did not just produce pleasant sounds. Even when they were still made predominantly from natural horn, they also produced practical signals, on the hunt for example. Since early modernity, this signaling function has increasingly been taken over by metal horns, among other places in that paradigmatic network of communication we still call the postal service. In high modernity, this development was continued and further developed by acoustic horns and speakers, as well as gigantic foghorns guiding maritime traffic along the coasts and no less gigantic horn antennas used in radio astronomy. Today, practically all motion detectors include miniaturized horn antennas.[18]

In other words, horn is a natural material as well as an artificial object. It is firmly tied to the living body, growing out of it, becoming visible on it and with it. Horn can be detached and separated from the body, and it can be exhibited and circulated, reencountering living bodies as an external being, a natural thing, or an artificial object. As a result, horn sheds an interesting light on the relationship between body, image, and technology. Conceived of as a literal "extension" or "projection" of the living body, it might even be understood as a medium par excellence, for it fulfills the central criterion of the definition of technical media given by Ernst Kapp, Henri Bergson, Marshall McLuhan, and others. The formation of horn in and on the human body might even be the concrete point of reference for understanding media as "extensions of man."[19]

Be this as it may, the focus on a motif that stands simultaneously for a natural material and an artificial object is extremely useful in studying the emergence and development of bodily and technical surfaces. In his engagement with the phenomena of media superficiality, Flusser has given an exemplary description of the gradual reduction of sculptures to images, of images to texts, and of texts to programs. But his depiction of this "play of abstraction" focused primarily on one side, that of media technology. His explanations of the other side, the surfaces of the body, the "body map" and the "skin atlas," however, have remained fragmentary.[20]

That is the point where our effort sets in. From the double perspective of human and machine, technics and body, this book supplements Flusser's "phenomenology of the cultural history"[21] of the outer skin of media with a natural history of surfaces—and thus contributes to achieving symmetry in this regard as well. In other words, the goal of our undertaking does not

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consist in reinforcing interest in the "cultural techniques" that fascinate some proponents of media theory, particularly in the German context.[22] Instead, the present study points to the existence of what might be called *natural techniques*, that is to say, biological functions and formations without which there simply would be no culture.

On this point, recent work explicitly devoted to a *biology of media* has yielded important insights. In the last few years, both Eugene Thacker and Robert Mitchell have persuasively argued that by "body," media theory should not just mean "human body." From different points of view, Thacker and Mitchell show that in the laboratories of the life sciences as well as in the installations of bio art, an entire spectrum of organisms, organs, and organic substances—from DNA sequences via individual cells to muscle tissue—function as media.[23]

Further prompts came from studies that do not or do not yet belong to the canon of media theory. Thor Hanson's wonderful book *Feathers* confirmed my intention to draw on both natural and cultural history. A particularly stimulating aspect of Hanson's account is his very detailed discussion of the fact that feathers consist of keratin. Based on a wealth of examples—from dinosaur and bird feathers via feathers for stuffing pillows to hat and writing feathers—he sketches a kind of comparative, historical keratology. The chapters that follow are devoted to this kind of horn theory, even if they do not enter into biological details to the same extent.[24]

Differently but no less intensely stimulating are the reflections on bodily limits Karen Barad develops in her philosophical elaboration of an *agential realism*. Barad explains convincingly that in looking at the outer limits of "human beings" on the one hand and of "apparatuses" (or media devices) on the other, visual clues can be quite misleading. Instead, she asserts, "human bodies, like all other bodies, are not entities with inherent boundaries and properties but phenomena that acquire specific boundaries and properties through the open-ended dynamics of intra-activity."[25] Especially because it is made not by a biologist but a physicist, this assertion does, I think, confirm my approach of looking at the genesis of bodily and technical surfaces from the inside.

The specific form this book has finally taken is that of a *fictitious exhibition*. This is not to say that from this point forward, presentation will replace explanation, indication supplant argumentation. Rather, the fiction of an exhibition is meant to underscore that what follows is not limited to engaging with texts but also brings in a multitude of different sources and materials, also and especially where the concern is not with art but with

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theoretical discourses: photographs of rhinoceroses and Stone Age reliefs of horns, paintings of fingernails, sculptures of horned heads, illustrations from scientific textbooks depicting the horns of rams and sheep, and unpublished manuscripts in which sketches of postal horns and megaphones surface . . .

The book's five chapters correspond to the rooms in which these texts, images, and objects are presented, commented on, and argumentatively connected in their material and semiotic "entanglement" (Barad). Each chapter–room stages an encounter between science, art, and technics. Their order is not chronological but follows different thematic emphases, highlighting media art and media theory in alternation. The first (art) chapter thus responds to the last, and the second (theory) chapter is related to the fourth, while the centrally positioned third chapter forms a passage between them and combines aspects of theorizing and artistic practice.

In coming up with and laying out these chapter–rooms, much care has been taken to respect and do justice to the qualitative differences of the various sources and materials. This is, on the one hand, the effect of a method that has led, especially in recent work in the history of science, to the exploration of local assemblages of knowledge production in their specific materiality and semioticity. In these pages, this method is, perhaps for the first time, applied in the fields of media theory and media art. On the other hand, the subject matter certainly rubs off on the method. In fact, the study of tactility has time and again drawn my attention to the different surfaces of letters and manuscripts, drawings and paintings, photos and films.

The printed book does level these differences. Nonetheless, the combination of text and images still renders it perceptible. That, precisely, is the methodological goal of this fictitious exhibition. It tries to exemplify that perceptions, also and especially in media theory, are semiotically and materially bound. It sets out to valorize the space *between* different medial representations in order to mark this space as a decisive starting point for an engaged thinking confronted with the "sensor society." It is in this sense, too, that in what follows I speak of the *counterside of media*. The term refers not just to the tactile agency of media devices. It also addresses our critical ability to reappropriate the use of existing media technologies and to both create and design new kinds of media.

A few years ago already, Katherine Hayles pointed out that the spreading of tagging and tracing technologies will require a critique of their deployment for particular economic or political purposes. At the same time, however, she pointed out that connected RFIDs, sensors, and actuators open up

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the possibility of "shedding the burden of long-held misconceptions about cognition and moving to a more processual, relational and accurate view of embodied human action in complex environments."[26]

The pages that follow are conceived as a contribution to the development of such a view. There is one philosopher who saw that such an undertaking cannot concern only one form of perception, that is, an aesthetics, but must take on an entire epistemology of embodiment. In this sense, Michel Serres writes about Lucretius: "Knowing [*savoir*] is not seeing [*voir*]; knowing is making contact, directly, with the things: and they, moreover, are coming to us."[27]

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PREFACE

1 Schmidgen, *Das Unbewußte der Maschinen* and *Hirn und Zeit*.
2 Pirsig, *Zen and the Art of Motorcycle Maintenance*, 106.

INTRODUCTION

Epigraphs: Flusser, *Lob der Oberflächlichkeit*, 18; Francis Bacon quoted in Sylvester, *The Brutality of Fact*, 32; Pynchon, *The Crying of Lot 49*, 121.

1 Deleuze, "Postscript on Control Societies," 181.
2 Scoble and Israel, *Age of Context*.
3 Flusser, *Lob der Oberflächlichkeit*, 59. At this point, my reflections converge with those of Jacques Derrida, who writes about the tactility of the computer: "A description is needed of the surfaces, the volumes, and the limits of this new magic writing pad, which exscription touches in another way, with another kind of 'exactitude' or 'punctuality,' precisely, from the keyboard to the memory of a disk said to be 'hard'" (Derrida, *On Touching*, 300). For a media studies perspective, see Lechtermann and Rieger, *Das Wissen der Oberfläche*; for an account from the perspective of historical epistemology, see Dagognet, *Faces, surfaces, interfaces*.
4 Winkler, *Switching, Zapping*; Bardini, *Bootstrapping*; Benthien, *Haut*, 265–79; as well as Paterson, *The Senses of Touch*.
5 Parks, "Points of Departure"; Parisi, "Fingerbombing"; Hayles, "RFID"; and Andrejevic and Burdon, "Defining the Sensor Society." German contributions include, for example, Sprenger and Engemann, *Internet der Dinge*.
6 Plotnick, *Power Button*.
7 Parisi, *Archaeologies of Touch*.
8 Latour, *We Have Never Been Modern*.
9 Kittler, *Gramophone, Film, Typewriter*, xxxix.
10 Benjamin, "On Some Motifs in Baudelaire," 328, modified. See the detailed exposition in Bolz, *Theorie der neuen Medien*, 67–110.
11 McLuhan, *Understanding Media*, 17, 106–18.
12 Benjamin, "The Work of Art in the Age of Its Technological Reproducibility [First Version]," 23. [The term *Stoßdämpfer*, "shock absorber," appears in a passage crossed out by Benjamin and thus not considered in Jennings's translation; see "Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit–Erste Fassung." The first, second, and third version of the essay have been published in English (see references in the bibliography); the fifth version has not.—*Trans*.]

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13 McLuhan, *Understanding Media*, 313.
14 [Unlike the more visual English verb *to scan*, the German *abtasten* is primarily tactile. See also below, chapter 4.—*Trans*.]
15 Hildebrand, *The Problem of Form*, 44, 56–58; Kandinsky, *On the Spiritual in Art*, 43; Marinetti, "Tactilism," 198.
16 In this regard, compare Siegfried Zielinski, *Deep Time of the Media*, 1–11, 61. In his excellent study "Taktile Medien," which unfortunately I discovered too late to include in these reflections, Klemens Gruber refers specifically to Benjamin and McLuhan.
17 On all these aspects, see Dagognet, *La peau découverte*.
18 On the history of the horn as instrument, see, for example, Janetzky and Brüchle, *Das Horn*.
19 See Curtis's discussion of "Technology as the Extension of Man" in the work of Kapp, Bergson, and McLuhan (Curtis, *Culture as Polyphony*, 61–79).
20 Flusser, "Von den Möglichkeiten einer Leibkarte"; Flusser, "Skin."
21 Flusser, *Lob der Oberflächlichkeit*, 19.
22 For an overview, see the contributions in the special issue of *Theory, Culture and Society*, "Cultural Techniques," edited by Geoffrey Winthrop-Young, Ilinca Iurascu, and Jussi Parikka.
23 Thacker, *Biomedia*; Mitchell, *Bioart and the Vitality of Media*. Even these studies, however, can claim Flusser to be on their side. As Flusser has shown in his remarkable work on the vampire squid, it is not precisely anthropology but biology that can tell us about the media capacities of a body: "Reality is neither the organism, nor the environment, neither the subject nor the object, neither the ego nor the nonego, but rather the concurrence of both." Ultimately, this is the background that allows us to understand the claim that the characteristic gesture of the present day is the striking of a key. See Flusser and Bec, *Vampyroteuthis infernalis*, 36.
24 Hanson, *Feathers*.
25 Barad, *Meeting the Universe Halfway*, 172.
26 Hayles, "RFID," 48.
27 Serres, *La naissance de la physique*, 134. For an exemplary art historical perspective on embodiment, see Krois, *Bildkörper und Körperschema*.

ONE. THE CAPTURED UNICORN

1 Lucretius, *On the Nature of Things*, 280–81, modified.
2 Roussel, *Locus Solus*, 183. On the gramophonic "groove script," see Moholy-Nagy, "New Forms in Music."
3 Roussel, *Locus Solus*, 189.
4 "I would also like, in these notes, to pay homage to that man of incommensurable genius, namely Jules Verne. My admiration for him is boundless" (Roussel, "How I Wrote Certain of My Books," 19).

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