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The tactile and the index

From the remote control to the hand-held computer, some speculative reflections on the bodies of the will

Lorenz Engell

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Abstract

The article deals with the conception of tactility in Marshall McLuhan's media theory and its relation to the notion of the index and the category of 'secondness' in the semiotic pragmatism of Charles Sanders Peirce. It shows how two different aspects of tactility in McLuhan's work can be differentiated and, by further comparison with Michel Serres' philosophy of the senses, how they are linked to the philosophical problem of the delegation of the will, or of the intention, from the human body to media technologies such as remote controls or computer interfaces.

Keywords: tactility, indexicality, intentionality, technology

This article is motivated by the experience of the traditional television user. The experience of television is (at least in one of its dominant forms), as everyone can assert, and as Raymond Williams marvelously described it, one of a medium state between day and night, sea and land, closeness and distance, consciousness and dream, reality and magic, attention and distraction.¹ The television experience is one in which the world changes completely just by pushing a button. This is why the following article begins with a completely surreal question: how can one imagine the transformation of a person into an animal, the metamorphosis of a university professor into a mouse? This could happen only by magic, as it does in fairy tales, or by technology, such as in films – and here I am thinking not only of animated movies² and early magic cinema,³ but also regular feature films such as Alain Resnais' wonderful *My American Uncle* (1980), or computer-generated images. Of course, this happens in everyday experiences using a television remote control. The following article centers on the hypothesis that the

computer's main function, the mouse click, or, more recently, the touching of a virtual key on a screen, is deeply rooted in and has been prepared by remotely-controlled television.

The philosophical question addressed here is precisely this: if the remote control – later the computer mouse, and subsequently the touch-screen – serves as a tool for designed transformation from something into something else, by this it figures within a chain of more or less intended transformational procedures; hence, it is a materialisation or externalisation of the will (or at least some will) or intention (or some intention). By 'intention' I mean here in a very primordial sense any direction towards something, very much in the broad sense which phenomenology gives to the term of 'intentionality', but turning it into a material relation or driving force without further reference to what in phenomenology would be called 'consciousness'.⁴ As it is meant here, intentions or directions are linked to movements, and they are produced not as a given immaterial structure such as consciousness but rather through an interplay of energies within and outside the human body, such as technologies.

This is exactly why technologies of the will or intention, such as the remote control or the computer mouse, are linked so closely to touch and to the tactile, and precisely to our use of the index finger. As I will develop, arguing along the lines drawn by Marshall McLuhan and Michel Serres, the index is the bodily residence of what we mostly call 'will' or 'intention'.⁵ With the notion of the index we also have to take into account the semiotic idea of indexicality, namely the concept of the index as developed in the writings of Charles Sanders Peirce.⁶ McLuhan's ideas about the tactile, conceived as a specificity of television even before the spreading of the remote control, can lead us to this hypothesis. Seen in its relation to television, the computer is not only and maybe not so much a discrete or digital machine in general, but, far more precisely, an indexical machine, and hence a magic tool, a technology of the will or the intention – or, to say the least, of direction. To a certain extent this idea can be looked upon as being rooted in McLuhan's conception of touch such as he applied it to the analogue television screen, and as we can relate it to the remotely-controlled world of modern television experience, and even further to the more recent computer mouse and touchscreens. Also, it can be developed along the lines drawn by Serres' philosophy of touch as he developed it in his book *The Five Senses*.⁷

In McLuhan, as others have already convincingly shown – and here I only refer to Richard Cavell and Till Heilmann – we have two different concepts of the sense of touch.⁸ The first is connected to the skin as a wrapping surface and a generator of unity. The second is connected to the

finger – mainly the index finger – and the digit, and to counting. According to Cavell and to Heilmann, it is in this second sense that the computer (which is often claimed to be deplorably underrated in McLuhan's work on television) could be integrated into McLuhan's media anthropology of touch and the tactile.⁹ What I want to show here is that this is true, but it is only one side of the coin. As magic tools, the remote control of the television and the computer both are as well-rooted in and deriving from the first understanding of touch in McLuhan's work. Moreover, even the idea of the digital as a purely symbolic order itself does not get rid of its foundation in the conception of the tactile (or the real) as skin, as surface, and as all-embracing sense of unity. This reveals itself if we bridge the gap between the two different conceptions of touch and the tactile in McLuhan with the help of other thinkers' ideas, namely Serres, and also Peirce's concept of 'secondness' and the index.¹⁰ According to the hypothesis, the technologies of direction, intention, and will, including the remote control and the computer mouse, lead precisely from the tactile as primordial unity in the first sense of McLuhan's understanding to the digital and symbolic order in the second sense, via an intermediate understanding of touch linked to movement, agency, causality, and indexicality, such as it is reified in the remote control. I want to forward the idea that the computer mouse also belongs to this intermediate realm of touch and the tactile in the sense of the indexical, the deixis, and distant causation of movement, force, intensity, energy, agency, and magical and technical power.

The remote control unites three dimensions in its most basic features or regimes: the symbolic regime, in the numbers of the channels; the indexical regime, with the function of pointing to the television set; and the iconic regime present in the images on the screen. These three regimes are perfectly compatible with what Peirce in his work on founding categories called 'firstness', 'secondness', and 'thirdness'. According to Peirce, firstness would be the category of all that exists for itself, without any relation or reference (or intention, or direction) whatsoever to something else. One could also add that the skin-like, wrapping qualities of the sense of touch come into play with the overall presence of televised (and other) screen images which surround us like a habitat, or an ecosphere, or iconosphere. Secondness would be the category or mode of being of what exists via its relation to something else, be it in cause-and-effect relations or in the pointing to something.¹¹ The remote control as indexical device would then adhere to the realm of secondness since it serves as a tool of articulation and addressing, directing, and even acting in the above-mentioned iconosphere, the sphere of images.

Thirdness, according to Peirce, is the mode of being of what exists by its function to relate to other entities; it is the category of words, signs, symbols. In comparison, stating in this sense that the computer belongs to the realm of thirdness, to the digital and hence to digits and numbers, to the discrete, to the symbolic, to computing, and to numbers is completely correct.¹² However, it does not say so much about the computer, since the digital in the computer is black-boxed – and increasingly so with the evolution of the computer.¹³ The mouse button and, even in an increased manner, the touchscreen in contrast, as the main types of interface and as the central device in our daily use of the computer, is a tool by which users exert their will or intention – or, to be more correct, what they believe to be their will and intention – on the images and processes on the screen, or on the iconospherical world. Hence, the mouse button belongs to the order of chains of continuous causation and the fluxes of energy. It is a physical, maybe a metaphysical, and, once again, indexical device of secondness in an iconic habitat. It is not so much an instrument of counting, of calculus, and of the symbolic. Like the remote control, it is a magic wand, operating on an indexical level within the overall wrapping sphere of touch in McLuhan's sense.

To quote a parallel case in media history, the moving image is a discrete, well-structured, and symbolic image-by-image articulation of movement and time – but this procedure is black-boxed in the movie camera. As projected on a screen, the moving image is indeed fluid and creates coherent and continuous fluxes of movement and of time. Very much alike, the computer may be looked upon as a universal discrete and symbolic machine; but even more than that, it is a tool of agency and influence and of coherent flux of causation. It is an electrical more than an electronic device. This is why we are licensed to talk about a post-digital age in which McLuhan's work, although designed to describe the world of television, may be of even greater influence than it has been in the digital age.

With this hypothesis I take up previous research on electrical buttons and keys that I undertook a couple of years ago, particularly on the remote control and the mouse.¹⁴ In these studies, I suggested to qualify the keypad as an apparatus of differentiation, of discretion, of selection and decision, very much in the sense of Peirce's secondness. I concentrated on the technical conversion of the indexical touch, of pointing to something with your fingertip, into some symbolic order of epistemic and social relevance. Today, I should like to go back underneath this level and research the transformation of the primordial sense of touch as a wrapping and overall phenomenon (firstness) into the movement of causation and the causation of movement (secondness), or the relation of touch and agency.

For McLuhan, touch or the tactile is a sense of integration and of closeness or even immediacy, where other senses, namely vision, are distinctive and distant. Touch, according to McLuhan, integrates all other senses into one interplay, thus overcoming the separation and specialisation of the senses.¹⁵ From the standpoint of physiological evolution, one could affirm this idea by stating that the prior organ of perception is the skin, and that all other senses have developed as specialisations of specific zones of the skin. The retina of the eye as well as the tympanic membrane of the ear and the surface of the tongue are specialised parts of the skin. Of course, it is the skin which wraps the body and makes it a whole. For McLuhan, it is mainly the hand which serves as an organ of touch for grasping and apprehension, under the leading control of eye and ear, thus integrating all senses into the tactile.¹⁶ In terms of media evolution, McLuhan forwards the idea that with the advent of the television screen image the gaze changes its character. The small size of the television screen makes it a feature not of distance but of closeness; its coarse pixel structure leads to a scanning procedure in perception that has more to do with haptic than visual activities. The gaze itself becomes tactile. This idea is even more relevant if one takes into account the use of the remote control, in which the fingertip takes over the leading function from the gaze. Talking about the computer, one can easily state that with the mouse and the touchscreen, physical grasping and operating re-enter the world of the symbolic, as Heilmann has pointed out.¹⁷

Moreover, the touch overcomes the deep split between the subject and the object. In taste, the object becomes part of the subject, so that the subject/object division is transformed into the difference of the whole and the part. In hearing, the body's own voice is looped back to the very same body through the ear by which procedure the body perceives of itself as an object and is enabled to apply the subject/object division to itself.¹⁸ In vision, on the contrary, the body does not perceive of itself. The gaze is unable to look at itself while perceiving the object, unless with the help of a mirror or other externalised artefacts like photographs. So here, the separation between the two is the clearest and most dichotomic. As we know, with the advent of the Gutenberg Age in early modern Europe, the dichotomisation between subject, or human, or thought, and object, or thing, or body has become canonic – and this happened precisely because with the printing age, according to McLuhan, vision became privileged over all other senses.¹⁹

Touch, on the contrary, does not separate subject and object, nor loops back one on the other, nor relates them in terms of part and whole or of internalisation, such as in taste. In touch, subject and object are experienced at the very same time. They overlap and melt into each other, which is true

not only for the skin in general but also for the more specialised zones of it, like the kissing tongue. They are not yet or no more distinct from each other. This self-presence or immediacy of the tactile can also be found in other forms than that of touch: pain is to be counted among the tactile forms of experience, and so is the kinesthetic sense of gravity, of equilibrium, and of movement – all three of them connected to the body's internal and immediate givenness as contrasting to its outer self-perception as an object, such as in the coupling of voice and ear. Finally, if we pass beyond McLuhan, we can quote Elias Canetti for his conviction that in the melting of great numbers of subjects into one more or less homogeneous crowd, the 'black mass', the sense of touch, plays the most important and to a certain extent irrational and magical role.²⁰ In the emergence of the crowd, Canetti states, the overcoming of the sense of distance is the decisive procedure, as well as its being replaced by a sense of touch which soon attracts more and more bodies in a sort of gravitation force. In McLuhan's terms, one could easily reformulate this as a shift from the visual to the tactile as a dominating force in the social relation. Equally important is McLuhan's idea of temporal immediacy or instantaneity of the touch, which makes of the universe of the tactile – which is, for him, what I have called the iconosphere – one of shared time, or synchronicity, or presence, such as in live television. This leads to the conclusion that even cause and effect in a tactile universe would emerge not only at the same time; they were not yet separate, which would make them hardly distinguishable. It is not so difficult to again see in McLuhan's concept of the tactile and the touch a reality which, according to the semiotic categories and operational ontology of Peirce, could be addressed as firstness. Firstness, we remember, according to Peirce, is the mode of being of everything which stands for itself, positively as such, not related to anything else and not articulate or composed.²¹

So far for McLuhan's first approach to the tactile. As for the other approach – counting, digits, and numbers as externalisation of touch – Cavell has already referred to it, so I can be very short on this. As Heilmann has pointed out, even counting and the number to McLuhan's understanding are based on magical cause and effect relations.²² Counting, McLuhan writes, very much like Canetti's black masses, has the power to assemble and to unite isolated items into unified quantities.²³ But as soon as numbers become signs or symbols, and from there become elements of a complicated notational system in which symbolic operations can be effectuated, they are cut off from the tactile and enter into the world of the visual, or the symbolic, or of the Gutenberg galaxy. Within a Peircean ontology, as we have seen above, symbolic systems or symbolic machines would belong to the realm

of thirdness, or relation.²⁴ Thirdness is the categorical and ontological status of what exists insofar and because it relates to other given entities. But in Peirce, thirdness does not exist *per se*, but only as deriving or emerging from firstness via the intermediate status which we already encountered earlier and which Peirce calls secondness. In McLuhan, the symbolic arrives in a more or less unprepared manner from some outside, transforming the primordial firstness of touch and counting into the abstract mathematical and the order of the visual. Digitalisation just happens, one could say. In McLuhan, we do not get any precise idea about how digitalisation, taken in this sense of the transformation of the primordial touch in its firstness into the symbolic or thirdness, occurred. Interestingly enough, one could say that the firstness aspect of the touch, such as it is present in the television screen image and in television's iconosphere, in McLuhan leads directly to the symbolic order of counting, digits, and the digital – precisely because he did not take into account the remote control (and, of course, the computer mouse) as the indexical device which links touch to vision and to symbolic procedures.

Nonetheless, we get an interesting hint at this transformation in McLuhan. The process of transformation of the primary touch into a symbolic order is, according to McLuhan, a reversible one: it is precisely by its electrification that calculation, computing, and counting by numbers will be brought back into the tactile and the interplaying regime of the overall touch.²⁵ So we have to think of electricity as a mediating force which bridges the gap from the digital to the tactile, from the symbolic order (thirdness) to the touch (firstness). Electricity is a form of energy linked to electric tension or voltage, which is a form of intensity; it has to do with magnetism as a force of attraction and coupling. Electricity is often looked upon or metaphorised in terms of current or movement. So the mediator between the symbolic and the tactile seemingly has to do with physical energy and movement, with tension and intensity, and forces of attraction. At the same time, electricity is, according to McLuhan, to be thought of as a milieu or habitat, hence very much linking qualities of Peircean firstness and secondness and turning the former into the latter.²⁶

In his philosophy of the senses, Serres conceives of the tactile in an interestingly similar if somewhat differing way.²⁷ Serres links the tactile to movement and mobility. For Serres, the sense of touch is not so much linked to coherence and identity of a unified whole as it is for McLuhan. It does not take its origin on the surface of the skin but rather inside the body, and hence the kinesthetic dimension.²⁸ Taking, as McLuhan does, the kinesthetic sense as a part of the tactile, Serres describes the situation of a

sailor on a burning ship, who in an attempt to get outside is stuck with his body in a very narrow bulleye.²⁹ Trapped between inside and outside, in an unbearable tension between too hot and too cold, his whole bodily self-perception concentrates and condenses into one single point in the middle of his body. According to Serres, in other situations the condensed focus of tactile attention and attraction can and will wander to the periphery of the body. The tension between hand and foot – or the heat and the cold in the sailor's case – can be replaced by the tension between the body and some outer object. The juggler would be an example, or the acrobat, whose whole bodily self-experience or attention condenses into his hands and fingertips while manipulating the kettles; or the tightrope walker with his feet, also the card player; or, if you think of Bresson's famous movie, the pickpocket who concentrates his whole existence into one slight movement or touch of his hand.³⁰

For Serres, the sense of touch, as far as kinesthetic sense, is characterised by its mobility and its eccentric or centrifugal force. The tactile in the sense of the touch emerges when the wandering focus arrives at the very outer limit of the body, the skin. So, for Serres, the skin is not the origin of the tactile but instead the surface or screen on which it shows when the movement of the tactile focus through the body reaches it and crosses it; particularly since touch can even transcend the body, which leads to the action of pointing at or aiming at or moving towards someone or something. Indications and indexical signs of all kinds, directions in both senses of the term, even paths in the landscape are, for Serres, forms of the externalisation of the tactile.³¹ The movement of the body through the landscape is a consequence of the mobilising force of the tactile.

For Serres as for McLuhan, this marks a sharp contrast to the sense of vision. According to Serres, the view you get when flying over a landscape or crossing it in a car derives from abstraction (where the tactile comes from attraction) and from taking distance (where the tactile demands approaching); it leads to symbolic order. The predominance and the logic of the visual can be reduced, and perception could be reorganised under the primacy of the tactile. However, both authors take completely different attitudes towards this process. As McLuhan posits, the application of the discrete order on the visual will lead back to the dominance of the tactile. In impressionist and pointillist painting as well as in the pixel structure of the photograph, he sees the tendency to re-organise the visual as an assembly of countless isolated optical touches. Serres, on the contrary, does not so much refer to Seurat and to pointillism but rather to Pierre Bonnard when he mentions the tactile and sensual qualities of the gaze.³² For Serres, the

visual touch does not mean the decomposition of the visual into discrete single optical touches or singularities, but instead the continuous movement across the surface of the painting, leading from one type of texture to the other, and linking the textual and sensual qualities of the physical painting to that of the depicted surfaces, of the textiles and skins so present in Bonnard's work. Again, the distinction between representation and the represented, or between subject and object of representation, is made to disappear in the realm of the tactile.

If we apply this difference between McLuhan and Serres to the case of the mouse button or the touchscreen, the tactile qualities of the digital are to be regained or reconstructed for McLuhan, where they would have never been absent according to Serres. For McLuhan, as Heilmann insists, articulation, interruption, and the click as such are decisive.³³ One could say that the agency of the click itself operates, as its disjunction or interruption, to the detriment of another pre-existing agency, such as a flow (of action or energy). It is a negative operation. From a more Serrian standpoint, touching the pad or the key would be conjunctive, contact, connex, causation, effect, flow – a positive energetic operation of a different type of agency, such as in the 'coup de foudre' phenomenon of the overpowering irresistible force of love at first sight, with its two intertwining energies of driving/being driven and of attracting/being attracted.

Another difference between Serres and McLuhan would regard the function of the process of externalisation; in this case, Serres' argument could serve to McLuhan's benefit. Taking Serres, externalisation is not so much an operation which is applied to the sense of touch, as it would be in the case of McLuhan's idea of 'amputation' of specific functions of the human body and their delegation to technical tools. In Serres, the sense of touch demands for and leads itself inevitably to externalisation. The sense of touch *is* externalisation. Its logic is the logic of externalisation. Touch is to be looked at as a driving force, as agency which moves across the body, then moves or leaves the body as in the deixis, or makes other bodies move when prolonged beyond the body. Pointing at someone can and will make this other body move. One might say the tactile belongs to the order of transgression and transformation, of effectuating agency upon the other or of becoming different of the body.³⁴

It seems evident that this understanding of the tactile is not only an interesting complement to McLuhan, but also that it leads to an understanding of the tactile, or the electric component in the digital, or the electronic: pressing the mouse button means having the initial impulse of a movement turn into a flux of energy which goes beyond the body and finally, in an

unknown or even magic way, arrives on the screen, where it has an effect on the movements which take place there. It is in that very same logic that we can imagine the transition from touch in the primordial sense of counting to the symbolic in terms of the calculus. It is not the mere arriving of symbolic forms which makes the difference, but also the impact on them that touch can effectuate; by writing for instance, or by manipulating counting stones, or the abacus or other calculating tools. In this sense, the digital would not so much derive from the discrete, from interruption and binarism, but from causation, from energy, from flux and coherence. The flux or the chain of causation leads to change, in detail or in the whole. It leaves an impact. It is this impact of the force of the tactile from which the symbolic forms derive, be it in the form of the wound caused by the weapon, the mark of a hit, or of the inscription like the fingerprint or the footprint, or more complicated indexical signs. One must add that magic practices of any kind, like casting spells or bewitching, fit to the same model of tactile agency and coherent chains of causation, as Alfred Gell has shown in his intriguing work on the index.³⁵

To get a more precise theoretical picture of this process so crucial for the understanding of the post-digital age, it is interesting to go back to Peirce once more and to his concept of the index. In Peirce's taxonomy, between firstness and thirdness, and leading from one to the other, is the category of secondness. It is by no way just coincidence that where firstness for Peirce incarnates in pure quality, such as gravity, or perception, or iconicity; and thirdness incarnates in pure thought, or logic, or symbolicity; secondness finds its prototype in causal relations, in physical forces, and, most important, in indexicality. The index is what mediates between the touch and the digital.

In Peirce we have at least three different understandings of the index. The one I want to focus on here can be found in Peirce's famous critique of Josiah Royce's 'Religious Aspects of Philosophy'. According to this definition, the index is a sign which 'like a pointing finger exerts a real physical impact similar to that of a magnetizer upon our attention and directs it towards a particular object of the senses'.³⁶ Peirce then gives the classical and often quoted examples, such as: the weather vane, the barometer; smoke, lightning; a photograph; signposts and landmarks, and deictic words like 'here', 'now', 'I', and all other pronouns. According to Peirce, the index does not mediate any information about the object it directs attention to – except for its mere being there, being meant or being referred to. The index does not know anything about its object but that it is there. This is why Peirce talks about the index as an 'existential relation'.³⁷ How is it possible

for the index to direct perception and thought? For Peirce, the agency of the index is rooted in the fact that it has some physical, material quality it would not have if the object it directs attention to were not there. This quality is always present in the index, even when the index is not perceived or 'read' as such. With the index rests a 'dual conscience', namely that of a 'will'. 'What I call "will" includes the sensation of action and reaction, of being external, being different, being couple.'³⁸ Peirce talks of the index as a place of clash, of collision, and impact. Hence, 'will', or intention, with Peirce can be read not just as given entities or forces, but also as effects caused or ascriptions motivated by the sensation of impact on something – very much like the sensation of the isolated, discrete spot on the skin is an effect of the primordial sense of touch crossing the skin, as we have seen with Serres. In this sense we might say that the place of will and intention is nothing like our consciousness, but that it is precisely the index, the spot where the movement of the tactile reaches the outer limit of the body, crosses the skin, and goes beyond – be it with the help of interrupters like keys and mouse buttons.

Let me close with an even more speculative observation about a possibly deep change in the order of the tactile and the body technologies of the will. Referring back to an anthropological point of view, one can state that the evolution from the all-inclusive primordial sense of the tactile to the symbolic order of the calculus or the digital goes via the fingers, or 'digita', as the most peripheral and far-reaching parts of the human body and the sense of touch. Decisive in this process is one specific 'digitum', which is, of course, the index. The index is the bodily tool of deixis and of causation. Along with the other three fingers, the index is counterweighed by the thumb. As Leroi-Gourhan and others have shown, the human grasp – so important to McLuhan – is a product of force and counterforce between the four fingers of the human hand and the thumb.³⁹ So, in the thumb as counterforce to the finer sense of touch as located in the four fingers, we have the representation of the solid ground, or of the earth, or of gravity, or, according to Alfred Gell, of being patient⁴⁰ – or, in the sense of Peirce, of firstness. In the index, on the contrary, we have, as we have seen, the representation of will, or intentionality, or agency according to Gell, or Peirce's secondness.

The computer mouse as magic or electric tool is based on the use of the index plus the mobility of the hand as whole. Now I can ask myself, what will happen anthropologically if this order of the fingers of the hand is being reversed? We have evidence that precisely this could happen these days. With the keypad of the typewriter already, the thumb was integrated

into the set of fingers as deictic tools and became a member in the chain of causation. In the use of the remote control, the old order of the thumb as counterweight and the index has already been partially subverted. Either you need two of your hands to operate it (in this case the index can keep its function) or you have to turn your hand around, take palm and fingers as solid ground for the remote control, and use the thumb both as deictic tool and means of causation. This accelerates with the increased use of touchscreens, particularly mobile phone, computers, and pads, also all the hand-held game devices, with text messaging and the use of Blackberrys, iPhones and other smart phones. What does this lead to? The principle distinction between gravity, the Earth, or firstness, and agency, or secondness, is kept, but the operators change place. So we shall have to ask what happens if our will or intention leave their spot and start to wander across our body surface in a movement of second order. So, if it is true that the computer is a magical tool of transformation and evolution, the hand-held computer might in the long run even transform what we call our agency, or intentionality, or will. Maybe this would be the true proof of our having arrived in the post-digital, the indexical, and more than ever the electrical age. Williams' magical in-between experience of the medium and the experience of the medium as directing, as body of the will, would have intersected in our technologies.

Notes

1. Williams 1974, pp. 77-121.
2. Panofsky 1947.
3. Here I am thinking precisely of the cinema of Georges Méliès. See Solomon 2010 and Engell 2013, pp. 255-268.
4. Drummond 2003, pp. 65-92.
5. McLuhan 1964.
6. Peirce 1998, pp. 274-292.
7. Serres 1985; Peirce 1992.
8. Heilmann 2010.
9. Ibid.
10. Peirce 1998.
11. Peirce 1996, pp. 243-245.
12. Kittler 1985.
13. Latour 1999.
14. Engell 2000, pp 305-324; Engell 2003, pp. 53-77.
15. McLuhan 1964, pp. 72, 207, 368-371.
16. McLuhan 1964, pp. 55f, 72, 121-125, 207.
17. Heilmann 2010, p. 131f.

18. McLuhan 1964, p. 346f.
19. Ibid, p. 84, 98f.
20. McLuhan 1964, p. 131; Canetti 1960.
21. Peirce 1984, pp. 43-78.
22. Heilmann 2010, p. 127f.
23. McLuhan 1964, p. 131.
24. Peirce 1998; McLuhan 1964.
25. McLuhan 1964, pp. 131, 274f.
26. Ibid., pp 383-395.
27. Serres 1985, pp. 11-110.
28. McLuhan 1964, p. 55.
29. Serres 1985, pp. 11-16.
30. Ibid., pp. 17-29.
31. Ibid., pp. 349-379, 406-416.
32. Ibid., pp. 30-42.
33. Heilmann 2010, p 134.
34. It is only very recently that I encountered Etienne Souriau's writing on the mode of being of the unfinished work (*Le mode d'existence de l'oeuvre à faire* in Souriau 2009). Here, Souriau develops the idea that it is the work (of art) underway which demands completion. Pushing forward this idea, in the case of deixis and other indexical operations, one could assume the driving force would not be directing or moving towards, but attraction of the move, and internalisation would be as important for the philosophy of the tactile as it is demonstrated here for externalisation. Unfortunately, it was too late to integrate this concept into the present paper.
35. Gell 1998.
36. Peirce 1958, p. 256.
37. Ibid.
38. Ibid, p. 258.
39. Gourhan 1965.
40. Gell 1998, pp. 21ff.

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