



Fingerprints: towards a multisensory approach to meaning in digital media

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Abstract

This paper argues for a multisensory approach to meaning-making in digital environments guided primarily by the sense of touch. Drawing on insights from multimodality, anthropology of the senses, cognitive science and media studies, among other disciplines, the text explores how such an approach can contribute to a more refined understanding of literacy and meaning-making practices in digital media. The paper starts by examining the relationship between meaning, embodiment and the senses, paying particular attention to the sense of touch. The discussion then focuses on the fundamentally tactile properties of digital media and explore their material, sensory and semiotic dimensions. The discussions are supported and complemented by the analysis of two empirical, illustrative examples of how a multisensory approach to meaning can help shed light on literacy practices in the digital age: the reading and interpretation of digital data visualizations and the production of videos using the TikTok app.

Keywords

Multisensoriality, Multimodality, Touch, digital literacy, digital media

Introduction: situating our discussions

“Electricity is only incidentally visual and auditory; it is primarily tactile.” – McLuhan

The main argument developed in this paper is that digital media is fundamentally “haptic”, that is, media that is experienced primarily through the sense of touch. In a broader sense, issues related to the human senses traverse the problematics of modes, media and meaning in the digital age and are crucial to understanding the “irreducible relation between technologies, embodiment, knowledge and perception” (Richardson, 2012, p. 135). Such concerns are reflected in the renewed interest among multimodal scholars in the human senses in general (Hurdley & Dicks, 2011), and in the sense of touch in digital communication in particular (Jewitt & Mackley, 2018). In a stricter sense, we are interested in the pedagogical implications of the relationship between perception, learning and digital technology (Pink, 2015). If we consider that sensorial perception and affect are fundamental components in the processes of interpretation (Jewitt & Mackley, 2018), exploring their role in digital media is key in understanding literacy and meaning-making practices in the digital age. As new generations increasingly interact with and produce texts, images and other semiotic material using digital devices, their practices are inevitably shaped by the affordances and constraints of digital media and the sensory experiences they engender.

These claims do not invalidate the power of visuality in the digital age. Quite the contrary, if images have the power they do, it is exactly because digital media allows them to be experienced, manipulated and transformed in ways that were virtually impossible in previous types of media. Rather than relegating sight and visuality to a secondary role, we are interested in investigating how the senses, particularly touch and sight, interact synergistically in digital environments to create “ways of knowing in which the senses remain interconnected” (Pink, 2011, p. 267).

In the specific domain of digital literacies, the works of Mangen and Velay (2010) and Mangen and Weel (2016) are noteworthy for exploring the associations between haptic/sensory feedback, perception and cognitive-emotional processing in reading and writing in digital environments. As a point of departure to our discussions, we adopt and expand the two premises elaborated by Mangen and Weel (2016) in their analysis of the evolution of reading in the age of digitization. The premises are reformulated in an attempt to account for a holistic approach to literacy and meaning-making practices in digital environments that includes (but is not restricted to) reading and writing. They are the following:

- a. Literacy and meaning-making practices in digital environments are effected via the interaction with technologies/devices with specific interface affordances and constraints.
- b. Cognition, hence literacy and meaning-making, is embodied – it entails physical (in particular, manual/haptic) interaction with a device (touchscreen phones, e-readers, etc.) and, more importantly, with the semiotic resources (written texts, images, videos, audio files, etc.) available in digital environments (adapted from Mangen and Weel, 2016, p. 119).

These premises are developed throughout the paper and are supported by two illustrative cases which are representative of current digital literacy practices among schoolchildren. The first case refers to the interpretation of data visualizations, an ability that is increasingly valued and discussed by teachers, educators and scholars (Bhargava and D’Ignazio, 2015; Tønnessen, 2020). The second example, the production of videos using the TikTok app, is extremely popular among young learners and refers to practices that are geared towards “practical action in the outer world” (Kress, 2003, p. 59) which reflect their interests and inclinations. The aim of this paper is to contribute to the ongoing debates about the role of the senses (particularly touch) in digital media and to propose a reorientation to literacy and meaning-making practices that take into account the sensory engagement of users with devices, semiotic resources and, ultimately, their own bodies.

Multisensoriality and multimodality in the digital age

To a large extent, our discussions are informed by and complementary to the theory of multimodality and are concerned with need for developing theories of meaning that incorporate the materiality of modes and media “to the physiology of bodily perception and the production of meaning” (Kress, 2003, p. 46). The human senses have never been far from multimodality (Pink, 2011), although their place in multimodal theorizing is “not well charted, and as yet unnamed” (Jewitt & Mackley, 2018, p. 98). In his earlier work on literacy and the new media, Kress (2003) makes some relevant remarks about the role of the senses in a theory of multimodality. However, his theorizing is not systematic and leans strongly towards visuality and the predominance of the sense of sight in the interpretation of images (Kress, 2003). As a consequence, it does not fully explore the sensory-semiotic implications

underlying the shift from printing to digital technologies. In his later work, there is a more explicit focus on the role of the senses (especially touch) in multimodality (Bezemer and Kress, 2014), even though some of the considerations made about the sense of touch in “touchscreen” technologies are problematic, as shall be discussed later.

However, the conceptualization of the human senses in the theory of multimodality has been questioned by some authors. In her critique of multimodality, Pink (2011) discusses how Kress and Van Leeuwen’s (2001) approach to the senses is deeply grounded in what anthropologists of the senses call the western sensorium model (Geurts, 2003; Howes, 2005), which conceptualizes the channels through which we perceive the world as numerable, discrete capacities with very specialized functions and ways of operating (Kress, 2000). As a consequence, Pink argues for the need to acknowledge “the cultural constructedness of sensory categories” and proposes “an approach that sees the senses as interconnected, rather than differentiated” (Pink, 2011, pp. 265-266). The next section discusses the role of touch in such an approach.

The intimate relationship between meaning, sensorial perception and touch

The notion of meaning as an embodied experience, effected in great part by the senses, has long been the focus of attention in research in embodied cognition (Carlo & Gomila, 2008; Shapiro, 2010) and cognitive psychology (Gibbs; 2003, 2005), besides also being acknowledged as fundamental to multimodality (Jewitt & Mackley, 2018). Empirical studies in cognitive science suggest that cognition takes place not only in a representation, symbol-processing unit (i.e. the human brain), but fundamentally in the perceptual and motor systems (Mangen & Weel, 2016). Gibbs (2003; 2005) argues that our kinaesthetic-tactile experiences are fundamental to higher-order cognition, adding that language development and human perception do not occur in isolation but through “a kinaesthetic activity that includes all aspects of the body in action” (Gibbs, 2005, p. 12). These observations hint at a conceptualization of touch not just as a separate sense, but rather as an ensemble of sensorial experiences that mediate and give meaning to our relationship with the world around us (Ingold, 2011; Jewitt & Mackley, 2018).

The ambiguous character of the sense of touch can be partially explained by the fact that, differently from other senses, it has no correspondence to a single organ (Paterson, 2007). Touch is the first sense to develop in the human embryo (Montagu, 1986) and it is primarily through physical contact that parental bonding, an essential component of our emotional and behavioural development, is achieved (Field, 2011). The fact that touch is a fundamental component of affectivity and intimacy further explains its vague conceptualization and point to the relational character of all sensorial experience, which is closely related to a phenomenological view of the body not as “a collection of adjacent organs” but as “a synergic system, all of the functions of which are exercised and linked together in the general action of being in the world” (Merleau-Ponty, 2002, p. 234). From a multimodal perspective, Kress argues that the constant traffic and interplay of the senses, the (psychological) processes of synaesthesia, lie at the core of what we call creativity and are related to the processes of translation of semiotic material from one mode to another, what the author called *transduction* (Kress, 2003). Nearly four decades earlier, when discussing the role of sensory perception in electronic media, McLuhan (1964/2013) had a similar insight, which summarizes the point we are trying to make:

[...] it may be very well be that in our conscious inner lives the interplay among our senses is what constitutes the sense of touch. Perhaps touch is not just skin contact with things, but the very life of things in the mind? (McLuhan 2013, p. 80)

The metaphorical approximation of ideas and thoughts to tangible objects that can be apprehended (grasped) and manipulated by the mind, point to the crucial role of the sense of touch in the processes of meaning-making or “getting at one thing through another”.

Following these insights, in this text “touch” should be understood not exclusively as the sense of physical contact, but as also an human capacity of apprehending and manipulating physical and mental phenomena that is inherent to any process of understanding. In the next section, we discuss the central role played by touch in digital media, keeping in mind a more fluid and comprehensive conceptualization of touch as both a sense and a suite of senses that subsumes a range of sensory experiences (Jewitt and Mackley, 2018).

Digital haptics and the fusion of the senses

Nowadays, the prevalence of digital media in our daily lives have indeed made the body-screen interaction one of the most significant human-technology relations in contemporary life (Richardson, 2012), and a number of studies investigate this phenomenon. Goggin (2012) argues for the need of theories that combine “the multimodal, multimedia, multi-sensorial breadth of contemporary mobile communication” (p. 11), placing particular emphasis on the importance of the haptic dimension of mobile devices. Miller (2014) draws attention to fundamental elements of the phenomenological experience of smartphone use and its cognitive entailments. Lasén (2010) looks into the affective and emotional aspects involving mobile media users and their devices and applications, while Richardson (2012) explores the phenomenology of mobile gaming on touchscreen devices and the techniques of “haptic vision” (p. 139), in which eyes and touch coalesce.

All these studies provide useful insights and should inform a multisensory approach to meaning in digital environments. However, they refer to the haptic properties of one specific type of device (the smartphone) and focus mainly on their implications for the interaction between humans and machines. Our approach, on the other hand, considers all digital media (and devices) as intrinsically “tactile” and seeks to understand how the interplay of the senses allowed by the constant deployment of the sense of touch in digital media radically transforms the way we interact with, interpret (“read”) and produce images, written texts or any other (culturally-shaped) modes of representation.

Virtually all actions performed on a computer or mobile screen (such as cut and paste, scroll, drag and drop, rotate, swipe) are in a metaphorical relationship with their counterparts in the physical domain and refer to a sensory-corporeal phenomenology marked by tactile experiences. More importantly, all these actions invariably perform a double function. First, they allow the user to explore and alter the material properties of whatever is displayed on the electronic screen. For example, scrolling gives access to other parts of a text, zooming in on Google Maps blows up an image, clicking on a hyperlink takes the reader to another webpage and so on. Second, because whatever appears on a computer screen is fundamentally composed of meaningful elements (signs), these same actions invariably imply a change in the way these elements are interpreted. For example, cutting and pasting a passage from a digital text makes it into a citation, the blown-up image allows the user to see different aspects of a map, clicking on a hyperlink changes the trajectory and the content of the reading experience, and so on. The first set of transformations are of material order: they alter the structure of whatever is perceived on the screen. The second set of transformations affects interpretation, and has to do with the meaning of the elements represented; it is a change of semiotic order. Thus, the computer mouse (or the tip of the fingers on touchscreen devices) becomes an extension of the human arm through which whatever is (visually) perceived on the screen is simultaneously open to haptic experimentation and semiotic manipulation by the user.

A case in point is the digital image, which is not just organized and interpreted in terms of the visual/spatial properties and relationships laid down by print technology¹ (Kress and Van Leeuwen, 2006). In addition to those, a whole new set of haptic/actional properties and relationships play an equally fundamental role in the semiosis of the digital image. One common example are images on Google Maps, which are open to a number of transformations (effected by actions such as clicking, dragging and zooming) that radically change the visual experience of reading of a map (and, to a large extent, the very concept of a “map” itself). It is under the light of this constant, dynamic interaction between what is displayed on a digital screen and the actions effected on it by the user, in other words, between the interaction of touch and sight, that we can say that a digital image can be “read” with the fingertips. From this perspective, the word “digital” acquires a triple connotation that subsumes the material, the sensory and the semiotic dimensions of the medium: “digital” media becomes not only media that is made up of numbers (Manovich, 2001, p. 27) but, equally important, media which can be experienced and manipulated by the fingers (digits) and, consequently, which can be apprehended, primarily, by the sense of touch.

If we consider that the same interactional pattern of sensory mediation applies potentially to all modes in digital media, we are led to conclude that it plays a crucial role both in the reception (interpretation) and the production (creation) of any kind of digital “text” or message. Contrary to what has been suggested by Bezemer and Kress (2014), the tactile engagement of the user with digital devices should not always be taken for granted (Mangen & Weel, 2016), nor does it necessarily entail a mere activation of predesigned resources for representation representing. Rather, it is part and parcel of the interpretive and creative processes in digital media, and even though “the potentials of touch screen appliances are not transformed— redesigned – by touching” (Bezemer and Kress, 2014, p. 84), the meaning-making potentials of the semiotic resources definitely are.

In the next sections, we look into two empirical, illustrative examples of how what has been discussed so far can help shed light on important aspects of literacy and meaning-making practices conducted in digital environments. The two cases emphasize the relevance of haptic/sensory engagement in both receptive and productive aspects of digital media content. The first example focuses on the interpretive ability of reading and arguing with data visualizations and is based on classroom observations from a study originally conducted by Tønnessen (2020). The second example focuses on the production short videos on the TikTok app and is more related to practices oriented towards “action in the outer world” (Kress, 2003, p. 59).

Data Visualizations: are they really just “visual”?

The use of data visualizations have become an increasingly common feature of discursive practices in contemporary societies. As a consequence, the capacity to interpret and critically evaluate (numeric) data and their representation in visualizations have become valued and valuable aspects of literacy, and have attracted the attention of teachers, educators and scholars. The creation of data visualizations (DataVis) occurs at the confluence of computer science, statistics and semiotics (Buzato, 2019), and the ability to interpret data visualizations is part of what some authors call data literacy. Bhargava and D’Ignazio define data literacy as “the ability to read, work with, analyse and argue with data” (Bhargava and D’Ignazio, 2015, p. 2).

1. This does not mean, however, that constituent elements from other media (including print) are not reincorporated in digital media (Bolter & Grusin, 1999; Miller, 2014), and therefore are not relevant to a semiotic analysis of the interrelation between digital texts and images.

In the following discussion, we explore the role of digital touch in performing analytic operations and building coherent interpretations based on data visualizations, in other words, in the capacity to “read, work with and argue” with data. In order to do so, we follow and expand upon the insights discussed by Tønnessen (2020), which are based on the author’s empirical observations of upper secondary students’ interactions with data visualizations in two classrooms in Norway. We focus our analysis on one visualization discussed by the author, taken from the Gapminder website.² According to information available on their website, Gapminder is an independent Swedish foundation with no political, religious or economic affiliations which produces free teaching resources for “making the world understandable based on reliable statistics”.³

As in any kind of literacy practice, visual numeric literacy requires the knowledge of specific semiotic resources, that is “resources of and for making meaning” (Kress, 2003, p. 9), which in the case of visualizations include lines, bars, bubbles, colours, numbers and percentages, and so on (Tønnessen, 2020). Equally important when reading a visualization is knowing that these resources are organized in a composition (Van Leeuwen, 2005) in which the visual-spatial arrangement of the elements are meaningful in terms of size, direction, their location in relation to the axes defining space, and so on (Tønnessen, 2020).

However, there is more involved in the interpretation of a visualization than just recognizing its elements and knowing the meaning of their spatial location and movement. Readers must also be capable of interpreting the relationships among the variables, formulating relevant questions and plausible explanations, testing hypotheses, and so on. In the case of digital visualizations, this usually involves exploring their pre-programmed affordances, such as finding out constraints, and trying out different options for visualizing the data and combining variables. The process of figuring out the mechanics of a digital visualization, how it works and what you can do with it, is crucial for its interpretation and cannot usually be achieved solely by a “visual” reading of the image on the screen. It also requires a number of experimental, tactile actions that might have an effect on the visual/spatial presentation of the different elements and the overall aspect of a visualization.

From empirical observations, Tønnessen concluded that the best reading practices were indeed effected by students who took the time to explore and try to figure out the mechanics of the visualizations in Gapminder before answering the questions posed by the teacher (Tønnessen, 2020). Similarly, in his discussion about videogames, Gee emphasizes the importance for players to “play around and explore a game world in order to hypothesize what its rules are (what sort of semiotic system it is)” (Gee, 2013, p. 50) and hence to be able to use (or ignore) those rules to their own benefit. What is implicit in these insights is that it is mainly through the constant interplay between touch and sight, between what can be seen on the screen and how it is manipulated by readers and players, that they are able to explore different (visual) arrangements and hypothesize on the different meaning potentials that accompany these changes.

In the specific case of the graphs in Gapminder, the complexity of the data and the different options available for their visualization, call for a “critical assessment of the numbers and statistics behind the graphs, which may be supported by information not immediately visible on the screen” (Tønnessen, 2020, p. 195). This active involvement with digital visualizations, which includes, literally, “not taking them at face value”, but rather ques-

2. [https://www.gapminder.org/tools/#\\$state\\$time\\$value=2019;&chart-type=bubbles](https://www.gapminder.org/tools/#$state$time$value=2019;&chart-type=bubbles)

3. <https://www.gapminder.org/about-gapminder/>

tioning them and trying out different reading possibilities, is a crucial component in successful reading practices. Yet it needs to be complemented by an assessment of the learners' adequate understanding of the changes in meaning effected by their manipulation and exploration of the images. In other words, teachers need to be sure that learners are able to account for the semiotic changes and potentials effected by the material changes in the images which were discussed in the previous section.

This is the point where the concept of *transduction* introduced earlier becomes extremely valuable, since it demands of the learners the capacity to rearticulate the meaning of the visualizations from one mode (the visual) to another (for example, a written report or an oral presentation based on the visuals). Besides helping students realize and contrast the different affordances and constraints of different modes, it is usually during the processes of re-elaborating the semiotic contents of one mode into another that misinterpretations are spotted and corrected (Tønnessen, 2020), and sometimes the possibility of novel and unforeseen readings emerge. With the proper guidance of the teacher, transduction might also offer learners the opportunity to reflect on their sensorial engagement with the visualizations, and develop an awareness of how different senses are deployed in the processes of interpretation (Kress, 2003).

As a result of her empirical observations, Tønnessen (2020) concludes that many of the “misreadings” were due to “students’ problems in handling the many choices given by the digital *Gapminder* tool” (p. 203). Indeed, it may very well be the case that the alleged proficiency of younger generations in digital technologies stems in a large part from their ability to try, experiment and explore the (haptic) affordances of digital devices and software. However, this does not mean that these abilities are evenly distributed among students, nor that their mastery automatically leads to an understanding of the logic underlying digital media and the semiotic potentials they offer. The author concludes that “visual numeric literacy” is not just about numbers and images, “it is also about how digital media work, and how they allow the user to interact with pre-programmed affordances in data visualizations” (Tønnessen, 2020, p. 203). Therefore, a multisensory approach might be a fruitful complement to multimodality in helping teachers, educators and researchers to understand the complexities involved in the interpretation of data visualizations.

From representation to performativity: the case of TikTok

TikTok is a video-sharing and creation platform owned by ByteDance, a tech company based in Beijing. In the first quarter of 2020 TikTok reached 2 billion downloads worldwide,⁴ making it one of the most popular apps of all time. From a broader socio-cultural perspective, the app is inserted in the logic of post-industrial, informational consumer society, which allows users to engage in the participatory consumption, production and distribution of media content (Bruns, 2006; Jenkins et al., 2009). It is estimated that 69% of TikTok users are between 13 and 24 years old,⁵ and the app was designed to appeal to the younger generations of “fourth screen”⁶ users, who have a more emotional relationship of attachment to their smartphones than they do to any other computational devices (Lasén, 2010; Vincent, 2005; Vincent et al., 2005). Such a relationship is grounded in the embodied, tactile and affective experiences that underlie mobile communication (Goggin, 2012; Picard, 1997).

4. These figures exclude Android users in China. Source: <https://sensortower.com/blog/tiktok-downloads-2-billion>

5. Taken from: <https://blog.hootsuite.com/tiktok-stats>

6. According to Miller (2014), the smartphone “is often called the fourth screen, coming historically after the cinema, television, and computers” (p. 210).

The creative processes involved in the production of TikTok videos follow the principles of appropriation and recombination of existing content that form the basis of Remix culture (Irvine, 2015; Lessig, 2008; Navas, 2010, 2012). These principles, facilitated to a large extent by the material properties of digital media (Manovich, 2001), enable users to engage in a dialogic relationship with pre-existing cultural and semiotic material by incorporating them in their own hybrid creations that mix the old with the new. From this perspective, a typical TikTok video can be conceptually defined as a collage of elements from different sources (for example, an audio sample from a pop band, a background photo from a famous tourist location or a choreography emulating another TikTok video) that are superimposed and sequentially organized according to different audio-visual techniques (such as editing, compositing and dubbing) and incorporated in the performance of the creator.

In a further compression of Warhol's prophetic 15 minutes of fame,⁷ the app allows users to record video clips of up to a limit of 15 seconds. These clips can be strung together to create longer videos up to 60 seconds, and the platform also allows the uploading of longer videos that were not created within the app.⁸ By aggregating classic film techniques (such as slow-motion, speeding-up and image compositing) to digital-age computerized effects (for example, augmented reality, face replacement), the app enables the creation of high-quality videos similar to the productions of professional cinema.

Even though the final product is usually just a 15-second clip, the processes of *transduction* discussed in the section on visual numeric literacy also play a crucial role in the creation of a TikTok video. However, the relationship between these processes (and the literacy practices and abilities involved, especially writing) is differently structured. Whereas in data visualizations, the *transduction* from image into written text is usually used by teachers subsequently to assess the comprehension of a visualization, in a TikTok video, writing can be considered as an integral component of the creative process. Besides the skilful manipulation of filters and video-making techniques, the production of a well-crafted TikTok video demands careful planning and thinking, which ultimately entails the transposition of ideas (or "mental images" of what the final product is going to look like) into video frames (the end product of the creative process). As in the production of any other audio-visual material, this process involves the mediation of writing, usually in the form of a script, the construction of dialogues or the development of storyboards. Even though writing is not at the forefront, it is part and parcel of the creative process. This does not mean that all TikTok users write scripts before they shoot their clips, nor that all clips are the product of elaborate script writing. The point here is that writing is a crucial skill in video making, and not just an isolated ability that is only deployed, and therefore only useful, when the final product is a written text. In this respect, Jenkins et al. (2009) argue that it is a mistake to assume that the use of digital media will displace reading and writing. Rather than pushing aside these more traditional competencies, what is needed is a thorough reassessment of their interaction with the new competencies required in the modes of expression young learners are engaging in (Jenkins et al., 2009; Mangen & Weel, 2016).

In addition to writing, the making of TikTok videos requires an intricate ensemble of technical and performative abilities which usually include dubbing, dancing, acting and knowledge of foreign languages, to mention a few. These abilities are deployed in the crea-

7. The quote "in the future, everyone will be world-famous for 15 minutes", attributed to the American artist Andy Warhol, can be interpreted as an anticipation to digital media platforms such as You Tube.

8. <https://slate.com/technology/2018/09/tiktok-app-musically-guide.html>

tion of a video in which the main protagonists are usually the creators themselves. Dubbing effects enable users to lip synch and “speak in somebody else’s voice”, the “green screen” filter allows, amongst other things, the performance of supernatural feats and even interaction with people in other video recordings. Other multiple filters enable users to manipulate and play with their own image, change and distort their size and appearance, add cartoon effects, create alter egos and shape new personas.

Differently from other software and applications, the haptic manipulation in TikTok no longer operates solely on semiotic entities (for example, texts, images or a game narrative) that are detached from and external to the sign-makers (to use Kress’ terminology), but, more importantly, it operates on the digital image of the makers themselves. This can be considered a radical departure from purely “representational” models of semiosis – which linearly portray the sign-maker working on meaning-making resources to produce messages and cultural artefacts (Hurdley & Dicks, 2011; Jewitt & Mackley, 2018) – into a hybrid performative one in which the sign-makers become the signs themselves. The mobile device, the app and the user are fused in a powerful symbiosis and the multisensory engagement operates simultaneously at three levels: between the creator and the device, between the creator and semiotic material (via the manipulation of photos, video frames, audio files, etc.) and, by extension, on the image of creator themselves.

In addition, these new forms of expression allow the multisensory engagement with the media to be extended to the viewers as well. One popular trend in Tiktok comprises “satisfying” videos, in which the aim is to produce a soothing and pleasing sensation in the viewer. Rather than being structured in traditional narrative forms, these videos consist of performances which manipulate audio, visual and tactile stimuli (for instance, the sound of fingers scraping a smooth surface) and whose aim is to produce a synesthetic physical response in the viewer, usually similar to that of ASMR (autonomous sensory meridian response). The sensory/sensuous experience is effected by a simulated physical intimacy achieved, paradoxically, by the distancing allowed by digital media.

Conclusion

This article argued for a multisensory understanding of digital media as being primarily “haptic”. Drawing from insights from various disciplines, we offered an alternative conceptualization of the sense of touch that includes and goes beyond touch as merely “skin contact”. After looking into the fundamentally haptic properties of electronic and digital media, we proposed a multisensory approach to literacy and meaning-making practices based on digital touch, which subsumes the material, sensory and semiotic dimensions of the media.

In addition, two practical examples were presented with the aim of establishing a bridge between “the material characteristics of modes” and media and “their consequent interaction with the sensoriness, the sensuousness of our bodies” (Kress, 2003, p. 171). Given the predominantly exploratory nature of this paper, the cases discussed were mainly illustrative and need to be supported by further empirical evidence from studies designed to look into the role of digital haptics in digital media.

We believe the conceptual reorientation outlined in this paper to be a promising path to achieve a more fine-grained understanding of practices geared towards action in the outer world and the new forms of imagination and creativity that lie at the heart of the notion of design (Kress, 2003). In particular, reconceptualizing touch as a sensory capacity that allows the interplay of all senses and mediates those practices, offers the possibility of developing

pedagogies that are more attuned with digital environments than purely visually-oriented approaches rooted in analogical media. Ultimately, this could be a viable route into thinking beyond the dichotomy of mind and body, still prevalent in Western thinking, and into a more integrated understanding of the relationship between cognition, affect and emotion (Kress, 2003).

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