**CHAPTER 1: About Touch and About Society**

In the third decade of the 21st century, everything appears “advanced” and “innovative.” In our fast-paced, high-tech, and increasingly online world, new technologies are emerging at a dizzying pace, making their predecessors seem as extinct as the diplodocus. Cinemas that once screened news dailies have long been supplanted by digital televisions and smartphones offering 24-hour news. Instant messaging apps like WhatsApp and Snapchat have replaced the landline. Yet brick-and-mortar bookstores still exist, people still read print newspapers, albeit perhaps only on weekends, and graduates still attend ceremonies where they are awarded certificates printed on parchment. Vinyl records and Polaroid cameras – yes, those technologies that were “advanced” and “innovative” way back in the 1970s – are once again on trend and profitable. Everyone knows that all these “retro” analog technologies – books made of paper, print magazines and newspapers, vinyl records, vintage cameras, Polaroid photos – have digital replacements. You can read e-books on your iPad or Kindle, newspapers on your browser, snap photos with your smartphone, listen to music on Spotify or Apple Music, and receive your degree certificate via email in PDF format. So why do we insist on clinging to some of the technologies of yesteryear? Is it just a question of sweet nostalgia?

In this book, I discuss communication technologies that rely on touch. I talk about the essential characteristics of these technologies and their human and cultural interpretations. While I do not neglect the smartphone, whose ubiquitous touchscreen has become the symbol of a generation, I am concerned mainly with old, analog technologies that have managed to survive into the 21st century. These technologies enable individuals to physically engage with the tangible qualities of documents, books, or records and differentiate between textures and surfaces.

 This feature is an expression of an intimate relationship with the message and a declaration of ownership. For a growing number of people, it is also an act of defiance against the increasing infiltration of the digital world into our everyday lives.

Ever since the invention of writing,[[1]](#footnote-1) people have used their hands to interact directly with the messages they read and write. They physically handled the paper on which they wrote and touched the pages of the books and newspapers they read. They framed and hung photographs on the walls of their homes or carefully stuck them in leatherbound photo albums as keepsakes. In the 20th century, with the advent of radio and television, touch was gradually reduced to a minimum, as new technologies emerged that required people to press various buttons that activated “content boxes.” This principle continued into the age of the personal computer, with which people interacted using a mouse or a special type of electronic pencil.

 At the beginning of the 21st century, two phenomena emerged. The first, and perhaps the most prominent, was the advent and rise to prominence of the smartphone, which first drew global attention when the iPhone was unveiled by Steve Jobs, the CEO of Apple, on January 9, 2007.

This communication device allows people to group a large amount of different data in a “content box” and control them by directly touching a screen. Therefore, the smartphone offers a tactile experience that, while more significant than that offered by buttons and computer mice, is still limited. Initially, people interacted directly with the “content box,” swiping messages side to side or scrolling up and down, as if touching each message individually. However, this experience was fundamentally different from touching paper; the feedback was the same regardless of whether they were interacting with a grocery list sent via WhatsApp or a photo of the Bible.

Thesecond phenomenon, which is the subject of this book, is the continued survival of paper media in our 21st century lives. This phenomenon arose from a combination of two sub-processes: a much slower than expected transition to digital and a fresh return to paper and plastic-based media that allow people to interact directly with each message.The first process involves the preservation of the status of certain documents despite them having digital alternatives. There has also been a rise in the printing of various types of books (such as children’s books). A prime example of this is the Harry Potter series by J.K. Rowling, which sold about 600 million copies worldwide from 1997 to 2003, reaching an audience that devotes considerable time to television and computer games.[[2]](#footnote-2)

The second process involves the reemergence of analog “retro-tech” like vinyl records and Polaroid cameras. Alongside the renewed craze for Polaroid cameras came a revived fashion for old-style, paper-based photo albums, which people could fill with printed digital photos – the same digital photos that had, ironically, partially replaced traditional photo albums. These technologies, which apparently became obsolete in the 20th century, are based on tactile experiences.

The properties of a specific technology thus play an important, but not exclusive role in the experience of its users. Equally important is the human meaning and interpretation given to those properties. To explain the enduring appeal of tactile technologies like paper books, I rely on the *theory of technological affordances*. This theory attempts to distinguish between the potential of a particular technology to create a certain experience because of its properties and the meanings people attribute to these properties. I show that technologies that allow people to directly touch each message evoke feelings of intimacy and ownership, as well as enable a deepening of knowledge. These meanings are shared by all who read paper books and print newspapers, store photos in paper photo albums, and play vinyl records on turntables. I also show how the persistence of these technologies can be interpreted as a criticism of the capitalist ideal of “efficiency” and our increasingly compressed world, which is based on a continuous receipt of information to the point of “the ends of sleep”[[3]](#footnote-3) – an era when people are expected to be available to their workplaces around the clock.

**Affordances theory: The person?** **The object? Maybe actually both**

# Over two thousand years ago, the ancient Greek philosopher Aristotle pondered whether it was possible to separate the organs of touch from the experience of touch. Can the properties of objects, as the human sensory system perceives them, be separated from the interpretative action of those sensations that take place in the organ of thinking – the brain?[[4]](#footnote-4) This analytical process is the basis of the theory of affordances. Originating in ecological psychology, this theory helped us understand how animals interact with the world. From there, its application expanded to studies of society, technology, and culture. Originally, it referred to every possible interaction that can occur between a living being and its environment. For example, the physical properties of rocks affect how they are used but do not determine how different organisms use them. The evolutionary psychologist James Gibson, who first proposed the theory, illustrated its principles this way – while the properties of the stone are fixed, they mean something very different to humans and lizards. [[5]](#footnote-5) A specific property of rocks is that they are harder and more durable than, for example, grass or paper. Lizards see rocks as hiding places, and (unlike people) do not take advantage of their hardness – for instance, on which to engrave important messages.

# The theory of technological affordances[[6]](#footnote-6) focuses on human-made technologies. It seeks to distinguish between the essential features of a specific technological artifact and its personal and social meanings. There is a clear distinction between the material properties of an object or technology (which are fixed and whose existence does not depend on an external subject) and their perceived affordances.[[7]](#footnote-7) This concept refers to the human (or non-human) interpretations and implications of an object’s material properties. It also describes the conceptual context of the encounter that takes place when an object’s properties encounter the limitations of human perception and knowledge, as well as the various practical, normative, and cultural factors that influence an individual’s interest in a specific object.[[8]](#footnote-8) To illustrate this idea, consider a book: a bound collection of pages with an unchanging material form and tactile distinctiveness. These features exist independently of human thought and do not inherently imply ownership. But when I hold this tangible and stable object and place it on a shelf in my home, I can assert, in a socially recognized way, that the book belongs to me.

# Moreover, in contrast to technological determinism, according to which technologies impose a certain mode of action and prevent others, technical affordances theory distinguishes between different measures of imposing. It is possible to distinguish between a “requirement” to perform a certain action and an “encouragement” or “lack of encouragement” to perform it. For example, the affordances of paper books “require” that people distinguish one copy from another, for example, a copy of Jane Austen’s *Pride and Prejudice* from a recipe book, or even distinguishing one copy of the recipe book from another identical copy. However, as we will see later, when people read a print book, the structure of the page encourages them to remember more compared to if they read the same information on a screen (but the screen does not prevent them from forgetting what they read).

# In summary, according to the theory of technological affordances, we should not underestimate the importance of the features of human-made objects or technologies. This is because (at least, to a certain extent) they impose a particular way of using them on us. However, how we use a particular object or technology is subject to two dimensions of human interpretation: the personal (the limitations of human perception and knowledge) and the social-ideological (the social norms that dictate the use of a particular technology).

# Before we discuss this tension between the specific characteristics of a particular touch-based technology and its meanings, we should first explore the meaning of touch.

**A touching experience**

Every day, we use our sensory systems to examine and explore ourselves and the world around us – this appears so natural that we usually do not notice we are doing so. We only pay attention when some aspect of our sensory system – our eyesight or hearing, for example – goes wrong and affects our ability to experience and understand the world. In light of this, what can be said about the importance of the human sensory system that does not require medical knowledge? The conceptualizations that describe this process come not from medicine, but from disciplines such as philosophy and sociology.

In 1954, the German-Jewish philosopher Hans Jonas described how the essential properties of the senses, especially sight and touch, allow people to experience the world.[[9]](#footnote-9) The table below summarizes the three main differences between the modes of interaction with the world imposed on us by these two senses:

|  |  |  |
| --- | --- | --- |
|  | Touch | Sight |
| Method of reception | Sequential | Simultaneous |
| Distance | Requires proximity | Requires distance |
| Nature of interaction | Leaves a trace | Leaves no trace |

Method of reception: Sight enables us to gather more information more quickly compared to touch for two reasons. First, under ideal conditions, we can detect a flicker of light that lasts just 25 milliseconds, whereas touch requires at least 50 milliseconds to register a sensation.[[10]](#footnote-10) Second, sight enables the simultaneous intake of scattered information, while touch, like hearing and smell, requires a delay in processing.

# To experience how touch works, we might close our eyes for a moment and reach for a nearby chair. An initial touch of the chair allows us to feel the properties of the material it is made from, such as its texture and thickness. However, we cannot conclude that what we are touching is indeed a chair, and we also lack information about the presence of other chairs in the same space. We will find this information only through further exploration.

# Distance: even though hearing in most cases (unless someone speaks very softly) does not necessarily require us to be in particularly close proximity to an object to gather information, sight is the only sense where being too close to an object can actually be a disadvantage. For instance, if a person is asked to close their eyes and a chair is placed in front of their face, nearly touching the tip of their nose, they may not immediately recognize it as a chair when they open their eyes.

# Here, the gulf between sight and touch is enormous. We cannot physically touch something that is further away than the length of our arm. This limitation sometimes means that if we want to experience a particular object through touch, we need to get so close to it that we cannot see it properly. In so doing, we impede our ability to examine the relationships between that object and others in our world. This is essentially what Walter Benjamin argued in his essay *A Child’s View of Color* – that the basis of a child’s experience is tactile.[[11]](#footnote-11) Benjamin theorized that children experience color close to their bodies; therefore, their drawings differ from reality experienced through the eyes. When they draw objects around them, children do not attempt to imitate the three-dimensional characteristics of reality, nor are they overly careful to match the colors they use with reality.

# The nature of the interaction: in his book *Visible and Invisible*, Maurice Merleau-Ponty used an image of two hands touching each other to demonstrate the concept of “double sensations.” This concept suggests that as I pass from one role to the other, I can recognize the hand being touched as the same hand that will soon be doing the touching.[[12]](#footnote-12) This third aspect of touch complements the previous two by relating to the sensory traces that linger after engaging our senses. In contrast, when we focus on an object and then close our eyes or turn away, it disappears from view. Because what we see can easily “vanish,” sight may be the most effective way to resist influence from our environment.

Also, touch is unique compared to hearing, smell, and taste. It is true that information absorbed through hearing, smell, or taste penetrates our inner systems and does not let go. Even if we close our ears or hold our noses, it is quite possible that information will nevertheless get through and penetrate us. However, touch is the only way of receiving information that forces us to *voluntarily* activate a set of mechanisms in our body. The result of this action changes not only us, but also the object being touched. Even the paper we touch has something of ourselves added to it – an almost invisible fingerprint.

# The human aspect: touch as a means of communication

# It is difficult to discuss the human implications of touch since we are not always aware of its particular importance. For the most part, we experience touch as part of our overall multi-sensory experience. Our five senses all work together. Yet physical touch has several unique implications related to our interactions with our environment. The 16th century English poet and lawyer John Davies described the properties of touch in his philosophical poem *Nosce Teipsum* (1599), connecting them with the way we perceive them:

By touch, the first pure qualities we learn,

Which quicken all things, hot, cold, moist and dry;

By touch, hard, soft, rough, smooth, we do discern;

By touch, sweet pleasure and sharp pain we try.[[13]](#footnote-13)

# Davies’ lines relate to two aspects of the experience of touch: the emotional and the rational. Let us discuss each of these in turn.

# Touch and feelings

When we think of touch, we often think first of emotions. We associate emotions with touch in various situations – whether talking about it, physically touching someone, or interacting with objects. For instance, the act of holding our own books or a digital “content box” can evoke a sense of joy because it signifies ownership: “This is mine.”

Let’s begin by exploring the use of touch as a metaphor in the English language. The verb “to feel” can refer to both thought and emotional experience. If someone tends to get upset easily or is sensitive, they might be described as “touchy,” and if you want to stay connected with someone you met on holiday, you might ask them to “keep in touch.”[[14]](#footnote-14) These expressions illustrate how language reflects the importance of touch in human relationships.

 One of the important implications of touch is the ability it gives us to express emotions (positive or negative), for example, by caressing or hitting someone or something.We use touch to express our feelings, and when someone touches us, we often interpret it as an expression of emotion. It is widely believed that touch is the best way to express our emotional connections, at least compared to other senses.[[15]](#footnote-15) Although touch is usually associated with the physical, in many languages, it is also a metaphorical expression of a person’s interior life and feelings, at least as far as an emotional response is concerned. Ashley Montague defined touch as “an action that means feeling something with the hand.”[[16]](#footnote-16) So did the Elizabethan poet Michael Drayton, who described touch in his 29th sonnet, *To the Senses*, first as “The King of senses, greater than the rest,” and added: “That yields love up the keyes unto my heart, And tells the other how they should be blessed.”[[17]](#footnote-17)

Emotional communication through touch is first experienced at birth. Touch establishes what the French philosopher and psychoanalyst Luce Irigaray called the “prenatal moment,” when a newborn baby gropes without seeing.[[18]](#footnote-18) This brief time is of dramatic significance, as it encourages babies to explore the world with their hands [[19]](#footnote-19).The French psychoanalyst Didier Anzieu believed that this early experience leads to the development of the ego, as the skin acts as a physical and mental interface between the baby and the world.[[20]](#footnote-20) Julia Kristeva and Irigaray also claimed that this early experience is a sign of things to come: it is calibrated and embedded within the symbolic world through which each of us experiences the world throughout our lives.[[21]](#footnote-21)

The influence of formative touch-based experiences on later life is not limited to humans. In the 1940s, Harry and Margot Harlow conducted one of the most brutal and controversial experiments ever undertaken in developmental psychology.[[22]](#footnote-22) The experiment examined maternal bonding in primates, with the aim of understanding this process in humans. Baby rhesus monkeys were separated from their mothers and placed in a cage with two “surrogate mother” dolls, one made of wire and wood and the other of foam rubber and soft cloth. The baby monkeys were split into two groups: in the first, the wire “mother” had a milk bottle, and the cloth “mother” did not; in the second, the cloth “mother” had the food, while the wire “mother” did not. In both groups, the infants spent more time with the soft, cloth “mother” than the wire mother – and when the wire “mother” had the milk bottle, the hungry infants fed from it, but immediately returned to cuddle with the cloth “mother.” The absence of touch-based communication proved to be of extraordinary and horrifying significance. Monkeys from all groups raised without maternal physical contact suffered behavioral problems in adulthood, with females failing to function as mothers, probably because they were deprived of maternal touch as infants.

Nevertheless, this deeply shocking experiment had a benefit that improved the lives of many. It taught that initial bonding through touch plays an important role in the development of communication and intimacy in humans. A relationship was found between experiencing sufficient physical contact at a young age and avoiding feelings of depression or the ability to experience romantic relationships. [[23]](#footnote-23)

Touch is not used only for deep, intimate communication. Even a lighter touch can express and create a certain intimacy between interaction partners. Interpersonal touch may affect our altruistic behavior. This is called the Midas touch effect, after the Greek mythological figure who turned everything that he touched into gold. Even a very brief touch on the hand, arm, or neck that lasts less than a second (sometimes without the “toucher” even noticing it) affects the toucher’s attitude towards the touch recipient, the feelings of the touch recipient, and the attitude of both toucher and touch recipient to the whole situation.

The relationship to the Midas touch effect is complex and ambivalent. In consensual relationships, touch can evoke positive feelings, as the person being touched perceives it as a sign of love or trust.[[24]](#footnote-24) Some studies suggest that this holds true of interactions with strangers. Studies have suggested that the Midas touch effect is reflected in the effect of hand contact on the desire to return lost money, the size of tips given in restaurants, and the degree of willingness to order from the menu.[[25]](#footnote-25) However, these findings are controversial, as touching a waiter or flight attendant could be perceived as an invasion of privacy or sexual harassment.

Another common expression of intimacy through touch is the handshake, which shifts away from the sometimes forced intimacy of Midas touch and places interpersonal interaction within a more acceptable framework that transcends historical and cultural boundaries. Handshakes serve various purposes; some express emotion, while others are practical and instrumental. This action can significantly influence the quality of subsequent interactions and help create or preserve relationships.[[26]](#footnote-26)

The handshake is not only used for an intimate-emotional expression on an interpersonal level. It also plays a significant role in representing the credibility of relations between commercial and state bodies. With a history spanning some 3,000 years, it originated as a gesture between the kings of Assyria and Babylon and evolved through the cultures of Greece and Rome. In ancient times, handshakes were used by armed people to signal a lack of ill intent, as both parties could show that they were not concealing weapons. Today, handshakes are integral to concluding international contracts, peace agreements, and commercial transactions.

The intimate relationships created through touch extend to our connections with objects, where the emotional dimension of touch is reflected in our understanding of property and ownership. French philosopher and theorist Jean Le Ron d’Alembert defined touch as a way to distinguish between “that which is ours and that which surrounds us.”[[27]](#footnote-27) People tend to distinguish between what is “theirs” and what is “not theirs,” often attributing added value to the things they own. In Chapter 4, I will explore how people distinguish between “their newspaper,” delivered to their door, and those delivered to the local bookstore, as well as between a purchased book and a page from a digital book viewed online.

In contrast to the sense of intimacy created through touch, the need for ownership and ways of realizing it are entirely acquired through learning and part of the social contract. According to Thorstein Veblen,[[28]](#footnote-28) an economist, in the first stages of the development of human culture, ownership did not exist in any form, neither personal nor collective.

The concept of ownership only emerged when we began to transition to the “predatory phase.” From then on, people began to express power and status through durable objects, such as weapons and jewelry. Even today, people buy valuable items so that they can touch them. Wealthy people might choose to buy valuable pictures to hang in their homes where they can touch them whenever they choose, or they hand them over to be housed in museums, provided that a sign is added clarifying the identity of the painting’s owner. Even people who are not particularly wealthy may acquire affordable original artworks and display them in their homes. The choices made by people from different economic backgrounds in selecting images they can physically hold underscore the significance of touch in relation to ownership. While some may be content to view art online or use an image of a famous painting, like the Mona Lisa, as their computer wallpaper, no one would claim ownership of the Mona Lisa in doing so.[[29]](#footnote-29) This example brings us back to the central theme of this book, emphasizing why people cannot be satisfied with what is on a screen.

 Beyond an emotional expression of intimacy and ownership, the human implications of touch are also related to scholarly research aimed at discovering scientific truths.

**Thinking rationally – what is the most “correct” way to investigate reality?**

# The contribution of the senses to a rational observation of the world has been a much-debated theme in philosophical thought throughout the ages. Although a recurring argument is that the senses should be treated as a whole, there were nevertheless many who believed that some senses were “better” or more worthy than others, mainly giving precedence to sight.

# Throughout history, great thinkers, from Aristotle to Descartes, considered sight as separating us from animals. Those thinkers claimed that only sight encourages and nurtures abstract rational thought since this requires observing things from a distance and without interaction. Descartes, who is considered the “founding father of the visual paradigm of modern philosophy,”[[30]](#footnote-30) argued that the ability to see several things at once is what caused human intuition to advance. The ability to immediately grasp a general idea is the first step toward being able to solve mathematical and mechanical problems.[[31]](#footnote-31) According to Descartes, new ideas are born in a single look and not through patient and methodical discovery,[[32]](#footnote-32) such as characterizes how we experience the world through our other senses

# Many of the early proponents of sight as a superior sense also despised touch as basic and animalistic. Aristotle wrote that “all animals whatsoever are observed to have the sense of touch,”[[33]](#footnote-33) which means that it is the most basic sense of any living creature. He continued with his statement referring to all creatures and stated that touch is the place where the human and the animal meet each other, sharing this basic sense without which it is impossible for an animal to be.”[[34]](#footnote-34)

In the early modern period **in philosophy, between 1500–1789**, when discussions were concerned with the relationship between the senses and rationality proliferated, Neoplatonic thinkers argued that touch, smell, and taste were inferior to sight. This was because humans share it with animals, and due to the proximity of objects that are touched to the body. This disgust regarding the “animal” and the “bodily” was expressed in a variety of areas. According to Norbert Elias, the process of “civilization” in which “warrior societies” turned into settled societies involved the institutionalization of actions that expressed control over **“animalistic interests”[[35]](#footnote-35)** or excessive physical proximity to the world of objects. The aversion to direct touch was implied by institutionalizing actions such as wiping one’s nose with a handkerchief and eating with a knife and fork. Elizabeth Harvey uses Elias’s description to argue that avoiding physical intimacy enhances the association of “humanity” with distance, restraint, control, and emotional internalization.[[36]](#footnote-36)

# One intellectual who ascribed great value to sight was the Renaissance philosopher Marsilio T. Ficino. In the 16th century, he described sight and hearing as “spiritual senses” connected to higher human thoughts, while describing touch as “the source of lust and madness.”[[37]](#footnote-37)

# Robert Boyle, the 17th-century Anglo-Irish chemist, stated that touch is the weakest of the five senses since the thoughts evoked by touch are instinctive.[[38]](#footnote-38) While these philosophers claimed that judgments about the supremacy of vision were unbiased, 20th century Russian philosopher Mikhail Bakhtin saw this as an expression of the class distinction made by intellectuals between themselves and manual laborers. He argued that manual laborers, focused on bodily needs, often held a contemptuous attitude towards what they defined as the human spirit.[[39]](#footnote-39) In essence, Bakhtin drew a relativistic parallel between the relationships to sight and touch and those between high and low culture.

# The scientific revolution that took place between 1500-1700 also contributed to the rise of the status of vision in rational thinking. The invention of optical technologies such as the telescope (1608) and the microscope (1620) contributed to the decline of the status of touch in a world that was thrilled by the breakthrough into a new visual world[[40]](#footnote-40).

# The institutional organization of the European medical world, which remained largely unchanged for centuries from 1000 CE, also contributed to the superior status of sight. Medical surgery involved two types of professionals: the trained physician and the barber-surgeon. While the latter lacked formal education in medicine, they were highly skilled with their hands. They were entrusted for years with various treatments: haircutting, tooth extraction, bloodletting, and even full surgeries. Their steady, skilled hands were seen as nothing more than a means [[41]](#footnote-41) to serve the physician’s eye.[[42]](#footnote-42) The physicians themselves, who preferred to teach at the academy or treat members of the aristocracy, tried to avoid direct contact with patients and contented themselves with merely advising those who performed the actual work.

However, in ancient times, during the Roman and Greek civilizations, many claimed that touch was not only a tool but also played a key role in helping people acquire deep insights. The famous Roman writer Pliny claimed in his book “Naturalis Historia” that eagles surpassed people in sight, vultures have a more developed sense of smell and better hearing. Touch was most highly developed in humans. [[43]](#footnote-43) Aristotle also argued that, although we share the sense of touch with other animals, which is essential for our existence, “we far excel other species in exactness of discrimination.” [[44]](#footnote-44)

These philosophical ideas were practically expressed in the writings of the Greek surgeon and philosopher Galen (Claudius Galenus), a first-century figure considered one of the fathers of modern anatomy. He claimed that in order to reach the truth in medical diagnosis, a combination of vision and touch is required, mainly through the fingertips.[[45]](#footnote-45)

 Later, In the 16th century, while Descartes and his followers believed in the supremacy of sight, other thinkers pointed to the value of medical observation based on touch. William Harvey, the influential English physician, wrote of the “powerful authority” of sensory integration, which he said was the “master of anatomy.” Harvey believed that the diagnostic experience, which combines sight and touch, was the right way to know the “truth.” Touch was an important and powerful source of authority that cannot be replaced by the abstract laws of probability.[[46]](#footnote-46)

This position was supported by the 18th century French philosopher Denis Diderot, who asked his readers to consider how much the eyes can deceive, if the interpretation of reality based on them is not accompanied by touch.[[47]](#footnote-47) Diderot supported his claim by quoting the blind English scientist Nicholas Saunderson, who is often credited with saying that to believe in God – or know with more certainty that God exists – one must touch Him.[[48]](#footnote-48)

In the 20th century, as I will demonstrate in this chapter and chapters 4 and 6, there was respect for the combination of sight and touch in rational thinking. The concept of embodied cognition, which gained prominence in the last quarter of the 20th century, influenced by thinkers like Maurice Merleau-Ponty, Edmund Husserl, and Martin Heidegger, rejected the notion that cognitive processes are merely computations on a modal symbol. Instead, it emphasized the body's active and significant role in shaping cognition.

In 2018, a team of neuroscientists from Germany and the United Kingdom conducted a study on the function of the sensory system in judging ambiguous information. The study used a well-known perceptual illusion that affects how people see and feel shapes. Participants were shown two matchsticks that formed an inverted T-shape: when both matches are of equal length, the vertical match looks and feels longer than the horizontal match. Participants were tested on a range of lengths: in some cases, the matches seemed similar in length, and in others, one seemed longer than the other. Participants were better at judging the length of the matches by sight than by touch. However, when the lengths were hard to judge, they made more confident guesses when they touched the matches than when they just looked at them. According to one of the study’s co-authors, Prof. Ophelia Deroy, these results did not show that touch is better or more accurate than sight – but that it makes us feel better. “Descartes was right,” Deroy quipped, “when he said that touch was the most difficult sense to doubt.” Studies like this highlight the significance of touch in tasks that demand organization and logical reasoning. I will revisit and expand on this argument later. In Chapter 4, I show that people prefer reading print newspapers because they help them determine which news is most important. In Chapter 5, I explore why many students prefer reading printed textbooks or a stack of pages before an exam instead of memorizing material from a screen. I invite you to contemplate these matters as I turn to the historical narrative of touch-based interaction in media.

Divine power, efficiency, and the post-digital movement: The shifting meanings of media materiality over time

Technological affordances theory draws from the concept of affordances in the broadest sense but focuses on the properties and meaning of human actions with objects and technologies. The process of imparting meaning is more complex regarding such artifacts. We must consider the interaction between creators, audiences, and various actors, such as educators, religious leaders, and media figures. All share the same “sociotechnical imaginary” – a term for the emotional and educational ways in which people imagine and plan their lives while considering the values and identities that define them as a group. When we adapt activities and objects to meet our needs, we are not necessarily conscious of the values they represent, but our bodies and our daily habits express our obedience to them.

For example, surveys presented in Chapter 4 reveal that airplane passengers tend to prefer reading digital books on the small screens of their smartphones. While reading printed books is often more convenient and rewarding, it appears that in this case people are influenced by the values of efficiency and economy, as printed books are heavy and take up valuable space in a suitcase.

In contrast, those responsible for the sociotechnological production of meaning – such as the designers of compact smartphones that can store an ever-increasing amount of information, including books – consciously interpret the cultural environment. They understand what is desirable and shared within the group, and which products might conflict with its hegemonic values.

Now, I discuss the social meaning of “tactile” technologies using three examples – touch as an expression of supernatural or state power, a means to sanctify the capitalist ideology of efficiency, and as a way to support “post-digital” concepts. This historical shift explains people’s longstanding attachment to material media that began thousands of years ago, the gradual move away from touch-based media in pursuit of the capitalist ideal of efficiency, and its resurgence in the twenty-first century. By the end of this review, we will see that our current media landscape ranges between touch-based interaction with digital content boxes – embodying the ideal of efficiency – and tactile engagement with traditional paper-based materials.

Touch, objects, and divine power

In many cultures, divine and supernatural power was (and still is) conveyed through physical contact with special people or objects. The unique ability of touch to create emotional intimacy is reflected in the special meanings we give to physical contact with high-status individuals and sacred artifacts. In the Bible, many examples exist of how touch is used to punish, harm, bless, or convey power. God himself creates and destroys through touch. For example, the Book of Amos warns that:

And the Lord GOD of hosts is he that toucheth the land, and it shall melt, and all that dwell therein shall mourn: and it shall rise up wholly like a flood; and shall be drowned, as by the flood of Egypt.

Sometimes, God transfers this power to a specially chosen person. Moses confers authority upon Joshua by laying his hands on him, after he receives a direct order:

Take Joshua son of Nun, a man in whom is the spirit of leadership, and lay your hand on him. Have him stand before Eleazar the priest and the entire assembly and commission him in their presence. Give him some of your authority so the whole Israelite community will obey him.

In Christianity, the laying on of hands – associated in the New Testament with Christ’s healing of the sick – invokes the Holy Spirit during ceremonies such as baptism, blessings, and the ordination of priests.

Human cultures imbue ritual objects with divine power. Such objects are given the status of an agent, as faithful representatives of the divine that is empowered to act on God’s behalf and transfer his power through touch. For instance, the European custom of kissing the monarch’s hand or ring was a sign of respect for the divine authority of kings, symbolized by and invested in these objects. In Britain, the king confers knighthood on a worthy individual by “dubbing” him with a bare sword on his shoulders, as the knight-elect kneels on a special knighting stool. These objects symbolize divinely granted royal power. Holy books like the Torah, the Bible, and the Quran are considered to represent God’s power since this is revealed through them. When a believer touches a holy book, he or she is touching this power. Sometimes, the wrath of God erupts when a holy book is touched without permission, and sometimes, touching a holy book protects people from harm (there are plenty of tales about Bibles that stopped bullets). People are supposed to respect holy books, which are often made from the finest materials and displayed in religious ceremonies, holy temples, or places of pilgrimage.

The British historian Brian Cummings argues that symbolic power began to be granted to holy scriptures in the Near East, especially in ancient Egypt. Books were consecrated by local priests, whose status increased when they touched these objects because they transferred divine power. This is especially relevant in religions such as Judaism, Christianity, and Islam, where the divine spirit is believed to be embodied in a sacred text. In Judaism, this belief forms the basis of the conviction that the Torah does not contain a single unnecessary word or even letter. If any passages are unclear, this is a deliberate expression of divine intent that requires interpretation.

The symbolic power of holy books as artifacts is reflected in the many events of biblioclasm – the burning and destruction of books to eliminate ideas and symbolically destroy those who wrote or wished to read them. The burning of sacred texts is a recurring phenomenon throughout history. In 1533, the Jewish Talmud was subjected to institutionalized burnings within Rome after being confiscated by papal order from across Italy. Similarly, religious book burnings have served as personal or political provocations, such as the burning of the Quran in Denmark in 2023 and the burning of both the Bible and the Quran in Sweden in 2024.

One of the reflections of the power attributed to holy books is the practice that has endured from ancient times of swearing an oath by kissing or laying a hand on the book. Holding the Bible and kissing it became the main means of swearing oaths in the court of Pope Nicholas I in the ninth century. Since then, many different oath-swearing ceremonies involving physical contact with a holy book have developed, including the oaths made by and to monarchs (the coronation ceremonies of the monarchs of England, most recently King Charles III, involved swearing an oath by holding and kissing a Bible).

In Christianity, swearing an oath on the Bible has a great symbolic meaning. For the oath taker, the Holy Bible represents the most sacred thing for a Christian – the belief that Jesus Christ is the Son of God who sacrificed himself to save them. By swearing on the Bible, believers declare that if they break their oath, they will desecrate their most sacred object, namely the Book, through which divine power was transferred.

Frederick Jonassen cites extensive documentation from a 17th-century British book: before giving evidence in court, witnesses had to take the holy book in their hands while the clerk of the court declared: “The testimony you bear is between God, the king, and the defendant who stands here. You must tell the truth, the whole truth, and nothing but the truth, so help you God.” Following this, they were supposed to kiss the Bible. Jonassen adds that, in order to avoid swearing falsely, the oath givers sometimes tried to kiss their thumb instead of the book, knowing that any deviation, even the smallest, from the course of the ceremony (disruption of the text, removing the hand from the book, or avoiding kissing it) invalidated the oath.

Encouraging higher goal achievement’,

People tend to share their life stories through the use of change and growth metaphors. Although we experience birth, aging, and death, as well as recognize that nature is cyclical, we want to feel a sense of continuous progress. Some argue that we can live more peacefully by relinquishing our ambition to leave a mark on the world and refraining from seeking validation from our past achievements. Research also suggests that those who embrace the cyclical nature of the world are happier and more peaceful.

Our culture does not encourage us to stagnate but urges us to try to achieve as much as possible during our limited lifespans. Many religions encourage their followers to accumulate good deeds in order to ascend to some sort of eternal paradise after death. Our education systems require us to progress each year and mark the path of this progress through important milestones, like graduation ceremonies, degrees, and certificates. Time becomes one of a person’s most important resources – even more important than money. Money can be accumulated indefinitely (and in the digital age, even the wealthiest person has no problem storing it since storage options are now endless). Despite all our technological developments, our lifetimes are finite, and within this short time we still need to devote ourselves to activities like sleep, eating, and personal hygiene. The only way we can achieve our goals is by doing more things in less time. Historical observation shows that the principle of efficiency has become so pervasive that people are rarely content with what they have. After every new achievement or record, there is an ambition for even greater accomplishments. For every increase in the processing speed of a mobile device, there is the hope that this will increase in the next version.

Throughout history, technologies appeared that shaped their creators’ “social imagination” to serve this increasingly dominant idea. Historian of the senses Martin Jay sees a connection between the invention of vision-based surveillance technologies and the rise of capitalism, a system that sanctifies the concept of efficiency. The efficiency of workers on the production line was monitored remotely, enabling their bosses to assess their capabilities and performance. Although in a different area, a similar approach led the 18th-century British philosopher Jeremy Bentham to conceive the ideal prison based on a panopticon structure. Each cell has a window that allows guards to observe and optimize their monitoring of prisoners.

The same technologies that people use for leisure also realize the ideal of efficiency. The futurists Jay David Bolter and Richard Grusin argue that, in the Renaissance, realistic paintings fulfilled people’s desires to experience distant places without having to actually travel. Later, photography made the experience of participation without presence a quotidian matter. Cinema and television only intensified this concept. In the 2020s, providing a powerful experience of “here and now” is also the goal of developers of virtual reality technologies.

If we go back a little and examine how the book developed as a technology, we can see this same principle at work. First, someone invented the idea of binding several pieces of paper within a cover, transforming a bundle of loose pages into a book that was easier to manage. Over time, books became smaller and easier to transport. Eventually, people began binding books in thin, flexible covers to easily fit into a pocket or handbag to facilitate reading on-the-go. Although books shrank in size, they did not contain less text. On the contrary – lengthy masterpieces were compressed into thin, poor-quality books, which caused, as I discuss in Chapter 2, several authors, including the 20th-century writer George Orwell, to protest and even ban the publication of paperback editions of their books, feeling that these shoddy products harmed their reputations.

The development of technologies that rely on touch-based interaction has long incorporated the concept of efficiency, even though, as we have seen, touch is less “efficient” than sight. One of the significant inventions of the 19th century that embodied the principle of optimizing efficiency through touch was the electric button, introduced to the market in the 1880s. With the simple press of a button or turn of a dial, people could now close an electric circuit and instantly produce a seemingly magical effect, in which lights turned on, sounds were heard, or huge machines were activated. With the help of the new invention, buildings, and halls were lit up with a light touch, destructive weapons were activated, and, as I will show in this chapter - electronic means of communication were activated.

The convergence of these concepts – content compression, the ability to access experiences anywhere and at any time, and technologies based on buttons or switches – paved the way for one of the greatest inventions of the 20th century: the “content box.” Previously, each media artifact was a discrete entity: each copy of a newspaper was printed on separate paper, and each photo on separate photo paper. The appearance of radio and television at the beginning of the 20th century and their gradual integration into the fabric of life over the next few decades drastically changed how we interact with media content.

The major shift began in the mid-late 1920s with the evolution of radio into a device that the public could listen to. This transformation accelerated in the 1950s when television became a mass-market product. Both innovations changed how people engaged with media content, as a single “box” or device was used to receive and display multiple forms of content. Moreover, this same “box” could be used to receive and display an unlimited amount of additional content.

The way people interacted with this technology was also new. Both radio and television worked by pressing an electric button, which activated a series of internal systems. This required only a light touch – quite different than holding a book and turning its pages. The invention of the television remote control around 1955 further transformed interactions, allowing people to control their television sets and choose content without needing to touch buttons on the device.

The concept of remote operation through button pressing is also evident in the peripheral devices for personal computers, such as the mouse, which has been used commercially since the 1980s, and the keyboard, which evolved from the typewriter. A major leap forward occurred in the early 21st century with Apple’s invention of the iPhone, which introduced more direct and meaningful touch interactions through a screen. I will explore this further later and in Chapter 6.

Joshua Meyrowitz summed up the differences between interacting with a television set and a book. With a television set, the characteristics of the electronic medium do not vary with changes in the characteristics of the message. A long book is bigger and heavier than a short book, but a television set stays the same size regardless of whether it projects a ten-second advertisement or a ten-hour version of War and Peace. To illustrate his point, Meyerowitz quotes movie star Jean Harlow, who told her friend not to gift her a book because she already had one: ‘Don’t buy me a book; I gotta book.’ Harlow’s quip is absurd because – of course – all books are different. Had Harlow said the same thing about a television set, however, she would have made perfect sense. This illustrates the difference between the affordances of books and televisions. While books encourage us to consider each tome distinct from all the others, television sets encourage us to consider the variety of books contained within one content box.

Subsequent innovations continued to implement the principles of reduction and compression. As technology advanced, an ever-increasing amount of content could be compressed into devices. The radio receiver was replaced by the portable transistor radio. In 1979, Japanese company Sony introduced the Walkman, a portable audio player that allowed people to listen to music on the move. As an alternative to a cumbersome desktop PC, people can now buy a laptop or tablet and work from coffee shops or on trains. The portable disk-on-key has replaced the home storage drive. Current versions can store exponentially more data than those available just a decade ago. Technologies like the radio, television, and even e-book readers have also coalesced into a single, small content box – the smartphone. In contrast to earlier cellphones, this device transformed the touch experience with its box-interface. Smartphone operation relies on directly touching a screen, a significant shift from earlier cellphones, which required users to navigate using a set of physical buttons. This development improved the accuracy and immediacy of how people access and manipulate the thousands of items of content stored on the device. Smartwatches, which include an integrated cellular device, optimize this process even more via a series of vibrations that transmit information directly to the wearer’s skin. Apple watches can transmit fifteen types of messages this way. Attempts are being made to develop a contact language for smartwatches that can transmit entire messages at a speed hitherto unknown . A future in which a person’s status is measured through the ownership of technologies that allow him or her to respond quickly to information he or she receives throughout the day seems inevitable.

The content box revolution supported the capitalist principle of efficiency. Countless pieces of content can now be controlled and managed with minimal interaction. However, a side effect has been “sensory hunger” or “lack of touch.” Smartphones, smartwatches, and e-book readers do not allow people to experience deep emotion and feelings of ownership through meaningful tactile experiences or to use touch to explore the world. The tactile experience has been taken away from us. As a response to this shift, we can observe various examples of a desire to return to meaningful tactile experiences with individual objects. This can be interpreted as the foundation for the development of the “postdigital idea,” a theoretical concept that describes a contemporary disenchantment with digital information systems and media gadgets. It reflects the shift that occurred after our initial fascination with these contents and artifacts waned.

Postdigital

In the ninth season of the popular American TV drama Grey’s Anatomy, the (fictional) Seattle Grace University Hospital runs into financial difficulties. A management company, Pegasus, threatens to buy it out. Two doctors, Dr. Weber and Dr. Torres, decide to test the competency of another hospital managed by Pegasus. They attend its emergency room, where Weber feigns chest pains, and Torres pretends to be his concerned wife. A young doctor arrives to take a history and make an initial assessment. He does not physically examine Weber but instead pulls out a tablet device – a “content box” – from which he reads a pre-written statement thanking Weber for choosing the hospital. He asks a series of generic questions generated by an app and taps the answers onto the tablet.

The episode centers on a critical discussion around the absurdity of corporate efficiency. Instead of physically examining a patient, a doctor uses a tablet computer. The tablet stores dozens of electronic records, including the patient’s notes and instructions for his treatment. The hospital, concerned with financial profit even at the expense of patients’ wellbeing, instructs doctors not to waste time examining patients, but to follow instructions on a screen. The argument being made here by Shonda Rhimes, the creator of Grey’s Anatomy, is that rationality and utilitarianism in pursuit of efficiency is not always worthwhile, neither from a moral perspective nor from that of providing adequate medical care.

The skeptical worldview expressed in the episode towards replacing human touch with instructions from a “content box” echoes some ideas of the emerging postdigital movement. This term, as used by academics, journalists, and cultural commentators, describes the “return of the analog” or a “historic phase of technological development that takes place after the digital revolution” or a “means to escape the fetishization of the new and the culture of upgrades.” Almost a quarter of a century ago, Robert Pepperell and Michael Pont defined this phenomenon as “the rejection of the perceptual change implied by the expression of the digital revolution, which means a logic of off/on or zero/one.” That is, the postdigital movement is essentially a protest against the notion that digital technologies will sooner or later eliminate everything that preceded them – and that this is a good thing.

What unites these thinkers and everyday people is their shared concern regarding humanity’s role in the digital world and how new technologies have replaced older ones without fully addressing certain features. These individuals can be seen as advocates of the post-digital idea, which unites those who push back against the values and ideologies brought by new technologies, particularly the emphasis on efficiency. As I illustrate in this book, many such individuals seek to strike a balance between digital and non-digital aspects of their lives, striving for a more harmonious value system that reflects the complexities of the 21st-century technological landscape.

 Those who consider themselves part of the post-digital movement do not call for a post-digital world, but consider how best to live with new technologies. Being “post-digital” does not mean subscribing to a utopian social vision of a mass return to a world free of digital technologies. The crux of post-digitalism is an opposition to absolute devotion to such technologies and a plea that those who choose not to adopt or be in thrall to every new technology should not be considered “Luddites.”

It can be challenging to argue that paper and plastic-based communication technologies are still essential for many people in a world dominated by the digital revolution. Nevertheless, as numerous examples in this book illustrate, this is indeed the case. As I explore in this book, people take pleasure in reading print books, listening to records, learning new languages by writing on paper, and displaying certificates on their walls. Many prefer these tangible products, even when digital alternatives are available.

Moreover, there is an increasing need to examine the meaning of efficiency and speed in people’s lives, values that digital technologies promote. Recent years have seen a rising number of social movements that call for a reduction in the pace of modern life, and urge people to avoid overloading themselves with activities and information. The global slow movement that calls for people to slow down consumption is prominent in this regard. This movement has expressed ideas about “slow cities” and “slow food.” Even those who are not adherents of the slow movement might choose to switch off their smartphones in the evenings, on weekends, or at least during family dinners.

An increasing number of countries are restricting companies’ ability to contact their employees by email on evenings and weekends. Germany has prohibited employers from emailing employees except in emergencies, while France requires workplaces with over fifty employees to establish designated communication times. In 2024, the United Kingdom began considering a bill to mandate limits on contacting employees outside working hours.

The postdigital movement has produced a variety of feelings and reactions towards old media. Jessica Pressman points to a series of references and quotes in popular culture that she believes express our longing for print culture. She argues that there might be fewer print books in stores, but references to and quotes from and about books permeate digital culture. E-books and online publications have adopted print books' look, fonts, and other features. At the same time, people continue to buy printed books, as owning and displaying these objects serves as a way to project an identity that resists the digital trend.

 In the digital age, actions such as buying and storing material objects such as books and records, printing photos, or displaying diplomas on a wall are not motivated by values such as efficiency. All these objects share three essential features that can be interpreted in a post-digital spirit: stability, differentiation, and uniqueness. The starting point for stability is that each message is related to its medium in a way that allows you to touch it physically. The stability of the material includes two guarantees: that it will persist (in contrast to the transience and temporality of digital bits, whose existence beyond the here-and-now is never guaranteed), and that it is impossible to add to the content of the message without the addition being noticed. Each of these objects – discrete copies of books, records, and newspapers – contains a definitive and fixed set of ideas and opinions that are difficult or impossible to change. Differentiation means that it is possible, through sight and touch, to distinguish one object from another. One of the most important human skills is the ability to sort objects into classes, according to a set of common characteristics or common functions. This is how we distinguish between chairs and tables, or between one copy of a book and another. This skill, which is actively supported by touch, is essential since it allows us to project implications beyond our unique experience of an object. Without touch, we cannot perceive an object as unique or special. “Content boxes” do not have this feature: there is no difference between one piece of content and another that can be discerned by touching a screen. Finally, our ability to physically touch a surface is what makes a particular document, book, record, or photograph unique, even if other copies of it exist, because each person has a unique fingerprint. These three essential features correspond in technological affordances theory with the “social imagination” of producers and audiences, and also with aspects of the postdigital worldview.

The solidity and fixity of analog technology is a source of comfort to many. Print newspapers help people be certain that the news they are reading is not fake. Data show that printed newspapers are perceived as more reliable compared to digital sources of information, including those produced by professionals. Special photos are still printed out on paper, framed, and hung on walls, so that they are not lost in the vastness of cyberspace.

Reading printed newspapers and pasting photos in leatherbound albums might not be everyday actions in an age of digital efficiency, but they are still with us. In general, I intend to show that the presence of analog technologies in our lives, while not as dominant today as in the past, is here to stay. In some cases, there seems to be acceptance that analog technology will continue to operate alongside its digital “replacement.” For example, people who listen to music on their smartphones during their commute may enjoy relaxing at home in the evenings with a record playing on the turntable. Although both smartphones and records involve touch-based interaction, each provides a different sensory experience and operates according to a different social imaginary.

According to Umberto Eco, the idea that new technology simply supplants the old is much too simplistic – rather, as he put it, “in the history of culture it has never happened that something has simply killed something else” but rather that “something has profoundly changed something else.” The papyrus, the scroll, and the book coexisted for centuries. The same may happen to analog technologies. These will be available to people who do not want to spend all their time interacting with “content boxes” and absorb the personal and social implications of living in the shadow of the values that these spread. The chapters of this book explore different aspects of these phenomena.

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29. The brief exploration of art ownership raises important questions about the nature of ownership in the digital age—an issue I will revisit in Chapter 6. This question comes into play in the context of NFT art, which sought to define ownership of artworks created through digital tools. The project’s limited success highlights the challenges of associating art with something intangible.

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36. Norbert, Elias, *The Civilizing Process* (New York, Urezin Books 1939)

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39. As discussed at, Danijela Kambaskovic, , and Charles T Wolfe,., ‘The Senses in Philosophy and Science: From the Nobility of Sight to the Materialism of Touch’ (p. 109) [↑](#footnote-ref-39)
40. #  Historian Martin Jay, states that “it can be said with some certainty that the vision aided by the new technologies has become the dominant sense in the modern world.” ( p. 45)

 [↑](#footnote-ref-40)
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