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Elodie Boublil  
Susi Ferrarello *Editors*

# The Vulnerability of the Human World

Well-being, Health, Technology and  
the Environment

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# Philosophy and Medicine

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Elodie Boubilil • Susi Ferrarello  
Editors

# The Vulnerability of the Human World

Well-being, Health, Technology  
and the Environment



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Susi Ferrarello

# Chapter 11

## From Digital Medicine to Embodied Care



Francesca Brencio

*We're no computers, Sebastian. We're physical.*

Blade Runner (1982)

### 11.1 The Rise of Digital Medicine: A Challenge in the Name of Health?

*The Person as an Industrial Palace (Der Mensch als Industriepalast)* is an artwork of Dr. Fritz Kahn (1888–1968), a German physician who in 1926 portrayed the body as a complex chemical plant, making comparisons between the human body (and nature), technology and the chemical industry. This interpretation was in line with the great enthusiasm towards technological progress and the invention of a variety of machines typical of the first part of the twentieth century. This is the era of Futurism, a cultural and artistic movement which contrasts the past with modern civilization, glorifying the invention of the machine. The “myth of the machine” combines the aspirations of modernity with the renewal and social transformation typical of those years. In literature, the advent of the machine takes on the value of a symbol, capable of fueling the fantasies of the collective imagination. The exaltation of the machine becomes a kind of religion: the machine is transformed into the means and end of artistic creativity and aesthetic sensibility. The machine becomes a metaphor for existence and offers the illusion of a concrete and objective foundation in a worldview that is in many respects abstract and irrational. It is in this cultural environment that Dr. Fritz Kahn describes (and draws) the human body as an industrial site: each part of the body is compared to and visually represented as

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chemical plants and mechanical devices. In his understanding, the body is conceived as the most skillful machine in the world, the potentialities of which are still to be investigated. In another artwork entitled *The doctor of the future (Der Arzt der Zukunft)* (1925) Dr. Kahn portrays the physician of the future who remotely monitors patients' health from his desktop through the use of a variety of applets.<sup>1</sup> This illustration anticipates the exponential developments of so-called digital medicine and the massive recourse to applications related to health.

Digital medicine is an expanding interdisciplinary field of medicine and of pharmaceutical companies concerned with the use of technologies as tools for measurement and intervention in healthcare. Mainly regarded as the future of medicine, digital medicine may assure at least four important goals: the increasing efficiency demanded in any field of medicine; the improving medical quality of treatments and interventions; the sustainable economic success of these interventions; and patient safety. Mainly grounded on systems and products driven by high-quality hardware and software, digital medicine offers strategic opportunities in providing medical services globally, also through the deployment of smartphone technology, Internet communication and telemedicine:

Digital medicine products [...] support health research and the practice of medicine broadly, including treatment, recovery, disease prevention, and health promotion for individuals and across populations [...]. Digital medicine products can be used independently or in concert with pharmaceuticals, biologics, devices, or other products to optimize patient care and health outcomes. Digital medicine empowers patients and healthcare providers with intelligent and accessible tools to address a wide range of conditions through high-quality, safe, and effective measurements and data-driven interventions.<sup>2</sup>

The emergence of digital medicine is relatively recent: it is part of the general revolution of digital technologies, the promises of which are grounded on significantly improving the margins of our lives in many respects. The rise of software-driven technologies has produced a change in the world of health, both at the level of information management (the increase in the flow of data, its transmission, and its protection) and clinical practice. In the landscape of digital medicine, telemedicine and mobile health occupy an important place. Telemedicine can be defined as the set of IT and medical techniques that enable patient care at a distance by providing appropriate services. Mobile health (mHealth), on the other hand, as defined by the World Health Organization, is represented by interventions via mobile devices for mental health, considered as an integral part of public services aimed at mental health.<sup>3</sup>

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<sup>1</sup> See U. Kühne, *Der Mensch als Industriepalast*, published online in "Heise", available at <https://www.heise.de/tp/features/Der-Mensch-als-Industriepalast-3384323.html>

<sup>2</sup> A. Coravos, J. C. Goldsack, D. R. Karlin, C. Nebeker, E. Perakslis, N. Zimmerman, M. K. Erb, *Digital Medicine: A Primer on Measurement*, in "Digit Biomark" 2019;3, p. 33, doi: 10.1159/000500413.

<sup>3</sup> For some basic definitions, I refer the reader to the World Health Organization, *Seventy-first World Health Assembly A71/20*, Provisional agenda item 12.4, 26 March 2018, *Use of appropriate digital technologies for public health*, available at [https://apps.who.int/gb/ebwaha/pdf\\_files/WHA71/A71\\_20-en.pdf](https://apps.who.int/gb/ebwaha/pdf_files/WHA71/A71_20-en.pdf)

These mobile devices include patients' mobile phones, their monitoring and measuring devices, personal digital assistants (PDAs) and other wireless devices, such as smartphone apps, text, video or voice messaging interventions, real-time tracking, and web-based interventions. According to the United Nations, more than 90% of the world's population uses these types of technologies on a daily basis and it is extremely easy to install them on their mobile devices. Another extremely appealing factor is the 24-h availability of this type of technology.

The rise of digital medicine products is an outcome of the massive rise of machine learning and artificial intelligence methods: "A key component of these systems is the transformation of raw physiological or environmental signals into health indicators that can be used to monitor and predict aspects of health and disease".<sup>4</sup> Through the use of computational processes the collected data are transformed into outputs which represent the health indicators monitored through high-quality hardware and software. The use of digital medicine is ordinary and well-established in clinics and hospitals, for example, digital measurements like using ambulatory ECG monitoring to detect arrhythmias in cardiac patients, or portable ECG technologies. The use of digital medical tools is also becoming quite common at-home, where these technological devices must measure and collect clinically meaningful information which lead to improvements or changes in treatment and practices of care. Digital measurement in medicine is not meant to "replace clinics or clinicians entirely [...]. The delivery of clinical care such as intravenous drugs or surgery, and the value that patients place in their relationship with their provider, cannot be replaced by digital tools. Nonetheless, when used appropriately, digital measurements can improve care by giving clinicians more complete information".<sup>5</sup>

However, digital medicine tools and apps are not only confined to measurements or to monitoring. Mobile therapy (mTherapy) refers to any therapeutic intervention via remote mental health apps or services. There are estimated to be between 10,000 and 20,000 apps dedicated to mental health; of these, only between 3% and 4% are based on empirical evidence. Mental health apps present at least four fundamental features: accessibility, variety, anonymity, and convenience. On one hand the user can access an app via a smartphone or a mobile device that focuses on certain aspects of mental health and well-being. On the other hand, such tools cover a broad range of areas, including relaxation, stress management, and sleep. They may also offer self-help tools, therapeutic activities, and access to treatment delivered by licensed mental health professionals. The target of most apps is to cover a broad spectrum of psychopathological phenomena, including depression, post-traumatic stress, schizophrenia, bipolar disorder and addiction. Among these apps, there are some that are not specifically indicated as being for so-called mental disorders: one thinks, for instance, of apps that can monitor one's emotional life, or those that provide guidance for coping with stress by offering mindfulness exercises, or those for keeping anxiety under control, or even those designed for the development of

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<sup>4</sup>A. Coravos et al., *Digital Medicine: A Primer on Measurement*, p. 35.

<sup>5</sup>A. Coravos et al., *Digital Medicine: A Primer on Measurement*, p. 39.

emotional intelligence in children. Some apps are developed, for example, to track mood swings, others to remind people of medical appointments or to monitor medication intake, and others to provide motivating and positive messages to alleviate an outbreak of existential fragility. Mental health applications guarantee anonymity, allow users to find information and access to treatments in a way that is private and secure, and do not expose the person to the stigma which often surrounds mental health issues. Finally, they have a certain convenience, both in terms of cost (usually the cost of these apps is lower than any psychotherapeutic encounter) and location (you can use your app wherever you are).

But how do these apps work?

## 11.2 The Neurocentric Paradigm

Mental health apps operate on the basis of cognitive-behavioral therapy (CBT) and almost all are designed following the model of the computational theory of mind (CTM), according to which the human mind is an information processing system in which cognition and consciousness are also distinctive forms of computation. The computational approach is also the basis upon which neural activity is understood; in other words, following the CTM the mind is a computational system that is sustained and implemented by neural activity in the brain. The brain is thus the only agent that is able to perform its computational tasks, without needing to involve the embodied, living subject. In the words of neurophilosopher Thomas Metzinger, “We are mental self-models of information-processing bio-systems [...]. If we are not computed, we do not exist”.<sup>6</sup> Or, to put it differently, it is the brain that “thinks” and “decides”. Subjectivity and all the relevant conscious experiences are a by-product of brain activity: “The sense of will is an invention of the brain. Like so much of what the brain does, the feeling of choice is a mental model – a plausible account of how we act, which tells us no more about how decisions are really taken in the brain than our perception of the world tells us about the computations involved in deriving it”.<sup>7</sup> As a consequence of this approach, the social dimension is therefore interpreted and conveyed to the user of the apps as a kind of execution of a model according to which people act. The way mental health apps are programmed and developed is grounded on a certain interpretation and understanding of the brain, that is, according to cognitive algorithms that allow the “construction” of neuronal representations or internal models that represent the world.<sup>8</sup> If we enlarge the perspective at the core of the CTM we see that it is not simply limited to a certain

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<sup>6</sup>T. Metzinger, *Subjekt und Selbstmodell. Die Perspektivität phänomenalen Bewusstseins vor dem Hintergrund einer naturalistischen Theorie mentaler Repräsentation*, 2nd edition. Paderborn: Mentis., 1999, p. 284.

<sup>7</sup>C. Blakemore, *The mind machine*, London: BBC Publications, 1988, p. 272.

<sup>8</sup>See T. Fuchs, *In Defence of the Human Being. Foundational Questions of an Embodied Anthropology*, Oxford: Oxford University Press 2021.

neuroscientific view on the brain, but rather it implicitly calls into question the notion of the mind, the image of man itself, the issue of subjectivity and every aspect of social life. All these elements are reduced to physical and physiological processes according to a physicalist and naturalistic approach. In other words, the CTM is a magnifying glass on the relationship between the brain and the mind. Let's see why.

The relationship between mind and brain is one of the most fascinating topics that has engaged both the fields of philosophy and neuroscience. Historically, in the West, mind and brain were conceived as a unity. We have to go back to Aristotle who believed that our consciousness, imagination and memory were rooted in the human heart.<sup>9</sup> It was a belief he shared with the ancient Egyptians, whose *Book of the Dead* endorses carefully preserving the heart of a mummy, but recommends scooping out and discarding the brain.<sup>10</sup> From the beginnings of modernity this relationship has become conceived of as a duality<sup>11</sup> and, as such, it is still at the core of the modern conception of neurosciences, affecting the way that mental health is understood and treated, how life and experiences are comprehended and scrutinized, as well as our value systems and social practices. Neurosciences encompass a broad range of questions about how the nervous systems of humans (and other animals) are organized, how they develop, and how they function to generate behaviors.<sup>12</sup>

But what do we mean with the words “mind” and “brain”? Scientists agree in defining the physical brain as an organ that serves as the center of the nervous system in all vertebrates and most invertebrate animals. The definition of mind is more complicated. It includes a set of cognitive faculties and aspects – such as consciousness, intentionality, imagination, perception, thinking, intelligence, judgment, language and memory – as well as noncognitive aspects such as emotion and instinct. We can say that the mind encompasses consciousness, but it is not limited to it. This is why the so-called “hard problem of consciousness”,<sup>13</sup> namely the problem of explaining why and how sentient organisms have *qualia* (subjective, qualitative, conscious experiences), can be inscribed into the problem of the mind.<sup>14</sup> In other words, the mind can also be defined as the psychological domain of all those aspects and faculties which allow us to think, to fear, to wish, to believe, etc.

The questioning of the relationship between mind and brain is pretty old in the history of philosophy. However, it is only with modernity that this relationship has

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<sup>9</sup> Aristotle, *De Partibus animalium*, OUP, Oxford 1972, p. 62.

<sup>10</sup> See *The Egyptian Book of the Dead*, Dover Publications, NY 1985.

<sup>11</sup> See S. Finger, *Minds behind the brain. A History of the Pioneers and Their Discoveries*, Oxford: Oxford University Press 2000; C. Schoonover, *Portraits of the Mind: Visualizing the Brain from Antiquity to the 21st Century*. New York: Abrams 2010.

<sup>12</sup> See D. Purves et al., *Neuroscience* (6th edition), Oxford: Oxford University Press 2018.

<sup>13</sup> See D. Chalmers, *Facing up to the problem of consciousness*, in “Journal of Consciousness Studies”, 1995, 2 (3): 200–219.

<sup>14</sup> W. Penfield, *The Mystery of the Mind: A Critical Study of Consciousness and the Human Brain*, Princeton: Princeton University Press, 1975, p. 39.

started to be conceived of in dualistic terms and, in order to understand this, we have to go back to René Descartes. He strove to understand not only the body, but the physical world in general and how brain activity can account for behaviors. He came up with the still influential idea that while the brain may control the body, the mind is something intangible, distinct from the brain. According to him, two substances, namely the *res cogitans* and *res extensa*, preside over different activities. The unification of these two principles was in the pineal gland, a tiny gland associated with the brain and considered the seat of the soul. During the eighteenth century, Johann Kaspar Lavater introduced the idea that physiognomy relates to the specific character traits of individuals and, as a consequence, thoughts and passions are connected with an individual's external appearance.<sup>15</sup> However, it is through the work of Franz Joseph Gall and his collaborator Johann Gaspar Spurzheim that the work on physiognomy was transformed into research on organology and later on phrenology.<sup>16</sup> Phrenology suggests that we can learn everything about someone's character by measuring the shape of his or her skull. Through careful observation and extensive experimentation, Gall believed he had established a relationship between aspects of character, called faculties, with precise organs in the brain. Phrenology became, in the context of Victorian society, a very respectable scientific theory. Instead of studying the mind through introspection, phrenology provided an attractive, biological alternative that attempted to unite all mental phenomena using consistent biological terminology. Phrenology started to be discredited as a scientific theory by the 1840s due to a growing amount of evidence against its biases and misconceptions, which also provoked a strong wave of racism and stigma.

Until the 1970s, modern neurosciences were inclined to welcome the long cartesian tradition of two distinct substances, which is the foundational step of the metaphysical view of medicine and technology. More recently, neurosciences are epistemically inclined to a form of reductionism according to which biological and physical elements are always and mainly at the core of other phenomena, i.e., mental or emotional phenomena. In the context of the mind-brain problem, however, even in neuroscience there was (and still is) a certain disagreement about how the mind and the brain are in relationship. Some neuroscientists considered (and still consider) inner life and our experiences to be reducible to the activities of the brain: the neural correlates of consciousness (NCC) constitute the hypothetical minimal set of neuronal mechanisms jointly sufficient to explain subjective conscious experience. As a consequence, the mind is a product of the brain's activities.<sup>17</sup> In other words, our existence, our fears, our wishes, and our will are reducible to the organic

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<sup>15</sup> See E. Shookman (ed.), *The Faces of physiognomy interdisciplinary approaches to Johann Caspar Lavater*. Columbia, SC: Camden House, 1993.

<sup>16</sup> See M. S. Staum, *Labeling People: French Scholars on Society, Race and Empire, 1815–1848*. Montreal: McGill-Queen's University Press, 2003.

<sup>17</sup> See D. Dennett, *Consciousness Explained*. Boston: Little & Company 1991; A. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain*, Putnam Publishing, reprinted in Penguin, New York 1994; A. Damasio, *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*; New York: Harcourt Press 1999.

substrate which presides over any activity and experience. However, Sir Charles Sherrington, the Nobel Prize Winner in Physiology (1932), famous for his studies of reflexes and his analysis of the integrative action of the nervous system, was skeptical about the idea of two substances and he claimed that if our being consisted of two fundamental elements, this would offer no greater inherent improbability than that it should rest on one only.<sup>18</sup> His pupil, the renowned neurosurgeon Wilder Penfield, had another opinion. According to him, it was quite impossible to explain the mind on the basis of neuronal activity in the brain, and because the mind develops and matures independently throughout an individual's life, he claimed that our being is to be explained on the basis of two fundamental elements.<sup>19</sup> According to Roger Sperry, the Nobel Prize Winner in Physiology and Medicine (1981), famous for his work with split-brain research, the mind is an emergent property of brain function. He proposed that subjective experience plays a principal role in brain function and that behaviorism and reductionism must both be replaced by a more holistic view of consciousness based on the concepts of emergence and downward causation.<sup>20</sup> In Sperry's view, consciousness, while generated from neural activity and therefore fully dependent upon it, is nonetheless an independent entity. Against this approach was the view of Todd E. Feinberg, who refuted the claim that the mind is a radically emergent feature of the brain. For him, the inter-related concepts of emergence, reducibility and constraint on which Sperry grounded his theory should be considered parts of a hierarchical biological system. This means that the mind arises as a radically emergent feature at the top command of a non-nested neurological hierarchy. As an alternative model, he proposed to avoid any dualism through the idea that the brain is a producer of a nested hierarchy of meaning and purposes that has no top or summit. In this sense, consciousness does not depend on radical emergence theory. This irreducible aspect of consciousness can be understood as a result of brain evolution and normal neural functioning.<sup>21</sup>

A feasible path for addressing the mind-brain problem from the side of neurosciences remains the search for the neural correlates of consciousness. Recent findings show that the anatomical neural correlates of consciousness are primarily localized

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<sup>18</sup>Quoted in W. Penfield *The Mystery of the Mind: A Critical Study of Consciousness and the Human Brain*, Princeton: Princeton University Press, 1975, p. 35.

<sup>19</sup>W. Penfield, *The Mystery of the Mind: A Critical Study of Consciousness and the Human Brain*, Princeton: Princeton University Press, 1975, p. 111.

<sup>20</sup>R. Sperry, *Mind, Brain and Humanist Values*, in J. R. Platt (ed.), *New Views of the Nature of Man*, Chicago: University of Chicago Press 1965; R. Sperry, *Holding Course Amid Shifting Paradigms*, in W. Harman, J. Clark, *A Reexamination of the Meta Physical Foundations of Modern Science. Causality Issues in Contemporary Science*, Sausalito: Institute of Noetic Science Press, 1994, pp. 99–124; see also T. J. Voineda, *Sperry's concept of mind as an emergent property of brain function and its implications for the future of humankind*, in *Neuropsychologia*, 1998, 36, 10, pp. 1077–1082.

<sup>21</sup>T. E. Feinberg, *Why the Mind is Not a Radically Emergent Feature of the Brain*, in *Journal of Consciousness Study*, Special Issue entitled *The emergence of consciousness*, 8, 9/10, 2001, pp. 123–146.

in a posterior cortical hot zone that includes sensory areas,<sup>22</sup> but at the same time some candidate neurophysiological markers of consciousness have proven elusive. Much progress has occurred since the initiation of the modern quest for the NCC in 1990 due to neuroimaging evidence. Conceptual work by both philosophers and scientists has clarified the importance of investigating the neural correlates of both specific conscious contents, but the path still seems uncertain. The NCC by themselves can provide little information about consciousness in patients with severe brain damage, infants, non-human beings or intelligent machines. Further progress in this field will require, in addition to empirical work, theories and theoretical frameworks that address in a rigorous manner what consciousness is and what is required of its physical substrates.<sup>23</sup>

### 11.3 The Phenomenological Turn

A paradigm shift with regards to these questions has been inaugurated by the so-called “phenomenological turn”, which was introduced into psychiatry initially through the works of Karl Jaspers, and then followed by those of Eugene Minkowski, Ludwig Binswanger and many others. From the side of phenomenology, Karl Jaspers considered the mind-brain gap to be a mere abstraction that was not of any help for the understanding of a human being in its totality and bodily existence. He used to call this approach “brain mythology”, an expression aimed to describe how the physiological approach to the understanding and explication of the mind was simply insufficient to understand it.<sup>24</sup> His critique of the somatic reductionism, typical of his time, fits well with the critique of the idea that the structure of psychological life is equivalent to the structure of the brain. According to Jaspers, even injuries in the brain are not valid proof of the alteration of the mind because they can only account for “centers of disturbance, not centers of performance”:<sup>25</sup> “We only know conditioning factors for the psychological life; we never know *the* cause of the psychological even, only *a cause*”.<sup>26</sup> In other words, the mental is not something the brain can achieve on its own, disentangled from the joint operation of the body and the world. Our mental life, the content of our inner life, our affectivity as well as our memory and behaviors cannot be the sum of partial functions localized in the physical brain: “The idea that everything psychological is at least partially conditioned by

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<sup>22</sup> M. Boly, M. Massimini, N. Tsuchiya, B. R. Postle, C. Koch, G. Tononi, *Are the Neural Correlates of Consciousness in the Front or in the Back of the Cerebral Cortex? Clinical and Neuroimaging Evidence*, in *The Journal of Neuroscience*, October 4, 37(40), 2017, pp. 9603–9613.

<sup>23</sup> C. Koch, M. Massimini, M. Boly, G. Tononi, *Neural correlates of consciousness: progress and problems*, in “Nature – Neuroscience”, 17, 2016, pp. 307–321.

<sup>24</sup> K. Jaspers *General psychopathology* (trans: Hoening, J., Hamilton, M. W.). Baltimore: Johns Hopkins University Press 1997.

<sup>25</sup> K. Jaspers, *General psychopathology*, p. 493.

<sup>26</sup> K. Jaspers, *General psychopathology*, p. 459.

the brain is correct but is too general to mean anything”.<sup>27</sup> As a consequence of this view, Jaspers conceived “psychic life (as) an infinite whole, a totality that resists any consistent attempt to systematize it; much like the sea, we may coast along the shore, go far out into the deeps but still only traverse the surface waters”.<sup>28</sup>

The idea that the mind can be reduced to the organ substrate had many important implications in the field of mental health. The consequences of this materialistic monism affected the biological approach to psychiatry between the end of the 1800s and the beginning of the 1900s. Mental disorders were considered to be brain afflictions, following the legacy of the work of the eminent neurologist Wilhelm Griesinger. This idea is still at the core of neurosciences but, as seminal findings have shown,<sup>29</sup> our mind – the contents of our inner life, our affectivity as well as our memory and behaviours – cannot be the sum of partial functions localized in the physical brain. The limits of this brain-based approach to the mind are stressed in several cardinal works by Thomas Fuchs. In his words: “It is not in the brain that we discover conscious experiences, rather only the neuronal processes or correlates that we assign to them. Yet during this assignment, neuroscience can still make the mistake of overhasty localization, thereby arriving at a new form of “phrenology.”<sup>30</sup> One of the most important contributions of the phenomenologically informed approach to neurosciences is the reorientation of the causal-effect mechanism in favour of a circular interaction between the brain and the environment in which it is embedded. As recently shown by Fuchs,<sup>31</sup> neurosciences consider the brain as:

a constructor, asking how the neuronal machinery produces the experienced world and the experiencing subject. Consciousness thus appears not as the relation of a living being to the world, but becomes an internal representation of the external world inside the head. In this conception, the brain is considered as a system in itself, in opposition to the remainder of the body as well as to the surrounding world. The body remains a physiological carrier mechanism for the brain, which supposedly even as a bodiless brain- in- a- vat could bring forth consciousness, as a “cosmos inside the head.”<sup>32</sup>

This attitude neglects the reciprocal relationships and circular processes in which the brain is embedded, processes that requires a circular concept of causality in which neither the mind nor mental issues can be considered as “secretions of the

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<sup>27</sup> K. Jaspers, *General psychopathology*, p. 496.

<sup>28</sup> K. Jaspers, *General psychopathology*, p. 17.

<sup>29</sup> F. Varela, E. Thompson, E. Rosch, *The Embodied Mind*, Cambridge, MA: The MIT Press 1991; S. Gallagher, *How the Body Shapes the Mind*, Oxford: Oxford University Press 2005; O. Sacks, *The Mind’s eyes*, Toronto: Knopf Publ. 2010; G. Colombetti, *The Feeling Body. Affective Science Meets the Enactive Mind*, Cambridge, MA: The MIT Press 2014; M. Tsakiris, H. D. Preester, *The Interoceptive Mind: From Homeostasis to Awareness*, Oxford: Oxford University Press 2018; T. Fuchs *Ecology of the brain*, Oxford: Oxford University Press 2017.

<sup>30</sup> T. Fuchs, *Brain Mythologies. Jaspers’ Critique of Reductionism from a Current Perspective*, in T. Fuchs, T. Breyer, C. Mundt (eds.), *Karl Jaspers’ Philosophy and Psychopathology*, Springer 2014, DOI: [https://doi.org/10.1007/978-1-4614-8878-1\\_5](https://doi.org/10.1007/978-1-4614-8878-1_5), p. 81.

<sup>31</sup> See T. Fuchs, *Ecology of the brain*, Oxford University Press, Oxford, 2018.

<sup>32</sup> T. Fuchs, *Ecology of the brain*, p. 67.

brain”,<sup>33</sup> rather they need to be framed in a more complex and nuanced causal relationship. The *Ecology of the brain* aims to show how the brain, adequately understood as an organ of a living being in its environment, is “on the one hand, connected to the living organism, and on the other hand, embedded in the natural and social environment by means of the organism’s manifold, and in particular, sensorimotor interactions”<sup>34</sup> carried on by the body. Organism and environment develop and adjust themselves in a mutual relation. The brain is a social and historical organ of mediation, transformation, and modulation, embedded in the human organism’s relationships with the surrounding world and in interpersonal relationships. The discovery of neuroplasticity (i.e., the effects that subjective and intersubjective experiences, for example, in psychotherapeutic processes, have on the neural structure), has shown that “causes” and “meanings” (as that which is explainable and as that which is understandable) are only comprehensible when considered as being in constant interplay with each other.<sup>35</sup> Fuchs casts light on a new pathway in the understanding of the relationship between mind and brain, proposing a new causal framework: no longer a monolinear causality going from the brain in the direction of the mind, but rather a circular concept of causality in which neither the mind nor mental issues can be considered as “secretions of the brain”.<sup>36</sup>

At this point we have reached at least two important conclusions: first, the mind cannot be located in the brain activity; and second, the brain cannot be considered the organ which exclusively forms the mind. Somehow brain and mind are in a mutual and influential relationship, and this is precisely what we need to understand. After more than one and a half centuries, neurosciences and philosophy are still struggling to examine their epistemological status and enter into dialogue. The temptation that some philosophical concepts, such as consciousness, emotions, and experience, can be explained by neuroscience through the recourse of brain-centered approach is still ready at hand. Quoting Alva Noe, “we live in a time of growing excitement about the brain (...). Perception, memory, our likes and dislikes, intelligence, morality, whatever—the brain is supposed to be the organ responsible for all of it. It is widely believed that even consciousness, that Holy Grail of science and philosophy, will soon be given a neural explanation”.<sup>37</sup> However, neuroscientists and philosophers who assert the possibility of explaining the mind in neuroscientific terms are challenged by the fact that mental states themselves cannot be detected within the brain itself. An example of this is offered by the subjective experience of phantom limbs, which cannot be found within the brain: “Only corresponding neuronal states but not the respective mental state of phantom experience itself can be

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<sup>33</sup>T. Fuchs, *The Challenge of Neuroscience: Psychiatry and Phenomenology Today*, in *Psychopathology*, 2002;35: 319–326, p. 319.

<sup>34</sup>T. Fuchs, *Ecology of the brain*, pp. 67–68.

<sup>35</sup>T. Fuchs, *Brain Mythologies. Jaspers’ Critique of Reductionism from a Current Perspective*, p. 83.

<sup>36</sup>T. Fuchs, *The Challenge of Neuroscience: Psychiatry and Phenomenology Today*, in *Psychopathology*, 2002, 35, p. 319.

<sup>37</sup>A. Noe, *Out of our heads. Why You Are Not Your Brain, and Other Lessons from the Biology of Consciousness*, Hill and Wang, New York 2010, p. XI.

observed there, into the brain”.<sup>38</sup> This was called the “brain paradox”,<sup>39</sup> an expression aimed at underlining the ontological and epistemic dissociation between brain and mind. On one hand, the life of the mind cannot be reduced to the brain’s activities and, on the other hand, the brain’s activities are not disentangled from the life of the mind.

It is in this complex and multifaceted scenario that we may understand why the CTM is inscribed into the modern trend of neuromania, conceiving the embodied, living human being as a mere series of data analyses and algorithms. Recently another of Fuchs’s works<sup>40</sup> has questioned the image of human beings in our age, asking whether or not we are going to surrender to an image of the human as constructed by algorithms, data analyses, and forecasts of artificial intelligence; or, on the contrary, if there is still the possibility to sketch the image of the human being as an embodied, free, social and self-determining being. Against the increasing considerations of virtualization and disincarnation of the person, Fuchs defends an embodied anthropology, the very idea of our corporeality and vitality as the main source of our existence and sociality. In the process of the digitalization of the world and dematerialization of presence achieved through the contribution of AI, the real and concrete living human being is threatened, as well as the betweenness which characterizes our being in the world and being with the others. People are not programs: they possess an “eccentric position”<sup>41</sup> which is unique in comparison with every form of artificial intelligence or artificial life lacking self-awareness. It is along these lines that Fuchs stresses the fallacy of conceiving the person as a disembodied brain. However, the brain is only an organ of a living being, serving as a mediating organ for subjective experiences. Consciousness is thus based on the joint and continuous interactions between the brain, the body, and the environment, and localizing it in the brain is impossible: “It is the human being who perceives, thinks, and acts, *not* the brain”.<sup>42</sup>

## 11.4 Health as a Moral Enterprise

How do all these elements lead us to a critical reflection on digital medicine and embodied care?

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<sup>38</sup>G. Northoff, “Brain-Paradox” and “Embedment” – Do We Need a “Philosophy of the Brain”?, in *Brain and Mind 2*: 195–211, 2001, p. 196.

<sup>39</sup>See G. Northoff, “Brain-Paradox” and “Embedment” – Do We Need a “Philosophy of the Brain”?, in *Brain and Mind 2*: 195–211, 2001.

<sup>40</sup>See T. Fuchs, *In Defence of the Human Being. Foundational Questions of an Embodied Anthropology*, Oxford: Oxford University Press 2021.

<sup>41</sup>H. Plessner, *Levels of Organic Life and the Human: An Introduction to Philosophical Anthropology*. New York: Fordham University Press, 2019.

<sup>42</sup>T. Fuchs, *In Defence of the Human Being*, p. 75.

Technology, robotics and AI have changed our life, our sociality and our affectivity in many regards. The market offers different apps which aim to respond to our needs and to our desires. Many of these are designed to help us to meet the right partner, to be in shape by planning workouts or McMindfulness, to sleep a certain number of hours or to burn a certain number of calories, to walk a certain distance, to test our IQ and so on. But this is just a part of the story: in other regards, they have also redescribed our sociality and brought to the surface a pervasive need of social acceptance expressed through the “like” button, having more followers and shared content, or conveying the possibility to change or build our identity according to the standards which the apps offer.

All these advanced frontiers of technology have also changed the way in which medicine is practiced, not only in terms of devices able to map and check vital parameters, but also in terms of the interpersonal relationships between the person and her body, her physician, and caregivers. As a consequence there is the risk of reducing health – broadly speaking – and mental health in particular to a series of algorithms and data analyses are ready to hand: “Through observation and the collation of data by procedures of measurement we are able to develop an almost mathematical knowledge of how illness can be influenced”.<sup>43</sup> However, health is something more than the correctness of collected data related to our physical bodies or to our mental lives. The establishment of physiological and biochemical standard values according to which we are *healthy* may sometimes be misleading, especially when we deal with mental health. Conversely, a diagnosis of a mental disorder conveys some clinical information in a very technical language and with precise diagnostic meanings but, at the same time, it does not say so much in terms of *existential meaning*. The chasm between these two different yet entangled perspectives unveils the dialectic between exactness and truth: exactness is of service to meaning, but meaning is not about exactness, rather it is related to one’s own experience of the world.<sup>44</sup>

It is especially in this field that we must acknowledge that mental health is directly connected with our living, embodied, social *being*. In other words, it relates to our intersubjectivity as a result of a complex series of interactional processes, such as bodily resonance, affective attunement, embodiment, interactive coordination of sense-making and many others. Following the rich phenomenological tradition and its recent shift towards enactivism, in light of the circular process of relations between individual and environment, intersubjectivity may be considered as an ongoing activity in which the person constantly influences others by her actions, and vice versa.<sup>45</sup> As such, “health is not a condition that one introspectively

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<sup>43</sup>H. G. Gadamer, *The Enigma of Health: The Art of Healing in a Scientific Age.*, Wiley, Kindle edition pp. 98–99.

<sup>44</sup>See F. Brencio, *From words to worlds. How metaphors and language shape mental health*, in S. Wuppuluri, A. C. Grayling (eds.), *Metaphors and Analogies in Sciences and Humanities: Words and Worlds*, Springer, 2022, pp. 233–250.

<sup>45</sup>See T. Fuchs, H. De Jaegher, *Understanding Intersubjectivity: Enactive and Embodied*, in T. Fuchs, H. C. Sattel & P. Henningsen (Eds.), *The Embodied Self: Dimensions, Coherence and Disorders*, Stuttgart: Schattauer, 2010.

feels in oneself. Rather, it is a condition of being involved, of being in the world, of being together with one's fellow human beings, of active and rewarding engagement in one's everyday tasks".<sup>46</sup> In other words, health is not something that can simply be made or produced by doctors and not confined to our physiology. It is a result of a complex process of personal and interpersonal relations and mechanisms. We could say that health may be conceived as a *moral enterprise*, as the result of an embodied encounter between the person and her system of values and beliefs, with her experience of illness, with her diagnosis, and finally with her prognosis and clinicians.

With the progress of science in general, and medicine in particular, we have witnessed a paradox: the more science has become exact, the more the person has become abstract, and in certain circumstances disembodied. The general *lack of embodied connection* between individuals, and between individuals and institutions, is an important element to acknowledge *in the era of connection*. Health care providers struggle to remain in touch with the person *in se*: their views on different health conditions are parcelled into the different regions of health they are required to treat, for example, a leg, an arm, the heart, the psyche, etc. This is mainly related to the education and training they receive, largely focused on control and measurement, on the subtle art of 'compartmentalizing', on the very idea of 'fixing' something broken in people experiencing mental health conditions, for example, rather than recognizing the need of a tools and therapeutic approach. As a moral (but not moralistic) enterprise, healthcare requires clinicians and health workers to be equipped with a series of different tools that may be found in a phenomenologically-oriented medicine and especially in psychiatry, which may be of great help in deciphering disturbances of intersubjectivity as the origin of psychopathological phenomena. As such, empathy and person-centered care cannot be achieved through digital medicine, but rather are the result of a journey into the recognition of the embodied presence and the aliveness which constitutes the person. The phenomenological and enactive approach to intersubjectivity emphasizes these components. Following the philosophical trajectory from Husserl to Merleau-Ponty, the living body (*Leib*) and the phenomena of corporeality and intercorporeality become central to the understanding of intersubjectivity and living presence, especially in clinical practice. For Merleau-Ponty the body has a pre-reflective directedness towards the world, a bodily intentionality which rests on perception and action as the primary means of interaction with the world.<sup>47</sup>

The peculiar embodied presence of the therapeutic encounter seems to be hard to replace with any digital technology. As much as, for instance, the current COVID-19 pandemic has increased online psychotherapy, helping to reduce the distance between the person and the therapist, especially for those with reduced physical mobility or those who cannot escape the burdens of work or family circumstances, it has also compromised an important portion of the embodied trust between the

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<sup>46</sup>H. G. Gadamer, *The Enigma of Health: The Art of Healing in a Scientific Age.*, p. 113.

<sup>47</sup>M. Merleau-Ponty, *Phenomenology of Perception*, New York: Routledge, 1981, p. 238.

person and her therapist due to the lack of bodily resonance and the perception and deciphering of atmospheres and the setting,<sup>48</sup> reducing the perception of the body mainly to what is displayed on the screen, limiting the grasping of bodily gestural expressiveness that mainly characterizes the I-Thou encounter. The digitalization of presence seems to objectify the peculiar intersubjective space typical of the clinical encounter in the asepticity of the screen. The visual nature of the media increases that interpersonal distance, which obstructs and disconnects us from the bodily space of shared intersubjectivity. The living body becomes absent and the virtual space turns out to be the epiphenomenon of a disembodied presence.

The emphasis put on embodiment is not peripheral in a phenomenological interpretation of subjectivity. Interpreted as an ongoing act continuously shaped by our experiences, by the relationships and interactions with others, and the environment, embodiment is the *conditio sine qua non* of our aliveness:

Lived experiences are ‘bound’ to the Body. Yet it is clear that the psychic subject is not primarily related to his Corporeal body as a material thing and is only mediately related to the lived experiences connected up to it, but, rather, the reverse: the psychic subject has a material thing as his Body because it is animated, i.e., because he has psychic lived experiences which, in the sense of the apperception of the human, are one with the Body in a singularly intimate way.<sup>49</sup>

The body is the condition for the possibility to meet others and the world around us: the “possibility of sociality, the possibility of comprehension (...) presupposes a certain Bodily intersubjectivity”.<sup>50</sup> It is from this background that we can understand why an embodied anthropology may illuminate the problem of health as a moral enterprise. It was Viktor Emil von Gebattel who pointed out how an embodied anthropology is fundamental for the goals of the medical enterprise and to overcome the risk of reducing the patient to just a case study, as someone who carries a disease and not as a person: “In the area of medicine, the scientific attitude threatens to turn the living fellow-person with all his needs, into the mere object of a technological contact and the irreplaceable unique person into a regular ‘case’”.<sup>51</sup> Phenomenologically speaking, this is the natural attitude of medicine and in particular of contemporary psychiatry, which is disease-centered and, as a consequence, the therapeutic enterprise is modeled on drugs’ efficacy and being able to reverse a “faulty” physiological process into a “normal” one:<sup>52</sup> “Disease and fellow-humans

<sup>48</sup>See V. Bizzari, *Absent Bodies: Psychotherapeutic Challenges during COVID-19*, in *Psychopathology*, 2022, doi: 10.1159/000524711.

<sup>49</sup>E. Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy. Second Book*, Studies in the Phenomenology of Constitution, Kluwer Academic Publishers, Dordrecht, 1989, p. 129.

<sup>50</sup>E. Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy. Second Book*, p. 311.

<sup>51</sup>V. E. Von Gebattel, *The meaning of medical practice*, in *Theoretical Medicine*, 16, 1995 p. 63.

<sup>52</sup>F. Brencio, *(Dis)Embodied encounters. Deciphering intersubjectivity in the context of drugs’ prescription*, in P. A. Gargiulo, H. L. Mesones Arroyo (eds.), *Psychiatry and Neuroscience Update. From Translational Research to Drug Addictions and Psychoses*, Volume V, Springer (forthcoming).

are the same in the clinician's eyes".<sup>53</sup> An embodied anthropology is the only "alternative to a naturalistic-reductive image of the human being" and "consists in attention to the embodiment and aliveness that are constitutive of the person. No abstract inwardness, disembodied consciousness or pure spirit are the guiding ideas of a humanistic view of the person, but the person's concrete physical existence".<sup>54</sup>

In the era of digital medicine, health as a moral enterprise calls into question many elements, among which are the issue of technology and its applications, the concept of recognition as a preliminary step to every clinical encounter and the notion of empathy. Many authors have devoted a substantial part of their meditation to the discussion of technology, including Martin Heidegger and Hans Jonas. Even if from different perspectives – Heidegger from an ontological perspective and Jonas from an ethical one – both authors dealt with the issue of technology in a very critical way. For Heidegger the essence of technology is not in the results, such as devices and products that may be offered to society for its progress, but rather it is a way of revealing, a kind of framework in which "things" reveal themselves.<sup>55</sup> For Jonas technology is what measures the progress of a society and, at the same time, what threatens mankind. Both authors point out the need for a critical investigation from the side of ontology and metaphysics (Heidegger), and from the ethical and bioethical perspectives (Jonas). Heidegger warns us to not confuse our mastery of technological devices and advancement of robotics, engineering or AI as if they were mere tools, because we may observe the world from a different perspective, which is from the perspective that these tools and devices serve for, namely the side of objectivation, usability and exploitation. Jonas takes into account some fundamental themes – such as nuclear war, ecological ravage, and genetic engineering – from the perspective of the ethical responsibility that addresses mankind and its global control over an improper use of technology: its power may affect life in every form.<sup>56</sup> The philosophers' critical views should impact our consideration of digital medicine and the most sophisticated technologies in our daily life.<sup>57</sup> The authentic quest for recognition, which is a fundamental part of the structure of personhood, is not satisfied by the advancements in telemedicine, digital medicine or apps, but

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<sup>53</sup>V. E. Von Gebattel, *The meaning of medical practice*, p. 60.

<sup>54</sup>T. Fuchs, *In defence of the human being*, p. 5.

<sup>55</sup>"The revealing that rules in modern technology is a challenge. which puts onto nature the unreasonable demand that it supplies energy that can be extracted and stored as such. But does this not hold true for the old windmill as well? No. Its sails do indeed turn in the wind; they are left entirely to the wind's blowing. But the windmill does not unlock energy from the air currents in order to store it. [...] Agriculture is now mechanized food industry. Air is now set upon to yield nitrogen, the earth to yield ore, ore to yield uranium, for example; uranium is set upon to yield atomic energy, which can be released either for destruction or for peaceful use", M. Heidegger, *The Question Concerning Technology and Other Essays*, Harper & Row, New York, 1977, p. 13 and following.

<sup>56</sup>See H. Jonas, *The Imperative of Responsibility: The Search of an Ethics for the Technological Age*, University of Chicago Press, Chicago, 1985.

<sup>57</sup>See S. Ferrarello (ed.) *Phenomenology of Bioethics: Technoethics and Lived-Experience*, Springer 2021.

rather, as an indiscernible part of our subjecthood, it is a very complex process that may be a powerful transformative resource in one's life.

Recognition has to do with empathy, understood as an intentionality directed towards the other's experience,<sup>58</sup> "is a distinct form of intentionality and is not to be confused or fused with closely related phenomena such as, sympathy, caring, being nice, providing service, helping somebody to solve a problem, etc."<sup>59</sup> In empathy "we experience the other directly as a person, as an intentional being whose bodily gestures and actions are expressive of his or her experiences or states of mind"<sup>60</sup>. Viewed from a second-person perspective, empathy may notably contribute to face-to-face (professional) encounters in psychiatry and serves as a means to interpersonal understanding.<sup>61</sup> For example, Edith Stein's account of empathy may act as a bridge between individual psychological experience, embodied interpersonal emotionality, and our collective social moral order.<sup>62</sup> The point of departure of this perspective is not the physical body, rather "the foreign living body as the bearer of a psychic life that we 'look at' in a certain way"<sup>63</sup>. This also means that the description of mental phenomena may be implemented with the contribution of empathy, underlying those elements that are not reducible to natural causality and mechanical processes. As such, all these elements contribute to an idea of curing which may be only an embodied act. Let's see why.

## 11.5 Embodied Care

*Curing*, understood as caring and restoring, is concerned with the process of recognition. This shows the essential dimension of the self, never isolated but always embedded in a relational dimension. Curing is not a disembodied practice and cannot be disentangled from its main relational trait. The sense of curing also partly included in the meaning of treatment: "The German term *Behandlung* is a rich and significant word for 'treating' people and 'handling' them with care. It contains the word 'hand', the skilled and practiced hand that can recognize problems simply by feeling and touching the affected parts of the patient's body. 'Treatment' in this

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<sup>58</sup>D. Zahavi, *Empathy, embodiment and interpersonal understanding: From Lipps to Schutz*, in *Inquiry*, 53/3, 2010, p. 291.

<sup>59</sup>M. Englander, *Empathy Training from a Phenomenological Perspective*, in *Journal of Phenomenological Psychology* 45, 2014, p. 12.

<sup>60</sup>S. Gallagher, D. Zahavi, *The Phenomenological Mind*, Routledge, New York 2012, p. 203.

<sup>61</sup> See M. Englander, *Empathy in a Social Psychiatry*, in M. Englander (ed.), *Phenomenology and the Social Context of Psychiatry Social Relations, Psychopathology, and Husserl's Philosophy*, Bloomsbury, Indiana 2018, pp. 49–64.

<sup>62</sup> See S. Wharne, *Empathy in phenomenological research: Employing Edith Stein's account of empathy as a practical and ethical guide*, in *Methods in Psychology* Volume 5, December 2021, 100053, doi: <https://doi.org/10.1016/j.metip.2021.100053>

<sup>63</sup>E. Stein, *On the problem of empathy*, ICS Publications, Washington 1989 p. 75.

sense is something which goes far beyond mere progress in modern techniques".<sup>64</sup> Curing requires a shared corporeal existence among those who are in need of curing, and those who provide the cures. This shared corporeal existence is possible through the mediation of living bodies and the gestural body: the expressions of the face, the movement of the eyes, the tone of voice and the movements of the body. Gestures and touch have a profound impact in the clinical encounter, especially when the person may suffer from neurological conditions which irreversibly affect her identity. An example of this is offered by the experience of health workers with Alzheimer's patients. Alzheimer's disease – and other forms of dementia – turns the person's identity upside down impacting the cognitive and reflective capacities, often considered as the seat the person:

To be a person in the full sense of the word is, in Western cultures, decisively bound up with the intactness of functions such as reflection, rationality, memory, and with the autonomy that is based on them. Impairments resulting from a process of dementia therefore come into conflict with the central values of a culture centered on cognition and on the individual. Dementia becomes a threat to the person as such and is more stigmatized than most other mental illnesses. (...) However, this identification of our selfhood with cognition, rationality, and memory is based on a dualistic conception of personhood, in which the body serves merely as a vehicle for the mind – or the brain. According to this view, the cortex and the act of thinking become the site of the person, while the rest of the body, along with our embodied feelings, lacks cognitive awareness and rational control and so leads nothing more than a shadow existence. Such a view (...) neglects what is constitutive of human personhood, namely its sociality, which already manifests itself in the primary pre-reflective intersubjectivity (...) and which is crucially based on intercorporeality and interaffectivity.<sup>65</sup>

In recounting his experience with Alzheimer patients, a physiotherapist says:

I was working with Mrs. D on her walking and she was resisting the physio. I was trying to explain to her how important it was to get her legs moving but I wasn't getting anywhere with her. As I took a moment to myself to figure out what I could do to connect with her it suddenly became THE moment we actually connected. Our eyes met and she smiled. I immediately smiled too and several moments passed like that of us just smiling at each other. We then proceeded with the physio. It was like she needed me to show her that I was there for her and I did.<sup>66</sup>

In the silent exchange of expressive gesture, the patient and her physiotherapist were able to communicate with each other, making a meaningful connection: "The significance of their connection derives not from semantic content but rather from the meaning their bodies directly convey. This is consistent with Merleau-Ponty's argument that communication dwells in corporeality or, more specifically, the body's capability of gesture".<sup>67</sup> Of course, organizational context and culture are factors that influence practitioners' ability to provide quality care; but embodied

<sup>64</sup>H. G. Gadamer, *The Enigma of Health: The Art of Healing in a Scientific Age*, p. 99.

<sup>65</sup>T. Fuchs, *In defence of the human being*, p. 196.

<sup>66</sup>P. C. Kontos, G. Naglie, *Tacit knowledge of caring and embodied selfhood*, in *Sociology of Health & Illness*, 2009, 31,5, doi: 10.1111/j.1467-9566.2009.01158.x, p. 696.

<sup>67</sup>P. C. Kontos, G. Naglie, *Tacit knowledge of caring and embodied selfhood*, p. 697.

interactions among patients and nurses are good examples of how the embodied presence is a precious – and in some case an essential – resource to convey a meaning into the therapeutic journey.

In this shared corporeal existence and space there is another element which cannot be replaced by telemedicine, digital medicine and apps: the touch. Touching is a form of non-visual perception that plays an important role in our emotional, cognitive and bodily development. It possesses multisensory qualities and is mainly related to bodily awareness. Touching is different from proprioception even if it involves the latter.<sup>68</sup> Touching is “a normal practice during care of older adults and it relates to physical assisting as well as to emotional care. (...). Affective touch has been mentioned as a recommended therapeutic communication technique, and comfort touch has been identified as a non-verbal communication strategy in assisting patients who have Alzheimer’s”.<sup>69</sup> Touching is a compound resource to let the presence be comforting.

Perhaps the case of Alzheimer’s disease illuminates the tight relationship between curing and embodiment. There is no solicitude (*Sorge*) without an embodied encounter, without a living presence, without a face that meets my gaze: “The face speaks. It talks, and it is the essence of the person that makes this possible and kick-starts any conversation”.<sup>70</sup> This is why curing cannot exclude the embodied encounter and why any attempt to replace this encounter with remote working devices or apps cannot fulfill the very last task of medicine: not merely fixing something broken within the person, but rather an embodied thoughtful enterprise which makes space for the *other* with an open disposition.

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<sup>68</sup>The literature on the theme of touching is extremely broad. For a general view I refer the reader to D. M. Armstrong, *Bodily Sensations*, Routledge & Kegan Paul, 1962, London; J. J. Gibson, *The Senses Considered as Perceptual Systems*, Houghton Mifflin Company, Boston 1966; A. D. Craig, *How do you feel? Interoception: the sense of the physiological condition of the body*, in *Nature Reviews Neuroscience*, 202, 3(8), pp. 655–666; M. Ratcliffe, *Touch and Situatedness*, in *International Journal of Philosophical Studies*, 2008, 16(3), pp. 299–322; M. Ratcliffe, *What is Touch?*, in *Australasian Journal of Philosophy*, 2012, 90(3), pp. 413–432.

<sup>69</sup>K. Mononen, *Embodied care: affective touch as a facilitating resource for interaction between caregivers and residents in a care home for older adults*, in *Linguistics Vanguard*, 2019, doi: <https://doi.org/10.1515/lingvan-2018-0036>, p. 2.

<sup>70</sup>E. Levinas, *Ethics and Infinity*, Duquesne University Press, Pittsburgh, 1985, p. 87.

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