Original Article

Rethinking health and disease in the age of the cyborg: Conceptual challenges for philosophy of medicine

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Abstract

Concepts of health and disease occupy a foundational position within medicine, shaping clinical decision-making, research agendas, public health policies, and ethical evaluation. Despite their differences, both naturalistic and normativist approaches to health and disease share an organism-centered orientation. While these frameworks have offered important insights, their underlying assumptions have become increasingly difficult to sustain in contemporary medical practice.

Advances in medical technology have produced forms of embodiment in which implantable devices, long-term pharmacological regulation, neurotechnological interventions, and algorithmic decision systems play a constitutive role in regulating bodily functions and clinical judgment. In such contexts, technology can no longer be understood as merely external to a self-contained organism. Drawing on the concept of the cyborg condition, this paper analyzes the growing interdependence between biological and technological elements in medicine.

Against this background, the paper critically examines naturalistic and normativist theories, focusing on their reliance on biological norms and species-typical functioning. As technological interventions become pervasive, distinctions between natural and artificial, internal and external, and therapy and enhancement grow increasingly unstable.

Rather than proposing a complete alternative theory, the paper highlights the limits of existing frameworks and argues for a more relational and systemic view in which health and disease are understood as features of human-technology systems.

Keywords: *Philosophy of medicine; Cyborg; Health engineering; Anthropotechnology; Nature of medicine.*

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Received: *23 Dec 2025*
Accepted: *21 Feb 2026*
Published:*13 Jun 2026*

Citation to this article:
Monajemi A. Rethinking health and disease in the age of the cyborg: Conceptual challenges for philosophy of medicine. J Med Ethics Hist Med. 2026; 19: 4.

Introduction

Health and disease are key concepts in medicine that guide clinical decision-making, research agendas, public health policies, and ethical evaluation. Classifying a condition as a disease, risk factor, or normal variation has significant consequences for diagnosis, treatment, resource allocation, and the social status of those affected. For this reason, philosophy of medicine has long sought to clarify the conceptual and normative foundations of health and disease.

Historically, dominant philosophical accounts have assumed that the human being is fundamentally a natural biological organism. On this view, the body possesses species-typical functions shaped by evolution, and deviations from these functions provide the basis for identifying pathology (1,2). Even when evaluative dimensions are acknowledged, biological functioning continues to serve as the implicit standard of medical normativity (3,4). Clinically, this means that treatment is understood as restoring physiological parameters to an expected biological range. This organism-centered image has shaped both naturalistic and normativist theories.

In recent decades, however, this assumption has become difficult to sustain. Medical technologies now routinely integrate artificial components into bodily functions. Implantable devices, neural prostheses, long-term pharmacological modulation, and algorithmic decision systems have transformed how health and disease are experienced and managed (5–7). These technologies are no longer merely external aids but elements of physiological regulation and clinical judgment.

Contemporary humans can therefore no longer be described as purely biological organisms supplemented by tools. They increasingly exist as hybrid systems in which biological and technological components are functionally interdependent. This condition can be captured by the notion of the “cyborg,” understood not as a speculative figure but as a descriptive category for technologically integrated embodiment (8). As a result, distinctions between natural and artificial, internal and external, and therapy and enhancement become less stable.

This shift challenges classical concepts of health and disease. If normal functioning is no longer defined by unaided biological processes, it becomes unclear what should serve as the normative baseline for medical judgment. When

technologically supported functions enable stable participation in social life, should the underlying biological insufficiency still count as a disease? Conversely, when technological dependency introduces new forms of vulnerability, should such conditions be considered pathological even in the absence of biological dysfunction? Classical frameworks offer limited resources for addressing these questions, as they presuppose a clear boundary between organism and technology. This paper argues that philosophy of medicine must therefore rethink its core concepts in light of the cyborg condition. By critically examining dominant naturalistic and normativist theories of health and disease, the paper aims to show how their shared reliance on biological normality and organism-centered models becomes increasingly unstable in technologically integrated bodies (1–4). The central claim is that health and disease should no longer be understood primarily as properties of natural organisms, but rather as relational and systemic features of human-technology assemblages.

To develop this claim, the paper proceeds as follows: Section 1 reviews classical theories of health and disease, highlighting their conceptual strengths and shared limitations. Section 2 analyzes the emergence of the cyborg condition through concrete medical and technological developments. Section 3 demonstrates why classical definitions fail to adequately capture health and disease in this context. Section 4 proposes a cyborg-oriented reconceptualization grounded in systemic stability and functional integration. Finally, section 5 explores the ethical and philosophical implications of this framework for responsibility, vulnerability, and justice in healthcare.

1. Classical Concepts of Health and Disease

Philosophical attempts to define health and disease have long been motivated by the need to clarify the normative foundations of medical practice. These concepts are not merely descriptive but play a central role in guiding diagnosis, treatment, research priorities, and health policies. As such, philosophy of medicine has devoted considerable attention to distinguishing pathological states from normal variation and to determining whether such distinctions can be grounded in objective biological facts or whether they inevitably involve evaluative judgments.

Two broad families of theories have dominated these debates: naturalistic accounts, which seek to define health and disease in value-neutral,

scientific terms, and normativist or hybrid accounts, which explicitly acknowledge the role of values, goals, and lived experiences. Despite their differences, both approaches presuppose a conception of the human being as a fundamentally biological organism with relatively stable functional boundaries. This shared assumption becomes increasingly significant when evaluating the adequacy of the two approaches in the context of technological integration.

1.1. Naturalistic Accounts of Health and Disease

Naturalistic theories are most closely associated with Christopher Boorse's biostatistical theory, which remains one of the most influential and widely discussed accounts in philosophy of medicine (1,2). According to Boorse, health is the statistically normal functioning of an organism's parts and processes relative to an appropriate reference class defined by species, age, and sex. Disease, on this account, consists in a deviation from species-typical functional efficiency, understood in terms of contribution to survival and reproduction.

The central ambition of the biostatistical theory is to provide a value-free definition of disease that preserves the scientific objectivity of medicine. By grounding medical concepts in biological facts rather than social values, Boorse aims to distinguish genuine pathology from socially disapproved traits or variations. This approach has been attractive to many philosophers and clinicians because it appears to align closely with biomedical explanatory practices and offers clear criteria for classification.

However, naturalistic accounts have been subject to sustained criticism. One line of critique focuses on the theory's supposedly value-neutral character. Critics argue that selecting reference classes and privileging certain biological goals, such as survival and reproduction, already involve normative assumptions (3,4). Moreover, statistical normality itself is not self-interpreting: determining which variations count as pathological rather than merely atypical often depends on broader evaluative judgments.

A second, more fundamental limitation concerns the theory's reliance on a stable conception of biological function. The biostatistical account presupposes that biological systems have evolved functions that can be identified independently of technological intervention. As later sections will argue, this presupposition becomes increasingly problematic when

biological functions are routinely supplemented, regulated, or replaced by technological components

1.2. Normativist and Hybrid Accounts

In contrast to naturalistic theories, normativist accounts reject the possibility of value-free definitions of health and disease. Georges Canguilhem's work represents a foundational contribution to this tradition. For Canguilhem, health is not conformity to a statistical norm but the capacity of an organism to establish new norms in response to environmental challenges (3). Disease, on this view, is not simply a biological dysfunction but a reduction in an organism's normative vitality and its ability to adapt to change.

Canguilhem's account has been influential precisely because it foregrounds the lived experience of health and illness and emphasizes the dynamic, context-sensitive nature of normativity. Health is understood as a form of practical competence rather than a fixed biological state. This perspective has inspired a range of later theories that seek to integrate biological facts with evaluative considerations.

One prominent example is Lennart Nordenfelt's action-theoretic account, which defines health as an individual's ability to achieve vital goals under standard circumstances (4). Nordenfelt's approach explicitly incorporates agency, intention, and social context into the concept of health while retaining a role for empirical facts about human functioning. As a hybrid theory, it aims to bridge the gap between purely naturalistic and purely normativist accounts.

Despite their advantages, normativist and hybrid theories also face important limitations. While they allow for greater flexibility and sensitivity to individual experience, they often rely implicitly on background assumptions about normal human capacities to delimit the range of relevant goals or norms. These assumptions are rarely made explicit and are typically grounded in an image of the human as a biologically self-contained organism. As a result, even normativist theories remain indirectly tied to a naturalistic baseline.

1.3. Shared Commitments and Conceptual Limits

Although naturalistic and normativist accounts differ in their treatment of normativity, they share several key commitments. Both conceptualize health and disease primarily as properties of individual organisms rather than of systems or networks. Both presuppose relatively stable functional boundaries between the organism and its environment. And both assume that biological

functioning provides, either directly or indirectly, the primary reference point for medical judgment.

These shared commitments have historically provided a coherent framework for medical reasoning. However, as technological interventions have become increasingly integrated into bodily functions, the adequacy of organism-centered and nature-based assumptions is called into question. The following sections argue that classical concepts of health and disease, while philosophically sophisticated and clinically influential, are ill-equipped to address the realities of technologically mediated embodiment. Understanding these limitations is a necessary prerequisite for developing a cyborg-oriented reconceptualization of medical normativity.

2. The Emergence of the Cyborg Condition

Recent developments in medical technology invite a reconsideration of how the human body is conceptualized within medical theory and practice. Rather than remaining a primarily biological organism supplemented by occasional technical aids, the body is increasingly constituted as a hybrid system in which organic and artificial components operate in sustained relations of functional interdependence. Earlier forms of medical intervention were often understood as temporary or external measures intended to restore impaired biological functions. By contrast, many contemporary technologies are integrated into bodily functioning in continuous and, in some cases, indispensable ways. This development gives rise to what may be described as a cyborg condition, understood here as a mode of embodiment in which health and disease cannot be meaningfully attributed solely to biological processes.

Implantable medical devices provide a particularly clear illustration of this shift. Cardiac pacemakers and implantable cardioverter-defibrillators continuously monitor cardiac activity and intervene autonomously to regulate heart rhythms in real time (6). In such cases, the maintenance of a vital physiological function no longer depends solely on endogenous biological mechanisms but also on a technologically mediated feedback loop. From a clinical standpoint, the patient's survival and functional stability depend on the reliable coordination between biological tissue and an artificial device. This raises a basic conceptual question for theories of health and disease: Should health be assessed with reference to the unaided biological heart, whose functioning is impaired, or with

reference to the integrated human-device system, which may operate stably and effectively over extended periods?

Neurotechnologies further complicate classical assumptions about embodiment and agency. Deep brain stimulation systems, for example, directly intervene in neural circuits associated with motor control, affect regulation, and support cognitive processing (7). These interventions do not simply compensate for lost capacities but actively modulate ongoing neural activity, sometimes giving rise to changes in mood, personality, or self-experience reported by patients. Similarly, neural prostheses designed to restore movement or sensory capacities depend on continuous interaction between neural signals and computational processes. In such cases, technological mediation appears not merely as an external influence on agency but as one of its constitutive conditions, thereby challenging the assumption that mental and bodily functions are grounded in a self-contained biological substrate.

Cochlear implants offer another paradigmatic case of technologically mediated embodiment. Rather than amplifying sound within the existing biological structures of hearing, cochlear implants translate acoustic input into electrical signals that directly stimulate the auditory nerve (8). Users typically undergo prolonged periods of adaptation, during which perceptual capacities are reorganized through interaction with the device. Hearing, in this context, is not restored to a pre-pathological natural state but reconstituted through a novel human-technology configuration. The resulting sensory experience is neither purely biological nor simply artificial, but emerges from the integrated system as a whole.

Pharmacological interventions likewise contribute to the gradual erosion of a strictly naturalistic framework. The long-term use of psychotropic medications to regulate mood, attention, and affect has become a routine feature of contemporary medical practice (9). Such interventions often aim less at curing an underlying pathology than at maintaining functional stability and social participation over time. Where psychological agency depends on ongoing chemical modulation, the distinction between a natural mental state and a technologically sustained one becomes increasingly difficult to draw. In these contexts, normal functioning tends to be defined not by biological baselines alone but by functional expectations shaped by social and institutional norms.

Beyond direct bodily integration, digital and algorithmic systems now play an increasingly significant role in medical decision-making. Artificial intelligence-based diagnostic tools, risk prediction models, and clinical decision-support systems shape judgments concerning diagnosis, prognosis, and treatment pathways (8). Although these systems are not physically incorporated into the body, they are functionally integrated into patients' medical trajectories. Decisions informed or guided by algorithmic analysis have direct consequences for bodily interventions and health outcomes, thereby extending the human-technology assemblage beyond organic and mechanical components to include informational infrastructures.

These developments place growing pressure on classical distinctions between internal and external intervention, natural and artificial function, and therapy and enhancement. Within the cyborg condition, health and disease increasingly appear as properties of hybrid systems whose operation spans biological, technological, and informational domains. The human body can no longer be adequately understood as a bounded natural entity but instead emerges as a dynamically configured assemblage maintained through ongoing technological mediation. This ontological shift provides an important background for understanding why classical concepts of health and disease, grounded in biological normality, are increasingly under strain in contemporary medical practice**.**

3. Why Classical Definitions Fail in the Cyborg Age

The cyborg condition introduces conceptual tensions that remain largely unresolved within classical definitions of health and disease. Both naturalistic and normativist theories were developed under ontological assumptions that no longer hold in technologically integrated bodies. Although these approaches differ in their treatment of normativity, they share a commitment to understanding health and disease primarily as properties of biological organisms. This shared commitment renders classical accounts increasingly inadequate in the age of the cyborg.

3.1. The Instability of Biological Normality

Naturalistic theories, most notably Boorse's biostatistical account, rely on species-typical biological functioning as the primary criterion for distinguishing health from disease (1,2). Accordingly, pathology is defined as a deviation from the statistical norm of functional efficiency

within a biological reference class. The cyborg condition destabilizes this reference point in two ways.

First, technological components may not merely compensate for dysfunction but actively reshape bodily or neural functioning. This is evident in deep brain stimulation, where electrical stimulation modulates neural circuits associated with movement, affect, and agency (7). Here, the integrated brain-device system produces patterns of functioning that have no clear species-typical baseline. Patients may function stably only under continuous technological modulation. If health is assessed relative to unaided biological functioning, these states remain pathological; if assessed relative to the integrated system, they may count as healthy. Classical naturalistic accounts offer little guidance, since they assume biological function prior to intervention as the normative standard.

Second, widespread technological interventions reshape statistical norms themselves. As technologies become standard, population-level norms increasingly reflect technologically mediated functioning. What counts as normal heart rhythm, perception, or cognition may be defined by populations sustained by devices or long-term medication rather than by unaided biological function. Appeals to species-typical functioning thus risk becoming normatively circular, as technological interventions redefine the very standards used to justify them (3,4).

3.2. Limits of Normativist and Hybrid Accounts

Compared to naturalistic accounts, normativist theories appear more adaptable as they emphasize values, lived experiences, and agency rather than biological facts alone. Both Canguilhem's account of health as the capacity to establish new norms and Nordenfelt's goal-based theory allow for variability and adaptation (3,4). In principle, such approaches could accommodate technologically mediated functioning. However, difficulties arise when technological intervention expands the range of achievable goals. Pharmacological or neurotechnological enhancement may enable individuals to meet expectations that would otherwise be unattainable (9–10). Classical normativist theories provide little guidance for determining whether such technologically sustained capacities represent health or masked pathology. Moreover, these accounts often rely on background assumptions about normal human capacities. In the cyborg condition, where technology reshapes perception, cognition, and agency, such assumptions become unstable, and

normativity risks being defined by prevailing social or technological standards rather than a defensible concept of health (11).

3.3. Pathology as Systemic Misalignment

A deeper limitation of classical theories lies in their organism-centered ontology. Both naturalistic and normativist accounts treat disease as a property of individual organisms. The cyborg condition, however, reveals forms of pathology that arise at the level of systems.

Failures in technologically integrated medical systems may result from device malfunctions, software errors, or infrastructure breakdowns, without any corresponding biological dysfunction (6,10). A patient dependent on an implanted device may face a serious risk due to a lack of maintenance or technical support, despite intact biology. In such cases, pathology emerges from the misalignment of a human-technology assemblage within broader sociotechnical systems (12).

Classical definitions struggle to account for these systemic vulnerabilities, as they privilege biological dysfunction as the primary marker of disease (13). Contemporary practice provides clear examples, for instance, in type 1 diabetes, insulin pumps and continuous glucose monitoring systems regulate metabolism as integrated human-device systems (11). In patients with chronic hypertension, clinically normal blood pressure is often sustained only through continuous medication (12). To cite yet another example, in intensive care, mechanical ventilation distributes respiration across biological tissue and technological apparatus (13). In these cases, health depends on the functioning of hybrid systems rather than unaided biological normality (14).

These developments suggest that classical definitions of health and disease face not only empirical but ontological challenges. Their reliance on biological normality and organism-centered models becomes increasingly out of step with contemporary medical reality. The cyborg condition does not merely introduce new cases; it transforms the conditions under which the concepts of health and disease operate.

4. Toward a Cyborg-Oriented Concept of Health and Disease

Sadegh-Zadeh offers a particularly systematic diagnosis of this technological transformation of medicine, characterizing contemporary healthcare as transitioning toward what he terms *health engineering*.[i] He argues that medical knowledge, therapeutic interventions, and clinical decision-making are no longer best

understood as primarily interpretive or judgment-based practices, but increasingly as outcomes of engineered processes designed to achieve specified functional goals. Biomedical research, pharmaceutical production, implantable devices, and computer-assisted clinical systems are all treated as components of an integrated technological infrastructure that organizes and optimizes medical practice. Within this framework, therapy is reconceived less as the restoration of a natural biological state and more as the technically mediated regulation of bodily and systemic processes (15).

Sadegh-Zadeh situates this development within a broader anthropological shift, in which the human being is increasingly conceptualized as a modular, reconfigurable system. Organs, tissues, and even cognitive and affective functions are treated as components that can be replaced, supplemented, or redesigned through technological means. He describes this trajectory as part of a movement toward *anthropotechnology*, in which medicine plays an active role in shaping not only health outcomes but the very forms of human embodiment and agency. From this perspective, technologically stabilized functioning becomes a central reference point for clinical practice, often independent of, or only loosely connected to, classical notions of biological normality.

While Sadegh-Zadeh's analysis captures important structural features of contemporary medicine, it also raises questions concerning the normative status of health and disease within an engineering-oriented framework. If health is increasingly produced and maintained through engineered systems, it remains unclear how distinctions between therapy and enhancement, or between pathological dysfunction and technically supported functioning, are to be drawn without reintroducing evaluative criteria external to engineering efficiency itself. In this respect, the concept of health engineering powerfully recognizes the transformation of medical practice, yet leaves open the question of how medical normativity is to be articulated once biological normality no longer functions as the primary baseline. This unresolved tension suggests that the engineering turn in medicine, while descriptively compelling, requires further philosophical clarification to support a coherent account of health and disease (15).

Sadegh-Zadeh supports the thesis of medicine's transformation into health engineering by pointing to engineered therapeutics, commodified medical knowledge, algorithmic

clinical decision-making, and a modular conception of the human body that enables systematic technological intervention.

5. Ethical and Philosophical Implications of a Cyborg-Oriented Framework

Reconceptualizing health and disease in cyborg-oriented and systemic terms entails significant ethical and philosophical consequences for medical practice. When health is no longer defined by conformity to a natural biological baseline but by the stability and integration of human-technology assemblages, the normative foundations of medicine necessarily shift. Medicine increasingly emerges not only as a practice of diagnosis and treatment, but as an activity of designing, maintaining, and governing hybrid systems composed of biological, technological, and institutional elements.

One immediate implication concerns the distribution of responsibility in medical practice. In classical clinical models, responsibility is primarily shared between the physician and the patient, with disease understood as a condition located within the patient's body. In the cyborg condition, however, responsibility becomes distributed across a broader network that includes device manufacturers, software developers, data analysts, healthcare institutions, and regulatory bodies (16). When pathological outcomes arise from technological malfunction, algorithmic error, or infrastructural failure, attributing responsibility solely to clinicians or patients becomes conceptually inadequate. A cyborg-oriented framework thus calls for an expanded notion of medical responsibility that reflects the distributed agency characteristic of contemporary healthcare systems.

A second ethical implication concerns technological dependency and vulnerability. While technological integration can enhance functional stability and agency, it can also introduce new forms of fragility. Patients dependent on implantable devices, long-term pharmacological regulation, or algorithmic decision systems may face heightened risks associated with device failure, loss of technical support, cybersecurity threats, or supply chain disruptions (6,10). Health cannot be equated with maximal technological intervention. Rather, it requires careful attention to resilience, redundancy, and the long-term sustainability of human-technology assemblages. Interventions that increase performance while simultaneously increasing vulnerability may therefore be ethically and medically questionable, even if they are clinically effective in the short term.

Issues of justice and inequality become especially salient within a cyborg-oriented conception of health. Access to advanced medical technologies is unevenly distributed both within and across societies. If technologically mediated capacities become implicitly incorporated into definitions of normal functioning or acceptable health, individuals and populations lacking access to such technologies risk being systematically disadvantaged or reclassified as unhealthy (17). This raises concerns about the medicalization of social inequality and the potential normalization of technologically produced advantages. A cyborg-oriented philosophy of medicine must therefore remain attentive to the social and political conditions under which medical technologies are developed and deployed, resisting the tendency to naturalize outcomes that are in fact shaped by economic and institutional power.

The cyborg framework also reframes ethical debates surrounding enhancement. Classical bioethical discussions often rely on a distinction between therapy, understood as restoring normal function, and enhancement, understood as exceeding it. As argued in earlier sections, this distinction becomes increasingly unstable in the context of technological integration (3,9). From a systemic perspective, the ethical evaluation of enhancement should focus less on whether an intervention exceeds natural function and more on how it affects autonomy, dependency, social pressure, and long-term systemic stability (11). Enhancements that generate coercive norms, increase inequality, or undermine resilience may thus be ethically problematic even if they improve individual performance.

Finally, reconceptualizing health and disease in cyborg-oriented terms has implications for the self-understanding of medicine as a moral practice. If the objects of medical intervention are hybrid systems rather than natural bodies, then medical ethics must expand beyond individual patient welfare to include considerations of technological governance, infrastructural justice, and collective risk. Philosophy of medicine, in turn, must engage more deeply with philosophy of technology and social theory in order to adequately address these challenges (16,17).

Conclusion

This paper argues that dominant philosophical concepts of health and disease are increasingly strained by forms of medical practice in which technological mediation is not incidental but constitutive. Classical naturalistic and

normativist approaches were largely formulated against the background assumption of a predominantly biological conception of the human organism, within which normal functioning could plausibly operate as a relatively stable normative point of reference for medical judgment. While these approaches continue to offer valuable insights into the prescriptive dimensions of medicine, their shared reliance on organism-centered and nature-based assumptions limits their ability to account for health and disease in contexts characterized by sustained technological mediation and integration.

By examining developments that are often categorized under the cyborg condition, the paper further suggests that contemporary forms of human embodiment are no longer adequately captured by models that treat technology as merely external to an otherwise self-contained organism. Implantable medical devices, long-term pharmacological regulation, and algorithmic decision-support systems increasingly participate in the ongoing regulation of bodily processes and clinical judgment, thereby shaping both agency and medical practice itself. Under these conditions, familiar distinctions between the natural and the artificial, the internal and the external, as well as between therapy and enhancement, appear less stable than classical accounts tend to assume. As a result, approaches that continue to define health and disease primarily by reference to biological normality or species-typical functioning face increasing difficulty in accounting for the realities of technologically mediated medical practice.

By foregrounding the cyborg condition and the emergence of health engineering, the paper proposes that health and disease be understood as properties of hybrid systems rather than solely of biological organisms. This shift does not render classical concepts obsolete, but it does expose their limits and calls for systematic theoretical revision. In contemporary medicine, technological mediation is no longer an exception to be philosophically accommodated; it is a defining condition that must be taken as a starting point for conceptual analysis.

A cyborg-oriented philosophy of medicine must therefore attend not only to conceptual clarification but also to the broader sociotechnical contexts in which medical technologies are developed, implemented, and normalized. A philosophy of medicine that remains anchored exclusively to biological

normality risks mischaracterizing the normative structure of medical practice as it actually exists today. Rethinking health and disease in the age of the cyborg is therefore not merely a speculative exercise but a necessary step toward aligning philosophical analysis with contemporary medical reality.

This paper does not seek to provide a comprehensive or definitive account of health and disease in the age of the cyborg. Rather, it aims to indicate that without a systematic re-examination of its foundational concepts, philosophy of medicine risks remaining oriented toward an image of the human that no longer adequately reflects modern medical practices.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

Acknowledgments

None.

Conflict of Interests

The author(s) declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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[i] This dual descriptive and normative role of *health engineering* should not be understood as a conceptual ambiguity. At a first level, the concept is intended as a descriptive account of how contemporary medical practice in fact operates through the design and regulation of hybrid human-technology systems; at a deeper level, however, this description is unavoidably normative, insofar as it discloses the standards by which health, disease, and clinical success are practically judged. Medical concepts such as health, disease, normality, and clinical success are not value-neutral descriptions but are intrinsically deontic, insofar as they implicitly guide judgment, intervention, and responsibility within medical practice. In this sense, describing how health is operationalized in technologically mediated medicine simultaneously reveals the normative standards at work, rather than deriving them from an external ethical framework.