

# Bringing disease back to life: an ecological intervention

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The philosophical debate about disease is traditionally shaped by the contrast of naturalism, which seeks a biological definition, and normativism, which defines disease as a social phenomenon. In this essay, I will discuss the two positions and show how they fail especially due to their reliance on subject-object and body-mind dualism. This is linked to the historical entanglement with scientific positivism that relied on a reductionistic cosmology including strict objectivity and value neutrality. I will argue that this results in a 'dead' ontology with negative consequences for the understanding of diseased bodies, as well as too much confidence in the scientific epistemology. Overcoming the underlying dualisms requires instead exploring disease from a non-dualistic ontology with life as an integral part. Here, it is not just about changing a perspective or respecting personal experience, but aligning our understanding of disease with what it means to be alive. Starting from a dynamic ontology, I will render disease a part of the living process that includes both an openness towards wider ecosystems as well as a necessarily normative orientation. Stepping beyond a subject-object and mind-body dualism leads thus to a pluralistic and naturalistic view of disease embedded in life as its normative basis.

Naturalism defines disease as a state that can be objectively explained as a deviation from health. This shall render the concept a matter of natural sciences and value-free<sup>1</sup>(Nordenfelt 2003, 5). A well-known proponent of naturalism is Boorse (1977, 542) who claims that disease is the dysfunction of a sub-system of the body in contrast to the normal biological functioning of a healthy organism. Thus, “the normal is the natural” for Boorse, in the sense that normality entails a “mode of functioning [which] conforms to the natural design of that kind of organism” (Boorse 1975, 57). He qualifies this account further by linking normal functioning to reference classes that represent groups of organisms with uniform functional design.

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1. This amounts however only to the claim that the scientific description and the evaluation of disease are two independent matters (Nordenfelt 2003, 6). Boorse (1977, 551–2) simply evokes the concept of illness, as the state of having a disease serious enough to need treatment that includes normative judgements, for the latter part.

Statistical abnormality alone is however not sufficient because some unusual conditions like being redheaded or above average height are still healthy conditions, whereas diseases like tooth decay are very common (Boorse 1977, 547). Therefore, Boorse (1977, 555–6) fully extends his biostatistical theory of disease by defining the statistically normal functioning of a part within its reference class as one that contributes to the survival and reproduction of the organism. Underlying this functional account is Aristotelian biology where all bodily parts function to enable the whole – the person – a good life and successful reproduction: each part and the whole individual adjust to environmental changes in ways that are appropriate to one final goal; the individual cells aim at manufacturing certain compounds, which contributes to higher-level goals like muscle contraction, which enables ‘survival’ behaviour like nest-building and hunting. Ultimately, this leads to behaviour that secures individual and species survival and reproduction (556).

One immediate issue of this overly teleological understanding of organisms, and in extension also evolution, is that variation is actually inherent to species according to more recent research: there is no one ultimate phenotype but a variety of phenotypes, with varying functions and behaviours, that emerge from the interaction of genes and environments (Sholl and De Block 2015, 148). As such, evolution confers a multiplicity of functions that do not directly aim at survival fitness but are more or less well adapted to the environments in which they evolved – not every cell of our body is ultimately related to the single goal of survival (Wakefield 1992, 379).

I think that naturalists could respond that Boorse’s understanding of evolution is somewhat outdated but not necessarily problematic for naturalism in general. In particular, Boorse qualifies his own account by admitting that the precise line between health and disease can in any case only be settled academically since most diseases involve functional deficits that are not absolute but only unusual by some reasonable standard (Boorse 1977, 558). It is then an idealised, ‘normalised’ version of the organism that is relevant for disease-claims, and “[t]o deny its existence on Darwinian grounds would be to miss the forest for the trees” (557).

However, this relativization still faces the general issue of naturalism to define proper reference classes for whom the ‘normal’ applies. Boorse is aware that they cannot encompass a whole species due to significant differences with regard to age and sex. However, survival rates also differ in relation to categories like ethnicity, economic basis and personality (Wakefield 1992, 379). Even worse, my account of phenotypes above indicates

that species cannot be separated from their environments including other species. Ignoring these relationships is highly problematic because of their importance, for example, in multi-factorially diseases like cancer in which environmental factors play an important role in explaining the variation of the individual's disease risk (Sholl and De Block 2015, 144). As a consequence, a reference group necessarily becomes highly specific and thereby, loses any statistical relevance required for naturalism (Cooper 2002, 266–7).

A further issue arising in this context is the question of who and how we should decide on which of the possible categories matter, especially because it seems clear that not all factors relevant for survival are candidates for defining diseases (compare Wakefield (1992, 379)). For Boorse (1977, 556–7), the solution is an empirical matter and can be found in physiological textbooks that provide “a composite portrait of what I will call the species design, i.e. the typical hierarchy of interlocking functional systems that supports the life of organisms of that type”. This reference to scientific facts is a necessary step for Boorse because he wants to keep moral values out of the disease classification. But in doing so, he implicitly incorporates values in as much as even the idealised standard has to be decided on somehow (Powell and Scarffe 2019, 580). Thus, the specification of disease is nonetheless justified by reference to values. Here, one might be reminded of Putnam who showed that values direct scientific knowing because they determine what and how we study historically and socially in everyday scientific practice (Tauber 2002, 269).

Normativism picks up the latter point and argues that states are diseases only if they are evaluated as such based on certain normative and social criteria. This is, for example, indicated in the case of multi-morbidity, the phenomenon that patients satisfy criteria for many diagnoses according to current scientific standards, so that biology cannot settle the matter (Vogt et al. 2014, 944). A recent proponent is Cooper (2002, 271) who defines disease as a state that is bad and unlucky to have as well as medically treatable. As such, disease does not require any biological difference but is undesirable for the affected person. Cooper (2002, 272–3) leaves open the discussion of how this desire shall be understood but assumes that it is a matter of social discourse. What is clear to me is that it cannot amount to a universal preference that every individual shares because some diseases can be desirable in certain situations, for example, cowpox could save a person's life amid a smallpox epidemic (Boorse 1977, 545). In contrast, certain conditions like pattern baldness, diminutive male sex organs (Powell and Scarffe 2019, 581) or alcoholism are generally considered undesirable states without being necessarily seen as diseases (Ereshefsky 2009,

224). The universality of the definition therefore needs to link the 'bad condition' to a species-specific goal like flourishing, whereas the link to the individual is secured through including the second condition: the afflicted person also needs to be unlucky in the sense that the person feels subjectively worse than before (Cooper 2002, 275–6). Again, the universality of her definition can only be secured if 'subjective worse' is generalised to "worse off than the majority of humans of the same sex and age" (276). This shall be a more flexible solution than the reference to a statistical abnormality in naturalism, but I think that this advantage is bought for the price of losing clarity. In particular, it still faces the issue of finding suitable reference classes while also attaching disease to philosophical debates about subjectivity and 'the good'.

Overcoming this vagueness and eventual mistaken cases where biological or social misfortunes count as diseases, Cooper (2002, 277–8) qualifies her account by a 'potentially medically treatability' criterion. This necessarily links disease to the medical practice of doctors who are trained in medical schools and are thereby, experts in human physiology, biology and psychology. However, I think that this is a problematic proposition because treatment in medical practice is neither necessary nor sufficient for something to be a disease. After all doctors are not necessarily concerned with diseases only, for example in cosmetic surgery (compare Boorse (1977, 546)). Important for my argument, Cooper's account hints at the dichotomy that normativism falsely tries to uphold against naturalism: normativism is right in observing that the medical sector evolves together with the existence of the disease phenomenon so that norms are involved, which naturalism ignores. Nonetheless, these norms are not only discussed in a pre-existing medical and social discourse but have to start from the individual, biological suffering. In consequence, Cooper is also unable to prevent social conditions from becoming diseases as long as she refuses to link her definition explicitly to biological facts.

I conclude from the discussion of naturalism and normativism that disease is some natural kind, as the reference to biology is unavoidable, but it is also a socio-normative concept due to its relation to individual suffering, medical institutions and society. Therefore, it becomes difficult for me to defend either of the two approaches. Further, it seems insufficient to simply combine these two as a hybrid approach. For example, Wakefield (1992, 384) proposes that diseases are harmful dysfunctions, where 'harmful' is an evaluative term determined by cultural values, and 'dysfunction' is a scientific term referring to the failure of an internal mechanism to perform its 'natural' function (compare Powell and

Scarffe (2019, 581)). As such, he extends naturalism in as much as the dysfunction must also cause significant harm to the person under present environmental circumstances and according to present cultural standards (Wakefield 1992, 383).

I leave open the question to which degree his reliance on both naturalism and normativism confronts him with the combined issues of both. Rather, I want to focus on overcoming the underlying strict separation of nature and culture, as well as the ignorance of the dynamic 'nature' of these concepts. As indicated above, normativists assume that the normative structure that is in place in our society universally captures the concept in question without acknowledging their own embeddedness in the concept construction as part of cultural developments but also as biological beings. We do not simply settle on a definition of disease through social discourse but at least in part also as organisms that live, die and experience diseases. In the same vein, naturalism tries to step outside biology and thus, ignores our necessary embeddedness in the process of life that extends itself into a socio-cultural history<sup>2</sup>.

Turning instead to the dynamism of concepts, Lemoine (2022, 322) proposes to avoid analysing medical judgements and rather, naturalise disease which “involves many steps, including successfully framing the condition in semiological terms, tracking its [a]etiology, and understanding its pathophysiology”. Starting from the particular conditions, the task is to classify and identify diseases as special kinds of processes in living beings (323). As a result, more or less complete definitions of diseases as natural kinds with normative dimensions can be found. Here, Lemoine (2022, 324) is optimistic that this task can be left to science, whereas the philosopher’s job is to track the theoretical sense of 'disease' and decide whether a consistent concept of disease can be found.

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2. Based on this critique, I also reject the eliminative approach of Ereshefsky (2009, 225) who separates state descriptions, so physiological or psychological states without reference to some norm, and explicit normative claims about these states. Thus, the definition eliminates the 'disease' concept and instead, opens up societal discussions about determined, objective states (226). Even though she is somehow careful about not being too optimistic about the practicality of this approach, she emphasises that “[i]t is important to distinguish the current state of the world from how we want the world to be. Accordingly, we should distinguish current human states from the human states that we want to promote or diminish” (227). Similar to Wakefield, my critique would be that it is impossible to exclude norms from any field that is influenced by human beings. For example, we should be careful about the values that are embedded in science and thereby influence the question about what a 'state' describes (an individual, an ecosystem) and how we measure it.

I appreciate the proposed principle shift in perspective on the debate but disagree with Lemoine that this amounts to blindly accepting a particular, scientific view on what a definition of disease can amount to. This is particularly problematic because Western medicine has historically drifted towards natural sciences after the nineteenth century (Tauber 2002, 263) and “thereby made a Faustian pact with valueless science” (266). As such, it is strongly influenced by scientific positivism which is based on a form of objectivity radically removed from the affected persons to ensure universal validity. Here, the observer, as the subject, is necessarily thought of as separated from the object of observation (264). Initially designed to address the patient’s suffering as experienced in an array of meanings directly accessible to the sufferer (compare Nordenfelt (2003, 7–8)), medicine started thereby to rely on physiology and molecular biology, whose central tenets held that the fundamental principles of the organic and inorganic coincide (Tauber 2002, 265). The result is that the human body as object is reduced to its constituent parts and studied independent of its embeddedness in a socio-historical context (echoing for example Boorse) (Eriksen et al. 2023, 158). Thus, a large amount of the knowledge Lemoine wants to rely on is based on investigating parts and consider the whole to be the sum of the parts in a linear relation. This linear causality tends however to overlook the knowledge or ontological status of relationships and the emergent phenomena that arise from such interactions of parts (Vogt et al. (2014, 943) and Eriksen et al. (2023, 160)).

The result is that as long as the medical sciences themselves are not scrutinised, the nature of disease, its ontology, is necessarily linked to the epistemic question of functioning and simplified causality<sup>3</sup>. I maintain that this ignores the reality that there is no external view to life and that it is not the average that determines norms of life, but norms of life that determine what will be considered average (Canguilhem 1989, 178). What is therefore required to approach the nature of disease is incorporating the concept in the

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3. For example, Hucklenbroich (2018, 30) denies philosophers the task of connecting disease to a different ontological position than the scientific-medical state of knowledge determines. This scientific positivism or ‘epistemology first’ position “means that pathologies need to be discovered and cannot be placed in the world by declaration or definition” (37) [own translation]. A direct result is that there is no further ‘neutral’ state to health and disease because it is not obvious how medical science could provide a necessary criterion to distinguish this state (47). He provides no explicit argument for his proposition but instead reveals his ignorance of alternative cosmologies by explaining that the “extensive system of pathologies, [is] the *second great achievement* of modern science of medicine, by which it distinguishes itself from all former forms and all medical systems of other cultures” (36) [own translation].

general becoming of organisms – to provide it its own ontological status grounded in life itself and to avoid explaining it away as deviation from health.

One group of proposals that target the highlighted reductionism of scientific medicine I identify as *extending models* to disease. This includes ideas from humanistic medicine like the biopsychosocial model and medical phenomenology as well as holistic system medicine. Common to all is thereby the focus on the origin of disease as 'dis-ease' or the 'lack of ease' for the suffering person as a living and experiencing subject.

Cassell's humanistic medicine is mostly concerned with the reductionism of the patient as a mere object and proposes a "medical practice that focuses on the whole person and not solely on the patient's disease" (Vogt et al. 2014, 943). For Cassell, a person is necessarily embodied, a 'body' that incorporates all capacities that others attribute to 'body' and 'mind', unified by meaning: it is constantly evolving through meaning-based and -creating processes (945) that "include physical manifestations as an essential and irreducible part" (Cassell 2004, 263). In this spirit, the biopsychosocial model of Engel was a response to the biomedical model that maintained a body-mind dualism by relying on biological aspects while minimizing psychosocial ones. Engel wants to overcome this by extending the traditional model to encompass all the biological, psychological, and social aspects of disease (Stilwell and Harman 2019, 5). However, he lacks an explanation for how the interaction between the parts is to be understood and even worse, neglects a dynamic integration of the three domains which would be required to overcome the nature-culture dualism. Instead, the model implies that a fragmenting of diseases in the different categories with simple causality in between is still somehow appropriate – a view the model actually tries to overcome (6).

System medicine is the attempt to avoid this issue of fragmentation by incorporating the complexity of an organism into a mathematical model (Vogt et al. 2014, 944). Here, the focus is on the process of life rather than its materialised constituents (946) to be able to seek explanations for phenomena not only on the lowest level like reductionistic biology but also on higher levels of human activity. As such, the actions of a person in an environment may just as well serve as a causal explanation as a molecular mechanism: "[T]he book of life is life itself" and not DNA only (946). This has effects on how we categorise and define disease, but ultimately fails because assuming that system biology as a quantitative science can represent the complexity of life seems inappropriate to me; especially in regard to human intentionality and values which are necessary to define symbolic interactions that

are involved in the discourse around diseases (949). Thus, a complete model of the process around disease seems outside the scope of quantitative system medicine – life cannot be calculated.

A viable candidate to overcome the overly focus on quantity is medical phenomenology, which was developed as a reaction to the subordination of the first-person perspective to the third-person perspective of a neutral observer in modern medical science (Svenaeus 2019, 466). Here, phenomenologists want to abstain from a scientific pre-understanding of the phenomena in question and instead, flesh out a conceptual structure found inherent in the world-embedded experiences of persons (467–8). Like Cassell, they want to consider the body as a subject-object – body and mind are integrated into our lived experience of the world. Here, a distinction between an objective and lived body becomes relevant, and it can be related to 'agency' versus 'ownership' as it transpires in the case of involuntary actions: I can have a sense that I am the one who is moving separately from whether I have the sense of being moved (Gallagher and Varela 2003, 101). Scientific medicine is the discipline that investigates the objective body as its object. In contrast, the lived body is the first-person experience of this objective body, the body as experienced by the person whose body it is (Carel 2016, 46). In health, we experience ourselves as being-in-the-world, a 'homelikeness' that expresses the transparency of everyday activities (Svenaeus 2019, 463). In contrast, an alienated experience of our body, 'unhomelike' being-in-the-world, is constitutive of the experience of 'dis-ease' (468). Thus, the transparency of the lived body is lost when the body breaks down and turns into an obstacle to our desired goals, appearing as a mere object or as something 'other'. Importantly, objective facts alone are insufficient to capture these changes (Sholl 2015, 394).

Further, it is acknowledged that the phenomenological perspective does not capture the subjective component of disease but the concept of illness distinct from the objective concept of disease (Carel 2016, 46). Thus, medical phenomenology is seen as a supplement to the medical sciences, for example in a comprehensive model that mimics a biopsychosocial model<sup>4</sup>, so that disease and illness are interdependent but conceptually without necessary

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4. In fact, Hofmann (2016, 16) distinguishes between three perspectives – linked to sickness, disease and illness – as perspectives focusing on different phenomena and entities. Each of these concepts reveals different types of knowledge. Here, disease is assumed to be empirical and objective, whereas illness “has emotions and experience, such as anxiety, fear, pain, and suffering, as its basic phenomena” (17). Further, sickness has expectations, conventions, and social norms as basic phenomena, and its criteria are discovered



connections (Hofmann 2016, 18).

I want to argue against this disease-illness distinction because it prevents closing the body-mind dualism completely. For example, Carel (2016, 17) explains that “disease is to illness what our physical body is to our body as it is lived and experienced by us” and that our contact with disease is through our experience of it. Similarly, Svenaeus (2019, 464) argues that illness is about the fatal change in the meaning structures, not only of the world but of the self. He also admits that all beings can be diseased but only self-conscious beings can be ill (470). As such, both at least implicitly accept that ‘world’ and ‘self’ are two distinct entities – an ontological dualism of subject and object.

Here, the issue arises from the understanding of embodiment as some epistemic privilege of self-investigation because it is linked to a kind of interiority that is part of life itself – the interiority of selfhood and sense-making (Wolfe 2015, 203). Thus, the lived body is real but at least in part outside the objective physical world (205). My concern is less the insistence on a felt or experienced dimension of reality but the idea that it is somehow separable from the physical world, for example, the self from the objective body, because it throws us back to the classical ‘soft problem’ of consciousness. In this context, I find it also relevant to notice that medical anthropologists suggest that this idea of bodily alienation was not part of the experience of disease/illness for much of history and only came about when the body was viewed more objectively or scientifically (Sholl 2015, 405). It goes beyond this essay to investigate this aspect, but it could be fruitful to further investigate the correlation between medical phenomenology and the strong position of selfhood and individuality in modern Western societies.

As a result, phenomenology opens up the way for epistemic pluralism but remains closed towards opening up ontology beyond strict dualism. I want to take a step forward by appreciating the emphasis on subjectivity as an element of (biological) life but avoiding any sort of dual ontology (as suggested by Canguilhem (2012, 39) and Gallagher and Varela (2003, 97)). Here, the holistic idea from system medicine needs to be taken seriously in as much as most scientific theories render any split of mental and bodily processes untenable: all experiencing is connected to changes in physiological functions and vice versa (Eriksen et al. 2023, 162). Humans as both, cultural and natural beings, have physiological characteristics that are integrated into relations and socio-cultural contexts that are always through social interaction, participation, and social sciences (17).

present and not to be divided. The body as the materialisation of this process is thus, a complex, biological whole embedded in a physical as well as socio-cultural world. Here, meaningful symbols and values are related to the interpretation of the experiencing and living being (Getz, Kirkengen, and Ulvestad 2020, 205). Thus, disease is epistemically necessarily pluralistic because “what is or is not considered the cause of an event depends on the agent’s adopted perspective, which is closely connected to his or her values and practical possibilities” (Tesio and Buzzoni 2021, 2). We usually consider only one or some of its conditions as causes, namely those that are relevant to our purposes and which we believe we can, in principle, control via practical interventions.

The task ahead is not about changing a perspective or respecting personal experiences but aligning our understanding of disease with what it means to be alive in order to appreciate this pluralistic epistemology<sup>5</sup> without preliminary stipulating a dualistic ontology, arising from categories like the social, psychological, or physiological. Therefore, the basis from which I want to start is life itself, understood as a creative process and not as a list of properties<sup>6</sup>.

Subsequently, I follow Cassell and Goldstein to define organisms as metabolic and meaning-creating processes – ‘becomings’ not ‘beings’ (compare Wolfe (2015, 199)). Thus, all organic processes are at their core normative: the organism’s necessity is its possibility – the freedom of the organic form to change its matter includes the necessity to do so because executing this process is the ground of its existence (Jonas 2001, 83). Also, this self-maintenance as a necessary aim requires us to assume that organisms are intrinsically

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5. This pluralism can be expressed within the philosophy of science as *scientific perspectivism* that starts from the Kantian idea that knowledge is always situated within a particular perspective, though not a priori (Massimi 2018, 166). Thus, scientific knowledge becomes an expression of the relation between our biologically informed cognition and the world it purports to know (compare Varela, Thompson, and Rosch (2016, XXVII)), and it is further contextualised in a cultural-historic manner. This is not to say that pragmatism needs to be endorsed as there are no absolute truths. Instead, a mind-independent world with truths independent of individual points of view can still be postulated as long as one acknowledges that our conditions to know parts of reality depend on our scientific perspective (Massimi 2018, 174). As such, different models provide no incompatible representation of the world but partial and perspectival images of an ultimately coherent representation of reality (167–8).

6. One could argue that this choice leads to a new dualism between life and non-life. I would counter that the aspects of life, I choose to describe the ontology, are not necessarily limited to living beings. As such, my ontology could easily be extended to a non-dualistic ontology like the process ontology of Whitehead (1978).

open to the environment to realise their nature. As a consequence, life is particular and not universal: 'the living' differs from 'life' in that the latter is always mediated, as living, by the specific milieu it experiences (Geroulanos and Meyers 2012, 5). In extension, organisms can also not be reduced to undifferentiated physio-mechanical systems because of the unpredictable and singular interaction with their milieus (Geroulanos and Meyers 2012, 5).

Based on these definitions, 'normality' is not relative to a species ideal but to how the individual organism or function finds its own way to live and operate in *relation* to various environmental demands (Sholl and De Block 2015, 151): different norms act in different situations, but insofar as they are different, are all equal, and so they are all normal (Canguilhem 1989, 182). Subsequently, the distinction between anomaly and abnormality needs to be taken into account. In contrast to Boorse's naturalism, 'anomalies' can still be 'normal', read natural, as long as they are able to survive in the new environment through establishing adapted norms (Amundson 2000, 43): a "non-typical but viable phenotype is not broken by its failure to comply with some imagined blueprint for its species. It will function anyhow, in spite of its atypicality" (39). Being healthy means thus being not only normal in one given situation but normative in this and other eventual situations (Canguilhem 1989, 196): it is characterized by a set of preferred reactions that fit best to the demands of the environment, at which physiological constants like arterial pressure and body temperature exemplarily express this ordered harmony between organisms and environments (184–5).

In contrast, disease as the pathology of anomalies is characterised by the impairment of continuing the process of establishing new norms, and not merely the deviation from a species ideal: "[T]he anomalous is not the pathological. Pathological implies pathos, the direct and concrete feeling of suffering and impotence, the feeling of life gone wrong" (137). Disease is therefore not a violation of a norm but an inferior norm of life that tolerates no deviation from the conditions in which it is valid, incapable as it is of changing itself into another norm; it is not a lack of organisation but a new organisation which makes the individual to behave differently and lose the capacity to establish other norms in other conditions<sup>7</sup> (Sholl and De Block (2015, 153) and Canguilhem (1989, 183)).

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7. For the interested reader, I interpret Canguilhem in line with Friedrich Schelling's nature philosophy that considers disease as an entity inappropriately subsuming everything to itself at the expense of the whole of which it is a part. Thus, Schelling considered disease not as a force opposing health or a lack of

It becomes obvious then that disease has an ontological status as an integral, biological part of all living beings. It arises from the risk of living as such, so prevalent for not only humans but also plants and other animals (Canguilhem 2012, 35) and eventually ecosystems. The risk arises from 'openness' as the bet of living beings at continuing their existence: "[T]he historical succession of organisms is a succession of claimants not powerful enough to be living beings that are more than merely viable – that is to say, beings that are fit to live, but lack any guarantee of succeeding totally in doing so" (41). At its core, the living being recognizes disease on the level of experience, "which is primarily a test in the affective sense of the word" (Canguilhem 1989, 198). At least for humans, this is further complicated by our intentionality that seeks actions beyond mere survival. What is normal or pathological for the human body, is therefore inherently socio-historical, cultural and ecological (compare Canguilhem (1989, 200)). This does however not simply require a phenomenological evaluation of how 'I' experience a specific disease as a personal illness. Rather, explaining disease means tracking the modes of individual lives entangled in their socio-historical and ecological norms. For example, Canguilhem (1989, 168) points towards the intercultural differences in the ability to digest the lactose found in cows' milk where the physiological ability is shaped by the historical and cultural embeddedness of the organism. Further, the inability to digest lactose needs to be diagnosed as a disease only if the given individual is in an environment where dairy is consumed (Sholl and De Block 2015, 153). Thus, disease goes beyond normativism in terms of desirability as it points beyond a static subject-object split towards a dynamic process of individual-in-environment without clear agency attribution.

Finally, this dynamic and interrelated model of disease leads to a necessarily ecological understanding of human-world connections that among others avoids the traditional idea of linking a single microbe to a single disease (Pitlik and Koren 2017, 1). For example, recent research on the microbiome suggests that there are multiple states of relative equilibrium corresponding to healthy states for a holobiont, the human hosts and its symbiotic microbes, in an ecological niche<sup>8</sup>. Similar interactions between pathobionts, the parts of health but as an internal disruption to the configuration of forces constitutive of health. This imbalance creates effects which are experienced as real feelings, which is why disease has real ontological status and is not considered to be the absence or impairment of 'being' (compare Rae (2017, 12)).

8. Similarly, Stilwell and Harman (2019) investigate pain and propose a model that is to a large degree compatible with my generalised account of disease.

the microbiome that can potentially inflict diseases, as well as the microbiota and host are increasingly found in other animals and plants (2). Extending this ecological approach to the general concept, disease needs to be seen as the affection of the holobiont in all its complexity, which includes challenging the biological idea of individuality in relation to the ontological status of holobionts (Friedman 2022, 11) as well as causality. As the boundary of the patient-environment coupling is dynamic, the affected party can be the individual organism, the extended organism including its microbes, the ecosystem with its socio-cultural and material conditions as well as the biosphere including all life (16), while the environment contains specific connections to the organism as well as the physical, biological and social conditions that are not specific to it (21). Thus, both what disease is and how it needs to be investigated and ultimately treated become pluralistic and go beyond species boundaries.

In conclusion, I argued that both, naturalism and normativism reduce disease to a static concept that represents an epistemological obstacle to the knowledge of 'normality' as well as an ontological obstacle to life's supposed goal of maintaining some condition like survival fitness or flourishing. Further, I attempted to show that this understanding of disease is closely linked to the evolution of medical science as part of scientific positivism, so that what disease is becomes closely linked to the epistemological status of medicine. To overcome this limitation, naturalism needs to be extended by respecting the particular environment in which a function or individual lives because reducing diseases to phenomena that act *on* the body is mistaken, and it needs to be limited by making the individual the crucial reference class. Here, I elaborated that the lack of a universal norm does not equal the relativity of disease or an overly individualistic account: norms are still imbued in each particular life and are not only guided by individual freedom but embedded in a socio-historical and ecological context. Thus, normality still includes physiological regularities related to the relative stability of the organism-environment coupling. Rather than abstracting from such specific conditions, I suggested a non-dualistic approach to disease that is ecological and thus, respects that the human organism is dynamic and intrinsically entangled in relationships with the 'other'. Thus, disease as an abnormal anormality contains restrictive norms that can affect individuals as much as multi-species symbioses or whole ecosystems. The process of becoming diseased is thereby as natural as 'normal' variations in organism-environment couplings including socio-historical developments – disease is part of life. Finally, a particular feature of my account is that any ideal of preserving health in society

necessarily includes being concerned with the health of all holobionts composing the world. As such, questions of biomedicine become related to environmental philosophy in general.

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