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Biological Normativity: A New Hope for Naturalism?

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Abstract

Since Boorse (1977) published his paper “Health as a theoretical concept” one of the most lively debates within philosophy of medicine has been on the question of whether health and disease are in some sense ‘objective’ and ‘value-free’ or ‘subjective’ and ‘value-laden’. Due to the apparent ‘failure’ of pure naturalist, constructivist, or normativist accounts, much in the recent literature has appealed to more conciliatory approaches or so-called ‘hybrid accounts’ of health and disease. A recent paper by Matthewson and Griffiths (2017), however, may bear the seeds for the revival of purely naturalist approach to health and disease. In this paper, I defend their idea of *Biological Normativity* against recent criticism by Schwartz (2017) and hope to help it flower into a revival of naturalist approaches in the philosophy of medicine.

Keywords: biological normativity; Boorse; Wakefield; health; disease; naturalism

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1 Introduction

Since Christopher Boorse (1977) published his paper “Health as a theoretical concept” one of the most lively debates within philosophy of medicine has been on the question of whether health and disease are in some sense ‘objective’ and ‘value-free’ or ‘subjective’ and ‘value-laden’. The conflict is often expressed with a famous quote by the Welsh psychiatrist Robert Evan Kendell who argued that the dispute is the most central and contentious issue in the medical sciences:

The most fundamental issue, and also the most contentious one, is whether disease and illness are normative concepts based on value judgments, or whether they are value free scientific terms; in other words, whether they are biomedical terms or sociopolitical ones.

– Robert E. Kendell (1986, p. 25)

In line with this, two opposed sets of accounts of health and disease have been distinguished in the literature. On the one hand, there are naturalist accounts of health and disease characterized as being objective, based in science and value-free. On the other there are normativist or social constructivist accounts, that recognize the role of values and social facts, although the differences among these can vary as widely as their differences to naturalist accounts.

However, far from being universally accepted, naturalist accounts of health and disease - such as Boorse’s (1977) so-called ‘biostatistical account’ (often abbreviated as BST) - have been considered rather unsuccessful in dealing with the accumulating criticism from so-called normativists (for a summary of these criticisms see Kingma 2017). Though normativist accounts of health and disease are far from uniform, they have gained substantial traction within the literature (see Goosens 1980; Reznek 1987; Cooper 2002; Nordenfelt 1993, 1995; Kukla 2014). In the naturalist tradition, health has often been equated with the absence of disease. However health, unlike disease, is taken by many - especially in the various anti-naturalist traditions - to be a much more straightforward case for normativism, something that just intuitively goes over and beyond the mere absence of disease. In fact, the very definition of health by the World Health Organization suggests that while disease might be a naturalist concept, health requires further facts: “a state of complete physical, mental and social well-being and not merely the

absence of disease”.¹ Boorse (1975) argued early on that this discrepancy is based on two distinct senses of health, one of which is naturalist and opposed to *disease*, and one that is normative and opposed to *illness*.²

This divide and conquer strategy of naturalists, however, has not yielded great acceptance.³ Instead, naturalist approaches to health and disease appear to have become less and less popular over time. This is largely due the abundance of criticism Boorse’s BST account has encountered - an account that is considered by many to be the “best and only presently existing naturalistic account” (Kingma 2010, p. 262). It is thus not at all surprising that with an accumulation of more and more critiques published against the BST account, that the viability of naturalism appears to have evaporated in the eyes of observers and participants of the debate.

But as John Matthewson and Paul Griffiths (2017) point out in an excellent paper, this dismissal of naturalism is premature. After all, there is a second group of naturalist accounts of health and disease not linked to statistical normality but to the proper functions or selected effects literature in philosophy of biology (see Millikan 1984; Neander 1983). In these types of accounts, a “dysfunction occurs when a part or process fails to produce the effect that led to the evolution of that part or process by natural selection” (Matthewson and Griffiths 2017, 450). Such etiological accounts of functions based on evolutionary history are popular among philosophers of biology and have recently been defended as a superior alternative to the BST (see Griffiths and Matthewson 2018). Though it is Jerome Wakefield (1992, 1999, 2000, 2001, 2007) who is most often associated with this view within the philosophy of medicine, Karen Neander (1983) was been an earlier defender of the view - exploring it in her PhD thesis.⁴

As the literature stands, neither of these types of accounts has been

¹See the Preamble of World Health Organization 2020.

²Though he appears to have changed his mind on this in later publications (Boorse 1997, 2014).

³Though some bioethicist influenced by naturalism have suggested that the concept of health has no intrinsic relevance for ethics over and beyond its relationship to wellbeing (Savulescu et al. 2011; Veit 2018b,a,c), thus suggesting that the ‘normativist’ concern may simply be accommodated by switching to considerations of welfare.

⁴As she met an unfortunate demise due to a lengthy struggle with cancer in May 2020, I very much dedicate this paper to her and her project for the naturalization of norms. I encourage a reading of Hill and Pavese (2020) for a tribute to and excellent overview of Neander and her work.

widely accepted.⁵ Nevertheless, both have raised an array of criticisms. As Matthewson and Griffiths argue: “[b]oth accounts have been inundated by counterexamples, many of which appear to show that they are too restrictive: that they exclude genuine cases of disease” (2017, p. 450). Though both Boorse (1997, 2014) and Wakefield (2000, 2007) have responded to these sorts of criticisms and proposed more sophisticated versions of their accounts, Matthewson and Griffiths are under the impression that this has “led a number of authors to suggest that no adequate objective account of disease is in the offing, and to favour views that place more emphasis on social facts”, something they think should be avoided as it would lead to a “conceptual divorce of human disease and pathology as a biological phenomenon” (2017, 451). Naturally, this is a development that erodes the very core of naturalism.

Partially, this is already apparent in the work of Wakefield, who endorses a hybrid account between an objective dysfunction criterion and an evaluative criterion and is thus considered by many to not actually be a naturalist. However, both Wakefield’s and Boorse’s accounts require the presence of dysfunction as an objective biological criterion for disease - something the literature is moving away from. Matthewson and Griffiths (2017) attempt to remedy the opposition to naturalism by introducing what they call *Biological Normativity*, a concept that they argue is better able to capture the myriad ways things can objectively go wrong in the biological world, without any reference to a human observer or their values. I think that this concept holds even greater potential for the debate than either of them realized. It is thus my aim in this paper to defend their idea of *Biological Normativity* against recent criticism by Schwartz (2017) and to help it flourish into a genuine new hope for naturalism.

Having motivated the goal of this paper, let us now offer a brief outline of how this paper is going to be structured. In **Section 2**, I begin by sketching the two most influential dysfunction-based accounts of health and disease popularized by Boorse (1977) and Wakefield (1992) respectively, and illustrate the criticisms they have received. In **Section 3**, I analyse and ameliorate Matthewson’s and Griffiths’ concept of Biological Normativity, before I defend the idea from a number of criticisms raised by Schwartz (2017) in **Section 4**. Finally, I take a broader perspective in **Section 5**

⁵In Veit (forthcominga), I have argued that experimental philosophy may be usefully applied to solve this debate.

and discuss the idea of Biological Normativity as a way to bridge the gap between naturalists and normativists, thus offering an important role for naturalist philosophy of medicine in the field.

2 Internal Turmoil in the Naturalist Camp

While health in the naturalist picture is often the mere absence of disease, most naturalists define disease in terms of dysfunctional states. However, just as the philosophical literature on health and disease is roughly split into two opposing camps, i.e. naturalists and normativists,⁶ naturalist accounts of disease can be sorted into two different sub-camps, themselves tied to two different views on what counts as dysfunctional. The first account, as previously mentioned, is the biostatistical account of disease (BST) provided by Boorse (1977), in what is perhaps the most cited and influential paper in the philosophy of medicine literature. Boorsian-type accounts are tied to the concept of *fitness* and define health as statistically species-typical functioning within a reference class, e.g. age and gender. This account is over 40 years old and has recently been slightly updated by Boorse (2014) in order to respond to his critics:

Boorse's most recent version of the BST

1. The *reference class* is a natural class of organisms of uniform functional design; specifically, an age group of a sex of a species.
2. A *normal function* of a part or process within members of the reference class is a statistically typical contribution by it to their individual survival [or] reproduction.
3. *Health* in a member of the reference class is *normal functional ability*: the readiness of each internal part to perform all its normal functions on typical occasions with at least typical efficiency.
4. A disease [later, *pathological condition*] is a type of internal state which impairs health, i.e., reduces one or more functional abilities below typical efficiency.

⁶Though I prefer the label anti-naturalists for the latter group.

– Adapted from Christopher Boorse (2014, p. 684 and 1977, p. 562).

Despite refinements by authors such as Peter Schwartz (2007b) and Dan Hausman (2012) the BST account can easily be misinterpreted as a widely accepted view within the field. Most of its citations, however, are from critical pieces rather than endorsements or applications of the view. Importantly, criticism directed against the BST account does not only come from the normativist side, something that gets lost in the naive picture that is sometimes propagated, in which the BST is the only possible naturalist account. Griffiths and Matthewson (2018) speculate that the reasons for Kingma’s assertion lie in Wakefield’s desire to defend the harmful dysfunction account as a hybrid one - one that is not purely based on biological facts. As a result, Kingma ‘praises’ the BST as previously illustrated as “the best and only presently existing naturalistic account”, all the while criticizing it as being “inadequate, both as a naturalistic account of dysfunction and as a naturalistic account of disease” (Kingma 2010, 22). This view appears to be all too widely accepted and yet, there are two major problems with it, since it i) suggests that naturalist goals have no role to play once values enter the picture, and ii) that there can only be one naturalist account. One or the other has to give.

But this may be premature. Let us therefore take a closer look at Wakefield’s harmful dysfunction account. According to Wakefield, his harmful dysfunction account for mental disorders is a hybrid account between normativism and naturalism. Not only need a dysfunction be present in a patient, but it must also be considered harmful in order to qualify as a disease state:

Wakefield’s harmful dysfunction account (HD)

In order for a condition to qualify as a (mental) disease, the following two requirements need to be met. The (mental) disease condition needs to be both:

1. a failure of biologically designed functioning
2. and judged negative by sociocultural standards (Wakefield 2007, p. 149)

– Adapted from Jerome Wakefield (2007, p. 149)

Though originally intended as a theoretical account of mental disorders Wakefield's harmful dysfunction account can easily be extended to all diseases (something he is not opposed to). It is therefore unclear why Kingma (2010) excludes it in her dismissal of naturalistic accounts of health and disease, since Boorse's account is clearly neither the only nor best available account. Boorse (2014) himself suggests that one may simply switch the function component in his account for a superior one, so it seems clear that both views on function present alternative naturalist approaches to health and disease. A third possible way has recently been suggested in the application of 'organizational functions' to health and disease (Saborido and Moreno 2015; Saborido et al. 2016). These approaches are interesting and deserve further attention, yet go beyond the scope of this article. If they succeed, however, the arguments in this paper will only be strengthened. Though both of these types of accounts have often been viewed as mutually exclusive, with most naturalists of health and disease falling into one of these two camps, Matthewson and Griffiths (2017) argue that this conclusion may have been drawn prematurely. In fact, an obvious alternative might be available, i.e. roughly a merger of the two types of accounts, able to accommodate the counterexamples brought forth against *each*.

Matthewson and Griffiths (2017) list the following counterexamples to each account they deem to be the most severe. Firstly, they point out that the BST fails to classify diseases when they are epidemic and persist for generations, e.g. lice, which are common not only in animals but at least until very recently among humans. From an evolutionary biology perspective, it is uncontested that an organism that is parasitized should be considered diseased or at least in a pathological state (if one wants to avoid the phenomenological association with diseases), even if the parasite has infected the entire population and has done so for a generation.

Secondly, but relatedly, Wakefield (2000) urges us to consider infections that protect against later illnesses and hence would not qualify as a disease under the fitness-based BST account. The selected effect view of functions helps to accommodate both of these cases, but Wakefield's account faces its own criticism. Matthewson and Griffiths list vestigial organs that by definition cannot be considered dysfunctional, but clearly pose problems to an organism. After all, the "failure to perform certain abilities that are currently common in the population [but] might seem detrimental in medically relevant ways, regardless of selective history" (2017, 451). One such example is reading, a trait that is too recent to have been selected for, but may

nevertheless be considered dysfunctional if failing, i.e. dyslexia (see Murphy and Woolfolk 2000; Kingma 2013 and for further criticism and Griffiths and Matthewson 2018 for a defence of the selected effect view in medicine). As these examples elegantly show, both supposedly conflicting accounts might solve each other's problems and open the path to a superior naturalist account of health and disease when combined in a unified picture of what can go *wrong* in the biological world. In the following, I shall, therefore, offer a brief analysis of Matthewson's and Griffiths' idea of *biological normativity* and defend their view against recent criticism.

3 Can there be a Naturalist Normativity?

The philosophical debate on whether health and disease can be naturalized often focuses on the role these concepts play within the manifest image. If someone goes to the doctor to treat an 'ill', they don't need to have any objective knowledge of their biology. Rather, illness as it is understood among the public involves a kind of internal perspective - often a kind of suffering or obstacle to pursue one's goals that causes one to seek out a remedy. These facts have been highlighted by phenomenologists such as Havi Carel (2007, 2011, 2018) to argue for the inadequacy of naturalism. This point, however, has already been made by the French historian and philosopher of medicine Georges Canguilhem:

Disease is behavior of negative value for a concrete individual living being in a relation of polarized activity with his environment. In this sense, it is not only for man - although the terms pathological or malady, through their relation to *pathos* or *mal*, indicate that these notions are applied to all living beings through sympathetic regression starting from lived human experience - but for every living thing that there is only completely organic disease. There are diseases of the dog and the bee.

– Georges Canguilhem (1991, p. 226)

Indeed, Canguilhem not only anticipated phenomenological approaches to health and disease, but he also introduced the term 'Biological Normativity'. It is thus surprising that Matthewson and Griffiths don't make any reference in their paper to the fact that Canguilhem introduced the term

first, despite the fact that he is mentioned at multiple times throughout their paper.⁷ This would be justified if not for the fact that they intend the term to mean something entirely different from Canguilhem. Indeed, their argument seems to be set up entirely against Canguilhem’s notion that our judgements of whether plants or other animals are diseased are merely based on a *sympathetic regression* from the human experience of suffering, illness, and disease.⁸

The philosophical debate on the status of health and disease is in many ways a muddled debate, bordering on many old and familiar philosophical problems. To make progress, it is helpful to bracket one of these problems off. The question Matthewson and Griffiths (2017) appear to be concerned with is whether there is anything objective to say about health and disease. One could take on board almost all the arguments of ‘anti-naturalists’ and yet it would not be clear for many of them what their answer to the following question would be: *Is there anything that could be objectively considered pathological in the biological world?* Canguilhem emphatically denied that this is possible:

There is no objective pathology. Structures or behaviors can be objectively described but they cannot be called “pathological” on the strength of some purely objective criterion. Objectively, only varieties or differences can be defined with positive or negative vital values.

– Georges Canguilhem (1991, p. 226)

This statement, however, is just plain wrong upon an examination of evolutionary biology in which normative language is simply abundant.⁹ It thus

⁷Canguilhem’s fate in the philosophy of medicine is in many ways an unfortunate one, since many of its current debates have already been discussed by Canguilhem and I may add in a better form than today. Unlike other glorified spearheads for new philosophical disciplines such as David Hull in the philosophy of biology or Daniel Hausman in the philosophy of economics, Canguilhem appears to be continuously underappreciated - a fate that is probably owed to his placement in the continental tradition.

⁸Recently, philosophers have argued that we can and should explicitly explore the phenomenology or subjective experience of health and suffering in non-human animals which gets us somewhat closer to Canguilhem’s aspirations yet remains fairly within a naturalist framework (see Browning 2020b,a, 2019a,b,c, 2018; Browning and Veit 2020; Veit and Browning forthcoming).

⁹See for instance Millikan (1984, 1989, 1995); Veit (2019a).

appears as if Matthewson and Griffiths use the term *Biological Normativity* for a dual role: to i) turn Canguilhem’s picture on its head, and ii) cause a rift in the naturalist/normativist divide in the philosophy of medicine by appealing to a naturalist kind of normativity. Giving up naturalism is a conclusion Matthewson and Griffiths (2017) intended to avoid. In this paper, I argue that their arguments for a objective form of biological normativity have even greater potential than they themselves intended, offering an opportunity to bridge the gap between naturalists and normativists and eventually solving the needlessly hostile debate between the two groups. Importantly, Matthewson and Griffiths are not arguing that their criterion is “sufficient for disease to occur; just that disease cannot be solely a matter of social convention” (2017, p. 464). As such they are not denying that social facts or human values could play a role in defining health and disease and hence are somewhat at odds with the traditional definition of naturalist accounts being value-free. Nevertheless, the role they attribute to values is a minor one. Instead, they press their account on “the fact that notions of normality, abnormality, pathology, and physiology are essential to understanding the biology of living things, even in cases where human values play no role whatsoever” (2017, p. 464). Intended to convince normativists, they develop their concept of biological normativity (BN), a failure of which could be counted as pathological. In the following, I explain their *four ways of going wrong* that jointly constitute BN.

3.1 Four Objective Failures in Biological Normativity

The first way they suggest in which something can go wrong for an organism is *mechanism failure*. They illustrate this idea by describing the mutated db/db mouse, which is a strain of mouse with faulty receptors for the hormone leptin. One of the primary functions of leptin is the control of hunger, which leads this strain into a dysfunctional state of obesity. They argue that one can justifiably make an evaluative or normative judgement here: “[s]omething has gone wrong for these mice—they are not the way they ought to be” (2017, p. 453). In their first case of going wrong, this ‘something’ is simple to understand: it is the failure of a mechanism. They grant that this first way of going wrong is similar to ‘selected effect’ accounts of function (see Godfrey-Smith 1994; Neander 1983, 1991), where a “biological structure fails to perform its function if it is unable to fulfil the causal role for which it has been selected in the recent evolutionary past” (2017, p. 453)

but prefer the term *mechanism failure* in order to distinguish it from other kinds of dysfunction. In doing so, they expose their preference for Wakefield-type accounts of dysfunction in medicine. In fact, both have authored an additional paper (see Griffiths and Matthewson 2018) in which they made a similar argument in favour of naturalism, arguing that the failure of the BST should not be equated with a failure of naturalism. Rather than combining the HD account with the BST, they argued that the selected effects account is the superior one. In Matthewson and Griffiths (2017) they take a more permissive view, as we shall see with the following three additional ways in which something can go wrong for an organism.

The second way in which something can go wrong for an organism is an “*abNormal environment*” (2017, p. 454), an idea they borrow from Millikan (1984). They describe the situation where a “mechanism is operating in accordance with its design but outside the operating parameters for that design” (2017, p. 454), suggesting the example of male glow-worms that fail to find mates in human settlements with high light pollution, an environment their mate-finding mechanism was not designed for.

These two ways of going wrong are tied to *evolutionary history*, the first source of normativity within biology. When biologists speak of natural design they are referring to the historical pressures of natural selection that have led to the adaptedness of traits, giving rise to *proper functions*, so named by Millikan (1984). However, Matthewson and Griffiths (2017) argue that there is at least one more such source.

The second source of normativity within biology is tied to the concept of **fitness**. They invite us to imagine the common monkey flower (*Mimulus guttatus*) growing in an inhospitable environment, flowering earlier and producing fewer seeds, than more fortunate conspecifics in order to ensure reproduction. However, the flower is doing exactly as designed, and the environment is not an *abNormal* one. Hence, they argue that an *inhospitable environment* is the third way in which something can go wrong for an organism.

The final way Matthewson and Griffiths (2017, p. 456) discuss in which something can go wrong for an organism is a *heuristic failure*. They discuss the example of the water flea (*Daphnia cucullata*) equipped with a development switch. Depending on the frequency of predators faced by a mother flea, her offspring will be born with defence mechanisms, such as spikes. However, these defence mechanisms are costly and from a fitness perspective should not be produced if the number of predators in their habitat is going

to be low. Such developmental switches or heuristics, therefore, generate a fourth way in which something can go wrong, i.e. the failure of the heuristic to select the appropriate phenotype. In order to distinguish between the third and fourth way, they draw a distinction between *realized* and *expected* fitness maximization. In the case of the common monkey flower, realized fitness is maximized, even though conspecifics on a more hospitable ground have higher fitness. If the density of predators fluctuates, perhaps, due to external circumstances, realized fitness is not maximized when the inappropriate phenotype has been selected. However, given the available information expected fitness may nevertheless be maximized. To emphasize that these failures in biological normativity are not uncommon they point out that humans born in cold climates develop fewer sweat glands, something that can have a detrimental effect on them if they move to warmer climates. They argue that “in these cases and many others, a ‘good bet’ was made, given the information available, but it nevertheless turned out to be the wrong option” (2017, p. 457).

After arguing for these four distinct ways in which biological science seems to legitimize judgements that something has gone *wrong* with an organism, they make the elegant move to introduce humans back into the picture. Whereas pathology judgements in the case of humans evoke much stronger normativist intuitions, other organisms such as plants seem to provide much better support for the naturalist view. After all, none of these four ways of going wrong seem to have required engagement in ‘sympathetic regression’ from the human experience of disease. And it just seems plain absurd to insist on doing so in some of these examples.

3.2 What about Humans?

The second step in their argument then is to convince the reader that their concept of biological normativity easily latches onto humans, as is nicely illustrated by the following quote: “[u]nsurprisingly, each of these can occur in human beings” (2017, p. 457). The first way is the most obvious: *mechanism failure* is one of the main concerns in medical science and the very basis for Wakefield’s (1992) harmful dysfunction account. As an example of an *ab-Normal environment*, Matthewson and Griffiths (2017) list carbon monoxide poisoning. In this example, all the mechanisms in the human body could be perfectly working as selected for, but none have been adapted for this environment. To illustrate normal but *inhospitable environments*, they suggest the

well-documented case of negative embryo development when food is scarce, a situation that was hardly abnormal in our evolutionary past. This example is furthermore, tied to the fourth case. Citing the predictive adaptive response hypothesis¹⁰ Matthewson and Griffiths argue that “if it ‘appears’ to a human fetus that its mother is not receiving adequate nutrition, its metabolism develops to be suited for future nutritional hardship” (2017, p. 457). The famous famine in the Netherlands from 1944-1945 illustrates the point, with a significant proportion of children conceived during this time “develop[ing] obesity, diabetes, and cardiovascular disease” (p. 457). Though this predictive adaptive response or development switch may have evolved to maximize expected fitness, here it failed to maximize realized fitness, hence a *heuristic failure*. Something has gone wrong for these children from a *purely biological point of view*.

These normative judgements are interesting and common in biology. Matthewson and Griffiths (2017) do not intend their list to be exhaustive, nor exclusive; there might be other ways in which things could go wrong for an organism. However, they have identified two sources of normativity on which these judgements rest. As briefly alluded to, the first source of biological normativity is evolutionary history. As they explain, “[n]atural selection has designed many biological traits to perform certain tasks in certain settings” (p. 459), which opens up two ways something can go wrong for an organism, either with the mechanism or an abnormal environment. Both of these are backward-looking. However, as they point out, there are two more ways of going wrong tied to evolutionary success that can be addressed without importing normative claims from outside of biology. This “forward-looking criterion of success—representation in future” accounts for the fact that the environment is often hostile and that organisms can have bad luck even when their development heuristic responded correctly to the available information (p. 459).

Granting that their analysis of biological normativity is closely related to the two views of functions espoused in Boorse and Wakefield respectively, they argue that their analysis shows that these options should not be seen as exclusive. Both sources of normativity have their origin in biology, so they view it as a pointless dispute to push one over the other. In fact, they argue that criticism against the restrictiveness of each may be overcome by recognizing such a broader view of biological normativity.

¹⁰See Low et al. (2012); Gluckman et al. (2005).

Interestingly their argument parallels a now-popular view in philosophy of biology: i.e. function pluralism.¹¹ According to Justin Garson (2018), who recently wrote an excellent article on the nature of function pluralism, different concepts of function are not only legitimate across sub-disciplines in biology but also within them, a position that may be able to lay an old dispute in the philosophy of medicine to rest. Indeed, this pluralistic view leads Matthewson and Griffiths to endorse a more permissive necessary condition for their form of naturalism than either Boorse or Wakefield, and one that is ultimately intended as a rejection of Canguilhem:

[W]e claim that the necessary biological criterion for pathology is that the phenotype must constitute a failure of biological normativity, where this is understood as either a failure to discharge a selected effect or a lowering of fitness (or both).

– Matthewson and Griffiths (2017, p. 460)

Their conclusion is simple: “disease cannot be solely a matter of social convention” (2017, p. 464). As this point would perhaps be embraced by the majority of normativists, this conclusion may appear fairly weak. One may be tempted to think that I have given their account too much attention (or praise for that matter). However, I deem it necessary to analyse their account in its entirety in order to discharge them from the premature conclusion others might draw: that they provide a *mere* combination of Boorsian and Wakefield-type accounts of health and disease. Most of the responses to naturalist accounts of health and disease have focused on counter-examples, arguing that these naturalist conditions are too restrictive and need to be amended. Matthewson and Griffiths do not face this problem; in fact, they face the opposite problem. Their condition might be considered so permissive that one may need further social constraints and begin to question whether their biological criterion has any use at all.

They anticipate this concern and address the issue as follows. First, they note that some limit must be put on the reduction of fitness in order to count as pathological. Though something may have gone wrong for an organism, e.g. being born into a slightly colder climate than the organism has been selected for, this need not constitute disease. Otherwise, any organism

¹¹Which is perhaps unsurprising given Griffiths’ previous endorsement of the view (1993, p. 410), in addition to the fact that two of Matthewson’s supervisors have argued for it (Godfrey-Smith 1993, p. 200; Maclaurin and Sterelny 2008, p. 114).

would count as diseased if they are consuming slightly less nutrition than usual. Proponents of fitness-based disease accounts have come up with a variety of solutions to the problem (see Boorse 1977; Hausman 2012; Garson and Piccinini 2014). Matthewson and Griffiths do not commit themselves to any particular cut-off point but merely suggest that one may adapt Boorse’s statistical outlier solution that is already common and well-respected in the medical literature.

Furthermore, they highlight that biology simply does not have sharp boundaries. The search for essential features in the biological world will always be plagued by counterexamples. Vagueness is an inherent feature of biological characterization and should, therefore, be recognized in the philosophy of medicine “even if that entails some revision of the concept” (2017, 462). Criticism of these biological cut-off points for being too vague may be unfounded and demand something that biological criteria cannot possibly deliver. Before we use the idea of biological normativity to breathe new air into naturalist approaches in the philosophy of medicine, let us first respond to a number of actual and possible criticisms against Matthewson and Griffiths (2017).

4 Biological Normativity Defended

The BN account faces several objections, many of which have been raised by Schwartz (2007b). In the following, I address these worries and defend the BN account against further potential criticisms. First of all, it seems somewhat unclear what Matthewson and Griffiths mean when they say they are providing a naturalist account. At the beginning of their paper, they state the central question in philosophy of medicine to be whether disease can “be analyzed solely in terms of human biology, solely in terms of values and social practices, or only with some mixture of the two?” (2017, p. 447). On the one hand, they are claiming that their account can help to distinguish pathological cases in plants and animals without any value-judgements, on the other hand, they suggest that they are open for the inclusion of value-judgements, especially in the case of human pathology. It seems that they are deliberately open to make their case as strong as possible, a move that may be well-justified due to the scope of their paper.

After all, if values do play a role in shaping pathology judgements, normativists might be the ones best equipped to deal with this part of the

concept. If both parts are complex and require substantial further work, it is unlikely that a single paper can accommodate both, such as Wakefield (1992) attempted with his HD account. Matthewson and Griffiths, however, intend to keep the label naturalist, seemingly redefining it on the basis of whether biological facts are a necessary component of an acceptable account of health and disease (see also Griffiths and Matthewson 2018, 2020). Hence, I propose that rather than a sharp dividing line between two competing camps, a division of labour between naturalists and normativists is the best method for progressing the debate. According to this vision, naturalists would work on the objective biological failures underlying disease, while normativists or social constructivists would work on the question of how values and social facts refine the concept .

Let us turn now to Schwartz's (2017) criticism of the BN account. First of all, I should mention that Schwartz's opposition towards Matthewson and Griffiths' account is somewhat surprising, given that in an earlier paper he criticized the idea that there is an underlying definition of disease shared across the biomedical sciences (see Schwartz 2007a). By providing a more pluralist view of how things can go wrong in the biological world, Matthewson and Griffiths' may very well be seen as dealing with this criticism. It is not that health and disease rest on a single conception of dysfunction but multiple ones. In fact, as noted earlier, they are motivated by the apparent lack of unity between normativist proposals and the way the term 'pathology' is used within the biological sciences. So it appears odd that Schwartz simultaneously maintains that we cannot provide a single definition, but also shouldn't turn towards a more pluralistic understanding of biological normativity.

When Schwartz (Schwartz 2007a) argued that different accounts of disease might be reasonable in different areas of medicine, he is taking a stance that appears to be in conflict with his criticism of the BN account. Nevertheless, Schwartz could respond in several ways. First of all, Schwartz may deny that the BN account is actually a unified one, rather than a mere list of four different ways something can go wrong for an organism. However, this response will not work if all of the different ways are applicable across different domains in the biomedical sciences and Matthewson and Griffiths have provided sufficient evidence that they do.¹²

¹²A naturalist may very well see these different ways of going wrong as useful perspectives or models of a single phenomena in nature, without having to give up on the reality

Nevertheless, Schwartz could respond to this by pointing to his additional criticism that Matthewson and Griffiths themselves do grant that though something may have gone wrong for an organism from a biological point of view, this failure in biological normativity need not count as a disease. He identifies the problem to be this: rather than something going wrong for an organism, something has to be wrong *with* an organism. Therefore, he is reluctant to accept anything but the first way of going wrong as a necessary condition for disease, i.e. mechanism failure. Further, Schwartz argues that Matthewson and Griffiths do not provide sufficient justification for their account, as the counterexamples raised against the BST and HD accounts have already been addressed by both of the authors (see Boorse 1997, 2014; Wakefield 2007), either by locating the dysfunction elsewhere or biting the bullet.

Nevertheless, there is something spurious about these responses. After all, critics of both accounts have been left far from convinced by Boorse’s and Wakefield’s replies. In fact, Schwartz even suggests that “[p]erhaps truly universal epidemics that last for many generations, if they ever occur, should be classified as new norms of health rather than as disease” (2017, pp. 493-494). This, however, is very clearly unintuitive and sells naturalism short. As Matthewson and Griffiths point out, parasites and hosts just like predators and prey “produce distinctive evolutionary dynamics” (2017, p. 449) that play a central role in biology. A naturalist account of health and disease that discounts this fact is not only unappealing in an intuitive sense but unable to capture a paradigmatic instance of disease and also unable to make sense of much research on pathology within biology. The attempt to combine both views to accommodate each other’s problems is then seemingly a natural move.

Last but not least, Schwartz suggests an understanding of Matthewson and Griffiths’ proposal of four distinct senses in which a biologist speak of something ‘going wrong’ for some organism” as mere “ways of thinking or speaking, ones that may be vague or metaphoric rather than literal or scientific” (2017, 494). It is here that Schwartz is making a grave mistake. Just because scientists talk about a problem in a vague or metaphorical sense does not mean it is not scientific. In fact, one may even argue that the successful use of such language within science qualifies it as being scientific. This is

of phenomena, in which case pluralism should face even less resistance (Veit and Browning 2020; Veit 2019b,c, 2020, forthcomingb).

in line with the naturalism Quine supports: “it is within science itself, and not in some prior philosophy, that reality is to be identified and described” (Quine and Quine (1981), p. 21). Thus, when Schwartz says that it is “really adopting a perspective rather than making an objective claim” (p. 494), it is not at all clear what he means by objective. Biological Normativity is *value-free* in the sense that biological normativity merely emerges from the biological facts. It suggests that the apparent value-ladenness of terms such as health and disease may have a scientific basis, rather than (or at least not only) one based on social facts or moral views. It suggests four distinct ways in which an organism may enter a pathological state, evaluative judgements that can be made independently of external sources. This relates to Matthewson and Griffiths’ (2017) response to the line-drawing problem for diseases. They point out that biology is not as stringent as physics and chemistry. There are no laws or essential properties in any strict sense. The boundaries of concepts are vague and necessarily so. Now, Schwartz may resort to the position that biology is not really an objective science, a position that was endorsed by the earlier positivists and is perhaps still popular in some scientific circles, but this is not a position popular among philosophers of science today. A naturalist account of health and disease is then necessarily vague - something that can’t and shouldn’t be used as an argument against it. If nature doesn’t lend itself to sharp distinctions than so much worse for any non-naturalist account that purports to show that there are. Having dealt with Schwartz’s and further potential criticisms of BN, we can now turn our attention to the *naturalism vs normativism* debate to conclude the discussion.

5 Naturalism Strikes Back

In her appeal to move beyond the strict opposition between naturalism and normativism, Kingma suggests that one way in which a stark distinction might be misleading are disputes over apparent facts that turn out to really be about different values, i.e. values “which are agreed are disguised as facts” (2017, p. 16). She mentions meta-ethics as an example and raises the concern that the literature on health and disease has paid insufficient attention to it.

Far from accepting this suggestion, I suggest that naturalists could simply appeal to the *inverse*. What seem to be value judgements about the desirableness of certain states are really disputes over biological facts. If the

BN account can explain why health and disease ‘seem’ to be value-laden by introducing an account of biological normativity, naturalist approaches to health and disease may experience a revival in the field. Nevertheless, both of these options, whether ours or Kingma’s, bridge the traditional distinction between naturalism and normativism. As these two inverse options for bridging the naturalism and normativism divide show, it might be premature to abolish the distinction between the two or rather the sorting into two distinct camps. As these two extreme cases demonstrate, there is a straightforward sense in which an account is naturalist rather than normativist or vice-versa.

Matthewson and Griffiths (2017) do allow for the possibility that social facts and values may play a role in determining whether a state counts as pathological or diseased, however, it is the biological facts that have primacy since they determine whether something has gone wrong biologically.¹³ Under the traditional definition of naturalism in the debate, as value-freedom, this would then qualify as a normativist account. Such a dividing line may not be useful and potentially damaging. Normativists may very well recognize that something has gone wrong biologically when a disease is present, but conclude that the social facts and values are primary when it comes to determining whether a state would count as pathological. If the distinction between naturalism and normativism can be upheld in a revised form, then it is arguably something like this Matthewson and Griffiths (2017) would like to endorse. One should thus resist the temptation to re-introduce the term ‘hybrid’ for the positions that combine ‘facts’ and ‘values’ since this will in one form or another be true of any position in the conceptual space. And yet, we would be no closer to determining which facts and values matter and to which extent they do so - the conflict between naturalists and normativists remains - albeit in an, I think, more productive and less hostile fashion.

Viewing this dispute as a matter of emphasis would provide a more useful distinction between naturalism and normativism on health and disease and would allow a more meaningful exchange between the two camps, both recognizing that the other side is working on a different component of the problem, judged to be more important. Such an attitude would be similar to meaningful intra-disciplinary exchanges within sciences, such as the exchanges between geneticists and developmental biologists. Drawing hard

¹³In the case of mental disorders such as autism we may be more reluctant to admit a naturalist interpretation though there is likewise room for both facts and values to play a role in classification (Chapman 2020; Chapman and Veit forthcoming, 2020).

lines in the sand is unlikely to be the most reasonable approach for progress. Kingma drew similar conclusions, suggesting that the “way forward is almost certainly not to polarize further by emphasizing the contrast between naturalism and normativism, but to adopt a more nuanced perspective” (2017, p. 16). Hence, I propose a division of labour between naturalists and normativists within the concept of health and disease. The distinction between naturalism and normativism would then merely boil down to a different *emphasis* in the importance of both components, a distinction that will serve much more productive than any strict dividing line could ever prove to be.

To conclude, Biological Normativity in the sense of Matthewson and Griffiths (2017), rather than Canguilhem (1991), is a genuinely novel idea with important roots in the work of Ruth Millikan (1984) and Karen Neander (1983). As a naturalist project it has the advantage of solving the respective problems of both Boorse’s BST account and Wakefield’s HD account. The real strength of this contribution to the field of philosophy of medicine, however, lies elsewhere. In their (perhaps somewhat uncharitable) characterization of normativism, Matthewson and Griffiths (2017) themselves have not seen the full potential of their account. Rather than providing a mere alternative to other dysfunction-requiring accounts of health and disease, they may have offered a novel approach to bridge the very gap between normativism and naturalism. I suggested to draw a new distinction between normativists and naturalists using the concept of BN, a distinction that is grounded in a division of labour on the various components that make up disease. Health and disease are complex phenomena, with multiple components such as biological facts, values, and social facts. It is unlikely that any single author could hope to solve this debate. However, in their co-authored paper, Matthewson and Griffiths may have led the groundwork for such collaborative work to commence. The idea of objective biological normativity instantiated by at least four ways something can go wrong for an organism has the potential to revolutionize the debate. Naturalism has an important role to play after all.

References

- Boorse, C. (1975). On the distinction between disease and illness. *Philosophy & public affairs*, 49–68.
- Boorse, C. (1977). Health as a theoretical concept. *Philosophy of science* 44(4), 542–573.
- Boorse, C. (1997). A rebuttal on health. In J. M. Humber and R. F. Almeder (Eds.), *What is disease?*, pp. 1–134. Totowa: Humana Press.
- Boorse, C. (2014). A second rebuttal on health. *Journal of Medicine and Philosophy* 39(6), 683–724.
- Browning, H. (2018). No Room at the Zoo: Management Euthanasia and Animal Welfare. *Journal of Agricultural and Environmental Ethics* 31(4), 483–498. <https://doi.org/10.1007/s10806-018-9755-2>.
- Browning, H. (2019a). The natural behavior debate: Two conceptions of animal welfare. *Journal of Applied Animal Welfare Science*, 1–13. <https://doi.org/10.1080/10888705.2019.1672552>.
- Browning, H. (2019b). What is good for an octopus? *Animal Sentience* 26(7). <https://animalstudiesrepository.org/animsent/vol4/iss26/7/>.
- Browning, H. (2019c). What should we do about sheep? The role of intelligence in welfare considerations. *Animal Sentience* 4(25), 23. <https://animalstudiesrepository.org/animsent/vol4/iss25/23/>.
- Browning, H. (2020a). Assessing Measures of Animal Welfare. *Preprint*. <http://philsci-archive.pitt.edu/17144/>.
- Browning, H. (2020b). *If I Could Talk to the Animals: Measuring Subjective Animal Welfare*. Ph. D. thesis, Australian National University. <https://doi.org/10.25911/5f1572fb1b5be>.
- Browning, H. and W. Veit (2020). Improving invertebrate welfare. *Animal Sentience* 29(4). <https://animalstudiesrepository.org/animsent/vol5/iss29/4/>.
- Canguilhem, G. (1991). *The normal and the pathological*. New York: Zone Books. Trans. C. R. Fawcett.
- Carel, H. (2007). Can I be ill and happy? *Philosophia* 35(2), 95–110.
- Carel, H. (2011, February). Phenomenology and its application in medicine. *Theoretical Medicine and Bioethics* 32(1), 33–46.
- Carel, H. (2018). *Illness: The cry of the flesh*. Routledge.
- Chapman, R. (2020). The reality of autism: On the metaphysics of disorder and diversity. *Philosophical Psychology*, 1–21.

- Chapman, R. and W. Veit (2020). Representing the Autism Spectrum. *The American Journal of Bioethics* 20(4), 46–48. <https://doi.org/10.1080/15265161.2020.1730495>.
- Chapman, R. and W. Veit (forthcoming). The essence of autism: Fact of Artefact? *Molecular Psychology*.
- Cooper, R. (2002). Disease. *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 33(2), 263–282.
- Garson, J. (2018). How to be a function pluralist. *The British Journal for the Philosophy of Science* 69(4), 1101–1122.
- Garson, J. and G. Piccinini (2014). Functions must be performed at appropriate rates in appropriate situations. *The British Journal for the Philosophy of Science* 65(1), 1–20.
- Gluckman, P. D., M. A. Hanson, and H. G. Spencer (2005). Predictive adaptive responses and human evolution. *Trends in ecology & evolution* 20(10), 527–533.
- Godfrey-Smith, P. (1993). Functions: Consensus Without Unity. *Pacific Philosophical Quarterly* 74(3), 196–208.
- Godfrey-Smith, P. (1994). A modern history theory of functions. *Noûs* 28(3), 344–362.
- Goossens, W. K. (1980). Values, health, and medicine. *Philosophy of Science* 47(1), 100–115.
- Griffiths, P. E. (1993). Functional analysis and proper functions. *The British Journal for the Philosophy of Science* 44(3), 409–422.
- Griffiths, P. E. and J. Matthewson (2018). Evolution, dysfunction, and disease: A reappraisal. *The British Journal for the Philosophy of Science* 69(2), 301–327.
- Griffiths, P. E. and J. Matthewson (2020, May). Diseases are Not Adaptations and Neither are Their Causes. *Biological Theory*.
- Hausman, D. M. (2012). Health, naturalism, and functional efficiency. *Philosophy of Science* 79(4), 519–541.
- Hill, C. and C. Pavese (2020). A Tribute to Karen Neander (1954–2020). *Unpublished Manuscript*, 1–13. <https://www.carlottapavese.org/resources/Tribute%20to%20Karen-10.pdf>.
- Kendell, R. E. (1986). What Are Mental Disorders? In A. M. Freedman, R. Brotman, I. Silverman, and D. Hutson (Eds.), *Issues in Psychiatric Classification: Science, Practice and Social Policy*, pp. 23–45. New York, NY, US: Human Sciences Press.

- Kingma, E. (2010). Paracetamol, poison, and polio: why Boorse's account of function fails to distinguish health and disease. *The British Journal for the Philosophy of Science* 61(2), 241–264.
- Kingma, E. (2013). Naturalist accounts of mental disorder. *The Oxford handbook of philosophy and psychiatry*, 363–384.
- Kingma, E. (2017). Disease as Scientific and as Value-Laden Concept. In *Handbook of the Philosophy of Medicine*, pp. 45–63. Springer Netherlands.
- Kukla, R. (2014). Medicalization, “normal function,” and the definition of health. In *The Routledge companion to bioethics*, pp. 539–554. Routledge.
- Low, F. M., P. D. Gluckman, and M. A. Hanson (2012). Developmental plasticity, epigenetics and human health. *Evolutionary Biology* 39(4), 650–665.
- Maclaurin, J. and K. Sterelny (2008). *What is biodiversity?* University of Chicago Press.
- Matthewson, J. and P. E. Griffiths (2017). Biological criteria of disease: Four ways of going wrong. *Journal of Medicine and Philosophy* 42(4), 447–466.
- Millikan, R. G. (1984). *Language, Thought, and Other Biological Categories*. MIT Press.
- Millikan, R. G. (1989). In defense of proper functions. *Philosophy of science* 56(2), 288–302.
- Millikan, R. G. (1995). *White queen psychology and other essays for Alice*. MIT Press.
- Murphy, D. and R. L. Woolfolk (2000). The harmful dysfunction analysis of mental disorder. *Philosophy, Psychiatry, & Psychology* 7(4), 241–252.
- Neander, K. (1983). *Abnormal psychobiology*. Ph. D. thesis, Unpublished doctoral dissertation, Bundoora, Australia: La Trobe University.
- Neander, K. (1991). Functions as selected effects: The conceptual analyst's defense. *Philosophy of science* 58(2), 168–184.
- Nordenfelt, L. (1993). *Quality of life, health and happiness*. Ashgate Publishing, Aldershot.
- Nordenfelt, L. (1995). *On the nature of health: An action-theoretic approach*. Dordrecht: Kluwer.
- Quine, W. V. and W. V. O. Quine (1981). *Theories and things*. Harvard University Press.
- Reznek, L. (1987). *The nature of disease*. Routledge, London.
- Saborido, C. and A. Moreno (2015). Biological pathology from an organizational perspective. *Theoretical medicine and bioethics* 36(1), 83–95.

- Saborido, C., A. Moreno, M. González-Moreno, and J. C. H. Clemente (2016). Organizational malfunctions and the notions of health and disease. In *Naturalism in the Philosophy of Health*, pp. 101–120. Springer.
- Savulescu, J., R. Ter Meulen, and G. Kahane (2011). *Enhancing human capacities*. John Wiley & Sons.
- Schwartz, P. H. (2007a). Decision and discovery in defining ‘disease’. In H. Kincaid and J. McKittrick (Eds.), *Establishing Medical Reality: Essays in the Metaphysics and Epistemology of Biomedical Science*, pp. 47–64. Dordrecht, the Netherlands: Springer.
- Schwartz, P. H. (2007b). Defining dysfunction: Natural selection, design, and drawing a line. *Philosophy of Science* 74(3), 364–385.
- Schwartz, P. H. (2017). Progress in defining disease: Improved approaches and increased impact. *The Journal of Medicine and Philosophy: A Forum for Bioethics and Philosophy of Medicine* 42(4), 485–502.
- Veit, W. (2018a). Cognitive enhancement and the threat of inequality. *Journal of Cognitive Enhancement* 2(4), 404–410. <https://doi.org/10.1007/s41465-018-0108-x>.
- Veit, W. (2018b). Enhancement technologies and inequality. In C. Saborido, S. Oms, and J. G. de Prado (Eds.), *Proceedings of the IX Conference of the Spanish Society of Logic, Methodology and Philosophy of Science*, pp. 471–476. <https://doi.org/10.13140/RG.2.2.21932.08326>.
- Veit, W. (2018c). Procreative Beneficence and Genetic Enhancement. *Kriterion – Journal of Philosophy* 32(1), 75–92. <https://doi.org/10.13140/RG.2.2.11026.89289>.
- Veit, W. (2019a). Evolution of multicellularity: cheating done right. *Biology & Philosophy* 34(3), 34. <https://doi.org/10.1007/s10539-019-9688-9>.
- Veit, W. (2019b). Model pluralism. *Philosophy of the Social Sciences* 50(2), 91–114.
- Veit, W. (2019c). Modeling Morality. In Ángel Nepomuceno-Fernández, L. Magnani, F. J. Salguero-Lamillar, C. Barés-Gómez, and M. Fontaine (Eds.), *Model-Based Reasoning in Science and Technology*, pp. 83–102. Springer. https://doi.org/10.1007/978-3-030-32722-4_6.
- Veit, W. (2020). Model Anarchism. *Preprint*. <http://doi.org/10.13140/RG.2.2.36694.47683>.
- Veit, W. (forthcominga). Experimental Philosophy of Medicine and the Concepts of Health and Disease. *Theoretical Medicine and Bioethics*.

- Veit, W. (forthcomingb). Review of Nancy Cartwright's *Nature, the Artful Modeler: Lectures on Laws, Science, How Nature Arranges the World and How We Can Arrange It Better*. *Philosophy of Science*.
- Veit, W. and H. Browning (2020, November). Perspectival pluralism for animal welfare. *European Journal for Philosophy of Science* 11(1).
- Veit, W. and H. Browning (forthcoming). Phenomenology Applied to Animal Health and Suffering. In S. Ferrarello (Ed.), *Phenomenology of Bioethics: Technoethics and Lived Experience*. Springer. <http://dx.doi.org/10.13140/RG.2.2.31185.76645>.
- Wakefield, J. C. (1992). The concept of mental disorder: on the boundary between biological facts and social values. *American Psychologist* 47(3), 373.
- Wakefield, J. C. (1999). The concept of disorder as a foundation for the DSM's theory-neutral nosology: response to Follette and Houts, Part 2. *Behaviour research and therapy* 37(10), 1001–1027.
- Wakefield, J. C. (2000). Spandrels, vestigial organs, and such: reply to Murphy and Woolfolk's "The harmful dysfunction analysis of mental disorder". *Philosophy, Psychiatry, & Psychology* 7(4), 253–269.
- Wakefield, J. C. (2001). Evolutionary history versus current causal role in the definition of disorder: reply to McNally. *Behaviour research and therapy* 39(3), 347–366.
- Wakefield, J. C. (2007). The concept of mental disorder: diagnostic implications of the harmful dysfunction analysis. *World Psychiatry* 6(3), 149–156.
- World Health Organization (2020). Constitution of the World Health Organization 49th ed. *Basic Documents of the World Health Organization*.