

teorema

Vol. XLII/1, 2023, pp. 77-100

ISSN 0210-1602

[BIBLID 0210-1602 (2023) 42:1; pp. 77-100]

Two Kinds of Biological Normativity

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RESUMEN

Este artículo distingue entre dos diferentes géneros de normatividad biológica. Uno de ellos es la de la normatividad biológica ‘objetiva’ de las unidades biológicas discutidas en la filosofía de la biología anglófona sobre la naturalización de nociones tales como función y patología. El otro es una normatividad biológica ‘subjetiva’ de la temática discutida en la tradición continental de Canguilhem and Goldstein. La existencia de estos dos distintos géneros de normatividad biológica reclama un examen filosófico más estrecho de sus relaciones. El objetivo de este artículo es abordar esta omisión en los estudios sobre este tema e iniciar la construcción de puentes conceptuales que cubran las brechas entre la filosofía continental, analítica y naturalista sobre la normatividad biológica.

PALABRAS CLAVE: *normatividad biológica, filosofía de la biología, filosofía de la medicina.*

ABSTRACT

This article distinguishes between two different kinds of biological normativity. One is the ‘objective’ biological normativity of biological units discussed in anglophone philosophy of biology on the naturalization of such notions as function and pathology. The other is a ‘subjective’ biological normativity of the biological subject discussed in the continental tradition of Canguilhem and Goldstein. The existence of these two distinct kinds of biological normativity calls for a closer philosophical examination of their relationship. The aim of this paper is to address this omission in the literature and to initiate the construction of conceptual bridges that span the gaps between continental, analytic, and naturalist philosophy on biological normativity.

KEYWORDS: *Biological Normativity; Philosophy of Biology; Philosophy of Medicine.*

I. INTRODUCTION

In the recent history of philosophy, there have been two major movements towards an understanding of *biological normativity*, i.e., the existence of goals, harms, functions, pathologies, and other normative properties of biological systems that distinguish them from non-biological ones.

The first movement is located in analytical and naturalist philosophy, which has drawn on biology, cognitive science, and even physics¹ to make sense of normativity as something that arises as a product of natural selection alongside the evolution of life. For philosophers such as Ruth Millikan (1984), (1989), Karen Neander (1991), Larry Wright (1976), and Christopher Boorse (1976), (1977) there was a kind of normativity to be found in biological science that did not require the overlay of human norms. While they endorsed different views, they all agreed that there is a form of objective biological normativity in the biological world that is independent of the human viewpoint. The term ‘biological normativity,’ however, also has a rich history of continental thought in the German and French tradition of philosophy. The term was originally coined by the French historian and first contemporary philosopher of medicine George Canguilhem in his 1943 Doctoral Thesis “*Le Normal et le Pathologique*.”² Canguilhem, in turn, was inspired by the German biologist and neurologist Kurt Goldstein (1934), (1939). Intending to capture the special status of the living – of normality and pathology alike – Canguilhem argues that normativity can only be captured from the perspective of an evaluator: the organism as a subject, not a mere object under the study of science.

This stands in stark contrast to the naturalist tradition of thinkers like Millikan (1984) who argued that norms are ultimately grounded in evolutionary history i.e., the norms that arise through natural selection such as the function of the heart, emphasizing their special status as ‘proper functions.’ Here, the source of normativity is in a sense outside of the organism; it is the environment with organisms being a mere product of natural selection. Naturally, the conflict between these two different views, which I shall refer to as ‘Objective Biological Normativity’ and ‘Subjective Biological Normativity’, is perhaps the most striking in the philosophy of medicine, where the core debate has focused on the question of whether pathologies are biological dysfunctions or merely an evaluative judgement by the ‘diseased’ [Veit (2021a)]. Matthewson and Griffiths (2017) who have recently attempted to reclaim the term ‘Biological Normativity’ for the naturalist side in this debate have explicitly attacked Canguilhem for his insistence that disease is something that requires an organism to ‘disvalue’ their state for it to count as pathological [see also Veit (2021b)].

The apparent existence of two different kinds of biological normativity (henceforth abbreviated as BN) calls for a closer philosophical examination. Indeed, the aim of this article will be to remedy the omission of a closer engagement between their respective ‘analytic’ and ‘continental’ tra-

ditions. In this article, I will introduce and elaborate the distinction between these two kinds of BN, investigate their relationship, and offer a pluralist stance that will help us to make better progress in debates on the sources of normativity in nature.

I.1 *Article Outline*

The remainder of this article is organized as follows. In Section II, I explore the form of BN discussed by Canguilhem and Goldstein. I dub their approach ‘subjective biological normativity’ in line with their emphasis of the organism’s own agency. Section III discusses the BN of evolutionary biology, which has attracted the attention of philosophers of biology in the analytical tradition. I distinguish this kind of BN as ‘objective biological normativity’. In Section IV, I will discuss the relationship between the two kinds of BN and defend a pluralist position that doesn’t reduce one kind of normativity to the other. Finally, Section V concludes the discussion and offers some directions for further investigation.

II. A FIRST KIND OF BIOLOGICAL NORMATIVITY

The most paradigmatic cases of norms in the biological world pertain to health, disease, and pathology. The distinction between the two kinds of BN is best illustrated through a discussion of pathology and can also lead to a better understanding of pathology itself. For Canguilhem (1991), there can only be one kind of normativity in biology, namely, the normativity of the norm giver. Normativity arises only through a subject’s engagement with its environment. Thus, the first kind of normativity that I discuss here is the normativity of subjects – a *Subjective Biological Normativity* – that I shall abbreviate as SBN. This is not to say that Canguilhem does not consider the possibility of an entirely objective kind of BN, but he instantly goes on to dismiss the notion, insisting that all BN must be subjective:

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 [Canguilhem (1991), p. 226].

While the term subjective may suggest the need for subjective experience, this should not be seen as a requirement. Indeed, part of the re-

sistance by analytic philosophers to seriously study Canguilhem may have been due to such a confusion. As I shall shortly argue, while Canguilhem frequently talks of the phenomenal experience of pathology, it is only meant to emphasize that pathology is something the organism experiences as a kind of obstacle to its vital goals (whether felt or not). Unsurprisingly, such assertions have nevertheless been seen with suspicion among philosophers aiming to naturalize the notion of pathology [Matthewson and Griffiths (2017); Veit (2021b)]. After all, they seem to stand in stark contrast to mainstream philosophers of biology and medicine who have tried to naturalize these notions in reference to the biological sciences and in particular evolutionary principles. Canguilhem (1991) even suggests that the “[n]ormal and pathological have no meaning on a scale where the biological object is reduced to colloidal equilibria and ionized solutions” [p. 110], seemingly dismissing the very attempt of naturalizing biological norms as all-too reductionist. However, since Section 3 is entirely dedicated to arguments for an objective kind of BN, I will not go into this conflict further here and instead focus on how we should understand what Canguilhem means when he speaks of BN, how Goldstein influenced the view, and how it is discussed today.

The first mention of BN appears for an English-speaking audience relatively late in Canguilhem’s (1991) book on page 127. This, however, isn’t surprising in the context in which Canguilhem operated. There are three reasons Canguilhem waited until the middle part of his book to introduce his core concept, which I suspect are also responsible for the neglect of Canguilhem’s ideas in contemporary analytical philosophy of medicine. Firstly, the French writing style differs considerably from English. Conclusions are not simply asserted as end goals in the beginning, with the rest of the writing constituting a prolonged argument for the conclusion. Instead, they emerge as a result of an elaborate historical engagement with the literature. Secondly, and relatedly, Canguilhem’s work is primarily historical, compared to the more ahistorical work in analytic philosophy of medicine. Only after discussing what came before and how it inspired one’s own work is it considered adequate to present one’s own ideas – at least, this is how Canguilhem seems to assess his own method. Thirdly, and similarly related to the previous point, Canguilhem’s writing has been inspired by Goldstein and even Kant.³ Indicative of the German writing style, there are numerous side-notes, digressions, historical anecdotes, and other things that appear as oddities from an Anglo-Saxon point of view, yet appear to the German and French academic milieu as a more holistic engagement, ultimately indi-

cating a broader perspective than the more familiar narrow and analytic writing style in English-speaking countries.⁴ In many ways, it thus seems that Canguilhem is imitating the style of his intellectual ancestors including their German notoriety – yet with an added French flavor. It is unfortunate, however that the majority of scholarly engagement with the likes of Goldstein and Canguilhem happens in – from an analytical philosophy perspective – more obscurantist, literary studies, thus giving their names a bad reputation in the Anglosphere. As Jonathan Sholl (2014) in his PhD thesis on Canguilhem points out, “[w]ith the exception of Nordenfelt, there has been very little engagement with Canguilhem’s ideas within those associated with the above debates concerning health and disease” [p. 10]. Let me therefore use this opportunity here to make their ideas tenable to the analytic world.

Having discussed the history of medicine in Part I of his book, Canguilhem elegantly states what would later become the central problem in the philosophy of medicine:

It is true that in medicine the normal state of the human body is the state one wants to reestablish. But is it because therapeutics aims at this state as a good goal to obtain that it is called normal, or is it because the interested party, that is, the sick man, considers it normal that therapeutics aim at it? *We hold the second statement to be true* [Canguilhem (1991), p. 126; italics added for emphasis]

There are two straightforward ways to interpret Canguilhem’s question. First, as a sociological question. Do medical practitioners believe that they are in the ‘business’ of restoring normal biological functioning or is it to respond to a patient’s call for help for whatever they consider to be pathological? Second, there is a more metaphysical question at play here, relating to the very notions of ‘normality’ and ‘pathology.’ Are these objective biological facts or subjective evaluations?

Canguilhem affirms the latter answers in both questions, and yet he doesn’t appear to give primacy to either one. To deny that there could possibly be an objective pathology makes it absurd to ask medical professionals to restore ‘normal functioning,’ but it is in the fact that the call of the patient arises first that the institution of medicine must ultimately be grounded in the subjective evaluation of the patient, an argument that is similarly present in Havi Carel’s (2007); (201); (2018) work on the phenomenology of health and illness.

Unlike many of the contemporary ‘anti-naturalist’ normativists and phenomenologists in the philosophy of medicine, however, Canguilhem

doesn't endorse a view in which the subjective experience is entirely separate from our biological condition. In many ways, Canguilhem can himself be understood as a naturalist, despite being frequently described as a normativist [e.g., Matthewson & Griffiths (2017)]. This is why I have written a recent book chapter arguing that a phenomenological approach to animal health must not be seen as standing in opposition to naturalism [Veit and Browning (2021)]. However, his work is continuous with the vitalist tradition in continental biology, rather than the Darwinian tradition that has been very influential in mainstream philosophy of biology, which may explain this common misconception. Because consciousness isn't a requirement for his kind of BN, but merely reflective of it, it can justifiably be seen as a 'biological' normativity rather than just the normativity of the evaluating agent:

The entry in the *Vocabulaire philosophique*^[5] seems to assume that value can be attributed to a biological fact only by "him who speaks," obviously a man. We, on the other hand, think that the fact that a living man reacts to a lesion, infection, functional anarchy by means of a disease, expresses the fundamental fact that life is not indifferent to the conditions in which it is possible, that life is polarity and thereby even an unconscious position of value; in short, life is in fact a normative activity [Canguilhem (1991), p. 126].

For Canguilhem, the source of normativity is only indirectly the normativity of subjective experience. Unlike most objectivists, who locate the normativity in objective biological facts grounded in evolutionary biology, Canguilhem – drawing on Goldstein – grounds this normativity in the normativity of the organism, i.e., life itself. It is not derived from a statistical sense of normality from the population as defended by Boorse (1977): "Goldstein asserts that a statistically obtained average does not allow us to decide whether the individual before us is normal or not. We cannot start from it in order to discharge our medical duty toward the individual" [Canguilhem (1991), p. 181]. Drawing on Goldstein, Canguilhem argued that pathology can only be understood through recourse on the environment: "What Goldstein pointed out in his patients is the establishment of new norms of life by a reduction in the level of their activity as related to a new but *narrowed* environment" [Canguilhem (1991), p. 185]. The sick patient is pathological because his opportunity for normativity is narrowed. As Goldstein (1996) puts it, "being well means to be capable of ordered behavior that may prevail in spite of the impossibility of certain performances that were formerly possible" [p. 332]. As the organism adjusts itself to its new form of life and establishes new in-

dividual norms, the organism becomes rehabilitated despite a “certain loss in the essential nature of the organism” [Goldstein (1996), p. 333].

What a close reading of Canguilhem reveals, is that he, unlike his French contemporaries or the majority of philosophers of today, was not interested in a conceptual analysis or lexicographic definition of the terms ‘normal’ and ‘pathological,’ but rather in what we now call scientific conceptual engineering or explication in order to capture the phenomena that have led us to the concepts of the normal and pathological. As I will show shortly, Canguilhem thus shares a strong similarity with some of the defenders of objective BN, who have objected to the reliance on mere statistical averages [Matthewson & Griffiths (2017)]. Having clarified his vitalist stance, Canguilhem finally introduces his notion of BN:

Normative, in philosophy, means every judgment which evaluates or qualifies a fact in relation to a norm, but this mode of judgment is essentially subordinate to that which establishes norms. Normative, in the fullest sense of the word, is that which establishes norms. And it is in this sense that we plan to talk about biological normativity [Canguilhem (1991), pp. 126-127].

The norm-giver for Canguilhem must be a subject. Like Goldstein (1996), who defines disease as “a disordered functioning, that is, defective responsiveness, of the individual organism as compared with the norm of this individual as a whole” such that “disorder is disease insofar as it endangers self-actualization” [p. 334], Canguilhem seeks to understand disease in relation to the agency of the organism. Yet, he doesn’t mean the conscious human agent. It is the *biological subject* he is interested in in the sense of an agent with vital goals. Nevertheless, he also explicitly warns of the danger that we might merely anthropomorphize the biological processes that bear a striking degree of normativity or what we may now call *goal-directedness*. Appealing to the naturalist idea that we must ground the normativity of human consciousness in biology, for it would be a mystery otherwise, Canguilhem asserts that there must be a prior normativity present in the embryo [p. 127]. Indeed, he seems to even offer a hypothesis for the evolution of sentience, when he argues that it is this normative dimension of life that is ultimately able to explain why even invertebrates have a biological need for ‘cure’, ‘maintenance’, or ‘healing’ that “arouses reactions of hedonic value or self-healing or self-restoring behaviors” [ibid.]. In this, he seems to have anticipated the arguments of those with a positive stance in the current debate on

whether invertebrates are conscious and can feel pain.⁶ It is the intrinsic tendency of life to seek self-maintenance and restoration – a speculation I will return to in Section IV.

To many, these metaphysical assertions just seemed weird, condemning Canguilhem as a ‘vitalist’, a label that he himself endorses despite its negative connotations. And yet, much recent in biology and the biological sciences work seeks to make sense of life, consciousness, and normativity by drawing on the idea of *autopoiesis* introduced by Humberto Maturana and Francisco Varela (1980), two Chilean biologists who attempted to explain the self-maintenance of cells and living organisms as a special feature that hasn’t received sufficient recognition by what they deemed to be the exceedingly reductionist biology of their time. Canguilhem’s arguments, however, predate theirs, leading some to speculate that they may have been inspired by him.⁷

Out of this cluster of ideas, a group of philosophers have constructed a new account of biological functions they have dubbed ‘organizational functions’ — sometimes explicitly drawing the link between Canguilhem and the later work on autopoiesis [Mossio et al. (2009); Saborido et al. (2011); Saborido and Moreno (2015); Saborido et al. (2016)]. In the words of Saborido and Moreno (2015), “biological organizations instantiate an intrinsic normativity, which is grounded not in external value judgments imposed by an observer, but rather, in the living organism’s capacity to respond to the changing demands of the environment” giving the ‘vital’ processes in an organism normativity precisely “because the preservation of life presupposes the organism’s ability to establish and follow stable and flexible norms” [p. 84]. Since this naturalist interpretation of Canguilhem’s BN stands in stark contrast with its phenomenological interpretation that motivates Matthewson and Griffiths (2017) to develop their ‘objective’ BN, I shall now turn towards their response.

III. A SECOND KIND OF BIOLOGICAL NORMATIVITY

In this section, I take a look at a second kind of biological normativity: normativity from a purely objective point of view. The term ‘objective’ has some historical baggage associated with it, but it nonetheless captures the spirit of the difference between these two kinds of normativity. As Saborido et al. (2016) describe the anglophone naturalist camp in the philosophy of medicine, they are occupied with a search for an “objectivist” definition that grounds the normativity in disease judge-

ments [p. 102]. The notion that there are objective norms, of course, has been around with us since the very beginning of philosophy. Many philosophers held (and a large proportion still do) the idea that there are objective *moral norms*: Norms that hold irrespective of any specific human point of view, though some asserted that this sort of objectivity would require a Divine Point of View.⁸ This is not at all the sort of normativity I am interested in here, though there is an interesting parallel to the philosophical and biological debates on teleology. Since Darwin, the question of whether species are designed or whether they merely exhibit the illusion of design has been hotly contested. Creationists asserted that Darwin's account of evolution couldn't be correct since design can only be created at the hands of a designer or that evolution must have been guided by God. But what is one person's *modus ponens* is another person's *modus tollens*, so some philosophers of biology confidently asserted that design and teleology in nature is just an illusion created through the process of natural selection.⁹

However, the view that 'real design' requires a designer has been questioned by many naturalist philosophers. Could naturalists claiming design to be an illusion not confidently conclude that something has gone wrong for a little bird who flew against a window and met his unfortunate demise or for an ant that lost one of its legs? For Canguilhem, as well as most naturalist philosophers in this debate, the answer is a confident yes. However, for Canguilhem it is a conclusion that is grounded in a "sympathetic regression starting from lived human experience" [Canguilhem (1991), p. 226]. Read out of context, such an answer could easily be interpreted as the denial that health and disease are real – that they are merely *subjective*. This is at the heart of John Matthewson's and Paul Griffiths' (2017) dissatisfaction with the anti-naturalist consensus in the philosophy of medicine, which is why they respond to Canguilhem that "there is more to the biology of disease than an analogy with the human experience of suffering" [p. 449]. Yet, given our discussion in the last section, one could criticize them here for misrepresenting Canguilhem, who held a much more sophisticated view than perhaps the majority of anti-naturalist in contemporary philosophy of medicine. Indeed, he would not at all disagree with Matthewson and Griffiths that "human and nonhuman disease ought to be variations on a theme, not simply homonyms" [(2017), p. 449]. All living systems, Canguilhem would emphasize, have vital goals so the reference to human experience is merely meant to emphasize that it is highly reflective of underlying disturbances to the BN of the organism. Canguilhem's opposition is to an atomist

view of the organism that locates pathology in organs, cells, or functions, rather than the whole organism. However, here he is primarily opposed to anatomists and physiologists, and it is certainly not a must that evolutionary biologists will treat the organism in such an atomistic way, though more on this later.

While much in the debate between so-called ‘naturalists’ and ‘normativists’ rests on the question of whether we should locate pathology in human convention or in biological science, it should be clear that Canguilhem cannot be made into the paradigm subjectivist Matthewson and Griffiths (2017) make him out to be. The conscious experience of disease is only our immediate guide to its underlying normativity – not its source. Life is in a constant struggle to maintain itself, to establish new norms, and only where this intrinsic BN fails – where it narrows the possibilities of action for an organism does the physiological change become a pathological one.

The distinction between these two naturalist approaches to grounding BN, and pathology in particular, can be effectively illustrated through an insightful anecdote provided by Heather Browning, a philosopher with a background in zookeeping:

I once worked with a lemur who had lost an arm in an accident and would quite happily tripod around his habitat. He was able to do almost everything a normal lemur could do, and it thus seems odd to say that his welfare was compromised by his physical lack. Similarly, if an animal has an infection, but we are able to give it medication to relieve all symptoms so that it subjectively feels well, it doesn't seem that we want to say it is experiencing poor welfare, as we watch it move about and enjoying life as it did before [Browning (2020), pp. 126-127].

Whereas Matthewson and Griffiths (2017) would think it absurd to not recognize that something objectively biological has gone wrong in this case, Canguilhem and Goldstein would not see it as pathological since the lemur is not constrained in the pursuit of his vital goals. They thus make a similar argument to Browning who argues that animal welfare can only be grounded from the perspective of biological subjects, not objectively from facts about their environment or physiological condition. Goldstein (1939) as well as Canguilhem would recognize the happy lemur as a wonderful example for how organisms have a dynamic engagement with their environment, able to shift their norms and adapt to changes. If the lemur was unable to adapt – condemned to a life of failures and falls – it should then be considered in a pathological state. The

lemur example makes clear how the agency of the biological subject makes a difference in the eyes of Canguilhem and Goldstein as to whether we should call something a pathology.

For Matthewson and Griffiths, however, it remains true that it is not the perspective of the organism that matters, but the perspective of evolutionary biology or to put it differently, the organism through the lens of evolution. Whereas SBN treats the agency of the organism as the source of normativity, OBN locates the source of normativity in the process of evolution, giving organisms only a passive role to play. Even if one removes humans from the biomedical sciences and looks at non-human evolutionary biology alone, terms such as pathology do not disappear. In fact, they are essential to the very enterprise of biological science. As Matthewson and Griffiths point out, “beetles squashed during collection, or half-eaten by a predator, should not be included in the description of the new species” and specimens with high parasite loads need to be distinguished from “healthy specimens, not lumped in to determine an average value for some phenotype” [p. 451]. Without such distinctions, it would be impossible to do biology. They are thus nevertheless justified in rejecting the notion that the *pathological* must be metaphysically grounded in ‘sympathetic digression’ from man to animal, since the concept is an unavoidable part of biological classification. Though they don’t say so explicitly, their defense of an objective notion of BN appears to undoubtedly be directly motivated as a reply to Canguilhem, which is further highlighted through their exclusive use of non-human animal cases to illustrate four ways in which something can go wrong for a biological organism from a purely objective point of view.

III.1 *Four Ways of Going Wrong*

The first example for a biological wrong they discuss is *mechanism failure*. If we look at a mutated db/db mouse, we see a strain that has dysfunctional receptors for the detection of leptin. Since this hormone controls hunger (among other things), mice in this strain tend to become obese. We need to recognize that something has gone wrong for these mice in a purely objective, yet nevertheless normative sense: “they are not the way they ought to be” [Matthewson and Griffiths (2017), p. 453].

A second way in which something can go wrong in a biological sense of the term, is an *abNormal environment* [Matthewson and Griffiths (2017), p. 454]. This term comes from Ruth Millikan (1984) to emphasize how selected effects accounts of function can fail to create a mapping between organism and environment when they’ve been placed in an

environment different from the one their traits have evolved in. Using the example of glow-worms, they argue that nothing has gone wrong with the functional architecture of their bodies, and yet, they will not be able to detect other mates because humans have changed the environment so drastically that light-pollution makes it hard for them to use their mate-finding mechanism. Here, the animal body is “operating in accordance with its design but outside the operating parameters for that design” [Matthewson and Griffiths (2017), p. 454]. This is a second kind of biological failing.

Both of these ‘going-wrongs’ are tied to selected effect accounts of functions and thus the selective history of the traits under natural selection (Neander 1983, 1991). Here, the failure can lie either in the adaptation itself or the environment the trait has evolved *for*. This is one source of BN. But there is a second one tied to the notion of *fitness*.

Using the example of the common monkey flower (*Mimulus guttatus*), Matthewson and Griffiths (2017) argue, that these can suffer in a purely biological sense by being placed in an *inhospitable environment*. When these flowers are placed in a poor environment, they will flower early and produce less seeds, than those who’ve been placed in a more nutritive environment. What goes wrong here is not a case of an *abNormal environment*. Neither are they failing to do what they’ve been designed to do. It is entirely normal for many plants to be ‘unlucky’ and grow in a nutrient-poor or dry environment. Their early flowering is simply an adaptive response to their poor circumstances. They are making the best with what they’ve got. This is a third way in which something can go wrong for an organism.

Lastly, but not necessarily exhaustively, Matthewson and Griffiths (2017) argue that biological organisms can be faced with a *heuristic failure*. An elegant example is the common finding in humans born in colder climates to have fewer sweat glands in adulthood. If they move to hot climates (which isn’t too uncommon in our modern globalized world), they will be at a biological disadvantage. As they put it, “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]. Such developmental responses are not uncommon and rely on the organism’s ability to judge its future environment based on the environment they grow up in. If there is a mismatch between these two environments, there will be a mismatch with the organism’s developmental response. From an evolutionary perspective, however, this is entirely sensible. It made *sense* in the past.

These four ways of going wrong from a purely objective point of view lead them to reject normativism, though perhaps not the more nuanced biological normativism 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].

Yet, as I hope to have made clear, there may be less of a stark difference between these two kinds of BN than is let on. Indeed, Canguilhem's view of BN does not easily fit into either side of the normativist vs naturalist divide in the philosophy of medicine. Let us therefore now turn to the relation between both views.

IV. ON THE RELATIONS BETWEEN THE TWO VIEWS

What should one make of these seemingly distinct kinds of BN? As the discussion thus far should have clarified, I maintain a decidedly pluralist stance towards the sources of normativity we might find in biology. My intention was certainly not to identify the 'ultimate' source of BN from which all others would have to be derived or, for that matter, dismissed as invalid. However, this is precisely what defenders of each kind of BN have in common. Both Canguilhem and Millikan, as the paradigmatic defenders of SBN and OBN respectively, would deny that there are sources of normativity in biology beyond their own accounts. While I have been very supportive of attempts to develop accounts of BN throughout this article to show that the normativity we observe in nature isn't just imposed through our human viewpoint, I have also been highly critical of Canguilhem's arguments against objective biological norms and Matthewson and Griffiths' misrepresentation of Canguilhem. As should be clear from the two previous sections, their views are not necessarily competitors; instead, they offer perspectives of a different nature altogether.

The resistance to taking different sources of normativity seriously is particularly surprising in the case of Matthewson and Griffiths (2017), since they spend much of their paper advocating for a more pluralistic view of what can go wrong in the biological world. Indeed, they emphasize that a naturalist approach to health and disease need not exclusively rely on selected-effects (proper) functions, but could also allow for

‘causal role’ functions that play, for instance, a central role in Christopher Boorse’s (1977) biostatistical account of health and disease (BST).¹⁰ Are there any reasons not to become even more pluralist and recognize another kind of BN that emphasizes the subject in evolution?

Previously, I mentioned the work on ‘organizational functions’, which has been inspired by Canguilhem, and suggests that there may be a third kind of biological functioning, in addition to selected effect functions and causal role functions. Indeed, we might try to expand the four ways of going wrong by Matthewson and Griffiths (2017), who admittedly appear to be open to recognize more ways since they “have not given any reason so far to think that we have exhausted all of the options” [p. 458] yet do make it a necessary condition of their account to require one of the two sorts of dysfunction that they have sketched. Unfortunately, much of the recent organizational function’s literature seems quite opposed to pluralism in the sense that organizational functions are defended as the primary source of BN. Saborido et al. (2011), for instance, explicitly argue that the organizational function account is “aimed at integrating the two mainstream views” of selected effect and causal role views of function [p. 583]. While this wouldn’t make the two kinds of BN I have discussed here competing views, it would seem to rob them of their distinctiveness. As I hope to argue here, however, we should embrace a mid-level position where OBN and SBN are neither competitors, nor reducible to one another.

There are, of course, several obstacles to the widespread endorsement of a such a position. In addition to organizational functions typically being proposed as alternatives to the prevailing accounts of function, they have so far only received very little support in the literature. Mainstream naturalists in the field have been rather hostile to – if not outright ignoring – the idea of organizational functions, though this admittedly appears to be changing. However, the narrow pluralism endorsed by Matthewson and Griffiths (2017) has already been seen with suspicion, and they themselves already worry that their account is too permissive, with their pluralism too quick at labelling things pathologies. While failure in any of the four discussed ways of going wrong may constitute a necessary criterion for pathology, it is not clear whether it would be necessary and sufficient.

A pluralist view of BN, however, has no obligation to be clean and tidy. Just as the biological world is messy and complex, with no sharp boundaries or categorizations, so could there be different kinds of biological norms conflicting with each other. After all, an organ may do pre-

cisely what it has been designed for (and do so very well) and still fail to promote the survival of the organism, e.g., in humans that die of carbon monoxide poisoning [Matthewson and Griffiths (2017), p. 457]. However, this does not mean that there cannot be any integration between SBN and OBN. After all, as Canguilhem hopes to make clear, environments are highly variable and what is good under one condition may not be so under another. If we take a forward-looking perspective in evolution, for instance, a new environment may present a new opportunity for the future evolutionary trajectory of a species, e.g., the loss of wings capable of flight on an island without predators, but plenty of resources.

Similarly, the emphasis of Canguilhem on the organism as an integrated agent can help us to look at the organism from a more holistic perspective. The seemingly pathological presence of cancerous cells in the body of an animal, may simply be the result of an optimal immune system, that would attack too many healthy cells if it were to get rid of all cancers [Aktipis et al. (2013)]. Life-history theory, for instance, can help us to think about the organism from such an integrated agent perspective, with organisms being faced with multiple simultaneous optimization problems, which helps to avoid the narrow perspective of physiologists who only recognize damage in a part of the organism without recognizing its greater effects [Veit (2023)]. The OBN theorist does not have to treat the organism as a mere combination of functional parts. But if the arguments of Matthewson and Griffiths (2017) and Canguilhem against their opposition do not apply to each other's views of BN, is there really the need to maintain the distinction? Perhaps the seemingly persisting differences might start to disappear with suitably advanced versions of OBN and SBN? While I think that there is some truth to this, I argue that the distinction between viewing the organism as an object vs. subject will remain.

IV.1 *The Organism as Object and Subject*

In an essay with the title “The organism as the subject and object of evolution”, the evolutionary biologist Richard Lewontin (1985) argued that the success of the Darwinian revolution stemmed from Darwin's separation between the ‘internal’ and ‘external’ forces of evolution. Theories, such as those of Lamarck (1984), that included subjective and teleological notions such as striving were not able to keep up with the theoretical advances of Darwin. For Lewontin, Darwin's theory of natural selection made the organism as passive “object, not the subject, of evolutionary forces” [(1985), p. 85]. Indeed, fitting to Lewontin's Marxist

ideals he describes these forces as being “autonomous and alienated from the organism as a whole” [(1985), p. 85]. It is this distinction, that I believe captures the difference between defenders of OBN vs SBN exceptionally well.¹¹

For those seeking objective biological norms, whether as a result of selected effects or causal role functions, the relevant phenomenon isn't so much the individual organism but the whole population, as well as its evolutionary past and future trajectory. OBN is a result of Darwinian forces that treat the individual organism akin to a passive object, whereas for SBN the individual organism is the source of normativity qua its active agency. Neither view is here reducible to the other. They are both valid and useful perspectives to take to think about BN. However, Lewontin also argued that the two views of looking at organisms have eventually to be brought together:

Darwinism cannot be carried to completion unless the organism is reintegrated with the inner and outer forces, of which it is both the subject and the object [Lewontin (in Levins & Lewontin) (1985), p. 106].

While these words may be suggestive of the need for a broader theory that unites Darwinian thinking with other biological theories (whatever they may be) into a single framework, I have no doubt that such a result would be no less muddled than the pre-Darwinian theories of biology that failed to distinguish internal and external forces. As I have argued above, it is in virtue of taking a different perspective that we can refine our models, without thereby merging them all into one.

Canguilhem's ‘sympathetic regression’ can, for instance, be seen as an initially useful epistemic tool or perspective to take in order to think about the vital goals of an organism. Broken wings after all do not seem all that different from a broken arm, and so do broken branches of trees. One does not have to appeal to the conscious experience to express a sympathy with the same underlying ‘vital’ tendency to seek self-maintenance. Humans are in this respect no different from most other living systems. Indeed, his approach is no different from the popular strategy employed by evolutionary biologists to treat organisms as agents in order to understand them better [Okasha (2018), Veit (2021c)].

On the other hand, Canguilhem (1991) deemed any attempt of reduction pointless, arguing that “reduction runs into difficulties which are now, and undoubtedly always will be, insurmountable” [p. 156] and in that has certainly been shown wrong. As selected effects theorists have

shown time and time again, there is much value in tracing the history of traits to understand their functions. In many ways, one can see the OBN defended by the likes of Millikan, Griffiths, and Matthewson as a direct response to those who a priori assert that normativity needs a spectator. There are a myriad of ways in which things can go wrong in the biological world from a purely objective point of view; perhaps better expressed as the perspective of natural selection. Canguilhem insisted that norms require a norm-giver, but not necessarily conscious intentions, so perhaps he could have been convinced of these teleonomic notions by seeing natural selection as the norm-giver of interest.

Such speculation aside, I believe that the present discussion should make philosophers much less opposed to a pluralistic stance. Despite inevitable conflicts with writing on OBN, there is much to learn from Canguilhem and Goldstein once we take a more pluralistic attitude and attempt to understand the more holistic nature and active agency of organisms that try to restore and maintain themselves in dangerous environments. It is here a dynamic normativity is born that operates between a biological subject's actions and responses on the one side, and the environment on the other. Attempts to explain away this *individual normativity* of organisms through recourse to the normativity of the population or vice versa would lead to a neglect of biological norms, not an enriched unified understanding. Indeed, the distinction between SBN and OBN may even help us to explain the evolution of biological subjects that act on their biological norms.

IV.2 *The Evolution of Biological Subjects*

For Canguilhem as well as Goldstein, all organisms are subjects. Their theorizing is simply meant to offer us a framework for how to think about them in a way that recognizes their agency and BN as something that emerges between them and their environments. However, when we think about the diversity of organisms it should be pretty easy to see that organisms can differ in their degree of agency. Some organisms have more autonomy from the passive forces of evolution, a fact that has received a lot of attention in the recent biological literature on niche construction [Laland et al. (2016)]. Humans have the perhaps greatest degree of freedom in this respect, which helps us to understand why philosophers such as Carel (2007) have argued that illness does not have to be an obstacle to happiness. Indeed, her notion of “health within illness” that emphasizes the creativity and adaptability of those with pathologies is very reminiscent of Canguilhem's ideas, illustrating how SBN

might offer a useful bridge between OBN and anti-naturalist normativists in the philosophy of medicine.¹² Indeed, if we can understand how subjects evolved, we might be able to bridge the deep conceptual disagreements in the philosophy of medicine without having to declare any side as misguided, but instead recognizing that they shed different lights on a complex phenomenon.

Just as Canguilhem was perplexed by those who sought to ground normativity in consciousness alone, we may not be justified by seeking normativity at the level of the organism. The motivation, however, may be a different one. Canguilhem and Goldstein moved to the level of the organism not because they saw it as a ‘successful reduction’, but rather as a more holistic answer than either a reductionist appeal to a subject’s consciousness or its physiological mechanisms. Admittedly, their writing is not always clear here and seems to walk a fine line between the normativity of the phenomenological and the normativity of the biological organism. It is not surprising that other thinkers in this ‘vitalist’ tradition have drawn an intimate link between the two, some even going so far as to assert that the question of life and consciousness are co-extensive [cf. Thompson (2007)].

This subjective organismal normativity may give rise to something like subjective experience, something that eventually turns into rich phenomenological experience through sensorimotor integration. The intermediate steps may look messy, may look metaphysically weird, but for a naturalist, i.e., evolutionary account of subjective experience, this may just be what is needed. To bridge the explanatory gap between the objective world of science and the subjective worlds of experiencing subjects may require the need for intermediaries between the ‘cold’ and objective normativity of natural selection and the ‘hot’ and painful normativity of subjective experience. Why are there some biological systems that have positive and negative hedonic feelings that correspond to their BN (harmful = bad)? As I mentioned in Section II, Canguilhem himself has hinted at a deep connection between the conscious hedonic impulses of organisms connected to “self-healing or self-restoring behaviors” [p. 127]. Perhaps, we can tell a plausible story of how one kind of BN gives rise to another. How can the ‘agency’ and ‘norms’ of natural selection give rise to agents with their own kind of normativity? Indeed, the possibility that the ‘normative force’ of natural selection could turn the units of selection from mere objects into subjects is a thought that has recently inspired Godfrey-Smith’s writing on the evolution of consciousness (2017).

Here, Canguilhem's and Goldstein's notion of SBN may be an invaluable naturalist tool to bridge not only the traditional gap between mechanistic reductionism and phenomenological normativity, but also between 'analytic' and 'continental' philosophers working on the same problems. While this potential upside for an exploration of the connection between OBN and SBN may be speculative, I have attempted to link health and pathological complexity with the evolution of consciousness in several recent publications [Veit (2022), (2023), forthcoming]. Finally, while it may be theoretically appealing to explain one kind of normativity away as illusionary, misguided, or reducible to the other, there are many theoretical benefits of a pluralist stance that recognizes two very distinct ways of looking at the biological normativity of living systems that are worth exploring further.

V. CONCLUSION

This article distinguished two different kinds of biological normativity. One was the 'objective' biological normativity of organisms in debates on selected effect and causal role theories of functions and pathology, represented by thinkers such as Millikan, Neander, Boorse, Matthewson, Griffiths, among many others. The other was the 'subjective' biological normativity of biological subjects as active agents determining their own norms, represented by Canguilhem and Goldstein, as well as organizational function theorists such as Saborido and Moreno (2015). Alternative ways of making the distinction could have been individual vs. population, analytical/anglophone vs. continental, or passive vs. active biological normativity, but the distinction between objective and subjective biological normativity perfectly encapsulated Lewontin's own discussion of the organism as both an object and subject. It is a distinction between two very different ways of looking at organisms and their biological norms that cannot be reduced to one another. Both are important perspectives to understand organisms and their normativity.

Despite the stark differences between thinkers on both sides of the distinction, I hope to have made clear that the similarities between those advocating for OBN and SBN may greatly outweigh their differences. They all agree that the biological world is full of normativity. One cannot describe this normativity purely in terms of physical and chemical processes; there is normativity emerging with life itself that does not require any conscious agents. My goal here was to address several misconcep-

tions about OBN and SBN from each other's side and advocate for a more pluralist stance in which each perspective can benefit the other. While my discussion of the possible advantages we may gain from combining these perspectives for an understanding of biological normativity and the evolution of subjectivity may have been speculative, I believe them to be indicative of the great potential benefits we may reap from exploring these connections further. Finally, I hope that I have succeeded in the impossible task of starting to build a number of bridges between these literatures spanning analytic, naturalistic, and continental philosophy within a single article, and that it will inspire other researchers to further expand our understanding of the normativity of living systems.

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ACKNOWLEDGEMENTS

I would like to thank the Theory and Method in Biosciences group at the University of Sydney for helpful discussions and comments. I would also like to thank the reviewers of this paper for helping me to improve it further. This paper is part of a project that has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program (Grant No. 101018533) and was supported under the Australian Research Council's Discovery Projects funding scheme (project number FL170100160).

NOTES

¹ Drawing on the free-energy based Predictive Processing framework (PP) developed by Karl Friston [see Piekarski (2019); Hohwy (2020)].

² Its 1991 translation "The Normal and the Pathological" that I will be citing here unfortunately appeared relatively late in the English-speaking world.

³ The extent that Kant influenced Goldstein (among other Germans) is contestable. Whether there is a direct genealogical link or a rather loose similarity-relationship between their ideas is unclear due to enormous sociological influence of Kant-scholarship in the German-speaking world. Canguilhem, on the other hand, has repeatedly argued against Kantian notions [see Brilman (2018)], so it seems fair to say that the influence of Kant on Canguilhem is genuine, where he himself admitted as much.

⁴ See Clyne (1987); Siepmann (2006).

⁵ Here, Canguilhem refers to André Lalande's (1938) entry for the term 'Normal' in his *Vocabulaire technique et critique de la philosophie*, which can be translated as the 'Technical and Critical Vocabulary of Philosophy' - a highly influential encyclopedic dictionary for philosophy in France.

⁶ See Barron and Klein (2016); Klein and Barron (2016); Browning and Veit (2020); Birch (2020); Mikhalevich and Powell (2020); Veit and Huebner (2020).

⁷ See Etxeberria and Wolfe (2018).

⁸ Cf. Mackie (1977); Joyce (2001); Veit (2019).

⁹ See for instance Rosenberg (2011) and Veit (2018).

¹⁰ Though with the added condition that this causal role must be about fitness (survival and reproduction), something as they point out, has earlier been dubbed "evolutionary function" by Griffiths (2009) himself

¹¹ Indeed, it should not all come as a surprise that some Canguilhem scholars [Sholl (2014); (2016)] cite Lewontin's view of the organism in support of Canguilhem's views.

¹² Carel's (2016) book briefly mentions Canguilhem approvingly.

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