How to Be a Naturalist *and* a Social Constructivist about Diseases

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Abstract

Debates about the concept of disease have traditionally been framed as a competition between two conflicting approaches: naturalism, on the one hand, and normativism or social constructivism, on the other. In this article, we lay the groundwork for a naturalistic form of social constructivism by (1) dissociating the presumed link between value-free conceptions of disease and a broadly naturalistic approach; (2) offering a naturalistic argument for a form of social constructivism; and (3) suggesting avenues that strike us as especially promising for filling in the details of an alternative approach and addressing the most obvious objections.

1. Introduction

In the philosophy of medicine, the question of how best to define the category of disease has largely been framed as a competition between two conflicting approaches: naturalism, on the one hand, versus some form of normativism or social constructivism, on the other. However, several authors have lately argued that this way of framing the issue is importantly misleading, especially in so far as it precludes consideration of viable theoretical alternatives that do not align neatly with the naturalism-normativism dichotomy (see, for example, Broadbent 2019a, 2019b; Ereshefsky 2009; Kingma 2010, 2013, 2014; Simon 2007). Though we agree with these critiques, in our view they have missed an important dimension of what makes the naturalism-versus-normativism dialectic problematic: the illicit assumption that a broadly naturalistic philosophical approach requires, or at least favours, a definition of disease according to which it is not a distinctively value-laden concept. Our aim here is to lay the groundwork for a naturalistic form of social constructivism by (1) dissociating the presumed link between value-free conceptions of disease and a broadly naturalistic approach; (2) offering a naturalistic argument for a form of social constructivism; and (3) suggesting avenues that strike us as especially promising for filling in the details of an alternative approach and addressing the most obvious objections. We do not take the arguments offered here to constitute a full-dress defence of naturalistic social constructivism about disease; rather, our aim here is to provide enough motivation and development of the view for it to be taken seriously as an option for explicating disease.

The first part of this article aims to undermine the appearance that naturalistic social constructivism about disease is oxymoronic. We begin by arguing that standard usage of the label "naturalist" in philosophy of medicine does not accord with more general philosophical usage and that this deviation is not benign. In a sort of conceptual sleight of hand, the virtues of methodological and ontological continuity with the sciences that motivate a broadly naturalistic approach to philosophy are attached to value-free definitions of disease, thereby covertly painting social constructivist accounts as scientifically problematic, or at least scientifically irrelevant. Having made conceptual space for the possibility of a naturalistically motivated brand of social constructivism, we turn to the relationship between disease and dysfunction. Because philosophers have already offered accounts of functions that purport to capture the distinction between proper functioning and dysfunction in value-free terms (for example, Boorse 1977; Millikan 1984; Neander 1995) and because the concepts of disease and dysfunction appear to be closely related in ordinary and scientific discourse, naturalistic accounts often define disease in terms of dysfunction. We argue that while the conceptual link between dysfunction and disease is revealing, rather than grounding a value-free concept of disease, it reveals how a normativist, social-constructivist account of disease *could* do scientific work. Based on a minimal characterization of the explanatory role that concepts like disease and dysfunction play, we show that this role is at least compatible with a social constructivist account.

In the second part of this article, we offer a positive argument for naturalistic social constructivism about disease and introduce a version of it we believe to be correct. Borrowing concepts from speech-act theory in the philosophy of language (Austin 1952; Anscombe 1957; Searle 1979), we suggest that scientific disciplines tend to emphasize activities that fall on one side or the other of a word-to-world or world-to-word direction of fit. Medicine, along with conservation biology and most engineering or clinical disciplines, tends to emphasize world-to-word activities. We argue that given this emphasis a normativist-cum-social constructivist concept of disease is better suited to play the role we earlier assigned to the disease concept. Having argued for a broadly normativist, social-

constructivist approach, we offer as proof of concept a specific definition of disease. Though we believe it is correct and put it on the table for serious consideration and critique, it serves here primarily to bolster our defence of the general approach. It shows that naturalistic social constructivism is not vacuous, and it serves to anchor some abstract points about the relative merits of social constructivism over rival approaches and to demonstrate useful strategies for answering the kinds of objections likely to arise for any naturalistic social constructivist account.

2. **Naturalism and Disease**

According to the standard framing of the debate, conceptions of disease are split between naturalist accounts—meaning that the boundaries of the class of diseases map onto the contours and distinctions of natural science—and normativist accounts, which treat the term "disease" and its extension as inherently evaluative. Note that "natural science" is thereby assumed to be value-free, an assumption that will raise eyebrows among most philosophers of science. Over time, this dispute has to a large extent become ossified into the pattern typical of mature philosophical debates: a small number of well-established positions, having survived any obvious "knock-down" arguments, trade objections and counter-examples, each accumulating more and more detail and complication in their definitions as the problem-cases and responses to them mount up (Griffiths and Matthewson 2018, 310–312).

In truth, this framing represents a strikingly poor characterization of the debate. Of the two most influential positions, Jerome Wakefield's Harmful Dysfunction Theory (HDT) is best characterized in these terms as a *hybrid* account, combining an evaluative criterion—harm—with a naturalistic one—(etiological) dysfunction (for example, Wakefield 1992). Its principal rival, Christopher Boorse's Biostatistical Theory (BST), can also plausibly be construed as hybrid, since his definition of "illness" appends a harmfulness criterion to his naturalistic definition of "disease" (Boorse 1975). But if it is not hybrid, as Boorse insists, his theory probably represents the *only* purely "naturalistic"—that is, non-evaluative—position in the contemporary debate. Some varieties of social constructivism do represent purely normativist theories (for example, Cooper 2002, 2007; Engelhardt 1976), but these cannot be said to represent particularly widely held or influential views.

A bigger problem with the framing, however, concerns the terms "naturalist" and "normativist" themselves. In their standard usage in the disease concept debate, as summarized by Elselijn Kingma (2010, 242): "Naturalists claim that health and disease are not determined by our subjective evaluations of a state but are purely a matter of biological fact. Normativists reject this claim to objectivity and maintain that health and disease are essentially value-laden." As noted above, the idea implicit here that natural science is value-free is, at best, deeply controversial. But even putting this aside, "a philosopher from any other field" would not regard naturalism as implying merely that health "has objective existence", as Alex Broadbent (2019b, 96) writes, because depending on one's metaethics, values too can exist objectively; there are, after all, moral naturalists. Aristotelian naturalists, for instance, hold both that judgements of health or disease concern objective biological facts about species-teleological functioning *and* that, just as such, they are inherently evaluative (Kass 1975; Megone 1998, 2000; Thompson 1995).

So, by a more typical philosophical usage, "naturalism" about health would be the view that health "represents a real respect of similarity between things, that health is related by natural laws to other natural properties, that health 'carves the world at the joints' to use the stock phrase" (Broadbent 2019b, 96). And this has been the principal sense in which self-described normativists have been concerned to deny naturalism. "No biological account

of disease can be provided," argues Rachel Cooper, for instance, "because this class of conditions is by its nature anthropocentric and corresponds to no natural class of conditions in the world" (2002, 271). One of us, likewise, has previously written that "normativists, and constructivists … should not deny the obvious point that disease-states are objective natural phenomena", but also that "the class of biological and behavioural states concerned is heterogeneous, and does not constitute a natural kind on which [natural] laws could operate" (Glackin 2019a, 261).

But, though an improvement, this still is not the way that naturalism is standardly understood in metaphysics, or in other areas of the philosophy of science. Philosophical naturalism is usually taken to come in two varieties: methodological naturalism, whereby "philosophy investigates reality in the same way as science. Its methods are akin to scientific methods, and the knowledge it yields is akin to scientific knowledge" and ontological or substantive naturalism, which "maintains that reality involves nothing more than the entities studied in the natural sciences and contains no supernatural or transcendent realm" (Papineau 2009, 2). What we argue for in this article, then, is a normativist—and indeed a social constructivist—view of disease, which nevertheless counts as naturalistic in the broad sense in which the label "naturalist" is used in philosophy more generally, and which motivates naturalistic accounts of disease—namely, that the account is methodologically, ontologically and epistemically continuous with the natural sciences. For an account of disease to be naturalistic, in the important sense, in no way implies that the concept is non-normative or non-socially grounded. Naturalism clearly allows for robust claims about social ontology, as well as a broad range of metaethical accounts of value; and the view of disease presented here requires no stronger an account of value than the very minimal, descriptive one employed by social psychologists or behavioural economists.

We have so far spoken as though normativism and social constructivism were interchangeable, or at any rate as though social constructivism was necessarily normativist. But this is not so. Broadbent (2019a) identifies at least two separate distinctions conflated by the standard naturalist-normativist dichotomy, one concerning whether health and disease are value-laden or not, and one concerning whether they are judgement-dependent or not. Though he believes the possibility of such a combination has been hitherto "entirely unexplored" (617), he advocates a non-evaluative, judgement-dependent view based on individual perception of secondary qualities.[1] But there is no reason that the judgements on which health or disease depend cannot be the product of social agreements or processes of discourse, or that such social judgements need be any more evaluative than the perceptions Broadbent postulates. So, it would be entirely possible to produce an account of health and disease as constructed by social operations that are not in any interesting way normative. However, since nobody, to our knowledge, has done so, and nor do we intend to, we will continue to discuss social constructivism as—at least extensionally—a subset of normativism.

3. **Dysfunction and Disease**

The concept of function has played a central role in attempts to give a naturalistic characterization of disease. The relevant notion of function is the one at work when we say hearts have the function of pumping blood, as opposed to, say, the mathematical notion of a function. An item can possess a function it is unable to perform, so an account of function should include an explication of the distinction between *dys*function and normal or proper functioning. According to Boorse (1975, 1977), disease is defined as subnormal functioning,

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[1] That one can have an evaluative account that is not judgement-dependent, and therefore not constructivist, is uncontroversial. Again, Aristotelian naturalists provide an obvious example.

and in Wakefield's (1992, 1996) hybrid account, disease is harmful dysfunction, with harm constituting the value component and dysfunction the value-free component. Aside from the intuitively appealing idea that the concepts of disease and dysfunction are closely related, the concept of function has been invoked in the disease debate because it exhibits a unique combination of scientific credibility and normativity. In so far as the concept of dysfunction is naturalistically acceptable, yet normative, an account of disease in terms of dysfunction can capture the sense in which something has "gone wrong" in a diseased individual in a completely naturalistic way. Given the usual presupposition in the literature that "naturalistic" implies "value-free," invoking dysfunction to define disease captures the idea that disease is deviation from the normal while keeping disease attributions value-free. A hybrid view like Wakefield's reintroduces evaluation, but only to select as worthy of medical intervention some subset of the space of candidate diseases determined by non-evaluative criteria.

Philosophers of science have long puzzled over how to reconcile the apparent normativity of function attributions with their role in scientific explanation, given a picture of science according to which it does not, qua science, engage in normative discourse. However, function attributions play such a central role in the explanatory practices of many disciplines that few question their explanatory credentials, and work on functions has focused on spelling out the explanatory role of functions and on explicating the normative distinction between dysfunction and proper functioning. We question the assumption that science does not and should not engage in normative discourse, but our strategy is not to argue for a general social constructivist account of dysfunction to underride our social constructivist account of disease. This strategy would fail to capture the ways in which disease is a distinctively value-laden concept and it would make our account depend on a controversial thesis about functions. Instead, we focus on the explanatory role dysfunction attributions play, which any account of dysfunction should capture. Taking seriously that disease is a related concept, we can then, as good naturalists, investigate the role the disease concept actually plays in medical science. We argue that the role of the disease concept in medical science is best served by a normativist-cum-social constructivist definition of disease. To this end, it will be useful to briefly outline the explanatory roles philosophers have usually associated with function attributions in general.

Robert Cummins (1975, 1983) has developed an influential account, according to which an item's function is its contribution to the working of a system. In a process called "functional analysis," a system's dispositions or capacities are broken down into simpler dispositions and capacities organized in a particular way. For example, the circulatory system has the capacity to transport materials like oxygen, waste and hormones to different parts of the body. We can decompose this capacity into several sub-capacities, including pumping, directing flow, diffusing materials and so on. The heart's capacity to pump blood contributes to the system's capacity to transport material. So, the function of the heart in the circulatory system is to pump blood because the heart is capable of pumping blood and the standard physiological account of how circulatory systems work adequately and appropriately accounts for the circulatory system's capacity to transport material, in part, by appealing to the heart's capacity to pump blood.

For reasons we need not address in detail here, many have found Cummins's account as written unsatisfying, but it is uncontroversial that function attributions do play a role in the general explanatory strategy he describes. In other words, while many reject Cummins's account as a complete account of functions, that function attributions contribute to explanations of the dispositional profile of a system is generally accepted.

According to the other major approach to functions, function attributions explain not how a system works, but *why it exists* (Hempel 1965; Nagel 1961). Following Larry Wright (1973), contemporary etiological approaches cash out these existence explanations as a kind of historical origin explanation. To have a function is to be the product of a history of design (Kitcher 1993; Allen and Bekoff 1995; Dennett 1995), natural selection (Millikan 1984, 1989; Neander 1991, 1995; Garson 2019), or self-maintenance (McLaughlin 2001; Mossio, Saborido and Moreno 2009).

The details of the two approaches do not concern us here. The important point for our purposes is that the distinction between proper functioning and dysfunction cannot plausibly contribute to Wright-style existence explanations. An item's current dispositional profile cannot explain why it exists without positing some spooky backwards causation. This is why etiological accounts invoke a history of evolution, design or self-maintenance. A heart's current pumping cannot explain why it exists, but the fact that ancestral hearts were naturally selected for pumping can. Similarly, whether or not an item's current dispositions match a norm defined by history or attitudes *now* cannot explain why it exists, since it must exist already for its dispositions to conform or fail to conform to the norm. Whether or not functions are defined historically, it is uncontroversial that whether an item is dysfunctional depends on its current features. Dysfunction consists in having a current dispositional profile that deviates from some norm that may or may not itself be defined historically.

We assume that (1) the explanatory role of dysfunction must be part of the explanatory role of function attributions more generally, and (2) the explanatory roles we have listed—analyzing a system's capacities/dispositions and explaining an item's existence—are the only options on the table. It would be odd if (1) were false and there is no independent motivation to deny it. It would be difficult to establish (2), but we are aware of no plausible alternatives, despite decades of vigorous debate about functions in philosophy and in the sciences that invoke functions. Given these considerations, the only remaining option is that dysfunction plays a role in explaining the dispositions and capacities of a system.

The problem here is that there is a very influential argument that dysfunction attributions are rendered incoherent by a dispositionalist approach to functions (Cummins 1975; Millikan 1989; Neander 1991; Davies 2001). In short, an item's contribution to a larger system must be a disposition or capacity it actually possesses, but dysfunction consists in being *un*able to perform a function. We believe this line of thinking is crucially flawed, but it is beyond the scope of this article to address this problem in any depth. Instead, we propose to circumvent it through a minimal characterization of how dysfunction contributes to our explanatory practices, even if this argument is right.

It is uncontroversial that a properly functioning item will satisfy Cummins' definition. Extant accounts of function, each in its own way, define a "normal" system and, by definition, an item functions properly if it contributes to the system in accordance with a Cummins-style analysis of the normal system. Dysfunction consists in some kind of deviation from this normal system. As Karen Neander (2017, 63) notes, few systems will be "normal" in every respect; nevertheless, "description of the normal system serves as a framework from which descriptions of dysfunction can be hung. To describe the organization that results from a broken thumb, one needn't redescribe an entire system." In short, dysfunction attributions are a way of saying how a system deviates from a specified "normal" state. Despite widespread disagreement about how to define a "normal" system, this much should be common ground.

Assuming that disease and dysfunction are at least related concepts, we can skirt the issue of whether disease is *defined* in terms of dysfunction. It is enough for our purposes to assume that the disease concept serves the same kind of explanatory role; that is, in

whatever way we define health, it serves as a descriptive point of reference and disease attributions mark deviations from this descriptive point. Because our point is methodological, not metaphysical, it is not a problem if disease is the more fundamental concept and health is defined, as Boorse (1977) has argued, as the absence of disease. If we think of health or proper functioning as akin to the origin in a coordinate system, while disease and dysfunction attributions specify something's location in a space of possible states relative to that origin, it matters not whether the origin or the rest of the space is more ontologically fundamental.

The analogy with a coordinate system is a useful one and we continue to employ it in the next section. However, the analogy is not perfect. It nicely demonstrates the explanatory strategy we believe is at work when the disease concept is invoked—namely, characterizing something of interest relative to a fixed reference—but we do not, for example, mean to suggest that there is only one way of being healthy. The origin of a coordinate system is a *point* of reference, while it may be more accurate to treat health as a *region* and even that is perhaps too neat. Rather than push the analogy too hard, it is best to simply note its limitations. Note that the origin is not the only thing we must specify in a coordinate system; the size of units, geometry of the axes, kinds of coordinates (for example, polar versus Cartesian) and so on all share the characteristics we want to emphasize. In principle, there are indefinitely many ways of defining them that could work, but some are better suited to a given explanatory task than others. Despite the pragmatic basis for selecting between them, all serve to provide a framework for describing very real features of, and relationships between, things.

The minimal characterization of dysfunction, and related concepts like disease, is this: We specify an ideal or normal system in which an item plays a particular role in a Cummins-style functional analysis. Dysfunction is deviation from this ideal in some respect or other and dysfunction attributions allow us to describe, and perhaps even explain, the dispositional profile of the system in question by contrasting it with the ideal or normal system. The process can be thought of as placing an item in an abstract space of possible dispositional profiles, with the location of the normal system serving as a reference location within that space.

Note that in principle *any* arbitrary way of defining the "normal" system could serve as a descriptive point of reference and this includes using social-normative criteria. Also note that it is no more mysterious, from a naturalistic point of view, to ask, "Is the system like *that* and, if not, how does it differ?"—if "that" refers to a norm defined by social values—than if "that" is a norm defined by evolutionary history or statistics. However, that any arbitrary norm could in principle serve the needed role does not mean the norm is in fact arbitrary. In the next section we argue that there are good methodological reasons that, at least in medical science, social-normative criteria are just what the doctor ordered.

4. **A Naturalistic Argument for Social Constructivism**

Imagine one needs to plot the location of guests in a room using a coordinate system. While in principle any origin, any type of coordinate (Cartesian, polar, and so on) and any unit could be used to describe guest locations, not all systems are equally well suited to the task. This is not just a matter of our preferences. Some will simply encode task-relevant information more clearly and/or efficiently. Importantly, we cannot say without more information about the task just which coordinate system is best suited to the task. Depending on how the information is to be used, the features of the room, the number of guests and many other factors, different systems would make more sense. In particular, the origin of the coordinate system might reasonably be placed in the centre of the room, in one

corner, at the door, at the location of a speaker, at the start of the buffet line, at the fire exit, at the strongest source of light, or any number of other options.

Likewise, though any given set of dispositions could in principle serve as a norm relative to which we describe other systems, functional norms are not arbitrary. Given their explanatory role, there are good reasons for isolating particular dispositional profiles as privileged norms of proper functioning and characterizing a given system by its adherence to or deviation from that norm. Note that, as with a coordinate system, it does not follow that the choice is purely conventional. Which distinction will best serve our explanatory aims depends a great deal on the nature of the explanandum itself.

The explanatory aims of medicine, we will argue, call for a concept that contrasts with a norm of functioning defined by *social values*. In keeping with the standards of the literature, we will call this concept "disease," but importantly this concept of disease includes much more than what we would call "disease" in ordinary language or medical discourse. Injuries, short-term illnesses, deformities and disabilities are all included under the umbrella term "disease" as it is used in this philosophical debate. What all of these have in common is that they constitute a deviation from something one is tempted to call normal or healthy functioning.

Our argument relies on a distinction akin to what philosophers of mind and language have called "direction of fit" (Austin 1952; Anscombe 1957; Searle 1979). The directions of fit are "word-to-world" and "world-to-word." Assertions, beliefs and representative pictures have a word-to-world direction of fit, characterized by success conditions that involve correctly representing the way the world is. Beliefs and assertions can be true or false and representations can be accurate or inaccurate. Imperatives, desires and schematics have a world-to-word direction of fit. Their success conditions involve bringing it about that the world comes to match the representation. Imperatives and schematics can be followed, and desires can be satisfied.

Scientific activity, too, can have a direction of fit. Some bits of science aim to explain and predict. The goal is to accurately represent the way the world is. Our theories and hypotheses can be true or false, corroborated or falsified, empirically adequate or inadequate. Other bits of science aim to manipulate and control. In contrast to predicting the weather, we want to halt climate change. In contrast to merely explaining how cancer progresses, we want to prevent it. Building a working bridge requires understanding mechanical forces, but the understanding provided by basic physics is a means to the engineer's goal of allowing travel over obstacles.

The goals of prediction and explanation, on the one hand, versus manipulation and control, on the other, are intertwined, and we cannot pursue one in complete isolation from the other. However, this does not mean the distinction is not real and we are easily able to characterize sciences by their focus on one or the other goal. In fact, many disciplinary boundaries appear to be defined in part by a difference in emphasis between projects with a word-to-world or world-to-word direction of fit. While physiology, physics, ecology, cognitive psychology and sociology are primarily in the business of offering explanations and predictions, the closely related fields of medicine, mechanical engineering, conservation biology, clinical psychology and social work aim to manipulate and control the very same study systems. This is not to deny that all of the aforementioned disciplines engage in both kinds of activities. The difference is one of emphasis.[2]

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[2] Since we characterize medicine as a predominantly world-to-word discipline, we should acknowledge that the claim is not wholly undisputed. In a recent monograph, Alex Broadbent acknowledges the "goal" of medicine to be curative and world-to-word but argues that since most medicine has not historically been—and perhaps is still not—curatively effective, the "business" of medicine is a word-to-world inquiry into the causes and nature

The crux of our argument for social constructivism about disease is this: (1) While the concept of dysfunction sometimes or always contributes to projects with a word-to-world direction of fit, the concept of "disease" (whether or not it is a special case of dysfunction) primarily contributes to projects with a world-to-word direction of fit. And, (2) social-normative criteria for selecting the relevant norm better serve the aims of projects with a world-to-word direction of fit.

Consider the difference between function attributions as they occur in evolutionary biology versus mechanical engineering. It is widely agreed that dysfunction in the context of evolutionary explanations consists in deviation from that which was favoured by natural selection, and the default view about dysfunction attributions in mechanical engineering is that dysfunction is deviation from designer intentions. Both of these claims have been questioned, but both are at least prima facie very plausible. It is worth asking why that is.

Evolutionary biology is in the business of offering explanations and predictions. We think the following is a plausible story about how a norm defined by natural selection is well suited to that job: Members of a population are non-accidentally similar in many respects and this is largely explained by natural selection. It is thus non-accidentally the case that the features of organisms relevant to evolutionary explanations tend to cluster around what has been favoured by natural selection. Evolutionary biologists often quite literally conceive of organisms in an abstract space of possible forms called morphospace (Raup 1966; Dennett 1995) and evolutionary theory predicts that organisms will tend to be located in that space somewhere very near a point defined by past selection pressure. If dysfunction attributions place something relative to a descriptive point of reference, it makes good sense to use a point of reference around which the things to be described non-accidentally tend to cluster. Of course, there is room for debate about details, but it is very clear why it looks so plausible that the explanatory aims of evolutionary biology are best served by a norm defined by a history of selection. To invoke another metaphor, the features favoured by past selection are like a centre of gravity in morphospace.

Now consider how a norm defined by designer intentions serves the aims of mechanical engineering. Here is another entirely plausible story: the goals of mechanical engineering are to create systems with particular properties. It is thus of utmost importance to gauge when and how a system deviates from the target. And it therefore makes sense to have a concept that allows us to track such deviation. In a given case, many systems of interest might deviate far from the target; but since the goal is to cause systems to align with a particular ideal, rather than to merely describe and explain their current properties, it makes sense to favour a normative concept that tracks deviation from the ideal, rather than a descriptive one focused on its "centre of gravity", as in a more word-to-world-oriented project.

Though the concept of disease also occurs in descriptive explanations, a point we return to in a later section, we claim that it has its origins and home in medical practices with a decidedly world-to-word direction of fit. As with mechanical engineering, the project of bringing it about that we ourselves realize a particular ideal—*health*—is best served by a concept of disease where the relevant norm serves as a *target*. Social-normative criteria are well suited to this aim.

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of health and disease (Broadbent 2019b, 64). Since we have stressed that the difference between the two kinds of discipline is one of emphasis and degree, and since Broadbent explicitly envisages the inquiry as being "for the purpose of cure and prevention"—medicine's "goal"—we do not believe there is any real contradiction between his view and ours on this point. Broadbent's espousal of a "primacy of practice", which prioritizes practical issues of treatment over "agreement about principle, theory, and so forth" between rival medical traditions (2019b, 196) again suggests an enterprise that is primarily, though by no means exclusively, world-to-word in orientation (cf. Glackin 2019b). We thank an anonymous referee for raising this issue.

This argument is nothing like a proof that social-normative criteria should be preferred to, say, evolutionary-historical, statistical, or even individualistic psychological criteria. By our own lights it is just as possible in principle for any given norm to serve either purpose, albeit in many cases much less well. Our argument should not be construed as the claim that alternative norms could not possibly serve the needs of medicine. Rather, we claim that the work our disease concept does is *best* served by norms defined by social-normative criteria, and thus the concept as it is actually deployed in our scientific and ordinary discourse is best analyzed in this light.

5. Developing Constructivism

The argument of the last section strikes us as a powerful one, fully sufficient to establish social constructivism as a wholly naturalistically acceptable contender for a theory of disease. However, the argument is, admittedly, far from decisive. It is beyond the scope of this article to provide the kind of detailed look at medical practice that would be required for a full defence of our central premise that the aims of medical science are world-to-word and that those aims are best served by a social constructivist account of disease. Instead, we rest content with the strong intuitive plausibility of the claim and turn our focus to suggesting avenues for developing the kind of view we have been defending and addressing some of the more pressing potential objections. In the course of doing so, a second methodological argument for naturalistic social constructivism will emerge; namely, that it is able to subsume what rival approaches get right and thus enjoys a dialectical advantage.

To this end, we suggest a concrete story about the social-normative criteria for disease. While we think these criteria are correct, and are prepared to defend them, their primary function here is as proof of concept; that is, they serve to show that the general approach of naturalistic social constructivism can be made non-vacuous. Furthermore, they serve as a concrete example of a social-constructivist view of the kind we envision, around which we can frame our discussion of objections and how social constructivism subsumes rival views. The success of this account lends support to naturalistic social constructivism, but if our criteria were ultimately rejected, this would not undermine the argument so far that an approach along the lines we suggest is a promising one.

A biological or behavioural state is judged to be a disease, on the view we propose here, just in case it is regarded:

    (a)   as not representing a *tolerable* state of affairs;

    (b)   but neither as representing a moral *failing* of the individual concerned;[3]

    (c)   as *not* being worth reorganizing society so as to fully neutralize the relative impairment caused by the state;

    (d)   but *as* being worthwhile to divert resources to "correct" and/or ameliorate it.

We can visualize each pair of criteria as marking two points on a single axis of evaluative attitudes; the diseases will thus be all and only those conditions that fall between the designated points on both axes. Note that this analysis omits any account of who exactly is doing the regarding.

So, the trajectory of homosexuality, to take one example, has historically crossed the threshold of both (a) and (b) in turn: it was declassified as a disease as it ceased to be regarded as problematic or in need of correction, but prior to being so classified, it was regarded as merely criminal, licentious behaviour (Kitcher 1996, 207; Duffin 2005, 33;

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[3] We are grateful to Sarah Hitchen for clarifying the following point: criterion (b) should exclude conditions that are *themselves* regarded as moral failings, but not necessarily those—like a smoker's lung cancer—that might be regarded as *caused by* the sufferer's moral failings in some sense.

Glackin 2010, 453; more broadly, see Conrad and Schneider 1992). Certainly, too, the diagnostic criteria for many psychiatric disorders, in particular, often invoke what seem to be moral failings—Narcissistic Personality Disorder, for example, involves "a grandiose sense of self-importance … unreasonable expectations of especially favorable treatment … interpersonally exploitative … lacks empathy; is unwilling to recognize or identify with the feelings and needs of others. … arrogant, haughty behaviors or attitudes" (American Psychiatric Association 2013, 301.81 (F60.81))—but the effect of diagnosis is to place the unacceptable behaviour outside the realm of moral condemnation; this person is sick, not evil.

Similarly, for (c) and (d): a society could remove (nearly all) the relative disadvantage that results from hearing impairment were it to pass and enforce laws banning all audio-vocal communication; the measure would be at least "in one way better", in Derek Parfit's phrase, since it would be more egalitarian (Parfit 1995, §§V, XII; see also the discussion in Cohen 2011, 230–31). Clearly, most people would regard such laws as far too costly in many other regards; too much else would be lost by the egalitarian move. So, the failure to enact such a law is not merely discrimination against those it would help. But nor, at the other end, is the same society prepared simply to leave those with the condition to their own devices; they are regarded as deserving of some degree of assistance even if society is not prepared to write a blank cheque.[4]

We thus have a putatively complete characterization of the evaluative judgement that some biological or behavioural state is a disease; it is simply the conjunction of these four more primitive evaluative judgements. Whenever we make these four judgements about such a condition, on this view, we are thereby conceptually committed to the further judgement that it is a disease.

These two axes represent two dimensions along which our normative judgements can vary, not axes in the abstract space of dispositional profiles alluded to in our earlier argument. Coordinate systems are a particularly straightforward example of something that plays the kind of role we claim the disease concept plays, but we can now kick away the ladder. The above criteria contribute to the explanatory strategy we have been outlining; they define a descriptive reference relative to which we can "locate" a given state, but that framework is not quite as simple as measuring distance from a unique, very specific point.

Are there counter-examples to this analysis? There are certainly tricky cases at the margins. A first such instance is adult illiteracy. It seems to meet the criteria—it is (a) not tolerable; (b) not a moral failing; (c) we are not prepared to reorganize society so as to neutralize the disadvantage; (d) but we are prepared to devote resources to correcting it—yet intuitively it doesn't look much like a *disease* (compare Kukla 2014, 521). But the thing about pre-reflective intuitions is that it may not take very much reflection to unsettle them and this does not seem an excessively difficult bullet for the constructivist to bite; we can easily regard adult illiteracy as the result of a disruption to the developmental processes appropriate to humans in a modern social environment.

Deaf activists often regard themselves not as disabled, but as members of a linguistic minority; we will discuss this kind of case in more detail in the next section. But it suggests another sort of counter-example: does membership of such a minority—being a francophone Canadian, for instance, or a Syrian refugee in Berlin who has not yet learned the German language—itself meet the criteria we have proposed for judgements of disease? Perhaps, depending on the judgements that are made, but examining the judgements necessary to reach the unwelcome conclusion will help to defang it.

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[4] We leave aside here the separate question of to what degree health care should be publicly funded.

If someone is a member of a large and stable linguistic group, whose life prospects are not significantly impaired by that fact, their position can hardly be considered intolerable. Even the status of "linguistic minority" is often really a matter of granularity; francophones are a minority in Canada, but not in Quebec. So, to meet criterion (a), we must consider either small and persistently excluded minorities, or cases like our recent refugee. Yet these will only meet criterion (b) if they have not had the time, opportunity or ability to learn the majority language to a tolerable standard; if an individual can be fairly judged to be culpable for their own linguistic isolation, their isolation will not count as disease on the analysis presented here.

Most of these cases, we suppose, will meet criterion (c); perhaps an exception can be found in officially bilingual Ireland or Wales, where schoolchildren are required by law to learn the indigenous minority language. Criterion (d), however, requires that society be prepared to devote adequate resources to the situation's amelioration and/or correction. So persistently excluded minorities, or refugees for whom adequate educational provision is not made, will count as cases of structural discrimination, rather than disease.

We are left, then, with only a small subset of possible candidate cases; those where linguistic isolation intolerably reduces the prospects of the sufferer, adequate provision is made by society to rectify this isolation and the speaker is unable for non-morally culpable reasons to take advantage of this provision. But with these details fleshed out, it is hard to regard such cases as anything other than learning difficulties, which we should have no difficulty recognizing as a form of disease.[5]

Here is a third sort of problem-case. Indeed, since it comes in two varieties, here is a fourth as well. Someone might make the judgement that it is not worth investing resources to cure or ameliorate a state, but for the wrong reasons. They might judge a case to be a disease, but also judge that other pressing concerns are a better investment given limited resources. "Orphan diseases", which are so rare that it is not economically feasible to research treatment, would fall into this category, as would less exotic conditions that are simply not considered a priority while, for instance, people are starving. One might also judge something to be a disease, but not judge it worth ameliorating because one does not care about those who have the disease. For instance, a racist might not care about sickle-cell disease because it primarily affects people of African descent, but still recognize it as a disease. Call these "low budget" and "low empathy" cases, respectively.

In both these kinds of cases, we need to unpack our criteria a little more. In "low budget" cases we seem, de facto, to *tolerate* the relevant conditions. But this need not mean regarding them, in violation of criterion (a), as *tolerable*. These are cases about which we think something really should be done; we just don't think we have the resources to do anything about them at present. We should interpret criterion (d) in a similar way, where these cases are concerned; we may "regard it as worthwhile to divert resources" to correct or ameliorate conditions, even if we currently lack the resources to divert. The criteria are to be understood as expressing our values, not our means.

In "low empathy" cases, however, our problem is that the values being expressed are the *wrong* ones. Such a person clearly regards it as tolerable for those who suffer from the condition to do so, and in the case of a wartime or terrorist atrocity involving deliberate

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[5] This marks a convergence, incidentally, between our analysis and Lennart Nordenfelt's recent "praxis-oriented" account of health and disease, where by one formulation "health … is the bodily and mental state of a person such that he or she has a second-order ability to realize his or her vital goals" (2018, 15); Nordenfelt illustrates this with the example of an African refugee in Sweden who is currently unable to speak the Swedish language and therefore make a living, feed his family, *etc*. But this does not count as an illness or disability as long as the refugee possesses the first-order ability to learn Swedish and therefore to acquire the other first-order abilities necessary to attain his goals.

infection of the enemy, may even actively desire or intend it. These cases presumably also fail criterion (4); the indifferent or malicious agent would not consider it worthwhile to divert resources to the suffering. Yet they may still regard the condition as a disease; indeed, that judgement would likely form an explicit part of the malicious agent's motivation.

To deal with these cases, we need a way of blocking "victim-selective" judgements, or judgements about a condition that depend on who has it. The most straightforward way of achieving this would be to construe criteria (a)–(d) as pertaining to state-*types* rather than state-*tokens*. That is to say, what is to be regarded—or not—in the evaluative ways described is not the instantiation of the state in any particular individual, but rather the general sort of state it instantiates. Thus, a self-centred individual can coherently say, "I don't care about *that* person's condition, but if someone else—such as myself—had it, then it would be worth ameliorating." Or a racist might think, "This would be awful for white people to suffer, but it doesn't matter if *they* do." Implicit in these judgements is the idea that the state-types are the same in the hypothetical cases the individual is concerned about and the concrete ones she is indifferent to. So, the evaluative criteria for disease-status can be met, even if every concrete case of the disease leaves the valuer unmoved.

Though details remain to be developed, criteria (a)–(d), we contend, represent a remarkably attractive definition of disease. At the very least, the above considerations show that the kind of naturalistic social constructivism we have been defending need not rest with the correct but vague assertion that disease is defined by social-normative criteria. Attention to the role of the disease concept in medical practice, and broader societal discourse, suggests concrete developments of the view that can do real theoretical work.

6. Why Constructivism Wins

In this section, we consider two kinds of cases often regarded as problematic for social constructivist theories of disease more generally, and not only for the candidate criteria outlined in the last section. There are, we argue, relatively straightforward solutions to these cases as stand-alone problems. But more interestingly, we claim, the two sorts of cases taken together produce a new kind of puzzle for theories of disease and answering this new puzzle will help to show in their best light the advantages we take social constructivist theories to possess.

The first kind of case with which social constructivists are challenged concerns non-human illness. If some condition's being a disease is a matter of human social values, then what, exactly, are veterinarians treating? What are potato blight, or Dutch elm disease, if not *diseases*? Non-human animals, to say nothing of plants, seem to lack the sort of evaluative attitudes that social constructivists hold to be constitutive of disease (MacIntyre 2016, 44; see also Frankfurt 1971), but it would be absurd to suppose that they cannot therefore have diseases.

Fortunately, in this guise at least, the problem is fairly straightforward to answer: conditions suffered by their pets and livestock, crops and ornamental flora will count as diseases just in so far as humans regard them as intolerable, etc. relative to their own purposes and interests. Blight threatens human populations with starvation; foot-and-mouth disease threatens the livelihoods of cattle-farmers, *phylloxera* that of vintners and the amenity of drinkers and so on. But this will not help us with cases of *wild* disease. Wild animals and plants get ill, intuitively, even when no human interest is affected. Perhaps compassion, or a concern for biodiversity, will account for such cases of which we are aware in the abstract. But wild animals and plants got ill, intuitively, long before there were humans or human societies, and would have done so had no humans ever existed to have

evaluative attitudes towards them ("Dinosaurs got cancer"[6]). And those intuitions look tricky to explain from a constructivist perspective.[7]

One possible bullet-biting response here would be to insist that, contrary to these intuitions, disease among non-human life does not occur except as it affects human, social (including altruistic, compassionate, agricultural or industrial) interests; there is no disease "in the wild", merely the various biological and behavioural phenomena. Alternatively, it is possible to accept that wild diseases are genuine diseases but adopt a pluralistic stance according to which the human/domesticated and wild diseases cannot be captured by a single definition. This brand of pluralism need not be unprincipled. Wild diseases would remain members of the family of concepts that serve the explanatory role we outlined for disease and dysfunction above, so human and wild "disease" would represent two very closely related concepts.

A preferable option, however, would take more seriously the constructivist view that disease-judgements are not merely normative but often distinctively social; the evaluative judgements specified by criteria (a)–(d) above may be those of societies as wholes, rather than any particular individuals. With this in mind, we may draw our definition of "society" and its membership far more broadly than has hitherto been common (Leopold 1949). Increasingly, theorists and lawmakers have recognized the interests of non-human animals as stakeholders and rights-bearers in an expanded view of society; a view sometimes lampooned as "human rights for animals". We believe expanding our notion of the moral community in this way produces a coherent and compelling sense in which the social constructivist definition of disease we have outlined applies naturally and equally to non-human animals. And while the details remain to be worked out, we believe that recent advances in ecological thinking provide a robustly normative sense of the interests of non-animal biological individuals that will allow plant diseases to be similarly integrated into our account in time (see, for example, McShane 2004, 233–36; Griffiths 2021; Jones 2021).

The second kind of problem-case concerns "disputed diseases". A notable and much-discussed example is deafness, which is generally regarded in the hearing community as a disease or disability. But many Deaf people reject this judgement (typically using capitalization to indicate this stance); they consider themselves simply a linguistic minority, with any disadvantage they face the product of discrimination (see, for example, Lane, Hoffmeister and Bahan 1996; Crouch 1997). In such a dispute, which set of evaluative judgements is to count? Social constructivism, it is sometimes claimed, is problematic because it lacks the resources to resolve such questions.

The short answer to this objection is that such cases represent an advantage for social constructivism, rather than a drawback. Relativizing disease-judgements to evaluative judgements, that is to say, gives us a better understanding than rival theories of the nature of these disputes and how to deal with them. What matters chiefly, in a democratic society, is not which party to the dispute is right or wrong by reference to some external standard, but whose sets of evaluative attitudes ought to count in which cases, and for what purposes (Glackin 2010). Nor does this "relativizing" move result in any sort of pernicious relativ*ism* about disease-status; normativist views of disease are not as such committed to relativist or non-cognitivist views of the relevant norms and can certainly hold that disease-attributions are correct or incorrect, just in so far as the value-judgements that underlie them are

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[6] https://dailynous.com/2020/05/05/free-speech-oxford/#comment-405281.
[7] At least in part, the intuitions seem to arise from the fact that the basis of disease must be substantially mind-independent; whether or not someone has cancer cannot depend on whether or not they or anyone else *thinks* they do. As one of us has argued (Glackin 2019a), it is not problematic to ground disease as a socially constructed category on a mind-independent biological or behavioural base.

(Glackin 2019a; Powell and Scarffe 2019). What social constructivism helps us to recognize here is that since agreement on which values are correct may prove persistently elusive, liberal democracies are organized less around the pursuit of evaluative truth than the defanging of conflict; and that this is the appropriate response, too, to conflicts about which conditions are to be regarded as diseases.

One might object that while normativism per se does not commit us to relativism about disease, as long as one assumes a non-relativistic metaethics, our social constructivist version nevertheless commits us to the view that the relevant norms are in some important sense *constructed* by us and thus that their truth is dependent on our choices in a way that immediately implies a pernicious relativism about disease. Note, however, that we have not argued that disease-status is determined by judgements, only that to judge something to be a disease is to make certain social, evaluative judgements. If those judgements are—in whatever sense is appropriate—correct, the disease-judgement will be true. But to classify a state as a disease, in our view, is simply to adopt a particular social, evaluative stance. Language, though, is public, and disease attributions in practice reflect not simply individual judgements, but social-level judgements, constructed out of social discourse. We take this to be the core motivating insight of social constructivism, one that need not be saddled with a particular metaethics, relativist or otherwise.

Whether there is an objectively right answer about disputed cases of disease or not, the upshot of our approach is that there is no avoiding engaging in social-normative discourse to settle the dispute. That social constructivism need not imply relativism should also ease anxieties about wild diseases. When we now judge a non-human, even a long extinct one, to be diseased we thereby take a social normative stance, but this does not imply that the truth of the judgement depends on the existence of our current society, unless we add substantive and controversial assumptions about the nature of values. One already given to accepting a relativistic theory of value is unlikely to be troubled by its implications, when paired with our account, for wild and disputed diseases.

Significantly, when we put these two sorts of putative problem-cases together, a new puzzle emerges: there are comparatively few—though by no means, it should be said, zero (see, for example, Matthewson and Griffiths 2017)—controversial or disputed cases in wild or non-human disease. So, what is different about wild diseases?

We think there are two differences worth noting. Wild diseases are different from human diseases both in so far as they are comparatively uncontroversial and in so far as they are comparatively amenable to both statistical and selectionist functional analysis. We think these two differences are linked. One potential answer is that non-human diseases are different because human values and preferences do not play any significant role in the attribution of disease-status to plants and non-human animals. We find this unlikely and suspect that anybody with a working knowledge of the history of the biomedical, agricultural and veterinary sciences will do likewise.

A better answer would be that non-human diseases are different because we find it *easier* to agree on what to value. The next problem will be to say *why* it is easier to agree on the appropriate value-judgements in these cases. And there are, we believe, several reasons for this. First, norms of statistical typicality and evolutionary design will usually align very neatly with our evaluative intuitions. This should not be surprising. For one thing, folk conceptions about innateness make connections between statistics, natural selection and what it is "biologically possible" for an organism to realize (Griffiths 2009). For another, as Kant pointed out (1781, A548/B576), "ought", at least intuitively, implies "can"; our judgements about how things ought to be are mediated by how we judge that it is possible for them to be. In other words, the evolutionary and statistical phenomena that rival

theories invoke do not play a direct role in a proper account of the disease concept, but they do influence the way the social evaluative judgements that play a central role in our theory are made. For example, impressions about what is statistically typical influence judgements about what is tolerable. Knowledge of evolutionary history can (often erroneously) generate inferences about the malleability of a trait, thus influencing judgments about moral culpability. While this kind of influence is considerable, it can—crucially—often be overridden by more important human values and interests. Importantly for the case of wild disease, animal—and even more so non-animal—interests are typically much less complex and therefore are much more likely to align with statistical and evolutionary norms.

For readers not hostile to evolutionary psychology, there is another, albeit rather speculative, line of support for our position worth considering here. If our most basic and general evaluative tendencies have been shaped by selective forces, they would be generally expected to favour things like statistical typicality and evolutionary "design" as generally indicative of, or conducive to, fitness. In that case, it would not be much of a surprise to find that our detailed, reflective and considered evaluative tendencies would also, in many cases, line up with these more general and basic tendencies in favouring typicality and apparently purposive design.

Whether or not one takes seriously this further, more speculative argument, we are now in a position to say why our brand of naturalistically respectable social constructivism is preferable to its more conventionally naturalistic rivals. That is, because our constructivist approach contains an explanation of the appeal of the rival theories, it also effectively subsumes that appeal; the kinds of cases where rival theories do well are the kinds of cases where our theory would predict that they do well. Consequently, every case of disease providing intuitive support for one of those rival theories is thereby evidence for ours also.

But lest the reader think we are supporting our theory only by theft over honest toil, and simply claiming credit for the successes of our rivals, there are two further reasons, already alluded to, why we think our approach should be regarded as preferable. The first pertains to the structure of the theory. Constructivist accounts like ours are distinctive in taking widespread intuitions about what is to count as a healthy state, and what as a disease state, as their *starting point*, rather than their target; we begin by attempting to accurately characterize those intuitions and build our account from there, rather than starting with a biomedical characterization of disease states and hoping that it turns out to coincide with them. This makes constructivist accounts much less vulnerable than those rival theories to troublesome problem-cases and counter-examples. If the characterization of intuitions is accurate, few such cases should arise; if they do arise with any significant frequency, we should revise our characterization, but the essential outlines of a constructivist account will remain unchanged. By contrast, biomedical theories can expect to face—as they have in the past—a steady accumulation of such cases. These are rarely fatal; bullets can be bitten, or qualifications added to definitions. But both sap the plausibility of the theory over time; the counter-intuitive consequences pile up, while what were once elegant biological criteria become thickets of legalistic caveats and hedges (Griffiths and Matthewson 2018, 310–12). That a constructivist account can avoid these fates must count as a mark in its favour.

The second reason to favour the sort of constructivist account we have given here relates to the distinction we drew earlier regarding the aims and "direction of fit" of science and the sort of endeavour that medicine is. We observed a very broad division of scientific disciplines into those that aim primarily at explanation and prediction of the phenomenon under study ("word-to-world") and those that seek, instead, to manipulate and control it ("world-to-word"). While both sorts of tasks go hand-in-hand, we believe it is evident that medicine—as distinct from related disciplines such as anatomy or physiology—is

characteristically concerned primarily with the latter of these. That is, medicine aims not merely to describe and predict the course of illness, but to alter it; to prevent, cure or, at a minimum, ameliorate it.[8] Rival accounts, we hold, are at their most compelling and persuasive when they successfully pick out the descriptive properties relevant to the overall goal of control. But control is the goal here, not description; and it is again a reason to prefer our constructivist account of disease that control, rather than description, is its focus.

7. Conclusion

We have argued that there is nothing particularly non-naturalistic, or anti-naturalistic, about a normativist, social constructivist account of disease. With the possibility of naturalistic social constructivism established, we have argued, there are good naturalistic motivations for embracing social constructivism about disease. We have also suggested specific normative criteria for defining disease, as well as strategies for addressing some of the more pressing objections to social constructivism. In closing, it will be useful to bring some of these points together.

We claim that application of the disease concept in part consists in making particular normative judgements. Note that, whatever one's metaethics, unless we assume a form of non-naturalism about the mind, there is nothing ontologically or methodologically problematic, naturalistically speaking, about invoking these kinds of judgements. Furthermore, given any form of metaethical view according to which normative judgements can be objectively correct or incorrect, the corresponding disease attributions can be as well. Therefore, there is nothing incoherent about being a naturalist and a social constructivist about disease.

Furthermore, a good naturalist should base an account of disease on the job that concept does in actual medical science. We claim that medical science is one among many sciences that emphasizes what we have called world-to-word activities, such as manipulation and control, rather than word-to-world activities, such as prediction and explanation. Though both kinds of activities are intertwined, and all sciences engage in both, the difference in emphasis justifies reliance on concepts with a corresponding world-to-word direction of fit. The disease concept is one of a family of dysfunction-like concepts that serve to mark deviations from some norm or reference point, and because the concept serves largely to guide control of target systems, the relevant norm serves as a kind of target. This role is best served by a normativist account of disease. In our view, the most plausible norms are social ones. Additionally, for various reasons, normative judgements will tend to align, non-accidentally but also very imperfectly, with more descriptive norms—for example, those defined by statistics or evolutionary history. We can thus explain why these norms might appear attractive as definitional of disease. Social constructivism not only better captures the role of the disease concept in medical practice; it also subsumes the successes of extant rivals.

We have also suggested that, more specifically, to judge something as a disease is to judge it to be intolerable, though not a moral failing on the part of the afflicted, and worth investing resources to ameliorate, though not so much so that society would be radically reorganized to remove relative disadvantages. We take these criteria to represent a remarkably attractive account of disease and, at the very least, they illustrate the fecundity of the general approach.

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[8] In some fields this may not be the case. Evolutionary biologists attribute diseases to explain evolutionary dynamics and fitness pressures; however, if the concept at work is the same one, the medical concept is the older and more basic one. It may be important that in the cases that interest evolutionary biologists, normative and descriptive criteria will tend to align well enough for their purposes.

There is also a general lesson to be gleaned from this discussion about values in science. It is often assumed, if only implicitly, that value-laden discourse is unscientific, and that real science does not engage in it. However, this position is difficult to maintain—even assuming a deep fact-value distinction—if we take seriously as sciences all those disciplines that focus on control and manipulation. Conservation biology, engineering and medical science are all goal-oriented fields, and they are also sciences. Perhaps our case for normativism about disease will apply to contentious concepts in these other fields. If so, the framework presented here can serve as an initial template for how to be a naturalist and a social constructivist about more than just disease.

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