

[Cooper, RV](#) 2002, '[Disease.](#)' *Studies in history and philosophy of biological and biomedical sciences*, vol 33, no. 2, pp. 263-282.

Disease

Whether a condition is considered a disease often has social, economic and ethical implications. Are psychopaths evil or sick? Should the N.H.S. pay for the treatment of nicotine addiction? Is it right for shy people to take character-altering drugs? All these debates may be seen to depend on whether the conditions are diseases, and developing an account of disease may be hoped to help us in addressing such questions.

In this paper I attempt to clarify notions of disease. Before the philosophical work begins it is necessary to explain the terminology that I will be employing. In ordinary language we often distinguish between diseases, wounds, disabilities and injuries. However, in the philosophical literature on the pathological, as well as in much medical discourse, it has become usual to use "disease" to refer to all pathological conditions - whether diseases in the narrow sense, injuries, wounds or disabilities. This is the sense of disease on which it makes sense to say, for example, that "Health is the absence of disease". Here I shall follow this philosophical and medical usage and will use "disease" to refer to all pathological conditions.

This paper falls into two sections. In the first I examine the best existing account of disease (as proposed by Christopher Boorse) and argue that it must be rejected. In the second I outline a more acceptable account of disease.

Boorse's Account of Disease - The Main Contender

Christopher Boorse has proposed the most sophisticated account of disease currently available (Boorse, 1975, 1976a, 1977, 1997). According to Boorse a disease is a dysfunction of a sub-system of the body. "Sub-system of the body" is used in the broadest sense imaginable, referring to organs, systems in the body such as the nervous system, and sub-systems of the mind, for example those devoted to memory or language comprehension.¹ The overall aims of the organism are to survive and reproduce and the different sub-systems function so as to contribute to the attainment of these goals. Diseases are then defined as being "interferences with [these] natural functions" (Boorse, 1976a, p. 30). Thus amnesia is a disease because it is a dysfunction of the memory system. H.I.V. is a disease because it causes a dysfunction in the immune system. Eczema makes the skin marginally more permeable to pathogens, here a minor dysfunction corresponds to a minor disease.

Boorse defines "function" thus:

"X is performing the function of Z in the G-ing of S at t" means "At t, X is Z-ing and the Z-ing of X is making a causal contribution to the goal G of the goal-directed system S".(Boorse, 1976b, p. 80).

At first sight "goal" and "goal-directed" system suggest that sub-systems can only have functions if there is some conscious purpose behind them. Boorse, however, uses Ernst Nagel's notion of a "goal-directed system" as one that "tends[s] to persist in some integrated pattern of behaviour of activities in the face of environmental changes" and in which "the constituents of the system...undergo mutual adjustments so as to maintain this pattern in relative independence from the environment." (Nagel, 1961, p. 408). The temperature regulating mechanisms of the body which act to maintain a constant body temperature form such a goal-directed system. When someone is too hot they sweat. Sweating cools the body, and this makes a causal contribution to the goal of the heat-regulating system, thus the function of sweating is to cool the body. Similarly the function of shivering is to warm the body. At a higher level, the person as a whole can be seen as a system that is goal-directed to survival and reproduction, as a person will alter their behaviour to counteract changes in the environment that might otherwise diminish their chances of surviving or reproducing.

Boorse suggests that the natural functioning of some sub-system of an organism will correspond to the statistically normal functioning in a suitable reference class. The suitable reference class is a population of the same sex, age and species as the organism under consideration. Thus, Boorse claims, we can discover the natural functioning of a

sub-system by a statistical survey; diseased organisms will be those where functioning falls below the range of normal functioning. Taking the statistical norm as an index of natural functioning makes it difficult for Boorse to include near universal diseases, for example dental caries, in his account. To include such diseases Boorse adds a condition that allows that the majority can be diseased if the cause is "...attributable mainly to the action of a hostile environment" (Boorse, 1975, p. 59).²

In the remainder of this sub-section I shall argue that Boorse's account is unacceptable. Before considering objections that are, I think, fatal to his account, I will consider ways in which his account can be revised to cope with objections that turn out to be less deadly. It is worth considering possible revisions to Boorse's account in some detail as this will bring out the difficulties of constructing an account of disease.

First, Anthony Flew has pointed out that a failure to function is not a disease if the patient could decide to function normally (Flew, 1973). This qualification is required to prevent ear-plugs and contraceptives counting as pathological.

Second, in some cases of disease no actual dysfunctioning occurs. For example, an asthmatic whose asthma is controlled by drugs might function normally, but we would still consider them to suffer from a disease. Thus the account must be weakened to allow a disposition to dysfunction to count as a disease in cases where no actual dysfunctioning occurs.

Following these revisions we are left with the following Boorsean-account of disease: A person is diseased if and only if there is a disposition for some sub-system to dysfunction, and the person cannot merely decide to function normally.

A more fundamental problem with Boorse's account may lie in the account of function that he adopts. Much of the following discussion will revolve around the question of whether there is any account of function that is suitable for use in an account of disease, and so this point must be examined in some detail. As mentioned earlier Boorse defines function thus: "'X is performing the function of Z in the G-ing of S at t' means 'At t, X is Z-ing and the Z-ing of X is making a causal contribution to the goal G of the goal-directed system S'." (Boorse, 1976b, p. 80). As Larry Wright has pointed out, this account of function cannot distinguish accidental from non-accidental contributions to the goal of the system (Wright, 1973). According to Boorse's definition sweating has the function of cooling down the body, but this function would also be attributed to my accidentally knocking a bucket of water over myself when I happened to be hot.

There are two possible ways of dealing with this objection, and I shall consider the plausibility of each in turn. Boorse attempts to deal with the objection by claiming that the natural function of some system is whatever it typically does in members of the reference class that contributes to reproduction and longevity (Boorse, 1977, pp. 556-7). Thus accidentally knocking water over myself is not a natural function as it is not something that members of the reference class, that is organisms of the same species, sex and age as myself, typically do. In contrast the natural function of my heart is to pump

blood round my body because that's what hearts in members of the reference class usually do that contributes to the goals of the organisms. If my heart stops pumping blood then I am diseased, if I fail to knock water over myself I am not.

There are, however, reasons to doubt that Boorse's reference class trick will do the job required. Boorse originally stated that the reference class for an organism is the group of organisms of the same species, sex and age. In actual fact, however, it seems that reference classes are going to need to be far more fine-grained. What's normal for an organism depends not only on species, sex and age, but also on a host of other factors. Masai are naturally sensitive to growth hormone, pygmies are not. Athletes normally have a lower heart rate than other people. People who live at high altitude, or in hot climates, adapt in various ways. Thus the organisms in a reference class must not only be of the same species, sex and age as the organism under consideration, but must also be of the same race and must have undergone similar training and have lived in the same kind of environment.

Boorse hoped that accidental benefits could be distinguished from natural functions because natural functions would be statistically usual in the reference class, whereas accidental benefits would be rare. This thought is plausible when the reference classes are presumed to be quite large. The underlying idea is that accidental benefits will only occur infrequently. However, as we have seen, the reference classes need to be more fine-grained than Boorse originally suggested, and once they are made fine-grained enough quite often they may become very small indeed. Elderly female Masai mountain-bikers,

Asian male teenagers who have been brought up in Wales, and half-Chinese, half-Eskimo boy toddlers will all need their own reference classes. In those cases where a reference class consists of just one individual, accidental benefits and natural functions cannot be distinguished by appealing to what is normal for the reference class as whatever occurs in the individual will thereby occur in 100% of the reference class. Small, but non-singular, reference classes also present problems. In such classes the probability of the same accidental benefit occurring in the majority of the class is far higher than it is in a larger class. Thus, where the reference classes are small Boorse's method of distinguishing accidental benefits from natural functions becomes unreliable. To sum up, Boorse's claim that accidental benefits will be statistically rare in the reference class and can thereby be distinguished from normal functions is only plausible when the reference classes are assumed to be large. Often, however, the reference classes will be small and in some cases they may consist of just one organism. For these reasons Boorse's suggestion for overcoming the problem of distinguishing natural functions from accidental benefits must be rejected.

The second way of dealing with the problem of distinguishing accidental benefits from normal functions is to reject accounts of functions which are based on contributions to goals altogether. Wright proposed that function should instead be defined thus:

The function of X is Z means:

- (a) X is there because it does Z
- (b) Z is a consequence (or result) of X's being there (Wright, 1973, p. 161).

Wright's definition of function accords well with our usual usage. The function of the brakes on a bike is to stop the bike and the designer included brakes in the design of the bike because they do this. The function of eyes is to see and that vision gives an organism a biological advantage resulted, via the workings of natural selection, in humans having eyes. The definition manages to distinguish accidentally beneficial effects from functions. Sweating and accidentally knocking water over myself can both cool me down, but only sweating has the function of cooling me down as only the ability to sweat has been selected.

There are, however, also problems with Wright's account. As Boorse demonstrates, the account tends to see functions where there are none (Boorse, 1976b). Consider a fat man who would exercise if he were not so fat. According to Wright's definition the man's obesity has the function of preventing him from exercising: being obese stops the man from exercising and he is obese because he does not exercise. As another example, suppose that a scientist notices a leak in a pipe carrying carbon monoxide. The scientist is on his way to mend the leak when the fumes overcome him and he falls to the ground unconscious. In this case the leak causes the scientist to fall unconscious and the leak exists because it does this. Thus, according to Wright's definition the leak has the function of causing the scientist to fall unconscious.

Boorse's objections to Wright's account can be overcome if the account is amended thus:

The function of X is Z means:

- (a) X has been naturally selected because it does Z
- (b) Z is a consequence (or result) of X's being there.³

This is the account of function that has been adopted by other contemporary proponents of accounts according to which for a condition to be a disease there must be a dysfunction (e.g. Wakefield, 1993; Papineau, 1994). However, there are problems with the account as it stands which, although recognised by philosophers of biology, have not been adequately appreciated by the proponents of disease-as-dysfunction accounts. These problems concern the time at which selection pressures should be considered relevant for the attributions of functions. There are a number of possibilities. For the function of X to be Z any of the following might be considered necessary:

1. X was originally selected because it does Z
2. In the recent past selection has been responsible for maintaining X because it does Z.
3. Currently selection is currently responsible for maintaining X because it does Z.
4. At all times X has been selected because it does Z.⁴

It is difficult to choose between these options and each is associated with potential problems. If the function of a sub-system is said to be whatever it does that caused it to be selected originally then there will be problems dealing with cases where an organ or behaviour evolved for one purpose but now serves another. For example, it has been suggested that insect wings originally evolved as heat regulating organs and were only

later used for flying. If the original selection pressures are considered important we are forced to the counter-intuitive claim that insect wings do not have the function of enabling insects to fly, and that therefore insects that can't fly are not diseased.

If present selection pressures are considered important there will also be problems if dysfunctions are to be used to give an account of human diseases. It is plausible that within modern societies selection pressures act on human beings in very different ways than in earlier times. As a consequence, it may well be the case that in modern societies short-sighted humans, for example, are as fit as anyone else; they all wear glasses and in any case there is less need to be spot lions at great distances. If this is the case, perfect eye-sight would not have been selected in recent evolutionary history and so, contrary to the intentions of those who propose a biological account of disease short-sightedness could not be considered a dysfunction. On the other hand, it might well be the case that within modern societies sexual selection results in men who are witty, generous and intelligent having more offspring than other men. If functions are attributed on the basis of present selection pressures then there may well be some mental sub-system that has the function of making men witty. Any account of disease that was based on such an account of function could thus be forced to claim that a failure to be witty (and similarly a failure to be generous, or a failure to turn up on time to dates and so on) constitutes a disease. As short-sightedness is a disease and a failure to be witty is not, an account of disease cannot be based on an account of function according to which the functions of sub-systems are determined by present selection pressures.

Nor will it do to hold that selection pressures at all times are important. If this option is taken we may well end up with too few functions - plausibly in evolutionary history many attributes have been selected at one time but not at another - and if there are too few functions our account will provide too few diseases.

The best option for a disease-as-dysfunction account would be to claim that for the function of X to be Z it is necessary that recent past selection has been responsible for maintaining X because it does Z. Even this option is problematic. The time period that counts as the "recent past" will have to be specified very carefully. The "recent past" must be recent enough to ensure that very few sub-systems have come to serve another purpose since the specified time. It must also be long enough ago to ensure that the account does not fall into the problems that resulted from taking functions to be determined by present selection pressures. Maybe it will not be possible to find such a time period at all. Even if such a time period can be specified, an account of function that makes use of it will have a somewhat arbitrary appearance. The account will end up claiming that the function of a sub-system is whatever it did that caused it to be selected between, say, 2000 B.C. and 1000 A.D.. The proponents of disease-as-dysfunction accounts were motivated by a desire to show that disease is a natural category. An account of disease that makes essential reference to a time period that has been carefully selected so that the "right" functions are obtained does not seem consistent with this original desire.

These problems with finding an account of function that will be suitable for use in an account of disease should already make us doubt the wisdom of attempting to analyse disease in terms of dysfunction. In addition there are other problems with disease-as-dysfunction accounts.

First, it seems that it is not sufficient for something to be a disease that it be an evolutionary dysfunction. The American Psychiatric Association stopped considering homosexuality to be a disease in 1973, and few people nowadays would think of homosexuality as a disorder. According to Boorse's account, however, there is a disease whenever a sub-system of the body or mind fails to fulfil its evolutionary function. Those who adopt Boorse's account must accept the risk that some sub-system of the mind has evolved to make sure that individuals are attracted to members of the opposite sex, and that this sub-system dysfunctions in cases of homosexuality. Now, of course, it might not be the case that there is any such sub-system. It might even be the case that homosexuality can be evolutionary advantageous, perhaps because homosexuals are good at helping their relatives to raise children, or for some other reason. In the present state of knowledge, however, no one can be sure whether or not homosexuality is a dysfunction in evolutionary terms, and so someone who accepts Boorse's account is forced to admit that homosexuality might be a disease. Many of us, however, would want to say that whether or not there is some evolutionary disorder in homosexuality is not really the issue. What matters is not whether homosexuality is a dysfunction but whether it is also harmful.

Could we adapt a disease-as-dysfunction account and claim that a condition is only a disease if it is a harmful dysfunction? This approach to disease has been proposed in a number of papers by Jerome Wakefield (Wakefield, 1992a, 1992b, 1993). However, such an account of disease cannot be accepted either, as it is not even necessary that a condition be an evolutionary dysfunction for it to be a disease.

In some cases the genetic bases of conditions that we would normally class as diseases may confer an evolutionary advantage and thus be selected. In such cases, from an evolutionary point of view, there may be no dysfunction when cases of the disease occur. Evolutionary psychologists have been struck by the fact that many mental diseases appear to have a genetic basis and yet occur at prevalence rates that are too high to be solely the result of mutations, examples include manic-depression, sociopathy, obsessive-compulsivity, anxiety, drug abuse and some personality disorders. This means that the genetic bases of these mental diseases must be promoted by natural selection, which implies that the genes are adaptive in some way or other.

The evolutionary hypotheses concerning particular diseases that I shall discuss here are controversial. Still even if the hypotheses turn out to be false, that counterfactually they might have been true will be enough to show that it is not *necessary* for a condition to be an evolutionary dysfunction for it to be a disease. Even if sociopathy, for example, is not selected for in the way described, we can imagine a hypothetical disease very like it that is.

Although a condition might be evolutionary advantageous in all environments, it might just confer some biological advantage to sufferers in some present environments, or it might just have conferred benefits in the past. As discussed earlier, an evolutionary based account of function must specify the time period in which selection pressures are going to be taken to be important for determining the functions of sub-systems (that is it must specify whether the function of a sub-system is what it was selected for originally, or what it is selected for in the present, or in the recent past). That a condition has been evolutionarily advantageous at some time, t , will only show that the condition is no dysfunction if t falls within the time period within which selection pressures are taken to determine the functions of sub-systems. As such, not all the cases of selected-for diseases that I shall discuss will disprove all disease-as-dysfunction accounts. Still, I hope to discuss enough cases to make it plausible that whatever the time period that is taken to determine functions, within that period some disease will have been, or at least counterfactually could have been, evolutionarily advantageous.

A condition may be selected for because it benefits sufferers in some present environment. Mealey (1995) suggests that the genes for sociopathy are selected for this reason. Sociopathy may increase the biological fitness of otherwise disadvantaged males. It makes sense to suppose that in a tough environment males who are violent and promiscuous may live longer and have more children than their milder mannered counterparts. If Mealey is right, and if functions are taken to be determined by current selection pressures, then in sociopathy there is no evolutionary dysfunction.

Alternatively, a condition might be of no benefit currently but have been biologically beneficial in earlier times. It has been suggested that agoraphobia and other anxiety disorders were adaptive when humans lived in more dangerous environments (Marks and Nesse, 1994; Nesse, 1987). In dangerous environments anxious people have a better chance of avoiding danger and so live longer and have more children than others.

Whether in such diseases there can be said to be a dysfunction depends on the account of function adopted. If the time period within which anxiety disorders were biologically beneficial falls within the time period within which selection pressures determine functions then anxiety disorders cannot be said to be dysfunctions.

A condition might be selected through kin selection processes. Through kin selection a condition that is of no direct benefit to an individual may be selected because it benefits the individual's relatives. Such mechanisms can occur because individuals are genetically similar to their kin. As such an individual can increase the number of copies of their genes through helping their relatives to breed successfully. It has been suggested that the genetic basis of Generalised Anxiety Disorder is promoted for this reason (Akiskal, 1998). People with Generalised Anxiety Disorder spend a lot of time worrying, often about the welfare of their relatives. It is possible that although their anxiety does not benefit people with Generalised Anxiety Disorder directly, it does help their relatives to have someone looking out for them. If a disorder were selected through kin selection mechanisms within the period of time considered important for determining functions there would be no dysfunction from an evolutionary point of view.

Whatever evolutionary account of function is adopted it is plausible that in at least some cases the sub-systems of an individual who suffers from a condition generally considered to be a disease will be fulfilling their evolutionary functions. As such, we should conclude that it is not necessary for there to be an evolutionary dysfunction for a condition to be a disorder. As an evolutionary dysfunction is neither sufficient nor necessary for a condition to be a disease, disease-as-dysfunction accounts must be rejected. A new account of disease is required.

A Better Account

I suggest that a neat account of disease cannot be achieved. By "disease" we aim to pick out a variety of conditions that through being painful, disfiguring or disabling are of interest to us as people. No biological account of disease can be provided because this class of conditions is by its nature anthropocentric and corresponds to no natural class of conditions in the world.

I shall argue that by disease we mean a condition that it is a bad thing to have, that is such that we consider the afflicted person to have been unlucky, and that can potentially be medically treated. All three criteria must be fulfilled for a condition to be a disease. The criterion that for a condition to be a disease it must be a bad thing is required to distinguish the biologically different from the diseased. The claim that the sufferer must be unlucky is needed to distinguish diseases from conditions that are unpleasant but

normal, for example teething. Finally, the claim that for a condition to be a disease it must be potentially medically treatable is needed to distinguish diseases from other types of misfortune, for example economic problems and legal problems.

All three criteria, or criteria close to them, have previously been employed by other writers to provide accounts of disease. These writers' accounts will be referred to as I develop my own. The novelty of my account lies not in the criteria themselves but in the arguments for them and the development of their implications. Now the outlines of my account have been sketched, I shall discuss each of my three criteria in more detail.

Diseases are bad things to have

A condition can only be a disease if it is a bad thing for the potential patient. The fact that a person is biologically different from others can never be sufficient to establish that they are diseased. Ginger-haired people are different from other people but having ginger hair is not a disease. Similarly geniuses might plausibly all have something similar about their brains, but they are perfectly healthy. Many writers agree with me that a condition can only be a disease if it is harmful (e.g. King, 1954; Sedgwick, 1981; Engelhardt, 1974; Flew, 1973; Vetch, 1973; Wakefield, 1992a, 1992b; Reznek, 1987), however, the discussion given here of the implications of this claim is novel.

Sometimes it is suggested that something can be a disease if it is a bad thing for society even if it isn't necessarily a bad thing for the potential patient. Here proposed examples

include personality disorders and pedophilia (Spitzer, 1999). This is a mistake. Although some behaviours that are bad for society are symptomatic of diseases, others are not, but are rather behaviour that is criminal or otherwise anti-social. Whether or not behaviour is symptomatic of disease can not be determined by the type of behaviour- someone might set fire to buildings because they suffer from pyromania, or they might do it as an act of terrorism. Behaviour that is symptomatic of a disease is only distinguished from behaviour that is not by being involuntary. And, if someone has no control over their behaviour then this is a bad thing not only for society but also for the individual. Thus, something cannot be a disease just because it is bad for society, it must also be bad for the individual potential patient.

Sometimes it has been thought that for a condition to be a disease it must be a bad thing for most, or typical, potential patients. On this view someone might have a disease even though in their particular case this was not a bad thing, so long as the majority of the people with the condition were harmed by it. This is a mistake, as can be seen by considering the case of sterility. Some people who are sterile are deeply unhappy about it, for others it is a good thing (indeed many people choose to be sterilised). Quite conceivably it might be the case, or come to be the case, that being sterile is a good thing for the majority of sterile people. Still, regardless of this, those who are sterile but do not want to be would still suffer from a disease. Thus, someone can have a disease even if their condition is a good thing for most people. What matters is that it is a bad thing in their particular case.

How should it be determined whether a condition is a bad thing for the individual potential patient? This is a very difficult question and one that I will not be able to answer fully here. It should be noted that the question of what is good for an individual is not only a problem for me, but is a problem that arises in many other areas of philosophy. The question has been much debated by moral philosophers, particularly by utilitarians who, it seems, must determine the nature of happiness if they are to have much chance of maximising it.⁵

The nature of the difficulties can best be grasped by thinking of the possible ways of determining what is good for an individual as varying along a scale. At one end of the scale lie methods that rely on asking actual people what they want. At the other end of the scale lie methods that claim that something is good for an individual if it helps that individual to meet some ideal standard of human flourishing. In between these two extremes lie methods that claim that something is good for an individual if that individual would judge it to be good in ideal circumstances, for example, if they had all the information, and were calmer and wiser than they probably are.

Methods that rely on asking actual people are unattractive because it is plausible that actual people often do not know what is in their own best interest. Actual people often lack essential information. Thus Dubos (1965) reports on a South American tribe who valued dyschromic spirochaetosis for the pretty coloured spots it produced on their skin. Plausibly the tribe only valued their condition because they were ignorant of some of its

consequences; if they had known that the spot-producing condition had a tendency to kill them, they would probably have decided that it was not, after all, a good thing to have.

Actual people are also notoriously prone to self-deception. Self-deception is perhaps particularly likely to arise when people are faced with making judgements regarding their health as within our society whether someone views themselves as being healthy has profound consequences. Sick people may both be stigmatised and receive certain social benefits. Thus people are often motivated to either consciously lie or to deceive themselves regarding whether or not they are sick.

Finally, it seems that some actual people are simply incompetent to judge the quality of their bodily and mental states. A lobotomised patient may sit around all day doing nothing and claim to be perfectly content, but here we feel that something has gone wrong with the individual's ability to evaluate their condition. Similar problems arise with all diseases that might themselves impair someone's ability to judge their situation.

Once the problems with relying on the judgements of actual people are realised, it becomes tempting to move to the opposite end of the scale and claim that something is good for someone if it helps that person to meet some ideal standard of human flourishing. Here too, however, there are problems. Relying on the judgements of actual people to determine what is good is satisfyingly down to earth. On such a view if we want to find out whether a condition is good we have only to ask actual people in order to find out. In contrast appeals to "ideal standards of human flourishing" seem disturbingly

anti-naturalistic. It is not at all clear how the ideal standards are fixed, nor is it clear how we can find out about them.

To a greater or lesser extent all other methods on the scale are beset by the problems of the extreme methods. To the extent that a method requires idealisation it is obscure how it can deliver answers. I know what I actually value, but how can I know what I'd value if I were more knowledgeable and wiser than I am? To the extent that a method relies on the judgements of actual people it risks giving the wrong answers, after all actual people make mistakes.

The problem of how to determine what is good for an individual will not be solved here. Rather I shall go on developing my account of disease and just make use of our everyday intuitions concerning the badness of various conditions. Once some acceptable account has been developed of how the good for an individual can be determined this account can be used to flesh out my claims regarding the badness of diseases.

However the issue is eventually decided it will almost certainly be the case that it will be possible for one and the same condition to be a bad thing for one person but a good thing for another. Different people have different aims, different abilities and different preferences. In addition, the same biological condition may produce different experiences in different people - some schizophrenics see terrifying creatures, others see angels.

In An Anthropologist on Mars (1995) Oliver Sachs describes several cases of "patients" in whose cases it is plausible to think that a condition that would generally be considered a disease is a good thing. One chapter describes an artist who loses his colour vision following a head injury. After several years the artist adjusts to his new state and eventually turns down a proposed new treatment. Sachs writes that "Mr I...has come to feel that his vision has become "highly refined", "privileged", that he sees a world of pure form, uncluttered by colour. Subtle textures and patterns, normally obscured for the rest of us because of their embedding in colour, now stand out for him." (Sachs, 1995, p.35).

Similarly a few schizophrenics value their hallucinations to the extent that they would prefer to be schizophrenic than normal. One schizophrenic writes: "Hallucinations can be good or bad. The world can be transformed into heaven or hell at the drop of a hat...The plus side to them is certain moments of vividness that can turn a walk through a park, or whatever, into a walk through paradise...It's a type of drug, something that people would pay money for...I consider myself the luckiest of individuals, and am most pleased with this mind...My life is an adventure, not necessarily safe or comfortable, but at least an adventure." (Romme and Escher, 1993, pp.130-134).

The best thing to say about cases where it seems that a condition is good for some people but not for others is that one and the same condition can be pathological for one person but not for another. The schizophrenic for whom it is a good thing to be schizophrenic is not diseased, while another for whom it is a bad thing is. Here I am suggesting that we should think about diseases in a way analogous to the way in which we think about

weeds. A plant is only a weed if it is not wanted. Thus a daisy can be a weed in one garden but a flower in another, depending on whether or not it is a good thing in a particular garden.

This claim, that one and the same condition can be pathological for one person but not for another, may initially seem counterintuitive. I suggest that this implication of the concept of disorder has been easy to overlook because in the vast majority of cases there will be no disagreement between people as to whether or not a condition is a bad thing. So far as I know no one has ever claimed that cancer, or tuberculosis, or depression, or flu are good things to have. In addition, people who have a condition that is a good thing for them have largely been ignored by medicine because these people do not seek, nor need, help.

Still, that the same condition can be pathological for one person but not for another is recognised in some cases. Sterility is a disorder if it is not chosen, but not if it is the result of sterilisation. A scar may be a deformity if the person doesn't like it, but not if they do (perhaps, for example, it is a tribal marking). Occasionally people will be said to hear voices or to be a transvestite without there being any suggestion that they are sick.

Whether or not a condition is a bad thing in an individual case may not always be clear cut. In some cases some aspects of a condition may appear good but not others. The obvious example would be manic-depression. Many "sufferers" enjoy having manic episodes, but dislike the depressed periods that are part-and-parcel of their condition.

Here whether or not their condition is a disease depends on whether they would be better off without it all things considered.

At this point one possible source of confusion should be cleared up. When I say that whether a condition is a disease depends on whether or not it is a bad thing for the "sufferer" I mean that disease-status depends on how the condition in and of itself is evaluated. Any secondary gains achieved via possession of the condition should be ignored in this evaluation. Thus, if someone has food poisoning they can consider this to be a bad thing in and of itself, even though they are glad to be poisoned because this gets them out of sitting a difficult exam. In such cases the food poisoning is a disease, because the condition is only valued because it just so happens to be linked to other benefits.

As mentioned earlier a disease must be a bad thing for the individual patient, and not just a bad thing for society. This might be thought to lead to difficulties with conditions such as pedophilia and personality disorders. If someone is a pedophile then this is bad thing for society, but it is not clear whether it need be a bad thing for the pedophile who, after all, presumably acts in accordance with his desires. On some notions of the good for the individual this will not be a worry. An Aristotelian, for example, can claim that pedophilia is always bad for the pedophile because the condition reduces the degree to which the pedophile meets ideals of human flourishing. On other notions of the good for an individual, however, the worry remains. If, for example, it is thought that something is good for an individual if it fulfils their desires then it appears that having sex with small children need not be bad for the pedophile.

I suggest that desire-fulfilment based accounts of the good can nevertheless adequately deal with conditions such as pedophilia so long as they are thought of as being characterised primarily, not by a person's actions, but rather by their desires. Thus whether or not someone is a pedophile depends primarily on whether or not they want to have sex with small children, rather than on what they actually do. Whether or not it is a bad thing for the patient can then be taken to depend on their second-order desires. A pedophile is diseased if they don't want to desire children as sexual objects but find that they can't help themselves, but not diseased if they are happy with their desires. All other conditions that are characterised by disordered desires (paraphilias, addictions, personality disorders) can be dealt with similarly. Obviously, claiming that pedophilia need not be a disease is fully consistent with claiming that it is a bad thing for other reasons. All diseases are bad, but not all bad things are diseases.

The afflicted person is unlucky

Someone who has a disease is unlucky. We only consider someone to be diseased if they could reasonably have hoped to have been otherwise. Thus 90 year olds who can't walk as far as when they were younger are not diseased because we expect old people to become increasingly frail. Similarly baldness in men is not considered a disease, although it is in women. The notion of "being unlucky" used here is medically unsophisticated. Of course there is a sense in which, once enough medical science is known, many diseased people have not been "unlucky". Given their lifestyle, their genetic inheritance and the

environment in which they live it is, perhaps, thoroughly predictable that they would end up suffering from some particular disease. By "unlucky", however, I do not mean "unpredictable by medical science", but rather "unlucky as judged by the uninformed layman", that is, roughly, worse off than the majority of humans of the same sex and age.

There are various grounds on which we can consider ourselves to be unlucky with regard to our bodily or mental state. The first, and probably most usual ground, is that we subjectively feel worse than we did yesterday or a week ago. When this happens we have grounds for considering ourselves to be unlucky because we have reason to believe that we can, and indeed generally do, feel better. Second, we may consider ourselves to be unlucky because we have reason to believe that other people generally are in a better state than ourselves, for example someone born blind might consider themselves to be unlucky because other people generally can see. Third, we may have reasons for thinking that, although many other people are in the same miserable condition as ourselves, there is a good chance that everyone could be better off. For example, we have theoretical reasons for thinking that although dental caries is an almost universal condition it is perfectly feasible for humans to be without it. Usually all three kinds of reasons will be available together; if I have flu, or suffer a panic attack, I will know that I myself am usually in a better state, that other people generally are in a better state, and that there are reasons for thinking that everybody could be in a better state.

That there are various kinds of grounds for thinking ourselves to be unlucky helps to make sense of the way in which we think of the health of people who are disabled. When

considering disabled people we often want to say both that they suffer from a pathological condition, but also that they may be, for them, healthy. Thus a child with Down Syndrome is healthy in a certain sense, so long as she is not suffering from some other infection or injury. This way of thinking can be taken to reflect the fact that in such cases the grounds for thinking of someone as being unlucky come apart. A disabled person who has been disabled from birth, or at least for longer than they can remember, has no subjective knowledge of having been in a better state. On the other hand a disabled person does have reason to think that other people generally are better off than themselves.

Claiming that a diseased person is unlucky is reminiscent of the idea that a condition must be statistically infrequent in order to be a disease (as held by Taylor, 1976; Kendell, 1975). Although the two concepts overlap to a considerable extent, the notion of being unlucky is more flexible and for that reason preferable. Claiming that disease conditions must be statistically infrequent runs into well known difficulties. The requirement implies that if the only survivors of a nuclear holocaust were the inhabitants of a remote leper colony the lepers would, by virtue of the new-found statistical normality of their condition, be cured. Employing the notion of being unlucky avoids this objection. The lepers are lucky to be on the island, but they are still unlucky to suffer from leprosy.

The condition is potentially medically treatable

For a condition to be disease it must be such that it could potentially be treated by medical science.⁶ A cure need not be presently available, but the condition must be such that there is reasonable hope that a medical treatment might become available in the future. This condition is required to distinguish diseases from other types of misfortune - economic problems, social problems and so on. This criterion implies that conditions can come to be thought of as diseases as a result of a treatment for them being discovered. Following the discovery of Paroxetine, social anxiety disorder is a condition that is coming to be thought of as a disease for this reason. Prior to the discovery of the treatment, no-one expected that shyness would prove to be medically treatable, but the discovery of the drug-action proved them wrong.

Previously I had thought that diseases had to be presumed to have a biological basis, but such a claim is in fact both too strong and too weak. Claiming that diseases must have a biological basis would be too strong because there might be some mental diseases where there is nothing wrong with the patient's brain. It might turn out, for example, that irrational phobias are completely indistinguishable from reasonable fears by the neurosciences.

Claiming that diseases must have a biological basis would also be too weak a requirement. Having a bad haircut and being unable to fit into last year's clothes are bad things, sufferers may be unlucky, and both have a biological basis, but they are not diseases. They are not diseases because we do not rely on medical help to fix these problems. The class of conditions that is "potentially medically treatable" is, of course,

vague and messy. Is speech therapy for stuttering a medical treatment? Is corn-removal by a chiropractor? This indeterminacy as to what constitutes medical treatment may make it indeterminate whether or not some condition is a disease.

If, having said that diseases must be potentially medically treatable, I went on to define medicine as the art of treating diseases, my account would be circular. However, there are other ways of giving content to "medicine". One possibility would be to take medicine to be the science practised by doctors and other medical personnel, and to adopt a sociological approach to deciding who counts as "doctors and other medical personnel". Very roughly, we would end up saying that doctors are those people who trained at medical school and are experts in human physiology and biology and other sciences.

Reznek, who also holds that for a condition to be a disease it must be potentially medically treatable, suggests that medical intervention can be defined "...purely enumeratively without reference to the notion of disease - in terms of pharmacological and surgical interventions" (Reznek, 1987, p. 163). This suggestion must be rejected because there is no way of distinguishing some medical interventions from some non-medical interventions in terms of what is actually done. If someone is given amphetamines by their doctor this is a medical intervention, if they are given them by their drug-dealer it is not. These interventions can only be distinguished sociologically.

Treating some conditions is technically feasible but socially unacceptable. For a condition to be a disease it must be not only technically potentially treatable but also

socially potentially treatable. Here homosexuality is an interesting case. In the 1970s it was usual to consider homosexuals who were unhappy about being gay to suffer from a disease, ego-dystonic homosexuality, and it was thought that this disease could be treated through therapy which aimed at making patients heterosexual. More recently it has become socially unacceptable for therapists to aim to change peoples' sexual orientation.⁷ At the same time homosexuality has ceased to be considered a disease. Here we have an example of a condition that ceased to be a disease as it became socially unacceptable to treat it.

My account of disorder has now been developed. To make it plausible I need to show how various potential counterexamples and problems can be overcome.

Potential counter-examples and problems

Unwanted Pregnancy

On my account unwanted pregnancy may count as a disorder. In some cases it is a bad thing for a woman who is pregnant to be pregnant, if she used contraceptives she may well be unlucky to be pregnant, and her condition is medically treatable. Still, we don't normally think of unwanted pregnancy as a disorder. I suggest that our intuitions do not cohere with my account here because our intuitions as to whether or not a condition is a disease lag behind changes in the disease-status of a condition. Until comparatively recently unwanted pregnancy was not a disorder. Prior to the invention of effective

contraceptives those who had pregnancies they would have been better off without were not unlucky, and until comparatively recently it has been socially unacceptable to treat unwanted pregnancy (and to a certain extent this is still the case). We still think of unwanted pregnancy as not being a disorder because our intuitions lag behind changes in the disorder-status of a condition.

In addition our intuitions regarding unwanted pregnancy may be clouded by the thought that women are supposed to become pregnant. It might be thought that women are supposed to become pregnant because this is what they are biologically designed to do. This thought is misguided. I have already argued that an evolutionary dysfunction is neither necessary nor sufficient for a condition to be a disorder.

Animal and plant diseases

According to my account a disease is a bad thing, the sufferer is unlucky and the condition is such that it could potentially be medically treated. All these criteria can be met by animal diseases. If a dog has a bone stuck in its throat this is a bad thing, the dog is unlucky and a vet can probably get the bone out.

It is harder to see how my account can work for plant diseases. Plants don't have a point of view and so no sense can be made of the idea that a condition could be a bad thing for a plant. Boorse takes this point to show that only a biologically based account of disease can work for plant diseases (Boorse, 1975, p. 53). He claims that plants, like humans, can

be said to have sub-systems that have evolved to fulfil particular functions. According to Boorse when these sub-systems fail to fulfil their functions the plant suffers from a disease.

Boorse's account of plant diseases must, however, be rejected. There are many conditions that render plants less able to fulfil their evolutionary function but that are not considered pathological. Many varieties of fruit and vegetables have been developed that are good to eat but that are not very good at reproducing, for example seedless grapes and varieties of vegetable that are slow to bolt. Although these plants often fail to fulfil their evolutionary function they are not considered to suffer from some genetic disease. This shows that a biological account of plant diseases is inadequate.

My account of disorder can work for plant diseases so long as the criterion that a disorder be a bad thing is understood rather differently in the case of humans and of plants. For a condition to be a bad thing for a human means that they would have been better off being otherwise. For a condition to be a bad thing for a plant means that the condition causes the plant to deviate from an ideal standard. Ideal standards for domestic plants are determined by plant breeders, roughly the ideal standard for a plant corresponds to the picture on the seed packet. Even though seedless grapes can not reproduce, they are not diseased because they are as plant breeders want them to be.

In some cases a similar notion of a condition being a bad thing can be used for animal diseases. Some domestic animals are bred to meet standards that put them at a biological

disadvantage and may plausibly be supposed to cause them pain. For example, the British Rabbit Council standards for Netherland Dwarf rabbits dictate that the ideal weight for a Netherland Dwarf is 2lbs. As they are so tiny Netherland Dwarf does have smaller litters than larger rabbits and have more problems giving birth. Still, the small Netherland Dwarf rabbit is not considered to suffer from a genetic disorder, as she is as the rabbit breeder wants her to be.

Are mental diseases particularly problematic?

Often it has been thought that mental disease is more problematic than bodily disease. As my account treats mental and bodily disease together, I am under some pressure to provide reasons why deciding whether someone suffers from a mental disease might appear particularly problematic.

My suspicion is that mental disease appears especially problematic for rather mundane practical reasons. We debate whether someone suffers from a mental disease more often than whether someone suffers from a bodily disease because suffering from a mental disease carries heavier social and legal consequences within our society. The existence of the insanity defence and of compulsory treatment orders, and the stigma attached to mental disease all make it more important to decide whether or not someone suffers from a mental disease. In addition, problems linked to deciding whether or not someone suffers from a mental disease have received far more publicity than those linked to deciding whether or not someone suffers from a bodily disease. It just so happens that R.D.Laing,

Thomas Szasz, Michel Foucault and other influential authors wrote about mental and not bodily disease. The emphasis of public debate is now perhaps beginning to shift; debates as to whether deaf children should be given cochlear implants, which are often in effect debates concerning the disease-status of deafness, have recently received widespread media attention. I suspect that deciding whether someone suffers from a bodily disease can be just as problematic as deciding whether they suffer from a mental disease.

Having said this, I should point out that it is not an integral part of my account of disease and I shall now outline how my account of disease is compatible with Foucault's and Laing's accounts of mental disease. I do not wish to commit myself to accepting these accounts, but they have been influential and so it is worth pointing out that they are compatible with my own. If acceptable, any of these accounts would explain why mental disease is more problematic than physical disease.

In Madness and Civilisation (1961 as Histoire de la Folie, 1967 in English) Foucault argued that contemporary notions of mental illness are rooted in contingent, historical developments. According to Foucault, prior to the Enlightenment the mad were tolerated and seen primarily as different, and possibly gifted, rather than as ill. The Enlightenment idolisation of reason then rendered society newly incapable of coping with the "unreasonable" in its midst, and so vagabonds, delinquents and the mad came to be shut away in huge institutions. Of this mixed group, the mad alone were unable to fit into institutional life and so, through forming a residual problem population, became visible as a group for the first time. Following various inter-professional power struggles, the

medical profession eventually gained authority over this group, who came to form "the mentally ill" as we know them today. If Foucault is right, then the mad have not always been seen as suffering from mental diseases. The reasons Foucault cites - that madness was not always seen as a bad thing, and that madness was not thought of as being a medical problem - are precisely the kinds of reasons that my account suggests should lead us to think of a condition as a non-disease. Thus his account is compatible with my own.

My account is also compatible with Laing's accounts of schizophrenia. Laing developed two completely different and influential accounts of schizophrenia during his career.

First, with A. Esterson in Sanity, Madness and the Family (1964) he developed an account according to which, rather than there being something wrong with schizophrenics, there is something wrong with their families. According to Laing and Esterson the families of schizophrenics present them with confused and impossible demands. The schizophrenic in the family tries to make the best sense possible of an insane situation. Still, since you can't make a silk purse out of a pig's ear, the best sense possible isn't very good and so the schizophrenic ends up appearing to be insane. This account can be glossed as claiming that schizophrenics are not suffering from a disease because their problems are not appropriately medically treated - there is something wrong with their family rather than with them as individuals. Again, this is the kind of reason that my account suggests should lead us to think of a condition as a non-disease.

Later, in The Politics of Experience (1967) Laing developed an account according to which schizophrenia is a mystical journey to a higher form of sanity. According to this account it is us "normals" who are truly alienated from ourselves. From childhood on we have been conditioned, first by our family, then at school, then at work, to act in ways that do not conform with our experiences, for example we are trained to be polite to people who offend us. Under such pressures we create a false-self to present to the world. Schizophrenics are people who have refused to construct a false-self and as such are better off than the rest of us. Their experiences are part of a healing spiritual journey that can potentially lead them away from normality and into a higher form of sanity. This account is also compatible with my own. Laing can be understood as claiming that schizophrenia is not a disease because it is not a bad thing and, if this were so, I would be forced to agree with him.

References

Akiskal, H. (1998) 'Toward a Definition of Generalised Anxiety Disorder as an Anxious Temperament Type.' *Acta Psychiatrica Scandinavica Suppl.* **393**, 66-73.

Boorse, C. (1975) 'On the Distinction Between Disease and Illness', *Philosophy and Public Affairs* **5**,49-68.

Boorse, C. (1976a) 'What a Theory of Mental Health Should Be', *Journal of Social Behaviour* **6**, pp.61-84.

Boorse, C. (1976b) 'Wright and Functions', *Philosophical Review* **85**,70-93.

Boorse, C. (1977) 'Health as a Theoretical Concept', *Philosophy of Science* **44**, 542-573.

Boorse, C. (1997) 'A Rebuttal on Health', in J.Hunter and R.Almeder (eds.), *What is Disease?* (Totowa, New Jersey: Humana Press), pp. 1-134.

Dubos, R. (1965) *Man Adapting* (New Haven: Yale University)

Engelhardt, H.T. (1974) 'The Disease of Masturbation: Values and the Concept of Disease', *Bulletin of the History of Medicine* **48**, 234-248.

Flew, A. (1973) *Crime or Disease?* (London: The Macmillan Press Ltd).

Foucault, M. (1967) *Madness and Civilisation: A History of Insanity in the Age of Reason*. (Cambridge: Routledge).

Griffin, J (1986) *Well-Being* (Oxford:Clarendon Press).

King, L. (1954) 'What is Disease?', *Philosophy of Science* **21**, 193-203.

Kitcher, P. (1993) 'Function and design', in P.A.French, T.E.Uehling and H.K.Weltsein (eds.), *Midwest Studies in Philosophy*. xviii. (Notre Dame, Indiana: University of Notre Dame Press).

Kendell, R. (1975) 'The Concept of Disease and Its Implications for Psychiatry', *British Journal of Psychiatry* **127**, 305-315.

Laing, R.D. and A.Esterson (1964) *Sanity, Madness and the Family*. (London: Tavistock).

Laing, R.D. (1967) *The Politics of Experience* (Harmondsworth: Penguin).

Marks, I. and Nesse, R. (1994) 'Fear and Fitness: An Evolutionary Analysis of Anxiety Disorders', *Ethology and Sociobiology* **15**, 247-261.

Mealey, L. (1995) 'The Sociobiology of Sociopathy: An Integrated Evolutionary Model', *Behavioural and Brain Sciences* **18**, 523-541.

Millikan, R.G. (1984) *Language, Thought and Other Biological Categories* (Cambridge, Mass: M.I.T. Press).

- Nagel, E. (1961) *The Structure of Science* (London: Routledge and Kegan Paul).
- Nesse, R. (1987) 'An Evolutionary Perspective on Panic Disorder and Agoraphobia', *Ethology and Sociobiology* **8**, 73S-83S.
- Papineau, D.(1994) 'Mental Disorder, Illness and Biological Dysfunction', in A.Griffiths (ed) *Philosophy, Psychology and Psychiatry. Royal Institute of Philosophy Supplement 37* (Cambridge: Cambridge University Press).
- Reznek, L. (1987) *The Nature of Disease* (London: Routledge and Kegan Paul).
- Robinson, B.A. (2000) 'Statements by Professional Associations About Reparative Therapy', available at http://www.religioustolerance.org/hom_expr.html
- Romme, M. and S. Escher (1993) *Accepting Voices* (London: Mind Publications).
- Ruse, M. (1981) 'Are Homosexuals Sick?', in A.Caplan, H.Tristram Engelhardt and J. J.McCartney (eds.), *Concepts of Health and Disease: Interdisciplinary Perspectives*. (Reading, Massachusetts: Addison-Wesley Publishing Company), pp693-723.
- Sachs, O. (1995) *An Anthropologist on Mars* (London: Picador).

Sedgwick, P. (1981) 'Illness - Mental and otherwise', in A.Caplan, H.Tristram Engelhardt and J. J.McCartney (eds.), *Concepts of Health and Disease: Interdisciplinary Perspectives*. (Reading, Massachusetts: Addison-Wesley Publishing Company), pp119-129.

Spitzer, R. (1999) 'Harmful Dysfunction and the DSM Definition of Mental Disorder', *Journal of Abnormal Psychology* **108**, 430-432.

Taylor, F.K. (1976) 'The Medical Model of the Disease Concept', *British Journal of Psychiatry* **128**, 588-594.

Veatch, R. (1973) 'The Medical Model: Its Nature and Problems', *Hastings Center Studies* **1**, 59-76.

Wakefield, J. (1992a) 'The Concept of Mental Disorder - On the Boundary Between Biological Facts and Social Value', *American Psychologist* **47**, 373-388.

Wakefield, J. (1992b) 'Disorder as Harmful Dysfunction: A Conceptual Critique of D.S.M-III-R's Definition of Mental Disorder', *Psychological Review* **99**, 232-247.

Wakefield, J. (1999) 'Evolutionary Versus Prototype Analyses of the Concept of Disorder', *Journal of Abnormal Psychology* **108**, 374-399.

Acknowledgements

Thanks are due to John Forrester and Martin Kusch who read and commented on this paper. Versions of this paper have been presented to seminars at Bristol, Cambridge and Leeds universities, and I am grateful for the comments of those present.

¹ Boorse is not entirely consistent with respect to whether he thinks his account can be used for mental disorders. In Boorse 1975 and 1977 he limits his account to physical disorders. At other times he takes it to also apply to mental disorders (Boorse 1976a, 1997). Most of those who have been influenced by Boorse take his account to apply to

both mental and physical diseases, and even in those papers where he takes his account to apply only to physical diseases he gives no reason for this restriction, thus it seems fair to here consider the adequacy of Boorse's account as an account of both physical and mental disease.

² Boorse is not altogether consistent in holding this account of universal diseases. In Boorse 1997 p. 86 he tentatively suggests that maybe medicine should cease to consider universal "diseases" to be genuine diseases. He suggests that this is acceptable as there are very few conditions that are considered to be universal diseases in any case.

³ This account of function has been proposed by a number of writers. It is most often attributed to Millikan 1984

⁴ List of possibilities adapted from Kitcher (1993 p.265 in reprint).

⁵ See, for example, Griffin (1986) for a fuller discussion of these issues.

⁶ This view is also held by Reznick (1987, p. 163), Taylor (1976), Veitch (1973).

⁷ For statements by professional organisations condemning "reparative therapy", that is therapy that attempts to change the sexual orientation of homosexuals, see Robinson (2000).