

DEFINING DISEASE: MUCH ADO ABOUT NOTHING?*

1. INTRODUCTION: CHARACTERISING “DISEASE-IN-GENERAL” –
A PROBLEM WORTH THINKING ABOUT?

Medical science, of course, tries hard to characterise more definitely and fully the symptoms and causes of particular conditions generally referred to as diseases. Equally obviously, clinicians are called upon all the time to make *diagnoses* – to decide, against the background provided for them by the present state of medical science, and on the basis of their perceptions of the signs and symptoms, whether or not someone under their care has a particular condition: lung cancer, diabetes mellitus, congestive heart failure, or whatever. There is often a good deal of uncertainty about such judgments. Doctors strive hard to become more skilled at making them, and some philosophers – employing techniques from decision theory and artificial intelligence – have tried to help them. The topic of this paper, however, is not judgments of this sort, but rather of a second sort that medics are also sometimes called upon to make. These are second-level or meta-level judgments of the following kind: having identified some definite set of signs and symptoms, and being, let’s suppose, confident that they have diagnosed the correct condition, clinicians may then be called upon to decide whether or not that condition amounts to a genuine disease or illness. They often feel very uncomfortable about such judgments. Perhaps philosophers, with their expertise in conceptual matters, can provide significant help here by providing a clear-cut and defensible characterisation, not of any particular disease (that seems clearly a purely scientific issue), but of the *class* of diseases – of what might be called “disease-in-general.” This idea has spawned an enormous literature – indeed the problem of characterising what does and what does not count as a disease is often regarded as one of the *defining problems* of the philosophy of medicine (Boorse 1997, 100).

This fact alone would tempt some present-day philosophers to regard the philosophy of medicine as an intellectual backwater: “conceptual analysis,”

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or the “explication” of concepts, although central to analytic philosophy for many decades, is, on the whole, no longer viewed with any great enthusiasm within contemporary philosophy. But, whatever one’s reservations about conceptual analysis in general, there seem to be at least three reasons for regarding the analysis of disease as an exceptional case. The *first* is that, unlike many cases where conceptual analysis has been liberally indulged in, there appear to be urgent practical reasons why an analysis of the concept of disease is needed. In particular, and again unlike many other cases, the way in which what might be called “grey cases” are resolved by the analysis seems really to matter from a practical point of view. “Grey cases” here are conditions whose status as diseases (or not) is controversial or intuitively unclear ahead of systematic analysis. The idea of conceptual analysis is, of course, to use the clear-cut instances of the phenomenon (in this case lung cancer, pneumonia, and so on) and the clear-cut non-instances to derive necessary and sufficient conditions for the target notion – in this case disease; those necessary and sufficient conditions will then be applied to decide the “grey cases.” How grey cases are resolved is, as we shall see, crucial to a range of judicial, insurance, and social decisions.

The *second* reason why even those most anxious to stress the limitations of conceptual analysis might be ready to grant the case of “disease” special status is this: as we shall see, many difficulties have been alleged to stand in the way of providing any purely descriptive, value-free account of disease. These difficulties have persuaded a clear majority of those writing on the problem to hold the normativist thesis – that “disease” is an ineliminably *value-laden* notion. Since medicine is the study of disease, this thesis, if correct, would seem *prima facie* to threaten the whole idea of medicine as a science or as firmly based on science.

The *third* reason relates closely to the first two and concerns the status of mental illness or disease. There has been a great deal of discussion – much of it stemming from the work of Thomas Szasz – as to whether it is proper to talk of mental illness at all. This discussion (when clear at all) operates by taking a notion of disease-in-general derived from clear-cut and therefore invariably “physical” cases, and then comparing so-called mental disease or mental illness against the standard thus provided.

We begin, then, by elaborating on these reasons for taking seriously the enterprise of characterising the general notion of “disease.”

2. THREE REASONS FOR SEEKING AN ANALYSIS OF
THE NOTION OF DISEASE

(i) *Grey Cases Matter*

Consider two patients attending a rheumatology clinic. Mr. A is 45 years old, married, with two children. He presents with difficulty in walking owing to a short right leg and stiff right hip resulting from septic arthritis of the right hip in childhood. He is already in receipt of invalidity benefit and mobility allowance and is now applying to be rehoused by the local authority on the grounds that he is, because of his illness, finding it increasingly difficult to negotiate the stairs in his house. Mr. B is 35 years old, single, and lives alone. He also presents difficulty in walking and gives a history of birth trauma. He exhibits a bizarre gait, but no abnormality in the musculoskeletal system can be found to account for this. He is not in receipt of invalidity benefit and is in fact in the process of lodging his second appeal against the state social security decision not to award him this benefit. He feels that he is suffering from an illness and wants his doctor to support this claim and hence to help him overturn this decision. However, neurological examination and investigation showed no abnormalities, and, in particular, no evidence of damage suggestive of birth trauma. This patient had, though, been referred to the psychiatric services several times in the past. Reports showed that he had been abused as a child and had spent his early life in a succession of foster homes. He had been bullied at school where he was an underachiever and found difficulty forming relationships both with his peers and teachers. He had held several menial jobs, each for no longer than a few weeks, and was now socially isolated.

The clinician may well feel intuitively that Mr. B is no less deserving than Mr. A. However Mr. A's social benefits are secure, while Mr. B's appeal will definitely not be successful unless the doctor declares that he has a "genuine disease or illness." There is no scientific evidence of birth trauma being the cause of Mr. B's disability. Indeed there seems to be no doubt that his disability results, not from birth trauma or any other overt physical injury, but rather in some complicated and little understood way from the fact that he is a profound social misfit. Perhaps one should say that Mr. B is indeed ill, that he is suffering from a genuine disease by virtue of being a social misfit. But this judgment also seems fraught with danger: it recalls Soviet Russia's treatment of dissidents (misfits in the context of that society) as psychiatrically ill.

The issue of whether or not some condition is “really” a disease in fact arises frequently in insurance and general social contexts. For example, in the 1970s a Manchester general practitioner prescribed the nicotine gum, Nicorette, to one of his patients and charged the prescription to the UK National Health Service on the grounds that it was treatment of a genuine disease, which he termed *Tobacco Use Disorder*. Norman Fowler, then Minister of Health, ruled against this on the grounds that smoking is not a disease but a “*bad habit*.” Fowler argued that Nicorette is therefore not a drug under NHS definitions (“a substance that has a pharmacological effect in relation to the prevention or treatment of *disease*”) and that therefore the NHS was under no obligation to pay for it.

In the 1980s a dispute arose over whether or not *stammering* constitutes a disease or illness. Claims had been made to private health insurers in the UK for treatment for stammering; but these had been turned down on the grounds that stammering “is not a disease, because correctable by education or training.” An eminent paediatrician, Noel Preston, argued, however, that:

... it is not normal to have any difficulty with enunciation and the flow of speech. This being the case, stuttering would be a deviation from the normal healthy state. The stutterer is not free from disease or dysfunction, and he does not enjoy all his parts functioning normally. Therefore stuttering is an illness.¹

Finally, although the list could easily be greatly extended, a 1995 article in the UK *Independent on Sunday* newspaper raised the issue of whether or not developing *wrinkles* amounts to a disease and so again merits treatment under the NHS. Amongst comments quoted from medics involved were the following:

The wrinkle is a serious disease. Do you know anyone who gets up every morning and worries about illness? But everybody worries regularly about wrinkles. (American dermatologist Albert Kligman)

Wrinkles are not a normal part of the ageing process. ... Just because wrinkling is not life-threatening does not mean we should not treat it. Few dermatological conditions are going to kill you, but we still treat them. (Professor Christopher Griffiths, Manchester)

It is hard to draw up rules to distinguish between what is medical and what is cosmetic. Some people would try and make you feel guilty for treating wrinkles, but I do not see what is wrong with it. It is only controversial in the context of rationing inside the NHS. (Andrew Griffiths, St. Thomas', London)

¹ Both of the above two cases are reported in Resnek (1987).

The Law Courts, too, often take it to be crucial whether or not someone's condition at the time some crime was committed amounts to a genuine disease: indeed in jurisdictions that still include the barbarism of capital punishment, such a judgment can be, as everyone knows, quite literally a matter of life and death. This sort of question arises almost invariably in the case of putative *mental* diseases – a field where “grey” predominates. So it is not surprising that, within the medical profession, it has generally been psychiatrists who have been at the forefront in seeking to characterise the notion of disease. A leading example is R. G. Kendell, Professor of Psychiatry at Edinburgh, who perspicaciously remarked (Kendell 1975, 444):

Most doctors never give a moment's thought to the precise meaning of terms like illness and disease, nor do they need to. They simply treat the patients who consult them as best they can, diagnose individual diseases wherever they can, and try to relieve their patients' suffering even if they can't. . . . But there are some situations in which this unthinking empiricism is inadequate. Psychiatrists are only too well aware of this, since they are often required to express opinions about the presence or absence of illness in the courts, and to defend these opinions to hard-headed lawyers. . . .

So both insurance (including state insurance) and legal issues often raise questions of what is really a disease and, finally, it is easy to construct a long list of particular conditions whose status as genuine disease (or not) has been extensively and heatedly debated independently of any specific judicial or social-insurance consideration. This list includes alcoholism, homosexuality, PMT (pre-menstrual tension) and ME (myalgic encephalo-myelitis or, as some prefer, CFS – Chronic Fatigue Syndrome). The heatedness of such debates indicates that the issue of whether or not these particular conditions are really diseases carries a great deal of significance for many people.

(ii) *Medical Science and the Normative View of Disease*

The *second reason* for even a sceptic about the value of conceptual analysis in general to take seriously the idea of “explicating” disease was, remember, this. Many attempts have been made to give such an explication in purely descriptive terms, and there are few who think that any such explication has proved adequate. Instead there is quite a strong consensus around the idea that, although a satisfactory way to demarcate disease from non-disease indeed exists, this demarcation ineliminably involves judgments of human *value* – conditions count as diseases only because we judge them to be of disvalue. But if “disease” is an ineliminably value-laden term, then it seems difficult to see how medicine, the study of disease, can be scientific. Of course

everyone agrees that the *practice* of medicine involves any number of value-judgments: which patients to treat, which to give priority to, when it is more humane to turn off the ventilator, and so on. But how can even the *theory* of medicine be scientific if what appears to be its very topic of study – disease – has no purely descriptive characterisation? Moreover since the “we” who are doing the disvaluing may change – that is, since what is disvalued by a society at one time may not be disvalued by another society or by the same society at a later time – the line differentiating disease from non-disease, even amongst known conditions, may be society-dependent. And this again seems inconsistent with what we normally think of as a scientific subject matter.

Certainly Christopher Boorse, whose characterisation of disease is widely regarded as the most sophisticated attempt at a “naturalistic” characterisation, sees the whole aim of his enterprise of developing a “value-free scientific disease concept” as that of providing a “bedrock requirement to block the subversion of medicine by political rhetoric or normative eccentricity.” (1997, p. 100)

One of the normative eccentrics that Boorse may have had in mind (though he does not explicitly cite him) is Ian Kennedy. Kennedy wrote (Kennedy 1983 5–6):

... illness, a central concept of medicine, is not a matter of objective scientific fact. Instead it is a term used to describe deviation from a notional norm. So a choice exists whether to call someone ill. The choice depends on the norm chosen and this is a matter of social and political judgment.

Kennedy writes in terms of “illness” rather than disease. But since these are usually either regarded as equivalent or differentiated on the grounds that illness is a particular type of disease – one in which the patient suffers discomfort (disease can of course be, at least temporarily asymptomatic) – his claims clearly apply to disease too.

Kennedy also goes on to make the following inference from the alleged normative nature of illness or disease:

illness is a spurious scientific term and . . . the doctor in purporting to determine its existence as an objective fact is [in fact] engaged in a series of moral, social and political choices . . . (ibid., 10).

Or, as he puts it more succinctly if scarcely more plausibly:

Each diagnosis of illness is an ethical decision. (Ibid., 17)

There are some fairly crude *non sequiturs* here, as we will show later; but none the less, the possible role of values in the characterisation of disease

and the effect of any such role on scientific method in medicine certainly forms a reason for seeking greater clarity concerning the notion.

(iii) *Mental Illness?*

The third apparent reason for swallowing any qualms one may have about conceptual analysis in the case of disease, we mention only to lay aside as too large an issue (at any rate in terms of the amount of literature produced) to be dealt with here. This is the question of whether or not those who are presently characterised as mentally ill are really ill in the sense of suffering from a genuine disease. Szasz, of course, seems to take it that there is a clear-cut notion of disease to be derived from “physical” illnesses; and he goes on to argue that the so-called mental disorders do not satisfy that notion – psychiatrists are using the notion of illness, in talking about *mental* illness, in a purely “metaphorical” sense, largely motivated by evaluative judgments. A clarification of the notion of disease-in-general might, then, shed some light on this issue of mental disease in particular.

3. SOME ATTEMPTED DEFINITIONS OF DISEASE AND
THEIR PROBLEMS

The history of medicine exhibits definite “revolutionary” changes both in ideas about particular diseases and in general ideas about causative agents in disease. We here, however, are concerned solely with current conceptions. So what exactly is involved, according to current conceptions and theories, in someone’s suffering from a disease? One major motive in characterising and investigating particular diseases has always been to explain suffering and incapacitation in the absence of overt physical injury. We might, therefore, try something like:

- DEFINITION 1: *A disease is any clearly characterisable condition that involves suffering or some degree of incapacitation not produced by any overt physical injury.*

But Definition 1 is clearly inadequate. First, because, as is well known, a whole variety of diseases may be, at any rate for a long time, asymptomatic. This is true of many extremely severe diseases such as lung cancer: someone may have the disease and yet be neither suffering nor incapacitated. Indeed if he is unfortunate enough immediately to fall under a

bus he may never actually suffer as a result of disease. But secondly and conversely, Definition 1 is inadequate because a person may well be suffering and incapacitated by conditions that would not normally be considered to fall under the concept of disease. Some people suffer great anxiety and mental anguish from, and may be socially incapacitated by, the fact that they are bald, short, “too thin,” “too fat,” have “too big” a nose, etc, etc. Nonetheless, none of these conditions presumably ought, on its own, to count as a disease.

The case of asymptomatic disease shows the need for a more objective element in the definition: the lung cancer sufferer may be asymptomatic but the lesion shows up on X-ray. So let’s try

- DEFINITION 2 (“Disease as lesion”): *Any process or state counts as a disease if it is produced by some definite structural or functional abnormality or abnormalities* (not ones in turn caused by some “external” physical injury).

Definition 2 – surely correctly – allows the possibility that someone may in fact be suffering from a disease even though no one can at present identify it. She may be exhibiting signs and symptoms that in fact result from some underlying lesion or abnormality, even though no one can at present *identify* that lesion or abnormality. (Otherwise we should have to say that no one suffered, for example, from Parkinson’s disease until 80 years or so ago when the brain lesion that characterises it was discovered.) The definition also, of course, deals by construction with the counterexamples to Definition 1 supplied by asymptomatic diseases.

The second type of counterexample still threatens, however. Someone’s nose may be large enough to constitute a structural abnormality; his shortness may be abnormal and may obstruct various functions he might otherwise perform, but again neither large nose nor shortness *per se* is plausibly characterised as a disease. Perhaps the definition can avoid these counterexamples, but only by being made more explicit concerning what constitutes an “abnormality” (or, better, a disease-indicating abnormality): as it stands, Definition 2 simply wraps the enigma of “disease” in the mystery of “abnormality.” What, then, is the relevant notion of abnormality?

The most straightforward understanding would be as simply *statistical* abnormality. This leads to

- DEFINITION 3: *Any process counts as a disease if it is produced by or associated with some definite structural or functional characteristics or*

some definite structural or functional processes that are statistically abnormal.

But it is again easy to produce what seem to be clear counterexamples *both* to the sufficiency *and* to the necessity of Definition 3. There is a whole range of statistically abnormal structurally and functionally definable states – being abnormally intelligent or abnormally physically attractive – that, far from being characteristic of disease, are clear social assets. Moreover, the counterexamples to Definition 2 have not been met: both the large nose and the degree of shortness involved are notions of statistical abnormality which therefore would still satisfy Definition 3 but are not, so we agreed, happily characterisable as constituting diseases. Finally, there are some conditions that, far from being abnormal, are universal or near universal – for example, eventually developing some degree of osteoarthritis – and yet normally count as diseases. Or suppose, horrifyingly, that there were a nuclear war and that all of those “lucky” enough to survive suffered from what we used to call “radiation sickness.” Since this condition would now be universal, it would no longer seem to count, by Definition 3, as a disease.

Clearly “abnormality” needs to be understood in some more special way than merely statistical abnormality. This leads to a definition, which unlike the previous ones, has real advocates in the relatively recent literature.

- **DEFINITION 4:** *Any process counts as a disease if it is produced by or associated with some definite structural or functional characteristics or some definite structural or functional processes that are not only statistically abnormal but which also put X at a biological (evolutionary) disadvantage.*

So, for example, the psychiatrist J. G. Scadding explicitly defined a disease as

the sum of the abnormal phenomena displayed by a group of living organisms in association with a specified common characteristic or set of characteristics by which they differ from the norm for their species *in such a way as to place them at a biological disadvantage.* (Scadding 1967)

That is, the genuinely pathological characteristic is to be distinguished from the *merely* abnormal by the fact that it puts its owner at some definite biological disadvantage. Being exceptionally clever or exceptionally attractive is not indicative of disease because not at all disadvantageous. Certainly having an abnormally large nose or being abnormally short *may* be

disadvantageous in important respects, but presumably the suggestion is that the disadvantage is not “biological.” But then we need to know precisely which disadvantages count as biological.

Kendell, advocating and elaborating on Scadding’s definition, claimed that being at a biological disadvantage here consists exclusively in suffering from “conditions which reduce fertility or shorten life.” Whatever its merits as an account of “biological” disadvantage (it is not clear why biology has any interest in lengthening our lives beyond reproductive age), it is certainly easy to play the counterexample game with this explication too. The definition surely rules *out* as non-diseases various (statistically) abnormal conditions – psoriasis is one example among many – that do not reduce fertility (at least physiologically speaking) or shorten life, but nonetheless (i) cause suffering, (ii) involve well-characterised lesions, and (iii) may be relieved by medical means. Since a condition with these characteristics would surely normally count as a disease, the definition seems to be in trouble. Also, women who choose to be sterilised would be, in conjunction with their doctors, deliberately inflicting a permanent disease on themselves. Moreover, in order to avoid refutation by minor conditions, such as the common cold, which again surely ought to count as, of course minor, diseases, the idea in the definition of “reducing fertility or shortening life” would need to be interpreted in *highly* attenuated, dispositional ways. Furthermore, it seems clear that there are diseases in which reproductive advantages outweigh disadvantages, at least in particular circumstances. Obvious examples are immunities conferred by some mild infectious diseases: in the middle of a smallpox epidemic, to be suffering from cowpox is enormously beneficial for one’s reproductive and survival prospects and yet surely cowpox should count as a disease. Again, it would seem difficult to characterise asthma as a non-disease on the grounds that it saved lots of otherwise fit young men in 1914 from the front trenches, even though it thereby greatly lengthened their lives and increased their likely reproductive success.

It is easy to see how one might start further to modify the definition in the attempt to deal with these counterexamples. Perhaps some *ceteris paribus* clause can deal with the cowpox/smallpox and asthma-in-times-of-war cases: asthma or cowpox does, *ceteris paribus*, (tend to?) reduce fertility or shorten life *in “normal” circumstances*. This, however, would in turn lead to great problems over what counts as a “normal circumstance.” Perhaps the psoriasis counterexample can be warded off by understanding factors that might reduce fertility in a broad sense so as to include social and behavioural as well as “purely physical” ones. Psoriasis may reduce one’s fertility not by affecting sperm production or ovulation but by making one less sexually attractive. But

this move in turn threatens to let back in as diseases abnormal shortness and abnormally large noses. Moreover, as Kendell himself allows – since he favours the inclusive understanding of reproduced fertility – making this move implies that homosexuality, transsexuality and even choosing a life of devotional chastity, all count as diseases under the definition.

Well, one of the frustrations of conceptual analysis is that one person's damning counterexample may be another's clear-cut positive instance; but surely the counterexample party would be in the strong majority in this case. Moreover, if the central problem is, as Kendell explicitly takes it to be, that of developing a characterisation of disease so as to be able to give clear and convincing answers to questions from "hard-headed lawyers," then it seems most unlikely that what the courts want to know if they ask an expert whether or not PMT, say, is "really a disease" is whether or not the condition tends to shorten life or reduce fertility.

Partly in response to some of these difficulties, Christopher Boorse has developed a characterisation of disease that is widely regarded as the most sophisticated presently available within the "naturalist" approach (that is, the approach that insists that disease can be characterised without resort to considerations of value). Boorse's characterisation is, he declares, inspired by a notion of a "species design" and of diseases as deviations from that design. Indeed he describes his approach as "based on the Galenic view that 'Disease is contrary to Nature': you are diseased just in case you are not in the 'normal' healthy state – health is normal functioning, where normality is statistical and the functions biological. . . ." Boorse's account is:

- DEFINITION 5: *A disease is a type of internal state which is . . . an impairment of normal functional ability, i.e. a reduction of one or more functional abilities below typical efficiency . . .* (Boorse 1977, 567).

This has been modified only slightly in his latest publication (Boorse 1997, 8–9) to read

- DEFINITION 5': *A disease is a type of internal state which is either an impairment of normal functional ability, i.e. a reduction of one or more functional abilities below typical efficiency, or a limitation on functional ability caused by environmental agents.*

The additional clause here is intended to deal with apparent counterexamples to the original formulation produced by, amongst other things,

diseases such as some degree of osteoarthritis or some degree of dental caries, which, far from being “atypical,” are universal or nearly so.

Boorse’s definition has in turn been subject to a whole range of criticisms. These include the charges that it is (i) circular, (ii) subject to counterexamples both in excluding conditions that ought to count as diseases and especially in including many conditions which ought *not* so to count, (iii) based on bad biology, (iv) based on bad medicine, and (v) covertly value-laden. Boorse replies at length to all these charges (Boorse 1997). Obviously we cannot here carefully examine each of the criticisms, Boorse’s responses, and explain exactly why, despite Boorse’s rejoinders, at least some of the charges in all five categories stick. Instead we can only give, in the briefest and sketchiest terms, the main outlines of what we see as some of the chief problems.

First, there are a series of interrelated conceptual problems:

- (i) The Galenic view that Boorse endorses of diseases being “contrary to Nature” is surely incoherent, or at any rate inconsistent with current naturalistic, anti-teleological views. We are part of Nature (what else?) and everything that happens to us is part of Nature (what else?). Pathogens such as bacteria or viruses are parts of Nature too (what else?). How could anything that actually happens be contrary to Nature?
- (ii) Boorse clearly thinks of Darwinian theory as supplying the scientifically kosher counterparts for what would otherwise be the teleological aspects of his account – what he seems really to mean by “contrary to Nature,” for example, is counteradaptive. But in fact many diseases, thought of as processes, may be examples of Darwinian adaptations. Elaborating his view, Boorse claims that, for example, “Common symptoms of acute illness such as fever, vomiting, and loss of appetite imply failures of such functions as temperature maintenance and digestion.” In fact, however, as recent Darwinian approaches to medicine have emphasised, fever may very well be an adaptive *beneficial* response to infection – beneficial because it does more damage to the invading bacteria or viruses than to the host. Similarly diarrhoea and vomiting, far from implying failure of some function, may well in fact be examples of adaptive functioning – one way in which the host organism can efficiently expel large numbers of the invaders. (For a fascinating introduction to “Darwinian medicine” see Nesse and Williams 1994.) These Darwinian insights, by the way, underline the lesson (already absorbed in more enlightened medical quarters) that the standard medical approach to treating fever, diarrhoea and vomiting may sometimes be entirely misguided – prolonging the

condition or endangering the patient, rather than alleviating the condition and helping the patient.

- (iii) Boorse's characterisation relies on defining the *function* of various organs and physiological structures. This is a notoriously difficult notion that has been the subject of endless analysis in philosophy of science. We agree with Schaffner (1993) that talk of functions is sanctioned only by what he calls a "vulgar" interpretation of Darwinian theory and that it relies on assumptions about the goal-directedness of natural processes that are unacceptably anthropomorphic.

Secondly, even laying aside these underlying conceptual problems, there are any number of apparent counterexamples to Boorse's definition, just as to the earlier ones. The clause about "limitation on functional ability caused by environmental agents" threatens, for example, to make being held in gaol count as a disease; while the first clause makes the account staggeringly all-encompassing – all of us are diseased all the time.

Indeed Boorse allows that it is hopeless to try to abstract one notion of disease from the confusion of ordinary and even expert common usage. There are, he thinks in the end, *several* disease notions. He is attempting to articulate the "pathological notion" of disease, but there may be other notions such as the clinical notion, perhaps the judicial notion, the notion for insurance purposes and so on. However, Boorse's account fails to capture even one notion adequately and if his analysis has no prospect of addressing the issues about the grey cases with which we began, then it is difficult to see it as of major interest: practising clinicians wanted a clear-cut notion of disease to enable them to give clear-cut answers to "hard-headed lawyers" and others, but Boorse admits that his own analysis, even if successful, would not meet this need.

The net result of this investigation so far, we hold, is that the attempts to characterise disease-in-general as an entirely descriptive, "natural" category form a classic case of a Lakatosian degenerating research programme: none of the attempted definitions is adequate; each has been patched up to meet the difficulties of the earlier ones only to run into counterexamples and difficulties of its own; and this has led to a proliferation of separate disease-concepts which in turn meet counterexamples, are amended, and so on. This degeneration of the naturalist programme may explain the perhaps initially surprising popularity of the alternative "normative model" – the view that disease can only be characterised by invoking human values as well as descriptive matters of fact.

The idea of the “normative model” is essentially to go back to Scadding’s definition (Definition 3 above) but instead of following Kendell and Boorse in taking “abnormality” in a statistical and/or biological sense, to insist that the relevant notion of abnormality is an evaluative one. The relevant sense of abnormality is not in the natural condition or process itself, but rather in the eye of the beholder (or rather collective beholders). So, for example, Engelhardt’s influential characterisation goes as follows:

- **DEFINITION 6:** *A disease is “the sum of the abnormal phenomena displayed by a group of living organisms in association with a specified common characteristic or set of characteristics by which they differ from the norm for their species in a way that we judge to constitute a significant disadvantage.* (Engelhardt 1983, 25; emphasis supplied)

Although this is not as sharply formulated as one might wish, the context makes it clear (i) that the “norm” referred to here is not statistical but rather some sort of evaluative ideal, and (ii) that judgments of significant disadvantage refer not to “our” perceptions of biological disadvantage but rather to our evaluations of conditions as generally undesirable. The main idea behind the account is, I take it, that we should not look to anything in the nature of the two conditions to place, say, normal pregnancy and lung cancer in two qualitatively different classes. Each is a natural process (what else?) subject to a distinctive etiology and producing a characteristic set of signs and symptoms: the reason we think of the lung cancer as a disease and pregnancy as not is simply that we (generally) evaluate the latter positively, the former negatively.

These evaluations, on Engelhardt’s account, tie in very closely with decisions about intervention. He writes:

[E]valuation enters into the enterprise of medical explanation because accounts of disease are immediately focussed on controlling and eliminating circumstances judged to be a disvalue. . . . Choosing to call a set of phenomena a disease involves a commitment to medical intervention, the assignment of the sick role, and the enlistment in action of health professionals. To call alcoholism, homosexuality, presbyopia, or minor hookworm infestation diseases, involves judgments closely bound to value judgments. Granted there is a spectrum from broken limbs to color blindness along which interest in construing a constellation of phenomena as a disease varies. The pain and discomfort of either a broken limb or a schizophrenic break invite immediate medical aid, while issues of color blindness or dissocial behaviour lie at the other end of the spectrum. But all along the spectrum, the concept of disease is as much a mode of evaluating as explaining reality. (Engelhardt 1981, 40–41)

But Engelhardt’s definition too seems rather obviously to fail. Most of us would value the condition of extreme poverty, for example, much below the

condition of having a mild cold – yet the latter is, in normal terms, the disease, not the former. Even if we rule this out *ad hoc* perhaps by claiming that extreme poverty is not a “physical” condition, the old counterexamples about extreme shortness and the like still strike. As does the fact that what surely ought to count as a minor disease may in some circumstances be valued very highly indeed. Here Boorse seems to be correct:

As any short person knows, shortness may reduce a person’s quality of life much more, in the long run [!], than a minor allergy or viral infection. It cannot be undesirability alone that makes a physical condition a disease. On the other hand, it is clear that diseases can be desirable under some circumstances. Cowpox could save a person’s life in the midst of a smallpox epidemic; myopia would be advantageous if it meant avoiding the infantry. (Boorse 1977, 544)

Moreover, although Engelhardt advertises historical changes in what is regarded as a disease as supporting his characterisation, and although he seems to have persuaded many other commentators, a little analysis shows that the opposite is true. Engelhardt’s discussion of the “disease” of masturbation has been widely influential. He shows that indulgence in masturbation was widely regarded as a disease both in Europe and the USA from the 18th century and through the 19th. Many unfortunates, both male and female, were subject to horrifying “treatment” to eradicate the disease. Engelhardt claims that:

The disease of masturbation is an eloquent example of the value-laden nature of science in general and of medicine in particular.

It is true that since the “we” who do the judging of significant disadvantage may have different social valuation frameworks at different times, Engelhardt’s Definition 6 has the consequence that what counts as disease is society-relative. But this seems clearly to be a fault of the characterisation rather than a virtue. What we surely want to say is not simply that masturbation was a disease relative to 18th and 19th century Western notions but is not, relative to later 20th century notions; we want to say that people in the 18th and 19th centuries were *wrong* – not just wrong relative to our present conceptions, but plain wrong – to think of masturbation as a disease. Engelhardt’s characterisation does not permit this judgment.

Finally the tie-in with intervention on the normative model is clearly inaccurate. Engelhardt and other normativists claim that the evaluations implicit in differentiating disease from non-disease are reflected in clinicians’ decisions to intervene or not: we intervene only to attempt to correct conditions we disvalue. This latter claim is no doubt in some sense correct, but it clearly shows again that this model has failed to capture any intuitively

satisfying distinction. Doctors certainly act in many cases of apparent non-disease: for example in circumcision, in preventing pregnancy in healthy women, and so on. On the other hand there are many cases that surely seem to count as diseases – at both ends of the seriousness scale – where clinicians will often choose to make no intervention: in the case of minor diseases, such as the common cold, for example, and in the case of terminal disease.

The normative model of disease seems hopeless, while the attempts to characterise disease naturalistically form a classic example of a degenerating research programme. In these circumstances, the smart move is invariably to return to the initial problem situation and think again about the whole enterprise.

4. THERE IS NO SUCH THING AS DISEASE (THOUGH THERE ARE OF COURSE DISEASES)

It seemed like a good idea to try to characterise the idea of disease-in-general (a) because the notion does seem to be obscurely used even in relatively expert “common usage” and (b) because it seemed important, for a variety of reasons, to try to clarify it.

There is indeed no doubt that medical usage is confused and entrenchedly so: “disease,” “illness,” “injury,” “disorder” are all used with at best rough and ready distinctions. This is reflected in the often quite marked differences, even within medically well-informed groups, about which conditions are or are not considered to constitute diseases.

It is worth mentioning a couple of pieces of empirical research on the extent of this terminological inexactitude. The first is the study of Campbell, Scadding and Roberts (1979). This involved presenting a set of 38 conditions to four different groups of subjects (nonmedical academics; secondary school students; medical academics; and general practitioners) who were asked to state whether or not each of the conditions counted as a disease. Various precautions were taken to control for order effects and the like. Although medics in general tended to be readier to count conditions as diseases than lay people, a great diversity of opinion was uncovered in all groups, even the medical ones. Thus while almost everyone counted malaria, tuberculosis and lung cancer as diseases, some 38% of medical academics, for example, did *not* classify haemophilia as a disease and over 30% of the same group also failed to count cirrhosis of the liver amongst the diseases. There was a 50–50 split amongst medical academics over both schizophrenia and depression (in both cases many more general practitioners classified the condition as a disease).

In the second empirical study, Stefan and McManus looked at how the readiness of medical students to count certain conditions as diseases evolves over time (1989). Fifth-year, third-year and first-year medical students were presented with a list of conditions and asked which ones were “definitely diseases.” In general, fifth-year students were much readier to count conditions as diseases than those at earlier stages of their course: for example, while only 18% of first year students counted “gallstones” as definitely a disease, 58% of third year and 82% of fifth year students did so.

There are clearly two different explanations for this great and shifting unclarity in usage. The *first* is that “disease” is indeed a real concept, a “natural kind,” but the perception of this real concept even amongst experts is vague and confused. This confusion might then be reduced, or even perhaps eliminated, if the right characterisation of this concept could be found and articulated – hence the explicatory efforts of Scadding, Kendell, Boorse *et al.* The naturalist explicatory research programme may presently be degenerating, but it might be destined to “stage a comeback” and perhaps even find the *correct* definition of disease.

But a *second* explanation of the terminological variability is that it reflects the fact that there is no real distinction in nature between “disease” and “non-disease.” It is not that there is ontologically a clear-cut distinction which is presently largely misperceived or only dimly apprehended, but rather that there is no clear-cut distinction to be perceived. (At any rate, there is no such clear-cut distinction that is independent of humans and their preferences.)

It seems to us that – paradoxical (and indeed anti-scientific) as it might initially sound – it is the second explanation that is correct. Indeed it seems to us, once thought about clearly, *obviously* correct. “Disease” is not a natural kind; there is no distinction in nature between processes that count as disease and those that do not – or, rather, there is no reason to think that disease is a natural kind, no reason to think that there is such a natural distinction. This is a view that has in fact been argued in the literature before, though not always as clearly as might be liked, and its consequences have not been fully or clearly appreciated. (See, e.g., Hesslow 1993, and Resnek 1987.)

Well, first, what is a “natural kind?” Or rather, since we can only know that from, so to speak, a god’s eye view, what are the grounds of reasonable belief concerning what are and are not natural kinds? The only serious view is that we have good reason to think that a class of entities constitutes a natural kind if and only if that class is the extension of a monadic predicate in the best, most unified exposition of our present best relevant theory. Hence “electron” designates a natural kind; “witch” does not. The fact surely is that

there is at present no scientifically successful theory of disease-in-general, nor is there any prospect of such a theory. On the other hand there are, plainly, plenty of scientifically successful theories of the etiology and course of lung cancer, pneumonia, tuberculosis, and many other *particular* diseases. (Or rather, as we should say in our Sunday best if our account is correct, “particular conditions which are often thought of as diseases.”) Hence it is reasonable to think that “lung cancer” is a natural kind, but there is no reason to think “disease” is. (Of course there are other particular conditions such as schizophrenia concerning which the jury is still very much out.)

Surely, when thought through clearly, the sensible view of the situation is something like this. What exists in nature, despite Boorse’s unscientific “Galenic” view, is a disparate set of natural processes – *what else? Sometimes* certain processes are indeed differentiated from naturally analogous ones and called diseases on valuational grounds. This has been well illustrated by Peter Sedgwick (1983, 120–121):

The blight that strikes at corn or at potatoes is a *human invention*, for if man wished to cultivate parasites (rather than potatoes or corn) there would be no ‘blight’, but simply the necessary foddering of the parasite-crop. . . . Outside the significances that man voluntarily attaches to certain conditions, *there are no illnesses or diseases in nature*. . . . The fracture of the septuagenarian’s femur has, within the world of nature, no more significance than the snapping of an autumn leaf from its twig; and the invasion of the human organism by cholera-germs carries with it no more the stamp of ‘illness’ than does the souring of milk by other forms of bacteria.

Notice immediately, however, the elementary point that has nevertheless often been obscured: this does not *of course* mean that humans invent blight in the sense that they create the objective, causal processes involved. The same causal interaction between parasite and potato occurs whether we call that interaction “blight” or “parasite-foddering”; the fact that we differentiate the snap of the 70-year-old femur from the snap of the autumn leaf only in terms of human evaluations has of course no effect at all on the biology of the fracture and repair of either human bone or oak leaf.

Notice also that it by no means follows from the fact that our distinctions between “diseases” and “non-diseases” are *sometimes* made on valuational grounds, that values are *always* involved. On the contrary there seems to be nothing systematic here. That is both (partly) why disease talk is so confused and why the so-called normative model of disease is just as prone to counterexample as other “models.” Sometimes, for instance, it is *treatability* that seems to matter. Medics, for example, generally seem to prefer to talk of genetic *disorders* rather than disease, and this seems to be on the grounds

that they can only be diagnosed, perhaps palliated, but not cured. Similarly the psychiatrists' distinction between mental illness and personality *disorder* seems to rest on the fact that medical means are (as yet) of no use in attempting to treat the latter.

We do not then endorse the normative model, any more than we endorse the naturalistic one. Normativists have correctly identified some of the reasons why the attempt to characterise disease naturalistically fails; but the sensible conclusion from the points they have made and we have here elaborated is *not* that "disease" is a normative notion, but rather that there is no such thing as disease. The notion fails to find any joints in nature at which to carve. Medical science neither currently uses nor has any need for any such notion.

But what, finally, of the reasons we gave to try to seduce you into taking the attempt to explicate the disease notion seriously? How do those considerations look, if we accept that there is no such thing as disease?

5. NOR DOES IT MATTER THAT THERE IS NO SUCH THING AS DISEASE-IN-GENERAL

(i) *Grey Cases Reconsidered*

When a medic is asked whether some condition is "really" a disease, she should be careful to ascertain whether she is being asked a question to which there is a real-world, descriptive, true-or-false answer. She *might* be being asked about descriptive, scientific issues in ways that use the word "disease," but these can always be paraphrased more accurately in ways that avoid the word. They are standard requests for further information about the condition – generally its causes or etiology.

Suppose, for example, that a medic is asked: "Is ME a real disease?" This *might* be an "internal," scientific question; but if so, then it really amounts to asking whether or not there is a recurrent constellation of signs and symptoms with some underlying, if presently unknown, causal etiology (perhaps of a definite "physical" kind such as a viral infection) in the patients (or most of the patients) currently diagnosed as suffering from ME. A positive answer to this question, complete with a specification of the causal nexus involved, would not, however, distinguish ME from, say, the processes of achieving puberty or becoming pregnant, each of which is marked by a characteristic set of symptoms and signs and each of which has a precisely specifiable causal etiology, but neither of which would in itself surely count as a disease.

If the medic, having answered this descriptive, scientific question or, as in this case, admitted present ignorance on it, is asked for more – say by the head of a University Board of Examiners looking to make due allowances for a candidate said to be suffering from ME – “yes, but does this causal process you have specified *really* amount to a *disease*?” – then she is being asked an evaluative, normative question rather than a descriptive, scientific one. Something like: “Does the student *deserve* our sympathy and a higher grade than his marks as they stand seem to merit?” She is being asked this normative question under the guise of an apparently descriptive, scientific one.

The attempt by medics like Kendell to resolve the perplexities brought on by harassment by “hard-headed lawyers” by *defining* what a disease really is, though perfectly understandable, is, in fact, misguided – logically misguided. It – of course unknowingly – assumes that the normative, evaluative or prudential issues undoubtedly involved can be solved by some factual, descriptive decision. But once this assumption is articulated, then it stands as clear logical nonsense despite some philosophical attempts to blur the issue. The “is/ought fallacy” – or the claim to infer an “ought” from an “is” – remains fallacious.

Our position entails that what Kendell perspicaciously identified as the “unthinking empiricism” of most medics is entirely justified. Remember: “Most doctors never give a moment’s thought to the precise meaning of terms like illness and disease, nor do they need to. They simply treat the patients who consult them as best they can, diagnose individual diseases wherever they can, and try to relieve their patients’ suffering even if they can’t.” (Kendell 1971) Those medics who are called upon – having characterised a patient’s *condition* to their own satisfaction, or having decided what they can or cannot do to help that patient – to state whether that condition “*really*” amounts to a “disease” or not, are being asked a non-scientific, non-descriptive question. If society has got itself in a muddle concerning issues of responsibility, then it is up to society to get itself out. It is simply a confusion to think that medics can sort out a moral muddle by making descriptive scientific distinctions.

If we go back in this new frame of mind to some of the particular “grey cases” we considered earlier, it seems immediately obvious that what is really at issue are evaluative, political or normative matters – not scientific ones at all.

In the case, for example, of *tobacco use disorder*, was Norman Fowler’s motivation for denying that this is a disease scientific? Or was his motivation to save the NHS money (the justification if pressed being evaluative –

smokers don't *deserve* NHS funds, because they *ought* themselves to have the "willpower" to stop without the rest of us paying for it)?

In the *wrinkles* case, remember that one of the medics commented,

It is hard to draw up rules to distinguish between what is medical and what is cosmetic. Some people would try and make you feel guilty for treating wrinkles, but I do not see what is *wrong* with it. *It is only controversial in the context of rationing inside the NHS.* (Andrew Griffiths, St Thomas' – our italics)

Or let's return to the rheumatology clinic and the cases of Mr. A and Mr. B. When we think about the matter coolly and logically, it seems clear that what we have are two different causal processes, each leading to a certain kind of disability. A is supported and B is not, because society has deemed A deserving and B not. Calling A diseased or "genuinely disabled" and B not is indeed a *moral* judgment and should not be disguised as a *scientific* one.

(ii) *Medical Science and the Normative View of Disease Reconsidered*

If disease were a normative, evaluative notion, then it would seem that the idea of medicine as based firmly on science is under threat. How could medicine be scientific, if its central notion – that of disease – is shot through with values? The suggestion by the more radical normativists like Kennedy is that something like the following argument is sound:

- (i) medicine is centrally concerned with disease; and
 - (ii) disease is an evaluative notion;
- therefore,*
- (iii) medicine is not a science but instead an exercise in applied ethics.

But medicine is not concerned with Disease, but instead with diseases – or, again speaking "Sunday best," with particular conditions, such as lung cancer, congestive heart failure, and so on that are within its purview.

Kennedy's position, quoted earlier, is based on a fairly crude *non sequitur*. Even if it were established that disease-in-general is a normative notion – that we call lung cancer a disease only because we disvalue it, it would of course hardly follow that "each diagnosis of [disease]" in this case lung cancer is "an ethical decision." Having chosen to distinguish the condition for whatever reason, valuational or not, the question of whether or not some unfortunate suffers from it is clearly an objective descriptive question independent of any evaluative norms.

In fact, however, we have argued that there is no such thing as disease-in-general. Kennedy's argument needs to be turned precisely on its head:

- (i) medicine *is* (or should be) scientific – it attempts accurately to describe real processes in nature; and
- (ii) there is no general distinction in nature between processes that count as disease and those that do not;
therefore,
- (iii) scientific medicine does not endorse a distinction between so-called “disease” conditions and non-diseases.

Accepting that there is no such thing as disease does not threaten the role of science in medicine but on the contrary endorses it. As the historian of medicine, Lester King, has said:

Biological science does not try to distinguish between health and disease. Biology is concerned with the interaction between living organisms and their environment. What we call health or disease is quite irrelevant.

and

All medical science studies facets of behavior under a wide variation in conditions. Many of these variations we call disease. But the grounds for calling them disease are not any essential part of the studies. Disease is an arbitrary designation. (1981, 107, 109)

The general situation concerning values and facts in medicine is surely quite simple. Of course values are often involved both in choosing which conditions to study and especially in complicated ways in the *application* of medical scientific knowledge – decisions about who to treat, about who to regard as able to work, and many others are undoubtedly value-laden. Nonetheless most diagnoses consist of some sort of no doubt partial and fallible identification of the causal process involved in producing some set of symptoms and signs. This is what medics are, or should be, experts in. They have also perforce become experts in excusing people from work and the like. They are generally – if only implicitly and uneasily – aware, however, that this issue and many others like it are evaluative ones in which they have no special expertise (except that, of course, garnered from experience). It can be argued that society off-loads too many of its important, evaluative issues onto doctors. By often phrasing the question in such cases in terms of whether someone is really ill, really has a disease, society is in effect, though perhaps confusedly rather than deliberately, salving its conscience by *pretending* that it is asking for objective, scientific medical advice.

(iii) Medical Illness (Briefly) Reconsidered

As suggested earlier, the way that Szasz and others have argued that the whole notion of mental illness is a “myth” is by comparing so-called mental illnesses with a notional general characterisation of disease abstracted from uncontentious diseases in the physical domain. Again the literature on this topic is highly complex but the message of our paper for the debate seems plain: since there is no reason to think that any such adequate general characterisation of disease can be developed, this is not a sensible way in which to approach the issue of the status of mental conditions.

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