The Concept of Mental Disorder

On the Boundary Between Biological Facts and Social Values

Jerome C. Wakefield

Columbia University School of Social Work and Institute for Health, Health Care Policy, and Aging Research, Rutgers University

Although the concept of mental disorder is fundamental to theory and practice in the mental health field, no agreed on and adequate analysis of this concept currently exists. I argue that a disorder is a harmful dysfunction, wherein harmful *is a value term based on social norms, and* dysfunction *is a scientific term referring to the failure of a mental mechanism to perform a natural function for which it was designed by evolution. Thus, the concept of disorder combines value and scientific components. Six other accounts of disorder are evaluated, including the skeptical antipsychiatric view, the value approach, disorder as whatever professionals treat, two scientific approaches (statistical deviance and biological disadvantage), and the operational definition of* disorder *as "unexpectable distress or disability" in the revised third edition of the* Diagnostic and Statistical Manual of Mental Disorders *(American Psychiatric Association, 1987). The harmful dysfunction analysis is shown to avoid the problems while preserving the insights of these other approaches.*

This article presents an analysis of the concept of mental disorder. The focus is on *disorder* rather than *mental* because questions about the concept of disorder cause the most heated disputes in the mental health field. I argue that disorder lies on the boundary between the given natural world and the constructed social world; a disorder exists when the failure of a person's internal mechanisms to perform their functions as designed by nature impinges harmfully on the person's well-being as defined by social values and meanings. The order that is disturbed when one has a disorder is thus simultaneously biological and social; neither alone is sufficient to justify the label *disorder.*

There are many reasons why mental health professionals should care about the correct analysis of the concept of disorder. Concerns about the distinction between disorder and nondisorder are omnipresent in the mental health field and range from the sublime (how can one tell the difference between noble self-sacrifice and pathological masochism?) to the ridiculous (is snoring a disorder the treatment of which therefore warrants medical insurance reimbursement?) and on to the tragic (if a person diagnosed with acquired immunodeficiency syndrome expresses suicidal thoughts, is he or she suffering from an adjustment disorder or reacting normally to a life-threatening illness?). In terms of clinical practice, every diagnosis involves the ability to distinguish disorder from normal reactions to stressful environments and from other nonpathological problems, such as the marital, parent–child, and occupational conflicts summarized in the V Code categories of the revised third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–III–R*; American Psychiatric Association, 1987). At an institutional level, "mental disorder" demarcates the special responsibilities of mental health professionals from those of other professionals such as criminal justice lawyers, teachers, and social welfare workers. Thus jurisdictional disputes are often disputes about the application of the term *mental disorder.*

Public concerns about misapplication of the term *disorder* underlie accusations of sexual, racial, and sexual orientational biases in diagnosis (Bayer, 1981; Bayer & Spitzer, 1982; Kaplan, 1983; Spitzer, 1981; Szasz, 1971; Wakefield, 1987, 1988; 1989b; Williams & Spitzer, 1983; Willie, Kramer, & Brown, 1973), as well as more general accusations that psychodiagnosis is often used to control or stigmatize socially undesirable behavior that is not really disordered (Eysenck, J. A. Wakefield, & Friedman, 1983; Foucault, 1964/1965; Goffman, 1963; Gove, 1980; Horwitz, 1982; Laing, 1967; Szasz, 1974). Awareness of past psychodiagnostic errors and abuses, such as diagnoses of "drapetomania" (the "disorder" that afflicted slaves who ran away from their masters; Cartwright, 1851/1981; Szasz, 1971), "childhood masturbation disorder" (Englehardt, 1974; Foucault, 1978), and "lack of vaginal orgasm" (Kaplan, 1983), sets the stage for today's controversies over diagnoses such as "self-defeating personality disorder" (American Psychiatric Association, 1987; P. J. Caplan, 1984), "premenstrual syndrome" (American Psychiatric Association, 1987; Ussher, 1989), "alcoholism" (Fingarette, 1988, 1990; Gorman, 1989a, 1989b; Vaillant, 1990), "hyperactivity" (Coles, 1987; Cowart, 1988; Kohn, 1989; Pond, 1960; Rutter, Graham, & Yule, 1970), "homosexuality" (Bayer, 1981; Bayer & Spitzer, 1982; Spitzer, 1981), and many others, all of which controversies would benefit from a clearer understanding of the concept of disorder. Finally, a correct understanding of the concept is essential for constructing "conceptually

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Correspondence concerning this article should be addressed to Jerome C. Wakefield, Columbia University School of Social Work, 622 West 113 Street, New York, NY 10025

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valid" (Wakefield, in press) diagnostic criteria that are good discriminators between disorder and nondisorder.

The concept of disorder is not the same as a theory of disorder. Physiological, behavioral, psychoanalytic, and other theories attempt to explain the causes and specify the underlying mechanisms of mental disorder, whereas the concept of disorder is the criterion used to identify the domain that all these theories are trying to explain. The concept is largely shared by professionals and the lay public (Campbell, Scadding, & Roberts, 1979) and is the basis for the attempt in *DSM–III–R* to construct universally acceptable atheoretical diagnostic criteria (Spitzer & Williams, 1983, 1988; Wakefield, in press). The concept is certainly more complex than the simple "suffering" and "problems in living" criteria that are sometimes suggested: Grieving a lost spouse involves considerable suffering and being in a bad marriage is a problem in living but neither is a disorder. Despite a vast literature spanning philosophy, psychology, psychiatry, and medicine devoted to the concept of mental disorder, there currently exists no widely accepted analysis that adequately explains even generally agreed upon, uncontroversial judgments about which conditions are disorders. I shall attempt to construct an account that explains such uncontroversial judgments; until such an analysis is available, using a definition of *disorder* as an arbiter of controversies is premature.

Among analyses of the concept of mental disorder, the most basic division is between value and scientific approaches. As Kendell (1986) put it,

> The most fundamental issue, and also the most contentious one, is whether disease and illness are normative concepts based on value judgments, or whether they are value-free scientific terms; in other words, whether they are biomedical terms or sociopolitical ones. (p. 25)

To construct a more adequate analysis and resolve the fact/value debate, I propose a hybrid account of disorder as harmful dysfunction, wherein *dysfunction* is a scientific and factual term based in evolutionary biology that refers to the failure of an internal mechanism to perform a natural function for which it was designed, and *harmful* is a value term referring to the consequences that occur to the person because of the dysfunction and are deemed negative by sociocultural standards.

Because the general concept of disorder, which applies to both mental and physical conditions, is the subject of the present analysis, examples from both the mental and physical realms are equally relevant and are used. I use *internal mechanism* as a general term to refer to both physical structures and organs and mental structures and dispositions, such as motivational, cognitive, affective, and perceptual mechanisms. Also, some writers draw distinctions among *disorder, disease,* and *illness. Disorder* is perhaps the broader term because it covers traumatic injuries as well as disease/illness. I ignore these differences and use the discussions of related terms as if they refer to *disorder* whenever they contribute useful insights.

First, I review the problems with six standard analyses of the concept of disorder and informally suggest how a harmful dysfunction approach might avoid these problems, if such a view could be precisely and clearly developed. I then analyze the critical concept of natural function so as to have a clear basis for attributing dysfunction (i.e., the loss of a natural function) and thus, in cases in which dysfunction is harmful, disorder.

Problems With Standard Analyses of Mental Disorder

The Myth of the Myth of Mental Disorder

The first question in analyzing the concept of mental disorder is whether the concept exists. Several skeptical writers (e.g., Foucault, 1964/1965, 1978; Sarbin, 1969; Scheff, 1966, 1975; Szasz, 1974) have attempted to cast doubt on the concept's coherence. The skeptics typically claim that "mental disorder" is merely an evaluatory label that justifies the use of medical power (in the broad sense, in which all the professions concerned with pathology, including psychiatry, clinical psychology, and clinical social work, are considered medical) to intervene in socially disapproved behavior. The strength of the skeptical perspective is that it explains the frequency with which the label "mental disorder" has been misapplied, as in "drapetomania" and "childhood masturbation disorder." However, this strength is bought at a considerable price. According to the skeptical view, all applications of "mental disorder" are illegitimate, so the ability to distinguish correct from incorrect uses, target criticisms, and improve criteria is lost.

Two arguments are proposed by the skeptics. First, the skeptics present many practical, ethical, and epistemological concerns about psychodiagnosis. They note, for example, that people who are labeled as mentally disordered are often stigmatized, psychodiagnosis is often used for purposes of social control, and it is often difficult to tell whether someone is mentally disordered. Such concerns, legitimate and important though they are, must be separated from questions about the coherence and logic of the concept of disorder (Gorenstein, 1984; Horwitz, 1982). The need for such separation of issues can be illustrated with a physical example: People who are labeled as human immunodeficiency virus (HIV) positive are often socially stigmatized; such labeling is often used for purposes of social control; and, because of imperfections in available tests, it is sometimes hard to establish whether someone is HIV positive. Despite all these problems, the concept of HIV positivity is perfectly coherent and HIV-positive status does truly exist. Thus practical, ethical, and epistemological problems simply do not demonstrate that there is something wrong with the concept of mental disorder. Similar comments apply to attempts to discredit mental disorder through analysis of the historical processes that led up to the adoption of this concept (Foucault, 1964/1965) or of the sociological processes that influence diagnosis (Scheff, 1966, 1975).

The skeptics' second argument is more to the point because it directly addresses the nature of disorder. This

argument has been put forward most explicitly by Szasz (1974), but it is implicit in most other skeptical positions as well. Szasz began with the assumption that physical disorder is a legitimate concept based on a clear foundation, namely, that a disorder consists of a physical lesion, with *lesion* referring to a recognizable deviation in anatomical structure. Szasz continued with the observation that mental disorder is an extension of the concept of physical disorder to the mental realm. Therefore, mental disorders exist only if the very same concept of disorder that applies to physical conditions also applies to the mental conditions labeled as disorders. Otherwise, the application of *disorder* to mental conditions is merely an analogy or metaphor. Szasz next maintained that *mental disorder* is used to label behavior that deviates from social norms and that the psychological functioning that is said to be a mental disorder is typically not accompanied by any identifiable lesion of the brain or of any other part of the body. (Szasz implicitly assumed that no lesions would be found in the future to explain such conditions.) Thus, the lesion concept of disorder that is applicable to physical conditions is not applicable to mental conditions, and mental disorders are not literally disorders. Szasz concluded that "there is no such thing as 'mental illness' " (1974, p. 1). Sarbin (1969) similarly asserted that "contemporary users of the mental illness concept are guilty of illicitly shifting from metaphor to myth" (p. 15).

The weakness in Szasz's (1974) argument lies in the inadequacy of the lesion account of physical disorder. The account consists of two theses: (a) that a lesion (or abnormal bodily structure) is simply a statistical deviation from a typical anatomical structure and (b) that a physical disorder is simply a lesion. First, the idea that a lesion can be directly recognized by its deviant anatomical structure is incorrect. Bodily structures normally vary from person to person, and many normal variations are as unusual as any lesion. Moreover, some lesions are statistically nondeviant in a culture, such as atherosclerosis, minor lung irritation, and gum recession in American culture and hookworm and malaria in some others. Therefore recognition of a lesion is not simply a matter of observing anatomical deviance. Second, and more important, it is not the existence of a lesion that defines disorder. There are physical disorders, such as trigeminal neuralgia and senile pruritis (Kendell, 1975), for which there are no known anatomical lesions. Moreover, a lesion can be a harmless abnormality that is not a disorder, such as when the heart is positioned on the right side of the body but retains functional integrity. Kendell compared lesions that are disorders with similar lesions that are not disorders in order to show that the existence of lesions is not what distinguishes disorder from nondisorder in the physical realm:

> A child with spina bifida and an oligophrenic imbecile both suffer from congenital diseases—the first by virtue of an anatomical defect acquired early in embryonic development, the second because of the absence of the enzyme needed to convert phenylalanine to tyrosine. But children with fused second and third toes have a similar congenital defect to those with spina bifida, and those with albinism also lack an enzyme involved in tyrosine metabolism, yet despite the presence of these lesions we do not normally wish to regard them as ill. (p. 308)

Thus the lesion account of physical disorder fails, and with it goes the skeptics' case that the concept of disorder cannot literally apply to mental conditions.

How, then, *do* we recognize deviations that are lesions and lesions that are disorders? Roughly, we recognize a variation in anatomical structure as a lesion rather than as a normal variation if the variation impairs the ability of the particular structure to accomplish the functions that it was designed to perform. Such an impairment of a specific mechanism might be referred to as a "part dysfunction" (Lewis, 1967; see also Klein, 1978). We recognize a part dysfunction/lesion as a disorder only if the deviation in the functioning of the part affects the well-being of the overall organism in a harmful way. For example, the reason that fused toes, albinism, and reversal of heart position are not considered disorders even though they are abnormal anatomical variations is that they do not significantly harm a person. Thus, a harmful dysfunction approach to the concept of disorder would seem to explain what the skeptics' lesion account cannot explain, namely, which anatomical deviations are lesions and which lesions are disorders.

If lesion is essentially a functional concept, then mental conditions and physical conditions can literally be disorders for the very same reason, that is, their functional implications. Considering that mental processes play important species-typical roles in human survival and reproduction, there is no reason to doubt that mental processes were naturally selected and have natural functions, as Darwin himself often emphasized (Boorse, 1976a). Because of our evolutionary heritage, we possess physical mechanisms such as livers and hearts; that same heritage gave us mental mechanisms such as various cognitive, motivational, affective, personological, hedonic, linguistic, and behavioral dispositions and structures. Some mental conditions interfere with the ability of these mental mechanisms to perform the functions that they were designed to perform. In such cases, there is a part dysfunction of the particular mental mechanism. The concept of disorder, whether applied to liver disorders, heart disorders, or mental disorders, refers to part dysfunctions that harm the person. Contrary to Szasz's (1974) and Sarbin's (1967, 1969), claims, the notion of a mental disorder is not a myth based on a bad metaphor but a literal application to the mental realm of the same harmful dysfunction concept of disorder that applies in the physical realm.

Disorder as a Pure Value Concept

The typical response to the skeptics is to argue that mental disorder is an objective scientific concept, like physical disorder (examples of this scientific approach are provided later). However, other thinkers who try to show that mental disorders are genuine disorders accept the skeptics' contention that mental disorder is a value concept and argue that physical disorder is also a value concept.

Quite correctly, the anti-psychiatrists have pointed out that psychopathological categories refer to value-judgments and that mental illness is deviancy. On the other hand, the anti-psychiatric critics themselves are wrong when they imagine physical medicine to be essentially different in its logic from psychiatry. A diagnosis of diabetes, or paresis, includes the recognition of norms or values. (Sedgwick, 1982, p. 38)

The pure value account of disorder asserts that disorder is nothing (or almost nothing) but a value concept, so that social judgments of disorder are nothing but judgments of desirability according to social norms and ideals. The pure value approach is to be distinguished from a mixed or hybrid approach (Boorse, 1975; Klein, 1978), of the kind to be defended later, in which values play some role but in which there are important factual components to the concept of disorder as well.

The value account reflects an important truth: Because disorders are negative conditions that justify social concern, social values are involved. On the other hand, the pure value view has the disadvantage that it makes disorder (both mental and physical) a completely value- and culture-relative notion with no scientific content whatsoever, thereby leaving the concept open to unconstrained use for purposes of social control. Nonetheless, a considerable number of writers have taken the pure value position or strongly emphasized the evaluative element in their analyses. Ausubel (1971) defined disease as "any marked deviation, physical, mental, or behavioral, from normally desirable standards of structural or functional integrity" (p. 60). Marmor (1973) stated, "To call homosexuality the result of disturbed development really says nothing other than that you disapprove of the outcome of that development" (p. 1208). Pichot (1986) asserted, "The definition of disease in every language is 'something bad' " (p. 56). King (1954/1981) wrote, "Disease is the aggregate of those conditions which, judged by the prevailing culture, are deemed painful, or disabling, and which, at the same time, deviate from either the statistical norm or from some idealized status" (p. 112). Engelhardt (1974) stated that "choosing to call a set of phenomena a disease involves . . . judgments closely bound to value judgments" (p. 41). The World Health Organization (1946/1981) defined health as "a state of complete physical, mental and social well-being" (p. 83). This appears to assume that disorder is any deviation from a completely desirable and ideal state. Sedgwick (1982) was perhaps the most articulate spokesman for the pure value position: "*All sickness is essentially deviancy* [from] some alternative state of affairs which is considered more desirable. . . . The attribution of illness always proceeds from the computation of a gap between presented behavior (or feeling) and some social norm" (pp. 32–34).

The fact that all disorders are undesirable and harmful according to social values shows only that values are part of the concept of disorder, not that disorder is composed only of values. Sedgwick (1982) suggested through vivid examples that there is nothing objective or scientific that distinguishes the conditions said to be disorders from other processes in nature, leaving the value element as the only identifying characteristic:

There are no illnesses or diseases in nature. . . . The fracture of a 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 a 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. . . . Out of his anthropocentric self-interest, man has chosen to consider as "illnesses" or "diseases" those natural circumstances which precipitate . . . death (or the failure to function according to certain values). (p. 30)

However, completely aside from values, there is a relevant difference between the cracking of a femur and the snapping off of an autumn leaf: The leaf is designed to fall off at a certain stage and the tree is not designed to require the leaf for its continued functioning, whereas the possession of an intact femur is part of the way a person, even an old person, is designed to function. Similarly, once it is extracted from the cow, milk certainly has no natural function, so the bacteria that invade and sour it are not causing a dysfunction, whereas the person who is infected with bacteria is in danger of losing functional integrity. Thus, if natural function is a scientific concept that cannot be reduced to values (as is argued later), then there is a scientifically definable difference between Sedgwick's (1982) examples of natural processes that are disorders and those that are not; that is, the ones that are disorders disrupt a natural function.

The most basic objection to the pure value position is that there are obviously a great many undesirable conditions that are not classifiable as disorders. Recognizing that not all undesirable states are considered disorders, Sedgwick (1982) added to the value account one factual requirement—that the cause of the undesirable condition could not lie entirely in external circumstances but must be inside the individual's body or mind. This would explain why externally caused undesirable conditions such as poverty, bad luck, or being sexually rejected are not disorders. However, it would not explain why other undesirable conditions that are internal, such as ignorance and the pain of teething, are also not considered disorders. A dysfunction account explains why these latter conditions are not disorders: Although they are internal, they do not involve a breakdown in the functioning of an internal mechanism.

Another problem with the pure value position is that it does not explain how people can be mistaken about disorder and how people who share social norms and values can disagree about which conditions are disorders. For example, slaves who ran away from their masters were not in fact suffering from a disorder of "drapetomania," even though the dominant social order saw the condition as undesirable, and many incarcerated Soviet dissidents were not in fact mentally disordered despite the fact that they violated social norms. If one embraces the pure value position, one has no grounds for asserting that these diagnoses were incorrect in their context. Moreover, our culture clearly disvalues such conditions as premenstrual

syndrome, hyperactivity, and alcoholism, and yet there are ongoing disputes about whether each of these is a disorder. The complex factual arguments presented by both sides in these debates clearly indicate that judgments about disorder depend on much more than values.

To say that a condition is undesirable or socially disvalued does not imply anything about the cause of the condition. Thus, the pure value view fails to account for the fact that attributions of disorder are attempts to partially explain behavior and/or symptoms. For example, the question "Why is that man talking to himself?" can be coherently answered by explanations in terms of rational action (e.g., "Because he is trying to memorize a list by repeating it aloud") or the manifestation of a disorder (e.g., "Because he is suffering from schizophrenia"). Admittedly, an explanation in terms of disorder says very little if nothing more is known about the attributed disorder, but it eliminates enough alternative explanations to be useful. The explanatory content of disorder attributions shows that they involve more than sheer value judgments. We shall see later that the explanatory content of disorder attributions is nicely explained by the functional approach.

Disorder as Whatever Professionals Treat

Frustration with failed attempts to analyze the concept of mental disorder often leads to the practical-sounding suggestion that a disorder is simply any condition that health professionals treat. For example, Taylor (1976) asserted that a disorder consists in part of the "attribute of therapeutic concern for a person felt by the person himself and/or his social environment" (p. 581), and Kendell (1986) suggested that we stop trying to diagnostically distinguish disorders from "the problems that psychiatrists are currently consulted about" (pp. 41–42).

However, many concerns that are handled by health professionals clearly are not disorders, but are assigned to health professionals because of their special skills. For example, professionals are regularly called on to provide "treatment" in cases of childbirth, unwanted pregnancy, circumcision, cosmetic surgery, and distresses due to the normal vicissitudes of life. *DSM–III–R* has a special section of V Code diagnostic categories just for conditions that are not disorders but are often treated by mental health professionals, such as marital conflicts, adolescent–parent conflict, and occupational problems. These are conditions in which there is some harm, but not a genuine dysfunction or disorder.

Furthermore, both the patient and the therapist can be wrong about whether a condition is a disorder. For example, Victorian medical books indicate that many people came to physicians seeking treatment of the "masturbatory disease" from which, under the influence of the writings of the very same physicians, they thought they were suffering, and women sought out treatment—sometimes surgical—for the "perverse" clitoral orgasms that afflicted them (e.g., Acton, 1871; Barker-Benfield, 1983; Schrenck-Notzing, 1895/1956; Showalter, 1987; Ussher, 1989). Despite what the doctors and patients thought, the patients' masturbatory activities and clitoral orgasms were not in fact disorders, contrary to the whatever-professionals-treat approach. The possibility of error is explained by a functional approach; the diagnostician can simply have an incorrect belief about what a mechanism was naturally designed to do.

Finally, this approach would paradoxically imply that lack of social concern can eliminate disorder. Kendell (1975) himself, in an article in which he criticized the view he later adopted, noted that "equating illness with 'therapeutic concern' implies that no one can be ill until he has been recognized as such, and also gives doctors, and society, free rein to label all deviants as ill" (p. 307).

Disorder as Statistical Deviance

The skeptics claim that physical disorders are lesions and mental disorders are socially deviant behavior and thus the two are not instances of the same concept of disorder. However, if one accepts the skeptics' notion that a lesion is a statistical deviation in anatomical structure, then one might claim that lesions and deviant behavior do have something in common, namely, statistical deviance. If statistical deviance makes either a physical or a mental condition a disorder, then the same concept of disorder can be applied to both domains, and the criterion is purely objective and scientific.

The classical statement of the statistical approach to disorder is Sir Henry Cohen's (1981) definition of disease as "quantitative deviations from the normal" (p. 218), in which by *normal* he meant the statistical norm. Statistical abnormality is a requirement of many other definitions, including those of Taylor (1971), Scadding (1967), Kendell (1975), King (1954/1981), and even *DSM–III–R* (discussed later). As Claridge (1985) noted, Eysenck's (1986) dimensional system of diagnosis also presupposes a statistical approach to disorder.

One basic problem with this view is that excellence in strength, intelligence, energy, talent, or any other area is just as statistically deviant as its opposite. Moreover, an individual's fingerprint, the precise shape of his or her heart, and endless other neutral features can be deviant and even unique but still normal. An obvious suggestion to avoid this problem is to add the requirement that the deviance must be in a negative direction. (We shall see later that this is essentially the strategy of *DSM–III–R*.) However, there are many behaviors that are statistically deviant and undesirable but are not disorders; for example, such behavior can be criminal, discourteous, ignorant, morally repugnant, or disadvantageous. For a man, being five feet tall is statistically deviant and presumably undesirable but not a disorder; the same goes for men or women being clumsy, having a slow reaction time, and so on.

Another problem with the statistical deviance view of disorder is that many conditions that are statistically normal in their context are still disorders. For example, as noted earlier, minor lung irritation from pollution, atherosclerosis, periodontal disease, and dental caries all seem to be statistically normal in American society, and

such disorders as hookworm and malaria are so endemic in other societies as to be statistically normal, but all these conditions are still considered disorders. In fact, there is nothing incoherent about a virtually universal disorder, as might occur as a result of an uncontrolled epidemic or radiation poisoning after a nuclear war. Thus statistical deviance cannot be part of what we mean by disorder.

Although statistical deviance is not the same as disorder, disorder often is statistically deviant. From a functional perspective, this is understandable. In general, mechanisms function as they were naturally designed to function; failures of function are usually deviant. As the preceding examples show, however, functional abnormality and statistical abnormality do not necessarily go together. Dysfunction is judged on the basis of standards set by the design of internal mechanisms rather than by statistical norms.

Disorder as Biological Disadvantage

In order to conceptualize disorder in purely scientific terms, more than sheer statistical deviation is needed. If the definition must equally fit both physical and mental disorders, then a reasonable place to look for an account of disorder is within the biological sciences. The biological sciences are the scientific basis for physical medicine, and the mind is, after all, a part of the organism and has evolved like other parts of the organism. Mental mechanisms like those involved in perception, motivation, emotion, linguistic ability, and cognition play distinctive but coordinated roles in overall mental functioning, much as different organs play distinctive but coordinated roles in physical functioning. Thus, a biological account based on evolutionary theory has seemed to many to be potentially capable of handling the concepts of both mental and physical disorder in a scientific and value-free manner.

Note that although the use of an evolutionary perspective makes an account of the mind biological, it does not necessarily make it physiological or anatomical. The evolutionary approach accepts descriptions of mental and behavioral mechanisms as legitimate biological descriptions of the advantageous mechanisms that were naturally selected (Buss, 1991).

Three different accounts of disorder that involve evolutionary theory are considered in the remainder of this article; confusion might be avoided if they are distinguished here. The first, considered in this section, is the view of Scadding, Kendell, and Boorse, who used the evolution-derived general criterion of lowered survival or lowered reproductive fitness, as a purely scientific means for identifying disorders. The second evolutionary account, suggested in passing in the Disorder as Harmful Dysfunction section, considers an organism disordered when some mental mechanism (e.g., perception or the fear response) does not perform the specific function (e.g., convey information about the environment or help the organism to avoid certain dangers) that it was designed by evolution to perform. This too is a purely scientific criterion. The third evolutionary approach, which is argued in the aforementioned section to be the correct one, combines the second approach (using the specific natural functions of mechanisms) with a value component, so that a person is disordered only when some mechanism fails to perform the specific function it was designed to perform *and* the failure of the mechanism causes the person real harm.

Scadding (1967, 1990) proposed a purely scientific biological definition of disorder by in effect translating the earlier harmful statistical deviation account into a biologically disadvantageous deviation account:

> The name of a disease refers to the sum of the abnormal phenomena displayed by a group of living organisms in association with a specific 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, 1990, p. 243)

Kendell (1975) elaborated and extended Scadding's biological disadvantage analysis, and Boorse (1975, 1976a) offered a very similar approach.

Scadding (1967, 1990) never explained what he meant by biological disadvantage, and on the surface it would seem that *disadvantage,* contrary to intent, is a value term. Kendell (1975) and Boorse (1975, 1976a) tried to get around the value implication by using biological theory itself as an objective criterion for what constitutes the relevant type of disadvantage. According to the theory of evolution, the prime advantages to accrue from any internal mechanism or structure are survival and reproductive fitness. (Actually, from an evolutionary perspective, survival also serves the one ultimate goal of reproductive fitness, but so many of the organism's mechanisms are aimed directly at survival in a way that is relatively remote from reproductive activity that it is convenient to use both criteria.) Thus, both Kendell and Boorse claimed that a disorder is a condition that reduces longevity or fertility. This made the definition value free by in effect equating lowered fertility and longevity with harm (Kendell, 1975).

The equation is faulty, however. A condition can reduce fertility without causing real harm; marginally lowered fertility is serious over the evolutionary time scale, but it may not affect an individual's well-being if the capacity for bearing some children remains intact. And some serious harms, such as chronic pain or loss of pleasure, might not reduce fertility or longevity at all; Kendell (1975) admitted there are many harmful physical conditions, such as postherpetic neuralgia and psoriasis, that are clear cases of disorder but have no effect on mortality or fertility. This is likely to be even more true of mental disorders. It would seem that the harm requirement must be added to, rather than derived from, the evolutionary requirement.

Another problem with Scadding's (1967, 1990) account is that his statistical deviance requirement runs afoul of the counterexamples to the statistical approach presented earlier. As Kendell (1975) noted of both Scadding's and his own position, "the majority are debarred from being regarded as ill" (p. 309). But this, as we have

seen, is not part of our concept of disorder and leads to numerous actual and potential counterexamples. The reason that Scadding and Kendell cannot just scrap the statistical deviation requirement and take biological disadvantage as the whole definition of disorder is that disadvantage is relative. Without the statistical deviation requirement, any disadvantage relative to anyone superior in function could be labeled a disorder, leading to an impossibly demanding criterion. Klein (1978), in an analysis otherwise extremely similar to the one I propose, made this mistake of relativizing disorder to "optimal" part function: "Disease is here defined as covert, objective, suboptimal part dysfunction, recognizing that functions are evolved and hierarchically organized" (p. 70). This implies that the existence of even a few people with unusually high functioning would mean that everyone else has a dysfunction. For example, everyone with an IQ lower than 180 has a brain that is functioning less than optimally and so is diseased, according to Klein's proposal. But it is how we are designed to be, not how we might ideally be, that is relevant to judgments of disorder. The same problem, of disorder's including any deviation from optimal functioning, would arise for Scadding if he defined disorder simply as biological disadvantage without specifying that the disadvantage is relative to the statistically normal. If Scadding were to jettison the problematic statistical deviation clause, the validity of the definition in one respect would be increased at the cost of severely decreasing the validity in another respect.

Taken at face value, Scadding's (1967, 1990) account is subject to two additional objections. First, differential fertility rates may exist between populations defined by racial, ethnic, economic, sex, personality, and many other variables. Are all these variables to be considered candidates for pathology? For example, is it a disorder to be a young Black urban male in 1990s America because that "set of characteristics" corresponds to increased mortality? The problem is that the definition does not distinguish between disadvantage due to dysfunction of internal mechanisms and disadvantage due to harmful environments. Second, the definition implies that a disorder can be "cured" simply by taking steps to increase the life span and fertility of the people who have the disorder, even if no change is made in their mental condition.

Kendell (1975) recognized these problems and tried to solve them by requiring that the effects of the condition on mortality and fertility be "innate" or "intrinsic" rather than due to social factors such as rejection by others: "The criterion must be, would this individual still be at a disadvantage if his fellows did not recognize his distinguishing features but treated him as they treat one another?" (p. 314). But because humans are social animals, it is impossible to separate the functioning of the organism from all consideration of how others respond. For example, aphasia is certainly a disorder, but language functions as a communication device between individuals, so if the reactions of others to one's attempts to speak are entirely discounted from consideration, then there are no grounds for classifying aphasia as a disorder. Even in the case of schizophrenia, which Kendell argued is a pathology in part on the grounds that schizophrenic individuals have reduced fertility, it seems likely that the lower fertility is at least in part due to the reactions of potential partners to the schizophrenic person's mental condition, thus putting in question whether schizophrenia is indeed a disorder according to Kendell's account. (Similar questions can be raised about the source of schizophrenic individuals' higher mortality.) Moreover, many conditions, such as being male versus being female, seem to be intrinsically tied to higher mortality and yet are not disorders.

Scadding (1967, 1990), Kendell (1975), and Boorse (1975, 1976a) were right that there must be an evolutionary foundation to our judgments of disorder. The notion that something has gone wrong with the organism's internal functioning, which is critical for distinguishing between disorders and other negative conditions, can be captured only by comparing present functioning with what the organism's mechanisms were designed to do, and this requires a reference to the evolutionary explanation of the mechanism. However, the biological disadvantage approach mistakenly uses decreased longevity and fertility in the present environment as the criterion for mechanism dysfunction. The fact that the organism's mechanisms were originally selected because they increased longevity and fertility in a past environment does not imply that some mechanism is malfunctioning when longevity and fertility decrease in the present environment. Thus, despite its evolutionary roots, the biological disadvantage definition actually fails to require a dysfunction and thus is subject to counterexamples.

By directly relying on reproductive fitness in the present environment as their criterion for health, Scadding (1967, 1990) and Kendell (1975) committed a form of the "sociobiological fallacy" (Buss, 1991; see also Wakefield, 1989a). This fallacy consists of misinterpreting evolution as conferring on the organism a general tendency to maximize fitness. In fact, evolution confers a multiplicity of specific mechanisms that do not directly aim at fitness but do have fitness as an effect in the environments in which they were selected. For example, sexual attraction is not a mechanism that directly confers maximal reproduction; it confers desire for sexual contact, and that leads to reproduction under the circumstances in which the mechanism evolved. Today, with contraceptive technology available, the sexual attraction mechanism may not ensure reproduction in the same way, but that does not mean that there is something wrong with the mechanism. It is the failure of specific mechanisms to perform their assigned tasks, rather than lowered fitness in itself, that shows that something has gone wrong with the organism. I shall use this insight later to construct a better evolution-based account of the concept of disorder.

Disorder as Unexpectable Distress or Disability

The most influential recent definition of mental disorder is the one developed by Robert Spitzer and his colleagues for *DSM–III–R*. I have presented a detailed analysis and

critique of *DSM–III–R*'s definition elsewhere (Wakefield, in press), so the present discussion is limited to a few crucial points. Further support for the claims made here can be found in the aforementioned article.

The definition in *DSM–III–R* is inspired by an overall view of disorder very much like the harmful dysfunction approach I propose. For example, in their discussion of the approach to disorder in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–III*; American Psychiatric Association, 1980), which is essentially the same as *DSM–III–R*'s, Spitzer and Endicott (1978) listed "dysfunction" and "negative consequences" (which can be taken to be equivalent to "harm") as two of the necessary conditions for disorder. Moreover, *DSM–III–R* explicitly states that a disorder must be "a manifestation of a behavioral, psychological, or biological dysfunction in the person" (American Psychiatric Association, 1987, p. xxii). It is also required that a disorder must be associated with "present distress (a painful symptom) or disability (impairment in one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom" (p. xxii), and this list might be considered to be an operationalized approximation to the requirement that there must be harm. So, at least in initial conception, *DSM–III–R*'s approach to disorder has much affinity to the harmful dysfunction view.

For two reasons, however, *DSM–III–R* does not actually define disorder as harmful dysfunction. First, as Spitzer and Endicott (1978) noted, one cannot simply define disorder in terms of dysfunction because dysfunction itself is a concept that requires analysis: "These criteria [for disorder] avoid such terms as 'dysfunction,' 'maladaptive,' or 'abnormal,' terms which themselves beg definition" (p. 17). So, although *DSM–III–R* as well as Spitzer and Endicott indicate in the statement of the definition that a disorder must be a dysfunction, the definition of disorder actually consists of a formula that analyzes dysfunction in clearer terms and in effect replaces dysfunction in the definition. The definition is thus adequate only to the extent that the analysis of dysfunction contained in the definition is adequate.

Second, a central goal of *DSM–III–R* is to present reliable operationalized diagnostic criteria for specific disorders. The definition of disorder is aimed at providing a general framework for constructing such criteria (Spitzer & Endicott, 1978). But dysfunction is not an operational concept, and for *DSM–III–R*'s purposes dysfunction must be translated into a more operational and reliable formula that captures the essential idea of dysfunction. The same point applies to harm, which must also be operationalized. Thus, the definition of disorder that actually guides the formulation of specific *DSM–III–R* diagnostic criteria is the operational definition that results after the notions of harm and dysfunction are translated into operational terms. As we shall see, it is in the process of operationalization that the problems with *DSM–III–R*'s definition occur, because the operationalization diverges substantially from the dysfunction requirement that it is meant to capture.

To stand in for the dysfunction requirement (and thus to discriminate those harms that are disorders from all the other harms to which people are subject), *DSM–III–R* specifies that a disorder "must not be merely an expectable response to a particular event" (American Psychiatric Association, 1987, p. xxii). The basic idea is that normal responses are expectable (e.g., fear is an expectable response to danger, and grief is an expectable response to loss of a loved one), whereas disordered responses are not expectable. *DSM–III–R* translates harm into a list of observable harms such as distress and disability; I shall take the latter two harms as an adequate approximation to *DSM–III–R*'s longer list. Thus *DSM–III–R* operationally defines disorder roughly as unexpectable distress or disability. It is this definition that manifests itself in *DSM–III–R* criteria for specific disorders; the terms *dysfunction* and *harm* never appear in those criteria, but statistical unlikelihood and distress/disability do.

However, the unexpectable distress or disability definition fails to capture the notion of a dysfunction, and this results not only in the invalidity of the definition itself, but also in the invalidity of many *DSM–III–R* diagnostic criteria that are patterned on the definition. First, many nondisordered negative reactions (e.g., stress responses and grief) are normally statistically distributed in intensity, so that many of such reactions will be sufficiently above the mean to be "unexpected" in the sheer statistical sense. The *DSM–III–R* definition allows the incorrect classification of such greater than average normal responses as disorders. For example, *DSM–III–R* classifies a condition as an adjustment disorder if symptoms following a psychosocial stressor "are in excess of a normal and expectable reaction to the stressors" (American Psychiatric Association, 1987, p. 330). This implies that any reaction to a stressor that is much above the mean in intensity is classifiable as a disorder. Similarly, a child is diagnosed with oppositional defiant disorder when, during a six-month period, he or she displays certain kinds of defiant behavior, such as loss of temper, arguing with adults, refusing to do chores, and swearing, at a rate that is "considerably more frequent than that of most people of the same age" (p. 57). These criteria confuse normal variation with disorder.

Second, there are many unexpectable conditions, from extreme ignorance to plain misfortune, that can cause distress or disability but are not disorders. Some telling examples are contained in *DSM–III–R*'s own V Codes. Although *DSM–III–R* states correctly that these conditions are not disorders, many types and intensities of marital, parent–child, and occupational problems that fall under the V Codes are unexpectable distresses and disabilities that are classifiable as disorders according to the *DSM–III–R* definition. As another example, consider an adolescent who runs away from home for a second time, breaks into a car, and steals something; these are potentially harmful and unexpectable behaviors. Such an

adolescent is disordered according to the criteria for the *DSM–III–R* diagnosis of conduct disorder. Yet this adolescent may just be rebellious, foolish, or desperate rather than disordered.

Third, *DSM–III–R*'s diagnostic criteria incorrectly allow normal responses to abusive treatment to be classified as disordered. For example, chronic depressed feelings can be due to a dysfunctional cognitive or affective system, or they can be a normal response to chronically depressing external circumstances such as abuse, neglect, or illness. *DSM–III–R*'s criteria for dysthymia do not adequately discriminate these possible sources of depressive symptoms; they merely classify unexpectably high levels of negative affect as a disorder.

The unexpectability requirement leads to other problems as well. For example, a "merely expectable response" to an extreme trauma is posttraumatic stress disorder, and an expectable response to lack of contact with a caregiver in infancy is anaclitic depression, but these conditions are disorders nonetheless.

All these problems result from the fact that *DSM–III–R*'s operational definition of disorder fails to match the dysfunction requirement that inspired it. For example, a dysfunction requirement would imply that an adjustment disorder would have to involve a breakdown in the way the coping mechanisms were designed to function and not merely a greater than average response to stress. The acts of a desperate teenager may be foolish, but they need not involve a dysfunction. Posttraumatic stress disorder is classifiable as a disorder despite its expectability after trauma if, as appears plausible from the nature of the condition, it involves a breakdown in the functioning of coping mechanisms. What is needed to resolve these problems is a better analysis of dysfunction.

A last point concerns the translation of harm into distress or disability. The list of harms in *DSM–III–R* and various secondary publications is longer than and different from the specific list of harms in *DSM–III*. One suspects that any kind of harm that is due to a dysfunction of some internal mechanism could be called a disorder and therefore the list of possible harms is potentially endless. Although a typology of harms such as that provided by *DSM–III–R* is useful, it should not be forgotten that, as Spitzer and Williams (1982) stated, the underlying reason these effects are relevant to disorder is that they are negative and this evaluative element is fundamental to our judgments about disorder. This value component should be reflected in, rather than obscured by, the definition of disorder.

Disorder as Harmful Dysfunction

Functions as Effects That Explain Their Causes

The preceding critique provides several important lessons. The concept of disorder must include a factual component so that disorders can be distinguished from a myriad of other disvalued conditions. On the other hand, facts alone are not enough; disorder requires harm, which involves values. Thus both values and facts are involved in the concept of disorder. With respect to the factual component of the concept, I suggested earlier that the problems with the lesion, statistical deviation, whatever professionals treat, biological disadvantage, and *DSM–III–R* analyses of disorder could all be avoided, and the facts cited in support of those approaches explained, by a suitable dysfunction analysis. The notions of function and dysfunction are central to the factual–scientific component of disorder.

However, all the preceding points were made informally, without a clear and precise analysis of dysfunction to support them. In a similarly informal way, the view that the concept of disorder somehow involves the concepts of function and dysfunction emerges with remarkable consistency in the remarks of many authors who otherwise differ in their views (e.g., Ausubel, 1971; Boorse, 1975, 1976a; A. L. Caplan, 1981; Flew, 1981; Kendell, 1975, 1986; Klein, 1978; Macklin, 1981; Moore, 1978; Ruse, 1973; Scadding, 1967, 1990; Spitzer & Endicott, 1978). Spitzer and Endicott (1978) noted the seeming necessity and virtual universality of using dysfunction to make sense of disorder: "Our approach makes explicit an underlying assumption that is present in all discussions of disease or disorder, i.e., the concept of organismic dysfunction" (p. 37).

Despite the virtually universal tendency to fall back on dysfunction to explain disorder and the potential explanatory power of the dysfunction approach, *dysfunction* rarely appears in actual definitions of disorder. Because there is no standard account of what dysfunction is, citing dysfunction provides no conclusive insight into disorder. Even the connection I assumed earlier among dysfunction, natural functions, and evolutionary theory is not obvious and needs to be justified. Still, if dysfunction can be analyzed in clearer and more basic terms, then an adequate and generally acceptable criterion for disorder might be constructed using the results.

What, then, is a dysfunction? An obvious place to begin is the supposition that a dysfunction implies an unfulfilled function, that is, a failure of some mechanism in the organism to perform its function. However, not all kinds of functions are relevant. For example, one's nose functions to hold up one's glasses, and the sound of the heart performs a useful function in medical diagnosis. But a person whose nose is shaped in such a way that it does not properly support glasses does not thereby have a nasal disorder, and a person whose heart does not make the usual sounds is not thereby suffering from a cardiac disorder. A disorder is different from a failure to function in a socially preferred manner precisely because a dysfunction exists only when an organ cannot perform as it is naturally (i.e., independently of human intentions) supposed to perform. Presumably, the functions that are relevant are natural functions, about which concept there is a large literature that I draw on shortly (Boorse, 1976b; A. L. Caplan, 1981; Cummins, 1975; Elster, 1983; Hempel, 1965; Klein, 1978; Moore, 1978; Nagel, 1979; Woodfield, 1976; Wright, 1973, 1976). For example, one of the heart's natural functions is to pump the blood, and

that is why a cessation of pumping is a dysfunction. A natural function of the perceptual apparatus is to convey roughly accurate information about the immediate environment, and that is why gross hallucinations indicate dysfunctions. Some cognitive mechanisms have the function of providing a person with the capacity for a degree of rationality as expressed in deductive, inductive, and means–end reasoning (I am referring not to ideal rationality as represented by theoretical models, but to simply the degree of rationality that people manifest in everyday inferences), and that is why it is a dysfunction when the capacity for such reasoning breaks down, as in severe psychotic states.

To understand dysfunction, then, we need an analysis of natural function. Hempel (1965) usefully posed the problem of natural function as follows: Each organ has many effects, most of which are not its natural functions. For example, the heart has the effects of pumping the blood and making a sound in the chest, but only pumping the blood is a natural function. An analysis of natural function must specify what distinguishes an organ's natural functions from its other effects.

The concept of function also applies to artifacts, such as automobiles, chairs, and pens. It seems likely that the concept of function was analogically extended from artifacts to organs (Wright, 1973, 1976). Therefore, the use of the term *function* in the case of naturally occurring mechanisms must be a way to refer to properties that such mechanisms share with artifacts. Now, the function of an artifact is just the purpose for which the artifact was designed; for example, the functions of automobiles, chairs, and pens are, respectively, to enable us to transport ourselves, to sit, and to write, because those are the benefits the artifacts are designed to provide. But organisms and their organs occur naturally and were not really designed by anyone with a purpose consciously in mind, so design and purpose cannot be the shared property. Of course, evolutionary biologists commonly talk in terms of purpose and design when they talk about natural functions, but that just brings the puzzle back a step: What justifies such talk in the case of naturally occurring mechanisms? The extension of function from artifacts to natural mechanisms must be justified by some other shared property that lies beneath talk of design and purpose and gives that talk its importance.

The function of an artifact is important largely because, via its connection to design and purpose, it has tremendous explanatory value. The function explains why the artifact was made, why it is structured the way it is, why the parts interact as they do, and why one can accomplish certain things with the artifact. For example, we can partially explain why automobiles exist, why automobile engines are structured as they are, and why with suitable learning one can get from place to place with the help of an automobile, all just by referring to the automobile's function of providing transportation.

Functional explanations of artifacts have the odd feature that an effect (e.g., transportation) is claimed to somehow explain the very artifact (e.g., automobiles) that provides the effect. Consequently, it has sometimes been claimed that functional explanations violate the basic principle that a cause must come before its effect. However, a description of the function can legitimately enter into the explanation of the artifact if there is some additional theory that shows that the cited effect plays some role in the events that preceded the artifact's creation. For artifacts, that theory is very simple and well known. The benefit precedes the artifact in the sense that it is represented beforehand in the mind of the person who designs the artifact. Thus, a functional explanation (e.g., "The function of an automobile is to provide transportation" or, equivalently, "Automobiles exist in order to provide transportation") is a sketch of a fuller causal explanation: The artifact (e.g., an automobile) exists because someone desired a certain effect (e.g., transportation) and believed that creating that artifact was a way to obtain the effect, and the belief and desire, which preceded the artifact, caused the person to create the artifact.

I have argued that the function of an artifact is important because of its explanatory power and that function explanations of artifacts have a distinctive form—the existence and structure of the artifact are explained by reference to the artifact's effects. It is this form of explanatory implication that statements about artifact functions and natural functions have in common and that justifies extending talk of functions from artifacts to natural mechanisms. Natural mechanisms, like artifacts, can be partially explained by referring to their effects, and natural functions, like artifact functions, are those effects that enter into such explanations. For example, the heart's effect of pumping the blood is also part of the heart's explanation, in that one can legitimately answer a question such as "Why do we have hearts?" or "Why do hearts exist?" with "Because hearts pump the blood." The effect of pumping the blood also enters into explanations of the detailed structure and activity of the heart. Thus, pumping the blood is a natural function of the heart. Anatomical and physiological research is largely devoted to establishing the natural functions of organs and explaining the features of an organ in terms of their contributions to the organ's natural functions. Talk of design and purpose in the case of naturally occurring mechanisms is just a metaphorical way to refer to this unique explanatory property that the effects of a mechanism explain the mechanism. In sum, the concept of natural function can be analyzed as follows: A natural function of an organ or other mechanism is an effect of the organ or mechanism that enters into an explanation of the existence, structure, or activity of the organ or mechanism.

An important feature of functional explanations is that they can be plausible and very useful even when little is known about the actual nature of a mechanism. With natural mechanisms, as with artifacts, the benefits that they provide are so remarkable and depend on such intricate and harmonious interactions that it is often reasonable to infer that the benefit is not accidental. In such cases, if no alternative explanations exist, it is reasonable to infer that the artifact exists because it has these effects.

For example, it cannot be merely a happy accident that the eyes enable us to see, the legs enable us to walk, and the heart pumps the blood any more than it is a happy accident that the automobile provides transportation. The eyes therefore must exist in part because they enable us to see; that is, the fact that the eyes provide sight must somehow enter into the explanation of why we have eyes. This makes seeing a function of the eyes. Obviously, one can go wrong in such explanatory attempts; what seems nonaccidental may turn out to be accidental. But often one is right, and functional explanatory hypotheses communicate complex knowledge that may not be so easily and efficiently communicated in any other way.

The preceding analysis applies equally well to the natural functions of mental mechanisms and thus forms a common basis for the attribution of physical and mental disorder. Like artifacts and organs, mental mechanisms, such as cognitive, linguistic, perceptual, affective, and motivational mechanisms, have such strikingly beneficial effects and depend on such complex and harmonious interactions that the effects cannot be entirely accidental. Thus, functional explanations of mental mechanisms are sometimes justified by what we know about how people manage to survive and reproduce. For example, one function of linguistic mechanisms is to provide a capacity for communication, one function of the fear response is to help a person to avoid danger, and one function of tiredness is to bring about rest and sleep. These functional explanations yield ascriptions of dysfunctions when respective mechanisms fail to perform their functions, as in aphasia, phobia, and insomnia, respectively.

Dysfunction and Evolutionary Theory

We now have an account of natural functions as effects that explain the existence and structure of naturally occurring physical and mental mechanisms. Correspondingly, dysfunction is the failure of a mechanism to perform its natural function. The next step is to provide this abstract analysis with some theoretical substance by linking it to the theory of evolution.

As in the case of artifacts, natural function explanations appear on the surface to violate the principle that a cause comes before its effects. For example, "Sexual desire exists because it causes people to copulate and reproduce" seems to explain sexual desire in terms of something that normally comes after it. To understand exactly how and in what sense such effects can play a role in causing the respective mechanisms requires an additional theory.

In the case of artifacts, it is a prior mental representation of the effect that explains the existence of the artifact. Coming up with a similar demystifying causal explanation in the case of natural functions has posed an age-old mystery: Why, indeed, should our internal mechanisms be so beneficially designed? Until recently, the mystery could be dealt with only by assuming that there exists a God who purposely created our internal mechanisms with benevolent intentions. According to this theory, our internal mechanisms are artifacts created by a divine entity, so natural functions are reduced to a special case of artifact functions.

Today evolutionary theory provides a better explanation of how a mechanism's effects can explain the mechanism's presence and structure. In brief, those mechanisms that happened to have effects on past organisms that contributed to the organisms' reproductive success over enough generations increased in frequency and hence were "naturally selected" and exist in today's organisms. Thus, an explanation of a mechanism in terms of its natural function may be considered a roundabout way of referring to a causal explanation in terms of natural selection. Because natural selection is the only known means by which an effect can explain a naturally occurring mechanism that provides it, evolutionary explanations presumably underlie all correct ascriptions of natural functions. Consequently, an evolutionary approach to personality and mental functioning (Buss, 1984, 1991; Wakefield, 1989a) is central to an understanding of psychopathology.

Dysfunction is thus a purely factual scientific concept. However, discovering what in fact is natural or dysfunctional (and thus what is disordered) may be extraordinarily difficult and may be subject to scientific controversy, especially with respect to mental mechanisms, about which we are still in a state of great ignorance. This ignorance is part of the reason for the high degree of confusion and controversy concerning which conditions are really mental disorders. Paradoxically, this ignorance about the detailed nature and causal histories of mental mechanisms also makes it all the more necessary to rely on functional explanations based on inferences about what mental mechanisms are probably designed to do. In this respect, we are now at a stage of understanding that is comparable in some ways to the position of ancient physicians who had to rely on similar inferences in judging physical disorder. For example, although knowing nothing about the mechanisms involved in sight or the natural history of the eye, such physicians still understood on the basis of functional inferences that blindness and other physical conditions are dysfunctions. As we learn more about the naturally selected functions of mental mechanisms, our judgments about dysfunction will become correspondingly more confident.

The Harm Requirement: Why Dysfunction Is Not Enough

Given that all disorders must involve failures of naturally selected mechanisms, it is tempting to simply identify disorder with dysfunction as delineated by evolutionary theory. This would realize the long-sought goal of making disorder a purely objective scientific concept. However, as I showed earlier with many examples, a dysfunction is not enough to justify attribution of disorder. To be considered a disorder, the dysfunction must also cause significant harm to the person under present environmental circumstances and according to present cultural

standards. For example, a dysfunction in one kidney often has no effect on the overall well-being of a person and so is not considered to be a disorder; physicians will remove a kidney from a live donor for transplant purposes with no sense that they are causing a disorder, even though people are certainly naturally designed to have two kidneys. To take a more speculative example, even if we suppose that people are designed to age and die at roughly a certain rate, someone whose aging mechanism suffered a dysfunction that slowed the aging process and lengthened life would be considered not disordered but lucky, assuming that no harmful side effects occurred as a result. The requirement that there be harm also accounts for why albinism, reversal of heart position, and fused toes are not considered disorders even though each results from a breakdown in the way some mechanism is designed to function. Although every disorder must involve a failure of a naturally selected property, not every such failure is a disorder. The element of harm must also be involved.

There are two reasons for the divergence between harm (in the practical sense that is relevant to diagnostic concerns) and failure of naturally selected effects. First, the natural functions of internal mechanisms were determined by the selective pressures that operated in environments that existed when the human species evolved. In some cases, those selective pressures have changed so that a breakdown in a mechanism now does not have the negative consequences that it would have had then. For example, high levels of male aggression might have been useful under primitive conditions, but in present-day circumstances such aggressive responses might be harmful. Consequently, even if a disposition to highly aggressive responses is the natural function of some mechanism, the loss of that function might not now be considered a disorder.

Second, natural selection of a mechanism occurs when organisms that possess the mechanism have greater reproductive fitness than organisms that do not possess the mechanism. Small decreases in reproductive fitness can be important over the evolutionary time scale, but in the absence of any other negative effects they are not necessarily harmful in the practical sense relevant to disorder. Relative reproductive fitness must be distinguished from possession of some reproductive capacity; the ability to have children is commonly considered a benefit and its deprivation is commonly considered a disorder, although even this has been disputed because of its implications for the classification of homosexuality. The mental health theoretician is interested in the functions that people care about and need within the current social environment, not those that are interesting merely on evolutionary theoretical grounds.

Thus disorder cannot be simply identified with the scientific concept of the inability of an internal mechanism to perform a naturally selected function. Only dysfunctions that are socially disvalued are disorders. Note that in this article I have explored the value element in disorder less thoroughly than the factual element. This is in part because the factual component poses more of a problem for inferences about disorder and in part because the nature of values is such a complex topic in its own right that it requires separate consideration.

The following general concept of disorder results from the preceding analysis: A condition is a disorder if and only if (a) the condition causes some harm or deprivation of benefit to the person as judged by the standards of the person's culture (the value criterion), and (b) the condition results from the inability of some internal mechanism to perform its natural function, wherein a natural function is an effect that is part of the evolutionary explanation of the existence and structure of the mechanism (the explanatory criterion).

This concept of disorder as harmful dysfunction leads directly to a definition of mental disorder as a special case. But first one question must be resolved: Does the "mental" in "mental disorder" refer to the nature of the harmful effects (symptoms) or to the nature of the dysfunctional cause of the harm? For example, as already mentioned, *DSM–III–R* asserts that the harm must be "a manifestation of a behavioral, psychological, or biological dysfunction in the person" (American Psychiatric Association, 1987, p. xxii). The inclusion of biological dysfunctions (by which *DSM–III–R* means physiological as opposed to psychological or behavioral) as causes of mental disorders suggests that what makes a disorder mental is not the kind of dysfunction but the kind of symptom. This interpretation is consistent with Spitzer and Endicott's (1978) statement that "a mental disorder is a medical disorder whose manifestations are primarily signs or symptoms of a psychological (behavioral) nature, or if physical, can be understood only using psychological concepts" (p. 18). The last clause was added to deal with what would otherwise be the obvious counterexample of psychosomatic illness, in which the symptoms are physical but the disorder is mental. The need for an ad hoc clause to cover psychosomatic disorders already suggests that the definition is incorrect. In fact, it is clearly not the case that mental disorders are disorders with mental symptoms. For example, trigeminal neuralgia has pain as its main symptom, and pain is a mental phenomenon, but trigeminal neuralgia is not a psychological disorder. As the example of psychosomatic illness suggests, it is the nature of the cause of the symptoms, and not the nature of the symptoms themselves, that determines whether a disorder is mental. This is why pain due to a physical dysfunction does not constitute a mental disorder; even extreme pain need not indicate a dysfunction of any mental mechanism. A physiological dysfunction can be the source of mental disorder only if it causes a breakdown in the functioning of some mental mechanism that in turn causes symptoms. So for a disorder to be mental, there must be a mental dysfunction, although the mental dysfunction might be secondary to a physiological dysfunction. This yields the conclusion that a mental disorder is a harmful dysfunction in a mental mechanism or, equivalently, a harmful mental dysfunction. More formally, in parallel to the general concept of disorder, we

have the following concept of mental disorder: A condition is a mental disorder if and only if (a) the condition causes some harm or deprivation of benefit to the person as judged by the standards of the person's culture (the value criterion), and (b) the condition results from the inability of some mental mechanism to perform its natural function, wherein a natural function is an effect that is part of the evolutionary explanation of the existence and structure of the mental mechanism (the explanatory criterion). The further question of how to distinguish mental from physical mechanisms in a principled way that goes beyond the sort of list presented earlier (e.g., cognitive, perceptual, emotional, linguistic, and motivational mechanisms) is beyond the scope of this article.

No doubt there is much to be done to clarify, extend, and improve this analysis. But if this analysis does indeed come closer than other analyses to expressing the concept that underlies judgments about mental disorder, then it is this conception that we must scrutinize if we are to understand the strengths and limits of the concept of mental disorder or attempt to improve the conceptual validity of our diagnostic criteria. However, it is worth noting that even the clearest concepts possess areas of ambiguity, indeterminacy, and vagueness, so even a correct analysis of the concept of mental disorder is unlikely to resolve all controversies, although it may illuminate why certain intractable cases are controversial.

The Concept of Disorder and Theories of Disorder

I observed earlier that the concept of disorder has explanatory content; for example, to assert that a person is talking to him- or herself because he or she is suffering from a disorder suggests something about the explanation of the behavior. According to the view developed in the previous section, the explanatory content is as follows: To say that a harm is due to a disorder is to say that the harm is due to the fact that some internal mechanism is not functioning the way it was designed by nature to function. This attribution is inferential and goes beyond either the sheer existence of the manifest symptoms or the value judgment that the symptoms are harmful. However, in itself, a disorder attribution says nothing about the specific nature of the mechanisms that have gone awry. Consequently, judgments of disorder can be based on circumstantial evidence when knowledge of mechanisms is lacking, as when we infer that blindness and hallucinations are disorders without understanding anything about how perception works. Nevertheless, understanding the nature of mental mechanisms is ultimately critical to advancing the mental health field. Specifying the nature and functions of mental mechanisms and why they fail is the task of theories of mental disorder.

Theories of mental disorder are essentially theories of dysfunction. The harm component of the concept of disorder is judged by value standards that transcend the technicalities of any theory. A theory may alert us to hidden processes that have negative implications that we did not know about, but the reason that the processes are negative has to do with pretheoretical values.

The concept of disorder thus places two constraints on any theory of mental disorder. The value criterion implies that any successful theory of disorder must link up in the right way with the commonsense concept of harm. The explanatory criterion implies that any successful theory must offer an account specifically of dysfunctions.

Accounts of disorder in terms of genetic etiology obviously fit well with the approach to disorder I propose. There is a presumption that genetic mechanisms are naturally selected and have natural functions, implying that when something goes wrong there is a dysfunction. Thus, genetic etiology might easily satisfy the explanatory criterion. Moreover, genetic dysfunctions often cause harm, fulfilling the value criterion. However, even dysfunctional genetic mechanisms do not indicate disorder unless there is harm to the organism, as was illustrated in the examples of albinism, fused toes, and reversal of chest organ position.

The harmful dysfunction approach equally fits more psychological theories of disorder. A good example is Freud's repression account of neurotic disorder. It is sometimes mistakenly claimed that repression in itself is neurotic. This position would be bewildering as a theory of mental disorder because it contains no account of the function of repression, of how it comes to be dysfunctional, or of why repression itself is harmful. However, Freud's (1915/1957a, 1915/1957b) theory is much more sophisticated and is quite consistent with the framework imposed by the concept of disorder. Freud maintained that the mechanism of repression is designed to provide the benefit of keeping extremely painful ideas and affects from reaching consciousness and impairing the functioning of the organism. However, according to Freud, repression sometimes fails to perform its function in a satisfactory way, especially under the conditions imposed by modern civilization where so many desires and thoughts must be repressed. Consequently, indirect expressions of the repressed material sometimes reach consciousness in the form of neurotic symptoms. Thus, it is not the repression per se that constitutes the disorder; that would make no sense because neither harm nor dysfunction is necessary in successful repression. Instead the disorder is the failure of repression to do what it was designed to do (which implies a dysfunction) and the fact that harmful symptoms, such as painful anxiety, result from that failure. Note that the link via symptoms to the commonsense concept of harm is essential to the claim that the failure of repression is a disorder.

Similar considerations apply to the opposite end of the therapeutic theory spectrum, behavioral theory. It is sometimes claimed that a behavioral approach to the mind is not compatible with the traditional concept of mental disorder, because behaviorists consider all behavior to be the outcome of the same basic processes of reinforcement and learning, which are normal mechanisms. However, there is no inherent incompatibility between a

behavioral approach and the harmful dysfunction concept of disorder. Behavioral theory can link up in a variety of ways with the critical concept of dysfunction (the harm requirement is easily met by many behaviors). One possibility is that learning mechanisms themselves may not operate in the way they were designed to operate. For example, simplifying greatly, Eysenck (1982, 1986) might be interpreted as arguing that certain personological characteristics can cause a person's learning mechanisms to respond to aversive stimuli more sensitively than they are designed to respond, yielding a variety of phobias and other maladaptive behaviors. A second possibility, which is hinted at in Salzinger's (1986) discussion of ethological approaches to behavior, is that there are submechanisms that facilitate the learning of specific classes of behaviors that are essential to survival and reproduction (e.g., ingestive, eliminative, sexual, parental, and agonistic mechanisms) and behavioral disorder results when these innate dispositions are not triggered by learning, as they are designed to be. Third, just as an emotionally normal infant can, in the absence of adequate or "expectable" caretaking stimuli, develop life-threatening anaclitic depression (Spitz, 1945), and a genetically normal fetus can develop pathological anatomical structures if "unexpected" chemicals come through the placenta, so a person with normal learning mechanisms can develop pathological behavioral dispositions that are outside the range that the learning mechanism was designed to produce, if the history of reinforcement includes stimuli outside the range that the mechanism was designed to "expect." For example, simplifying a bit, suppose that one function of learning mechanisms (i.e., one result of learning that selectively shaped the nature of learning mechanisms) is to associate the response of fear with danger, in such a way that the intensity of fear is roughly proportional to the degree of actual danger. Sometimes a severe trauma or other unusual sequence of stimuli causes the formation of an enduringly exaggerated sense of danger that causes substantial harm to the person. Such a disposition constitutes a disorder, because not only is there a dysfunction (learning is not leading to the kind of adaptive association between fear and danger that partially explains why learning mechanisms exist in the first place), but there is also harm (the exaggerated fear is painful and disabling).

Concluding Comments on the Misapplication of the Concept of "Disorder"

The requirement that a disorder must involve a dysfunction places severe constraints on which negative conditions can be considered disorders and thus protects against arbitrary labeling of socially disvalued conditions as disorders. Unlike the skeptical view, the harmful dysfunction analysis distinguishes between sound and unsound applications of the term *mental disorder.* Diagnoses such as "drapetomania" (the "disorder" of runaway slaves), "childhood masturbation disorder," and "lack of vaginal orgasm" can be seen as unsound applications of a perfectly coherent concept that can be correctly applied to other conditions. Unlike the value view, the harmful dysfunction view allows us to reject these diagnoses on scientific grounds, namely, that the beliefs about natural functioning that underlie them—for example, that slaves are naturally designed to serve, that children are naturally designed to be nonsexual, and that women are naturally designed to have orgasms from vaginal stimulation in intercourse alone—are false.

Because of the complexity of the inferences involved in judgments of dysfunction and our relative ignorance about the evolution of mental functioning, it is easy to arrive at differing judgments about mental dysfunction even on the basis of the same data. For example, according to the eminent Victorian physician and sexologist William Acton (1871), the female sexual organs do not naturally function to produce orgasm during intercourse, and the occurrence of orgasm in a woman is a form of pathology due to an excess of stimulation beyond what her body was designed to tolerate. According to Masters and Johnson (1966, 1970, 1974), orgasm during intercourse is a natural function of the female sexual organs, and lack of orgasm in a woman is a disorder due to inadequate stimulation of the sort to which her body was designed to respond. Acton and Masters and Johnson knew that there are many women who do have orgasms in intercourse and many women who do not. Acton interpreted these facts to mean that there are a lot of women who are disordered because they suffer from overstimulation, whereas Masters and Johnson interpreted these facts to mean that there are a lot of women who are disordered because they suffer from understimulation. The nonstatistical nature of function and disorder, combined with ignorance of the evolutionary history of female sexual capacities, enabled these opposite beliefs to be consistent with the same set of data and with the same concept of disorder. Only further facts about the nature of the mechanisms involved in female sexual response, and the evolution of those mechanisms, can resolve such debates.

In principle, Acton and Masters and Johnson might have been able to reach agreement on what constitutes female orgasmic dysfunction if they had full knowledge of the evolutionary history of female sexual capacities. However, according to the view presented here, it is possible that agreement on the facts about function and dysfunction might not lead to agreement about which conditions are disorders because of differences in values (e.g., is orgasm in intercourse a desirable goal?). Such value differences, rather than any dispute over facts, may be what makes some diagnostic controversies, such as that over the pathological status of homosexuality, so intractable (Spitzer, 1981). The harmful dysfunction analysis thus provides a framework for identifying both the possibilities and the limits of agreement in such controversies.

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