

HEALTH AND DISEASE: FLUID CONCEPTS EVOLVED
NON-LITERALLY

“While there is no a priori standard of health with which the actual state of human beings can be compared so as to determine whether they are well or ill, or in what respect they are ill, there have developed, out of past experience, certain criteria which are operatively applicable in new cases as they arise.”¹

AN OVERVIEW

Disease and health are motley concepts generated, often metaphorically, from several conflicting core models of what *symptoms* mean, how they arise and how various assortments of them are related. While *symptoms* are literally given in experience, *diseases* are constructs which attempt to relate and explain symptoms. The notion that all diseases ought to have a common essence, originating in the conviction that a category like “disease” must be either classical or incoherent, has motivated a search for *the* unifying principle or set of necessary and sufficient conditions to identify candidate syndromes as diseases. This chapter gives a preliminary sketch of unifying concepts, or models, which have been put forth as philosophical criteria of “disease” and also others, less explicitly discussed, on which common sense notions of health and disease seem to be based. I will argue that no one of these concepts is adequate to lay down a basis on which “disease” can be made into a classical category. Yet each of them has value as one of a cluster of models, often metaphorical, on which our understanding of disease is based.

Some of the metaphors for causation described in Chapter One fit particular models of disease better than others. We will find that no one concept of causation can begin to be adequate universally when considering diseases and their treatments, just because of the diverse models which are more or less appropriate to the various categories of disease. Additionally, there is no privileged level of analysis on which the causation of disease must be described, nor is there a privileged choice for every purpose among causes of various remoteness or proximity to the targeted disease events.

While no discrete principle unifies all diseases, they are linked to each other in such a way that a meaningful and useful, but *radial* category is generated. Not everything that is meaningful or useful is necessarily precise, as Wittgenstein pointed out when discussing the category of “games” united only by what he called “family resemblance.” Each influential working answer to the question, “What is disease,” has its place in organizing and directing action. Each cognitive model of

“disease” has its correlative version of health. And as we shall see, the relation between these “opposites” is not simple contradiction and mutual annihilation.

The focus of the philosophical literature on the subject has been to judge the adequacy of the various concepts of disease and health. Rather than undertake such a task with the idea of settling on one best definition, we need to better understand how these concepts are generated and in what situations they seem to work. This survey should afford ample evidence that conventional ideas of “efficiency” provide little compass for action given the conceptual terrain. We will find no literal, univocal core concept of disease, although some concepts seem to have wider applications than others. And the array of what are called “diseases” is a non-classical, radial category having central exemplary examples and exhibiting prototype effects.

Given the enormous complexity and dynamism of the main disease models which will be outlined, the projection of purposes in clinical care simply cannot be mechanized in rigorous fashion. The idea that “costs” and “benefits” or even “costs” and “effects” are well formed concepts usable in formulating logical rules for decision making is founded on a fictional view of both the disease category and the nature of value.

The first part of this chapter focuses on how Western medicine and popular culture, at least, operationally assume diverse concepts of disease. The several concepts of disease form a complex “cluster” of what George Lakoff calls idealized cognitive models. His example of such a cluster is the concept *mother*: Individual models in this cluster are as follows: (a) The birth model – The person who gives birth is the *mother*. (b) The genetic model – The female who contributes the genetic material is the *mother*. (c) The nurturance model – The female who nurtures and raises a child is the *mother*. (d) The marital model – The wife of the father is the *mother*. (e) The genealogical model – The closest female ancestor is the *mother*.² Lakoff points out that at times, any one of these types of mother can be thought of as the *real* one. Nevertheless, some of the concepts are, in most contexts, more central than others. When the cluster of cognitive models for “*mother*” acts as a source domain for understanding target domains metaphorically, the structure of this cluster suggests the meaningful metaphorical extensions.³ This is also the case when “disease” is used as a source domain, as we shall see later in the chapter. Like “mother,” “game” and “business,” “disease” is a cluster of related cognitive models at least close to those I have suggested below.

The second part of the chapter details why the “disease” category must be understood as a radial category, extended by many devices from central prototypical members. If anything is close to foundational in this semantic structure, I will contend that it is “symptoms.” The large disease category springing originally from observations about clusters of symptoms, has indistinct boundaries grading off into certain allied and cognitively “neighboring” categories. These include “crime,” “weakness,” “old age,” “lack of fertility,” “suffering,” “eccentricity” and probably others. Similarly, health is near to “normalcy,” “youth,” “strength,” “fecundity,” “wealth,” and “happiness.”

IMPORTANT AND PARTLY METAPHORICAL MODELS OF DISEASE
AND HEALTH

The main disease models identified here, and some of them elsewhere,⁴ are (1) Disease Is Mechanical Breakdown (2) Disease Is The Abnormal, (3) Disease Is Disintegration (of a whole), (4) the related Disease Is Disorder, (5) Disease Is Imbalance, (6) Disease Is Loss Of A Vital Fluid and (7) Disease Is Being Under Attack. It should be pointed out that these concepts have both to do with what disease is thought to be in itself and with how we imaginatively structure our responses to it. They also figure in both popular and professional characterizations of disease, but to a different degree. For instance, (4) Disease Is Disorder is probably more important for professional conceptualization and discourse than for that of the general public, whereas (7) Disease Is Being Under Attack is prominent in the thinking of patients and the public as well as traditional allopathic practitioners, with the classic response being to drive off, poison or cut out the metaphorical "enemy."

To an important degree, most of these models are metaphorical. That is because the most vivid and literal examples of mechanical breakdown, imbalance, disintegration, and disorder are not diseases, and the way the terms are used to describe disease borrows from these more literal domains. For example, our understanding of mechanical breakdown starts with broken tools and machines, of imbalance with tripping and falling, of disintegration with objects breaking up or falling apart, and of disorder with domestic messes or social chaos. In the case of (6) Loss Of A Vital Fluid, bleeding is the literal and central example but is a *symptom*, and not a disease. Based on the logic of this symptomatic event, health and disease seen as fullness and deficiency of a vital fluid are cognitively mapped out. And finally, our knowledge of attacks is one more metaphorical source domain for the understanding of disease. The transfer of comprehension from attacks to disease is strong. There is a related reverse metaphor which sees War As Disease but it is not well elaborated or important in our understanding of war so far. The model Disease Is The Abnormal is a special case, not truly metaphorical but probably related to the common association of anomalies with symptoms.

Each disease concept or model puts disease in tandem with a concept of health, i.e. (1) Health Is A Well Running Machine, (2) Health Is Normality, (3) Health Is Wholeness, (4) Health Is Order, (5) Health Is Balance, (6) Health Is Being Full Of A Vital Fluid, and (7) Health Is Victory (or Immunity To Attack). The health models are not as well developed as those for disease and are often understood mainly as contraries of the disease depictions, secondarily generated from them. Perhaps this is because health is taken for granted until it is lost. Like "peace," health is often seen as the absence of something negative rather than a positive presence with its own integrity and content. Unfortunately, this view means that the nourishment of health as well as peace are typically neglected since, unlike the disruptions of disease and war it is easy to think of health and peace as "uncaused." The status quo, because it has no *salient* cause often seems to require *no* cause, as long as it is relatively stable.

The principal cluster of models I have noted are outlined and discussed below, but I do not pretend that this is the only way they could have been put. These descriptions are preliminary, not definitive, and are subject to alteration upon more reflection and empirical study. But it does matter that concepts of health and disease are plural and often metaphorical, and that can be established.

The conceptual structures matter because qualitative symptoms cannot be quantified into units of suffering with the help of a single standard of disease. They matter because the relevance and seriousness of any definable condition is peculiar to each particular case, and no comprehensive formula for health applies in full to any unique situation. They matter because the logic used to decide what is desirable and what is not cannot itself be mechanized when imaginative and conflicting models are so pervasive in conceptualizing health and disease.

1. Disease Is Mechanical Breakdown

In this model the body is a large machine made up of the organs which are smaller machines. The mind is also a machine, more or less tightly tethered to the body at the locus of the brain, one of the constitutive machines. The several little machines break down in illness, and fail to *work*. Common locutions in medical texts like “disorders of kidney function.” “Loss of bowel and bladder control,” and “dysfunctional temperature regulation” show the close relation of “dysfunction” in the semantic structuring of “disease” to the other disease criteria “disintegration” and “disorder” or “loss of control.” Disorder and disintegration are reasons why machines will not work.

One difficulty with this model when it is looked at closely, is that of specifying what all the organs should be doing when they are working well or optimally. There is a dispute between those who believe that an objective concept of proper working can be developed, usually on the basis of evolutionary fitness or some other measure of adaptation, and those who believe that the definition of proper function is a value judgment.⁵

The little machine that directs the building, basic operation and general maintenance of all the others is the genome. The brain more or less directs operations with respect to the external world. The proper purpose and functioning of these two constituent machines turn out to be less than self-evident. Terms like “adaptive behavior” and “fitness” or “inclusive fitness,” which supposedly describe the proper workings of the brain and the genome, respectively, evoke much controversy. For example, how many generations of survivors do we count in deciding whether one gene allele or another is working better to promote “fitness?” If we count until the planet burns up, none will be “fit.” If “fitness” simply means the ability to replicate, nonsense sequences of DNA seem to work just as well as those which code for functional genes.⁶ Then there is still debate about whether units of selection are genes, individuals or groups. So is a gene as a tiny submachine working well when it promotes reproduction of itself or of individuals of the type which contain it?

In practice, good working of organs, brains and people is culturally defined, although it is probable that cross-cultural definitions of good function would be

in wide agreement, for example, when describing a functioning eye, ear, heart, lung, kidney or parathyroid gland. When symptoms, those most reliable markers of disease can be traced to the function of an organ, the likelihood of universal agreement on the presence of disease as mechanical breakdown is greatest. For instance, when a cluster of symptoms like chest pain, shortness of breath, wheezing and swelling of the hands and feet is traced to how the heart works, agreement that there is a breakdown of the heart is usually reached, and the heart is said to be *failing*. Approaching the heart in this situation as if it was a broken down machine has been quite useful.

Indeed, when modeling health after well running machines we often speak not of the whole person but of organs, which as small machines are parts of the larger one. We say: "Liver *function* was restored." "Her kidneys are *failing*." and "Heart defects were *repaired*." Similarly, we say: "Adequate water pressure was restored." "The tires are *failing*," and "The radiator was *repaired*." Engineering language is obviously especially appropriate to surgery, where the similarity to mechanical repair is close. Patients sometimes describe their treatment as having been "fixed back up."

While certain organs appear to have universal purposes, others do not. Muscles, nerves, skin, brain neurotransmitter levels and locations, breasts, T-lymphocytes, transplantation antigens, hair and hands all have multiple functions and multiple variants. Optimal working in one capacity is often associated with deficient function in another. Pale skin works well to metabolize Vitamin D and poorly to block ultraviolet radiation. Long gracile fingers work better for playing the piano than for digging roots. Particular tissue types (transplantation antigens) may confer immunological protection against one problem but increase susceptibility to another. People with strong immune responses to parasites may be more susceptible to allergies.

Brain workings are especially difficult to assess apart from their relation to social needs. Are deviations from the best memory, the best mathematical ability, and the most verbal ability well characterized by comparison to dysfunctional machines? If our brains are depicted as machines, are there not instead many perfectly well running but different machines among them? Within limits, function which might otherwise be labeled pathological can facilitate specialization. Depressives are cautious, prudent and prone to suicide. Euphorics are innovators, overoptimistic and prone to accidents and bankruptcy. Obsessives make good doctors, hysterics good actors, mild sociopaths good spies, extroverts good salesmen, introverts good poets, hyperactives brave soldiers, etc. So good function with regard to the structure and makeup of some organs, depends upon what an environment demands as well as upon what environment is selected, when there is the option of choosing. And assessment of what an environment demands or what environment to choose is in the province of clinical judgment and the judgment of the patient.

The use of "well adapted" as the marker for "functional" invites other difficulties. This criterion requires us to privilege some historical, social or evolutionary state of affairs, presumably a relatively stable one, as the "state of nature" or

“norm-determining state” to which we should be best adapted. But even if we could agree on what that “state of nature” or “norm-determining state” was, we would have to decide if uniform populations or diverse ones were optimally healthy then. Considering that a diverse population is usually more likely to survive environmental change than a uniform one, it would be odd to label the deviants from the mean in the population of that time and place, presumably ones who had fewer surviving offspring for one or two generations, as “sick.”

Natural and adapted traits in one environment may be unadapted and look unnatural in the next. For example, height is favorable for finding and reaching things in trees but probably unfavorable for finding and picking things up off the ground. Large size helped people emerge victorious in fights but if the six billion humans alive today were all pygmies we might not be eating, burning and mining the environment out from under us. Conversely, the tendency to obesity in times of plenty can kill people when that plenty is constant and save them when feast alternates with times of famine.

Other purported foundational criteria for “favorable functioning” of whole individuals, whether modeled as machines or otherwise, are also disputable. Is “favorable” functioning reproductive fitness as measured in the second generation? If so, then any characteristic leading one to be a semen donor would be, at present, the epitome of health. Is it survival potential? Ability to influence and control others? Capacity to accumulate wealth? Ability to experience euphoria? And what if an environment is one that most of us would identify as defective? Is perfect adaptation to assembly line work, slavery or war something that should be valorized as healthy?

When healthy bodily function is modeled on the proper operation of a machine, the metaphor, a widely influential one, is described by Mark Johnson as follows:

The Body Is A Machine

The body consists of distinct, though interconnected parts.
 It is a functional unity or assembly serving various purposes.
 It requires an energy source or force to get it operating.
 Breakdown consists in the malfunctioning of parts.
 Breakdowns occur at specific points or junctures in the mechanism.
 Diagnosis requires that we locate these malfunctioning units.
 Treatment directs itself to specific faulty units or connections.
 Repair (treatment) may involve replacement, mending, alteration of parts, and so forth.
 Since parts causally connect, we must be alert for failures in causal connections.
 The parts of the functioning unity are not themselves self-adapting.⁷

Approaching the body as if it were a machine makes the physician a mechanic and the scenario of a medical encounter analogous to taking in a machine for maintenance or repairs. The body is seen as a container of replaceable parts which can be put in and taken out. Causation Is Making. Body parts are constructed and assembled. In some respects this approach has been and will continue to be enormously useful. It falls down where the analogy of people to machines fails. Replacement parts for humans are vastly inferior to the originals. Machines do not

experience themselves, evaluate their own functioning (although they may *monitor* it according to fixed formulas), suffer when broken or taken out of service for repairs, or pay for their repairs. They do not help decide their own purposes.

2. Disease Is Abnormality

Health and disease are often thought of in statistical terms, with disease defined as anything that is statistically uncommon enough.⁸ There is an assumed relation, of course, between the unusual and the symptomatic, and indeed, it is often helpful, in looking for what is *healthy* to identify what is *average* or *typical*. Attempts to anchor health in the *normal*, defined statistically, are actually attempts to get away from *normative*, or value judgments. Unfortunately, the word *norm* gets used indiscriminately for both *usual* and *desirable*, but surreptitious elision from one use to the other does not justify conflating the two. However, the way we often speak assumes just such an elision, given below. This is, I should note, more of an habitual substitution than a full metaphorical mapping:

Being Ill	Being Abnormal
Being Healthy	Being Normal
Becoming Ill	Developing An Abnormality
Treating Illness	Removing or Correcting Abnormalities.

It is said, for instance, that “Hormone treatment returned growth to *normal*.” “Blood pressure *normalized*.” “The electroencephalogram was “*markedly abnormal*.” “*Bizarre* red cells were seen on the smear.” “*Low* potassium was *corrected*.” “Bone density was *abnormal*.” “Many Americans are *over* [normal] weight.” “The response of urinary output to dehydration was *atypical*.” And the public should be reassured that “Results of the President’s physical were *entirely within normal limits*.”

The idea that disease is the abnormal has obvious usefulness. Many conditions considered “disease” are defined solely as outliers on Bell curves. “Short stature,” “obesity,” “hypertension,” “anxiety disorder,” “hirsutism,” “mental retardation” and “reactive hypoglycemia” are examples. Laboratory values in particular do lend themselves well to evaluation in terms of abnormality. We know that abnormalities of, say, serum potassium or albumin levels are strongly associated with eventual symptoms, and that normal findings such as a normal red blood count or a normal electrocardiogram are strongly reassuring on the basis of evidence.

But there are problems with using abnormality as the *sine qua non* of disease, not the least of which is the obvious one: Are we going to label exceptionally strong, exceptionally tall, exceptionally musical, exceptionally red-haired, etc. people as diseased? Are those living to 100 all diseased by virtue of that fact? Are the 1% of people who have the most average of a group of characteristics “abnormally normal?” There must either be something besides abnormality which renders an exceptional trait pathological, or there must be something about the problem which makes the “abnormality” criterion sufficient.

A further difficulty with generalizing the “abnormality” model is identification of the group compared to which a person, trait, physical or laboratory finding is assessed as “abnormal.” What is the source of the “normal” curve? Shall it be all humans, all of one race, all of one race and sex, all of one race, sex and age, or all white, male, sixty year old neurosurgeons living in New York in 1998? In other words, who or what are the normal instances compared to which a particular one is called abnormal? Any particular individual’s condition and findings can be assessed and compared to many different groups, in all of which that individual is a member. Depending on the group selected for reference the person can be called either well or ill according to this disease model.

All these considerations prove that being “normal” is not often an objectively identifiable state, nor is it always necessary or sufficient to classify a person or even an organ or a cell as “healthy.” Yet “abnormality” is sufficient *sometimes* to mark a condition as “unhealthy” or “diseased.” Based on previous experience and evaluation of the particular situation, the “abnormality” of a symptom, finding or event in conjunction with that situation is the salient signal that “disease” is present. It is abnormal to have no skin pigment, to be born before 36 weeks’ gestational age, to fail to speak before the age of 3, to have the heart on the right side, to have a blood glucose of 20 mg/dl unless dying of other causes, to go into shock after eating a peanut, to have a five minute seizure after looking at a flickering light, to develop paralysis of the legs while recovering from influenza, to have at age 20 a blood pH of 6.9 or a heart rate of 300, to have growth arrest at age 4, puberty at age 2, arm span greater than leg length, etc., etc. These are among the “abnormalities” that by themselves indicate disease, but their strong association with symptoms, not their mere abnormality, reinforces the connotation of pathology.

The category of “abnormal” features of human beings is evidently graded, having central members like “armless” or “comatose” which across cultures, most situations and subclasses of humans would universally be called “abnormal,” middle members like “hirsute” which vary with cultures, age of the person and situations as to whether they arouse suspicions of pathology, and borderline members like “red headed” or “left handed” which are considered normal variants except in unusual circumstances. Disease thus cannot be read off from the mere presence of these other “abnormalities.” Suffice it to say that there is not a transcendent Bureau of Standards which can be consulted to tell us what is abnormal, therefore, pathological. Items that “cash out” as pathological are selected from the statistically “abnormal” on the basis of experience, not prior to it. “Abnormality” mostly acts to raise the index of suspicion for “disease.”

Our traditional philosophic impulse has been to want a single foundational criterion or model upon which pathology can be hung. But as human creatures who must identify problems and respond to them on a human scale, we find that certain criteria may be perfectly adequate in the particular yet inappropriate for wholesale application. It is necessary to tease out the specifics of problems which lend themselves to the application of the “abnormality” model as opposed to one of the others.

When we think of disease as abnormal we think of ourselves as containers or amalgams to which various items need to be added or subtracted. Our abnormalities are often thought of as having been produced from sources which need to be identified and shut off. Sometimes objects have to be transferred into or out of us to “correct” these abnormalities. So treatment involves opening or closing off sources of the abnormal, or facilitating the transfer of objects like thyroid hormone, growth hormone, chemicals or metabolites in or out of the body. Sometimes it also involves remolding, as in the case of plastic surgery.

3. *Disease Is Disintegration (of a whole)*

This model is partly literal in that some diseases are manifested by literal loss of cohesion or completeness of bodily structure, but also metaphorical in that our cognition of other literal realms of loss and disintegration is mapped onto disease. Disease is linked in our experience with disintegration, but here they are not merely *associated*. Instead, disease is *understood as if it were* disintegration.

Health	_____	Wholeness, Integrity
Disease	_____	Disintegration. (There are two types. Incompleteness and Falling Apart.)
Chronic Illness, Disability	_____	Permanent Loss of Parts or Permanent Loss of Cohesion Among Parts.
Death	_____	Final Dismantling.
Treatment	_____	Reassembly.
Self-Treatment	_____	Gathering Together
Caregiver	_____	Reassembler.
Recovery	_____	Reintegration.

The logic of this metaphor is manifested over and over again. The disintegration can be of the whole person or only of an organ or a system. “He *fell apart* after retirement.” “Their health *disintegrated* in the concentration camps.” “Jesus made him *whole*.” “The arrhythmia *deteriorated* into ventricular tachycardia.” “He is eighty, but he is *hale and hearty*.” “Even in the midst of a panic attack, she knew that she could *gather her wits together* in response to her baby’s cry.” “The psychiatrist often presents stark alternatives to help the person with a character disorder *reintegrate*.” “They *put him back together* after he was thrown from the back of the truck.” (Traumatic severing is the literal core case of disintegration). “At first he seemed to have recovered completely after the cerebral hemorrhage but then I realized that *something was missing* in him.” “The *integrity* of cardiovascular *function* (here function is thought of like structure) was *restored*.” Note that this system overlaps with The Body Is A Machine in that machines typically fail to work when they come apart or parts fall off.

People are regarded as poorly developed, poorly integrated or incomplete by reference to an ideal which is assumed but rarely made explicit. If the features of this ideal were empirically investigated it would no doubt be discovered that some, such as “two hands” are universally held but others, such as “two hands of the

same size” or “two hands of the same strength” are not. The degree to which bodily systems are coordinated or to which various aspects of personality are integrated in the ideal is not articulated, although much language, particularly in the field of mental health, refers to “integration” as though it were well defined and agreed upon. Additionally, little thought has been given to what we mean by treating “the whole person.” To what degree should we be aiming at a universal ideal rather than one unique to the individual? How is “personhood” generic and how is it particular?

Still, the idea that the way aspects of a person are unified can be assessed qualitatively, and that health status relates to this quality, is persistent. A central image schema is the re-establishment of proper links. The prominent causal efficacy of medical treatment involves reassembly according to a structural model, so this is a kind of causation as making.

Unity and order are closely related in that feedback mechanisms, intercellular communication, orderly and complete differentiation of tissues, development of organs and their coordinated function require principles and agents of both order and unity. Thus the next disease concept is closely related to this one.

4. Disease Is Disorder Or Loss Of Control Over Order

Health	_____	Order Maintained By Control.
Disease	_____	Disorder or Loss of Control.
Treatment	_____	Straightening Out, or Controlling.
Recovery	_____	Restored Order.

This is a common manner of speaking about health which presupposes the often unarticulated idea that Health Is Order Maintained By Control. We know that function is dependent upon structure and that structure requires unity and proper order. This implicit knowledge links the concepts of health as wholeness, controlled order and proper function. But at times one of these related concepts is highlighted as central in importance and at times another. Each model in the related cluster of idealized cognitive models contributes to the cognitive structure relating the individual “diseases” in a vast radial category outlined in the second part of this chapter. So in addition to being “mechanical breakdowns” and “losses of integrity” illnesses are commonly thought of as “disorders,” as in “disorders of metabolism,” “disorders of the kidneys,” “of the skin,” “of the brain,” etc. Schizophrenia is a “thought disorder,” scleroderma was called a “collagen disorder,” malignant hyperthermia is a “disorder of temperature control,” and bipolar illness is a “mood (control) disorder.” We speak of bringing fever, seizures, pain, bleeding, blood pressure, etc., “under control,” of “straightening out his electrolytes,” and of “controlling the cancer.” Despite the ubiquitous use of this language in medicine, very little thought has been given to what, exactly, is meant by “disorder” as opposed to “order,” or even if “wrong order” rather than “lack of order” is meant by “disorder.” Nevertheless, even in the popular mind, illness is something that “messes you up,” as do other noxious insults.

5. *Disease Is Loss Of A Vital Fluid*

Body	Container For Vital Fluid..
Health	Fullness With Vital Fluid.
Extra Healthy	Overflowing Or Having Extra Vital Fluid (sometimes Full Of Fluid Under Pressure).
Disease	Loss of Vital Fluid.
Life	Vital Fluid.
Ill	Having Lost Some Vital Fluid.
Increasingly Ill	Losing More Vital Fluid.
Death	Emptying Of Vital Fluid.
Recovering	Gaining Vital Fluid.
Cause of Illness	Agent Rupturing Fluid Vessel, Decreasing Fluid Production or Using Too Much Fluid Up.
Treating an Illness	Patching A Leak, Stimulating Fluid Production, Refilling With Vital Fluid.
Caregiver	Person Stopping Leak Or Refilling With Vital Fluid.

Since we observe that people become first weak and then die as they lose blood, and also experience a continuous need for water in order to survive, it comes as no surprise that the capacity to contain a fluid is a central model of health. This capacity is associated with categories located in the lexical neighborhood of health, such as youth, strength, fecundity, wealth, energy, happiness, power and beauty. The sick are “wasted,” “drained,” “dispirited,” and “washed out.” Their energy is “sapped,” they “have the dwindles” and finally their life “ebbs away.” Such descriptions apply as well to the old (who are also “shrunkened” and “shriveled”), to the weak, the malnourished, the fatigued, sad and poor. Correspondingly, healthy people are “bursting with health,” “full of vitality” (or “vim” or “vigor,” “youth,” “lust,” etc.) The young are “dewy-eyed.” Sometimes excess fluid leaks out and the very healthy are “dripping with” or “oozing vitality.” The vital fluid is an “elixir.” It can be augmented by using a “tonic.” Energetic people are “pumped up,” or “full of pep.”

This concept is remarkable in that it is as fully developed for health as for illness, if not more. Also, it occurs in popular speech and not in technical medical jargon, even though health professionals use it commonly when describing a patient’s condition in “slang” to each other. But little has been made, in technical writing, of health as a quantity of any sort of “stuff.” Still, we know that we resist insults and stresses better when our organ systems are in good condition.

The network of concepts about positive “stuffs” such as vital fluid, includes “breath” as the “stuff” of spirit, “protein” as the “stuff” of strength, “mother’s milk” as the epitome of nourishment and, in many cultures, “fat” as the embodiment of well being. Even though no quantifiable, commensurable “stuff” has been found sprinkled around the body as a cause of good health, we persist in hoping for elixirs, vitamins, mineral supplements and nutritional additives which will add to our general level of vitality. Similarly, we attempt to draw “virtue” from medicinal plants as a source of power. “Healing waters” and “fountains of youth” are additional

sources of health and sources in general are causes of health, the pursuit of which involves finding these sources. Once found, fluid is held on to, and holding on and retaining typify the activities involved in preserving health.

Changes in health status described metaphorically (and as noted, occasionally literally) as gains and losses of fluids exemplify the Object Event-Structure Metaphor outlined in Chapter One. A target domain, the experience of changes in health status, is imaginatively structured like a change in the possession of an object, in this case the vital fluid.

If, on the level of folk culture, we still often think of health and disease in such humoral terms, we naturally do not expect that small defects, such as single cell mutations and aberrant cardiac conduction pathways, or incidents like the bites of fleas or the lodging of a cherry pit in the appendix can spell the beginning of the end for us. Whereas non-specific measures addressed toward “filling us up” with global health are often efficacious in building resistance, it is manifestly imprudent to stop there. A shift from the global view of illness to the crucial particulars may often be necessary. Even the average ninety five year old with congestive heart failure, who statistically has a very short time to live and colloquially has little vitality remaining, will die after thousands of robust people in the world who are shortly to be felled by specific insults, often seemingly innocuous like the unexpected ones above. So, along with the other health constructs, looking at health in terms of quantity of vitality has its limitations as well as its uses. If there is a tonic, it doesn’t come with a guarantee.

6. Disease Is Imbalance. (This relates also to Disease Is Loss of Control in respect of control over balance.)

Health	Balance (or Stability).
Disease	Imbalance (or Instability).
Agents Of Disease	Agents Upsetting Balance.
Resistance to Disease	Compensation. (Stabilization)
Loss Of Disease Resistance (Destabilization)	Decompensation.
Treatment	Restoration of Balance
Evaluating Treatment Strategies	Comparative Weighing.
Prevention	Keeping Balance.
Recovery	Restored Balance.

The term *homeostasis*, originating with Walter B. Cannon and used by Hans Selye, is synonymous with proper balance or stability of an organism and with maintaining that stability. Anciently, this balance consisted of the proper mixture of the Four Humors, and balance is integral to temperance according to Aristotle. Following the Greeks, we still speak of “*well roundedness*” as important to health, thus relating health both to wholeness and balance of parts. Bodily balance, as with stable gait and bilateral symmetry is the literal source of cognitive structuring for steady states, regular rhythmic cycling, law-like predictability, and proper proportion in

art, ecosystems, climates, societies, organizations, machines and servomechanisms, to name only a few domains.

The following are a few samples of how we talk about health as balance and illness as imbalance: Mentally ill people are said to be “*unstable*,” “*unhinged*,” and “*unbalanced*” whereas the mentally healthy are “*stable*,” “*emotionally steady*,” and “*well balanced*.” Physiologic health is “*homeostasis*,” perturbations of electrolytes are “*compensated*,” “*back in equilibrium*” or “*restored to balance*.” We say of a recovering person, “He’s “*back on an even keel*.” Patients “need to be *stabilized* in the emergency department before they are sent up to the floor.” People suffer from “*unstable* asthma,” or “*unstable* diabetes.” Some cardiac rhythms are also “*unstable*,” meaning that they are prone to deleterious changes. This can be because certain influences were “*destabilizing*.” And the operation of various organs can be called “*out of whack*” or “*off kilter*” in the vernacular. (“I have a *hitch in my git-a-long*.”)

The balance metaphor of health expresses the idea that the way our minds and bodies usually work is consistent, persistent, harmonized with regard to the completeness, proper proportion and the mutually beneficial working of many parts. Inconstancy, discontinuity, disproportion, loss or mutual antagonism of parts is generally deleterious. Changes must be measured or they cannot be assimilated by the whole organism. But philosophically, at least, we should inquire as to what is proper proportion and mutual harmony in the service of particular and perhaps different ends. Some ends may be served by one mix of mutuality in the body parts and some by another, although I will claim that certain ends have near universality. Generally, these common ends are the prevention or elimination of *symptoms*, about which more will be said later.

The balance metaphor cannot be the whole story simply because there are better ways to describe some medical problems. When cancer develops, or tuberculosis, or rheumatoid arthritis, or when a baby cannot eat because the esophagus connects to its lungs, we are not enlightened by conceptualizing the problem as a “lack of balance.”

7. *Disease Is Being Under Attack*

Health	Security From Attack.
Being Ill	Being Attacked.
Ill people	Combatants.
Caregivers	Allies.
Onset Of Illness In Parts Of The Body	Attacks At Locations. (Also Specific Wounds)
Cause Or Agent Of Illness	Enemy.
Immune System	Defenses.
Treatments	Offensive Weapons (typically for cutting, poisoning, burning and in general, killing.)
Tonics, supplements and exercise	Defensive weapons
How To Use Treatments	Strategy.

Recovery	—————	Victory.
Death	—————	Defeat
Lingering Illness	—————	Standoff Or Stalemate.
Morale	—————	Morale.

Accordingly, “The fluoroquinolones (a category of antibiotics) are *new weapons in the therapeutic armamentarium* for our *fight against* bacteria.” “Mayor Giuliani is *fighting a battle against* prostate cancer.” “William Styron has *triumphed over* depression.” “We have not yet *won the war over* cancer and we need to *come up with new strategies*.” “Good health is a *bastion against the onslaught* of disease.” “Paul Ehrlich searched for a *magic bullet to knock out* syphilis.” “Fluoride is a *weapon in the fight to resist* tooth decay.”

The related cognitive landscapes of assault and war are richly detailed, vivid and unfortunately familiar as among the most salient features of human history. This makes them natural sources of inference structure for the domain of dealing with illness. Everything, including life and limb, is at stake in each domain. Both attacks and illness typically supersede all else, become the principal business of life, and are emergencies during which normal customs and rules are often suspended and drastic and unusual acts allowed. We go “all out” to win fights and wars and to recover from being sick. Furthermore, wars are so vast in scope, prolonged, complicated and rich with detail that they present nearly endless resources for the imagination to use in structuring the rapidly ramifying domain of health and illness. The logic of being attacked has to do both with modeling disease and our response to it. The second half of this chapter will give samples of how this metaphor both works to facilitate our understanding of some aspects of illness and fails to help us grasp what is going on with others.

WHY AND (PROVISIONALLY) HOW DISEASE IS A RADIAL CATEGORY

The “disease” category begins at the level of *symptoms*, basic components of disease entities. It is apparent on first inquiry, although detailed empirical confirmation is needed, that the symptom, such as a “cut,” a “bloody nose,” a “headache,” “blindness,” “numbness,” “vomiting” or “fever” is the level on which most of us would start to understand the whole system of concepts topped by “disease in general.” One reason for making this assertion is that symptoms such as “stomach ache,” and “chest pain” are clearly embodied, whereas disease entities like “appendicitis” and “gastroenteritis” are abstract in that they are a step removed from direct experience. In George Lakoff’s terms, embodied symptoms are “directly understood” whereas the understanding of disease as an underlying unified pattern of symptoms is indirect.⁹ Also, symptoms can be comprehended in a single mental image, whereas diseases cannot.¹⁰ And children learn about coughs and sneezes before they learn about colds, allergies, bronchitis and pneumonia. Although the *capacity* to have symptoms is certainly healthy, within limits, the *actual presence* of them is not in most instances. If disease were entirely a social construction

there should be cultures that would embrace chest pain, headaches, arthralgias, sore throats and rashes as healthy. Any author denying that symptoms provide an experiential, cross-cultural foundation for disease ought to produce such examples for our edification.

Having said that much about the most basic symptoms, there *are* some experiences which can be considered symptoms to a varying degree, and in some contexts these are not even thought of as symptoms. For example, shortness of breath, fatigue, anxiety, depression, forgetfulness and itching are almost always experiences we would rather get over, but the mere fact that they are generally unpleasant does not turn them into basic constituents of disease any more than unpleasantness renders hunger or homesickness pathological. Factors like the age of a person experiencing these discomforts, the reason for and nature of their onset as well as their intensity determine whether they are considered out of place. It is when they are wrong for the circumstances that they become symptoms, and then they function just like symptoms of the more incontrovertible type, i.e., nosebleeds, loss of vision, paralysis, swollen ankles and vomiting.

Still, diseases are not just concatenations of symptoms. They have other cognitive features which structure the symptoms, locate them in a context and assign them a history as well as meaningful implications. Although symptoms are the groundwork, a much larger semantic architecture is built on them. Notions of etiology, nature of onset, patterns of progression, symptom clusters, signs, pathophysiology, epidemiology and prognosis also constitute diseases.

For this reason, symptoms are not diseases by themselves, and prototypical members of the “disease” category, such as pneumonia, are not at the most basic level in the cognition of illness. Individual diseases are instead complexes of features like those just mentioned, among which the symptoms are at the basic level. Whereas it is “self-evident” whether someone has a cough, a runny nose and a fever it is not automatically evident on the surface whether the person has a cold, influenza, whooping cough or pneumonia.

In the case of a classical category, all members have essential defining features plus added features which differentiate them one from another. In contrast, the members of the “disease” category are generated from their connection to central members but do not have even all of the main features of these central members. In addition, an abstractionist analysis of the “disease” category will not work because any skeletal features which could be asserted to apply in common to all the varying members (i.e., “harmful”) will not in themselves be sufficient to pick out members of the category “disease” as opposed to those of some broader category such as “types of suffering.”

The wide category of disease has sub-categories such as “acute infectious disease,” “chronic disease,” “injury,” “cancer,” “vascular disease,” “occult disease,” “congenital conditions,” “mental illness” and “deficiency diseases.” Below this level are specific diseases and syndromes whose boundaries may also be indistinct. Their number is always fluctuating and controversial, because of conflicting and evolving

principles for lumping and splitting and disputes about the relative significance of “natural kinds” versus “social constructs.”¹¹

The categorical hierarchy of which individual diseases are a part becomes diffuse and vague at its top, disease in general. The cluster of ideal cognitive models is generated from the bottom up, starting with our experience of symptoms and what we have found out about their causes and cures. Beginning with symptoms, understanding builds up to individual disease concepts and their sub-categorical variants, then the classes of disease, like infectious diseases and vascular diseases, and at last, disease in general. The broader categories are understood in terms of the more specific ones, by and large. The higher categories in this taxonomy are the least incisive.

As we have already seen, there is no classical criterion, no univocal set of necessary and sufficient features to define disease literally. On every level there is ambiguity, overlap and uncertainty. Depending on the vagaries of ongoing research, academic fashion and the mutually contradictory pronouncements of authorities at different times and in different places, category assignments shift, drift and are often in dispute. There is very little about this whole system which accords well with classical category structure.

The overall “disease” category is *radial*, not classical. Central members of this category are extended by cognitive proximity, analogy and metaphor to increasingly peripheral examples. If a history of disease identifications were undertaken, I suspect that the central prototypes would be found to have been the first ones labeled as “diseases.” The most central and exemplary diseases are those best exemplifying the main idealized cognitive models. Analogies and metaphors act cognitively like forces (such as gravity) or links in that the easily identified, clear cut central members present a cognitive pull on marginal examples, drawing them into association. At the very margins of the general “disease” category the most peripheral examples wobble in their orbits, so to speak, partially gravitating toward other large categories in the lexical neighborhood of disease: “old age,” “weakness,” “crime,” “harm,” “suffering,” “eccentricity” and “infertility.” The best examples of disease are the ones farthest from these adjacent categories (although they may be excellent examples of “suffering,” which is overarching, not just overlapping).

Some rhetorical arguments try to reposition members of categories toward either their centers or their margins. Others essay to push them in and out of categories altogether. For example, there is “date rape,” whose very label represents an attempt to strengthen its relationship to a more prototypical crime. Similarly, proponents of abortion have labeled one of its forms “menstrual extraction” while opponents call it “murder.” Lies are called “misstatements,” firing is “letting go,” successive losses, “one-time charges,” violence, “action,” gambling, “gaming,” used, “pre-owned,” etc. Some descriptions of homosexuality try to categorize it with typical “perversions” like bestiality and necrophilia; some construe it as a crime, usually trying to identify it with pederasty; and some portray it as a beneficial normal variant in the population.

Especially bizarre, brutal and vicious acts of harm are rhetorically pushed by prosecution and defense attorneys back and forth from the “crime” to the “disease” category. Others, having no particular interest in the outcome of individual cases argue for “disease” or “crime” labels, for example with drug abuse, depending on whether they think punishment, rehabilitation or medical treatment is the most effective remediation or response. When an attempt is made to reconstrue something in relation to one category or another, or in relation to the cognitive center of a category, we call it “exaggeration” when we feel it is unwarranted.

Prototypical “cases” of specific diseases are the “textbook examples.” As instances within the category of the disease these cases fit a core disease description. Usually the “classic” core cases are the first ones to be identified. They do not borrow from the peripheral or “borderline” cases whereas the reverse is true. We identify marginal cases by noting their resemblance to the central ones. However, knowledge about the central cases is only more or less applicable to the peripheral ones.

Textbooks, diagnostic manuals and algorithms fail to note that much “disease” falls outside the well defined category of any specific disease entity. Indeed, the stricter the definitions, the more cases fail to fit in at all. Research reports usually study strictly defined cases only, which is useful in that readers and authors understand the nature of the cases in the same way. But just how well knowledge about typical problems applies to atypical ones is determined informally. This can only be done on a case by case basis, not by general rule.

I have described the vagaries involved in defining “disease” as well as some of those complicating the assignment of particular cases to diagnostic categories. Just as “cases” are assigned as examples of specific “diseases” the “diseases” are members of the large category “disease.” The remainder of this chapter is devoted to showing how “disease” is a radial and not a classical category, not only from the overall perspective already discussed, but because of the way its members are related. In this broad radial category our understanding of what is in the category, and why, proceeds from the center out, just as it does with the smaller categories of the individual diseases. We do not begin with a scattergram of peripheral examples and then figure out where the center is.

I claim, subject to empirical confirmation, that the prototypical, central “diseases,” at least in Anglo-American folk culture and scientific medicine, are such entities as “pneumonia,” “colds,” “bladder infections,” and “gastroenteritis” (“stomach flu”). Close to, but slightly off-center are “heart attacks,” “appendicitis,” “strokes,” and “cancer.” Fanning further out we encounter the “chronic diseases,” “mental illness,” and “dementias,” with instances like “latent” or “asymptomatic disease,” “learning disabilities,” “attention deficit disorder,” “sexual addiction,” “character disorders” and “genetic carrier states” at the very margin.

To confirm or reject this hypothesis it would be necessary to study both lay people and medical professionals to discover what names come to their minds most readily as representative examples of disease, how they think and reason about diseases, and how quickly and easily they assent to the inclusion of any given

entity in the “disease” category. Also, if category membership in “diseases” were presented to an experimental group as a matter of degree this should result in some informative rankings.

CENTRAL MEMBERS OF THE DISEASE CATEGORY

“Pneumonia” and other central members share a number of features which give them their central place and vividness for identification as diseases. I have come up with a list of 13 features which characterize disease in contrast to health. These features may not be the only significant ones, but I think they are sufficient for picking out the most readily accepted examples of disease. The central, prototypical ensemble of these features makes the sharpest possible distinction of a disease from health. Clinical entities manifesting the features of core diseases stand out to be grasped readily and are blatant, as opposed to the less overt and more subtle features of less exemplary “diseases.” As noted above, these central diseases share little with the non-disease categories which are adjacent to and overlapping somewhat with “disease.” They are relatively pure examples. Furthermore, they are readily suited to at least one or more of the important ideal cognitive models of disease, such as Being Under Attack. Parenthetically, note that the *worst* diseases, such as rabies, pancreatic cancer and AIDS are not necessarily the most prototypical. Severity is not a needed feature of a prototypical disease. For example, a cold is prototypical.

I suggest the following preliminary list of features for a central prototype such as “pneumonia,” without claiming that it is definitive, and will later identify how these features are systematically diluted, modified and stretched in the characterization of other, less prototypical groups of diseases. Because pneumonia is one of the most representative diseases, its typical features are *assumed* to be present. We only need an explanation when they are not. Thus it makes sense to say, “She has pneumonia on an x-ray, but without symptoms,” whereas we have no need to hear, “She has pneumonia with symptoms.”¹² It is not a surprise to hear that someone is “battling” pneumonia, but we are taken aback and have to consider how it could be said that “Pneumonia is the old man’s friend.”

A. *Pneumonia*

1. There was pre-morbid health. (Someone is afflicted who was previously well.)
2. The onset is acute and the outcome is death or complete recovery.
3. There is a single primary cause, typically an infectious agent, which is far and away the leading cause generally coming to mind.
4. The cause comes from outside the person. Susceptibility factors in the environment or immune system are viewed as secondary and minor causes compared to the etiologic agent, even though upon reflection they may turn out not to be at all minor and could actually be equally necessary and decisive, although not sufficient without the infectious agent.

5. The cause is physical, not psychological. A person is not conventionally regarded as having contracted pneumonia for psychological reasons.
6. The cause affects and harms the body. Social and psychological effects may not be trivial, but they are distinctly secondary.
7. The victim is aware of being ill and suffers. There are distressing *symptoms* such as cough, chest pain and fever with losses of function manifested by fatigue, weakness and shortness of breath. Occult, unsuspected pneumonia is not a kind which comes to mind first or readily.
8. There are *signs* upon examining the body, which are abnormal concomitants of the disease. Victims do not look well. For example, cyanosis, retractions and tachycardia in the case of pneumonia. These are only indirectly distressing to the victim even if noticed.
9. There is a name for the illness, the “diagnosis.” This name is understood metaphorically as a key to the pathogenesis (how the illness developed) the treatment and the prognosis (the most likely outcome).
10. *Complications* are adverse events which make the illness more serious or prolonged than expected (something unusual goes wrong). In pneumonia these include pneumothorax, abscess formation, pleural effusion, septicemia, shock and respiratory failure. (Collapsed lung, pus pockets, fluid around the lung, blood stream infection, inadequate blood pressure and inability to breathe.)
11. The victim is a person, not a cell, a fetus, an animal, a plant, a building or an organization.
12. The person does not want to be sick and hopes to recover. The case of a very old or infirm person who wants to die is anomalous.
13. The metaphorical model Disease Is Being Under Attack best organizes cognition of these central cases and is the primary one whereby they are understood. The disease is conceptualized as a dangerous and potentially lethal attacker which must be defeated. The patient is “*battling*” pneumonia, is engaged in a “*struggle*” for life, could be “*defeated*” and hopes to “*fight off*” the infection. Medication helps the victim “*go on the offense*” and some antibiotics are “*new weapons*” in the “*arsenal*” against the disease. A person involved in such a “*fight*” must “*keep up her courage*” and not “*give up*.” It is her goal to “*overcome*” the illness and “*beat*” it. Pneumonia also causes a Disorder of the lungs and a Mechanical Breakdown of lung function. These metaphors are only used by professionals in technical discourse about severe cases.

Other groups of diseases satisfy the cognitive model Being Under Attack less well than pneumonia and the remaining acute infectious diseases. Some of them satisfy one or more alternative models in the “disease” cluster, and some are only tenuously analogous. I now want to consider some of these roughly in the order, as I see it, of their distance from the central disease prototypes. By going through some illustrative examples we can get a sense of why the category of disease has ramified to include so much, but also of how the less central diseases deviate from the prototype.

B. Cancer

Cancer is a collection of very different diseases often casually considered as one because of the common feature of cell growth escaping from normal control. It differs from the prototypes in respect of the following features:

1. Pre morbid health is suspect. There might have been something wrong with the victim that predisposed to cancer, even if she felt well.
2. The onset is gradual and the course is chronic and progressive if not treated.
3. There is a whole grab bag of proven and alleged causal factors, not a single outstanding discrete cause. It may be that single primary causes (like asbestos for mesothelioma) will be found for more and more varieties of cancer, but even when we know of viruses causing human malignancies, such as Epstein-Barr virus causing Burkitt's lymphoma, the relationship of the etiologic agent to the disease is far from one to one. So many other confounding factors are present that the virus is not understood in simple fashion as "the" cause.
4. The causal factors do not necessarily come from outside the person, since there are inborn cancers, inherited syndromes causing cancers, idiopathic (etiologically obscure) cancers, intrinsic resistance or susceptibility factors and behaviors increasing known environmental risks.

Regarding the remaining cardinal "disease" features listed under the prototype, cancer is in the main similar. The central cognitive model is still Disease Is War with the useful modification that the victim is being undermined and "eaten from within" by an enemy. Accordingly, the disease "infiltrates," may be "insidious" and is "the body turning against itself." "Disorder" is also important in understanding cancer, but in this case the disorder is mostly literal and observable grossly as well as microscopically. Finally, cancer is most common in the elderly, and thus seems more like a "real" disease and not a normal accompaniment of aging when it occurs in younger victims. In such cases it is more "Abnormal."

C. Vascular Accidents

In considering vascular accidents such as heart attacks, strokes and emboli (dislodged clots which migrate) it is evident that these conditions diverge differently from the prototype than does cancer.

1. Previous health is highly suspect. Even with a striking sudden initial episode there is the presumption (after the shock wears off), of prior "latent" or "occult" disease such as atherosclerosis, which has become manifest in the attack.
2. The episode may be acute, but the underlying process is chronic. Usually the episode heralds the onset of chronic illness. There is "damage." Recovery is not complete.
3. The causes are muddled and multi-factorial, not single and discrete.
4. The causes do not clearly originate outside the person, from the standpoint of medical science, but in habits, environment and inherited factors together. Thus the disease, upon reflection, is not entirely alien to the "self," broadly considered. Here and with many other diseases there is often a divergence in the

view initially taken by the caregiver and the victim, which may only be partially resolved later as they come to understand one another better. The victim has an interest in distancing her or himself as far as possible from the disease. This means that the victim has an interest in construing a part of the body from which the disease came (also in the case of cancer) as radically separated from the self. No one wants heart disease as a part of his identity. This sort of thinking is ready to hand because in everyday experience so many perspectives on and parts of our own bodies are unavailable and hidden from our own consciousness. Yet, when health is running smoothly we like to take credit for it as part of ourselves and self-worth. It is when something goes wrong that we prefer to confront it as "other." The caregiver is usually more enthusiastic than the patient to push for reintegration of the disease into the self-image, when incorporation of responsibility for the illness is seen as constructive for treatment. The patient, on the other hand, is understandably in conflict because she needs a strong self to "fight" the illness and incorporation of the illness into herself is contrary to that need.

Interestingly, in other instances, i.e., mental illness or other cases of suspected incompetence or misjudgment on the part of the victim, the caregivers usually try to distance behavior thought to originate in the illness, i.e., "pathological behavior," from the "true" or pre-morbid self. Frequently, our narratives of illness or aging have to do with attitudes we take toward infirmities including owning or disowning them.

5. The causes of vascular disease and accidents are mostly physical, but personality factors and environmental stresses may yield "psychosomatic" effects on the circulatory system.
6. The causes primarily affect the body but secondary psychosocial effects such as depression are often more important than with an illness like pneumonia.
7. The victim is aware of being ill, but only after a presumed "silent" or latent process has become manifest.
8. 9. 10. 11. 12. Similar to the prototypical diseases.
13. Because of the divergence between patients, who focus on the acute, disruptive and difficult to assimilate aspects of the disease and professionals who see these as outcomes of a long underlying process, the cognitive models and other portrayals of vascular disease are not uniform. The victim, and to a lesser extent the physicians, use language which maps injury and often assault on vascular disease. Thus we have a "stricken" victim of a "heart attack" or a "vascular accident." But when focusing on the process and not just the outcome, there is imbalance in the lifestyle, the body chemistry and physiology. Delicate physiological processes, often "balances," are upset and the body attempts "compensation" for the damage which was originally caused by various excesses and deficiencies. The upshot is that cardiovascular disease in its diverse aspects can be thought of in terms of attack, injury, imbalance or mechanical breakdown ("heart failure").

Physical Injury

In many ways this is like the prototype in respect of:

1. Pre-morbid health.
2. Typically acute (chronic injuries and insults are less easily brought to mind) with recovery or death likely, but an increased chance over the prototype of permanent loss of parts or function.
3. There is a single most salient cause such as an accident or an assault.
4. The cause is an “insult” coming from outside the person. Contributing causes such as “carelessness” or “defenselessness” are typically seen as secondary and remote, with the immediate physically harming cause proximate and pre-eminent.
5. The cause is physical. Psychological torture is distinctly aberrant and a cognitive “stretch” to include in the “injury” category.
6. The cause affects and harms the body. This is not true of “psychological injury,” but when an injury is largely (“only”) psychological it is in its own group, further removed by this feature from the central disease prototype.
7. The sufferer is aware that he or she was injured (unless killed outright, unconscious or suffering amnesia). There are discomforting and distressing *symptoms* like bleeding, pain, loss of motor or sensory function and many others.
8. There are *signs* such as pallor, shock, thirst and rapid heartbeat.
9. There are names for the various injuries and these are the keys to prognosis and treatment.
10. Complications like shock, cardiac arrest, unconsciousness, wound infection, including tetanus, etc., can occur.
11. The victim is a person.
12. The person did not want to be injured and wants to recover. Intentionally, self-inflicted injuries as well as malingering after injury belong to a different scenario from the default injury one, and are much further from the prototypical illness.
13. But injury is unlike the prototype in that the main cognitive model is not Being Attacked, except when that is the literal case. Injuries are dismemberments, disorganizations and disabilities. People are “broken,” “cut,” “smashed,” “torn apart,” “dismembered,” “blinded,” “knocked out,” etc. Wholeness is disrupted both literally and metaphorically, or the bodily machine is broken. Although the war (“he is now battling for his life”) and the vital fluid (“life is ebbing away”) (sometimes as a consequence of literally “bleeding out”) cognitive models can be of service at times in the structuring of injury, I think that “Disease Is Mechanical Breakdown” and “Disease Is Disintegration” are more important. Thus the treatments are “repairs,” “restorations,” and “reconstructions” and trauma surgeons “put people back together” in literal and metaphorical ways.

NON-CENTRAL MEMBERS OF THE DISEASE CATEGORY

There are numerous more remote and peripheral subcategories and members of the radial category “disease.” I will mention a representative sample of these outlining only the features which distance them further from the prototypes.

E. Chronic Disease

The subcategory of chronic disease is, of course, more importantly distinguished by the difference in Feature 2. The illness is prolonged, typically is never cured; and if it remits it only lapses into a “latent” stage from which it can and will recrudescence (for example, major depression and inflammatory bowel disease). Also, frequently but not invariably, the illness does not (1) affect someone who was previously well, and has (3) multiple contributing causes. (4) These do not necessarily come from outside the person and are not (5) necessarily physical. The major cognitive model for chronic disease (13) is Disease Is Disintegration. In older patients the disintegration is flavored by the supposition of wear and tear, and so older people with degenerative diseases are not so vividly the victims of “real” disease as are younger ones. The model Disease Is Mechanical Breakdown assumes more significance in chronic conditions of the elderly.

F. Occult Disease

Occult disease can also be called “silent” disease as in the case of a symptomless heart attack later diagnosed on a cardiogram, or “latent” disease in the case of infections like HIV, which have an asymptomatic incubation period or a seemingly dormant phase. Inactive tuberculosis and latent syphilis are classic examples. Here, the important differences from the prototype are in features: (2) The illness is not acute, but “smoldering” or subacute. (6) The cause does not now appear to harm the body but may *potentially* do so. And most importantly (7) The victim does not know, unless hidden facts come to light, that he or she is ill. There are no symptoms and (8). No signs. The victim consequently has trouble coming to terms with the fact that she is in a sense “sick” and needs to respond. And (13) Although the main cognitive model is still Disease Is Being Under Attack, it is often modified, as with some cancers, into imagery of subversion, infiltration, “undermining,” “gnawing away at the foundations of health,” etc. Thus it is an *undercover attack* or an *undeclared war* which is most commonly projected onto latent illness.

G. Congenital Diseases

Congenital diseases are usually considered conditions present at birth caused by adverse gestational or perinatal events. But often anything wrong present at birth or shortly thereafter which is likely to persist without treatment or even with it, including some early onset genetic diseases and inborn errors of metabolism, is annexed to this category. So, the subcategory “congenital disease” as located in the greater “disease” category structure includes diseases like trisomy 21 (Down’s Syndrome) or fragile X syndrome, fetal alcohol syndrome, and metabolic diseases

like galactosemia or hypothyroidism of newborns. Later onset genetic diseases with a long healthy pre-morbid phase such as Huntington's Chorea and adult onset polycystic kidney disease do not fit here, nor do diseases such as schizophrenia, diabetes and asthma which have mixed genetic and (presumably post-natal) environmental causation, many variants, and are not present at birth or viewed as inevitable.

The congenital disease group lacks certain important features of more prototypical diseases: (1) Pre-morbid health. The baby is born with the condition. (2) The condition is usually chronic and lifelong, not acute. (3) There may or may not be a single outstanding cause. (4) The cause is not conceived to come from outside the person, instead being part of the person who is, however, not responsible for it. The person and the disease grow up together. By contrast, genetic diseases of late onset *seem* to be a foreign imposition upon previous health even though they originate inside the person's body. (12) Depending upon the condition (and note here how easy it is to slip into using "condition" instead of "disease" when approaching the periphery of the "disease" category), the person having it may or may not regard it as a disease to be rid of. Sometimes this is because the person who is affected, such as a deaf person or someone with dwarfism, might take issue with society's definition and portrayal of her condition as an illness, instead appreciating some of its aspects as positive. In other instances the victim is too profoundly retarded to conceptualize his condition in any conventional way. (13) The cognitive models "Disease Is Imbalance" and "Disease Is Disintegration" (loss of wholeness or order) are used to portray these conditions. A limb or another body part may literally be missing or deformed (I am thinking here of missing form as a type of missing order), or a problem can be construed as an imbalance, particularly in metabolic conditions. Parenthetically, it is of note that for genetic diseases of later onset where there is regression from health, such as Tay-Sachs disease or Wilson's disease the "Disease Is Disintegration" model is particularly well satisfied.

H. Mental Illness

Mental disease is a subcategory which is itself radial with core members which are generally accepted as pathological (although not universally so) and peripheral members whose status is disputed. The core members are the psychoses and the profound mood disorders. Most neuroses, phobias and panic disorder are intermediate, and entities like "social anxiety disorder," "attention deficit hyperactivity disorder," "oppositional and defiant disorder" and "adolescent adjustment reaction" are more marginal and controversial. With a "mental illness:" (1) Pre-morbid health is suspected to have been flawed. (2) Most cases are chronic and/or relapsing. (3) Often the causes are not thought of as single (except in cases such as mercury poisoning or acute drug psychosis), but are multi-factorial or unknown. (4) They may originate "inside" the person as with neurotransmitter imbalances or "outside" in the case of traumatic experience. The patient, under the influence of the disorder, typically does not view its causation as does inter-subjective community consensus. In psychoses, the commonly accepted distinction between the "inside" and the "outside" of the person has deleteriously altered, reducing the ability to

function socially and survive. (5) The cause is not stereotypically physical, but is usually a matter of vigorous contention among all the parties concerned. There is a longstanding schism in the health professions themselves about the role and interaction of “organic” versus “psychological” causation for most of these conditions. There is not even any general consensus about the distinction between these terms. Now that we have functional magnetic resonance imaging and positron emission tomography, we can see something going on in the brain concomitantly with almost anything in the mind. (6) The causes affect the mind primarily and only secondarily the body. Or, according to some, they affect the brain, then the mind and then the rest of the body. Meanwhile others see them affecting the mind, then the brain and finally the body. (7) In many such conditions the sufferers do not conceive of themselves as ill. Psychotics know something is wrong, but generally misconstrue the locus of the problem. On the other hand, patients with neurotic disorders usually identify their suffering as disease. There are symptoms of mental illness, such as hallucinations, delusions, compulsions, obsessions, anxiety, agitation and depression, but symptoms with a difference: with the more prototypical “physical” symptoms no one thinks of a little chest pain, a slight nosebleed, mild nausea or a little bit of impotence as healthy. But it is the *intensity* or *pervasiveness* and the *inappropriateness* for the circumstances of anxiety, compulsion and delusion which determines whether or not they are pathological. Hence mental illness is a matter of degree. This causes most second-year medical students studying mental illness for the first time to wonder if they are themselves of sound mind. Furthermore, some syndromes like “hysterical personality disorder” and “multiple personality” are called mental illnesses by those who focus on them as dysfunctional, but normal “adaptive strategies” by those who focus on traumas to which the victims are or have been subjected.

Whether or not the patient believes it, in common parlance mental illness affects the self. But the sorts of things which can be wrong with the self depend on what concepts of self, self identity and inner or psychological life we adopt, and there are many. In every case, the self is considered as some sort of assembly of parts. For example, Hume enumerates parts like one’s body, one’s temperament and knowledge, one’s habits, relatives, friends, home, country, possessions and culture as constitutive, to a greater or lesser degree, of the self. These constituents are literal. But when it comes to identifying parts of the mind and inner life, Hume names Reason and Passion and is forced to describe their relations metaphorically. Much of Hume’s work concerns how a radically independent reason comes to absurd conclusions from the standpoint of the emotions. The emotions are treated metaphorically as a person or persons who are reacting to and evaluating the pronouncements of reason as it works when cut off from them. Apart from Hume, historical versions of the self have put forth a whole case of characters like Reason and Inclination with Kant: Ego; Superego, and Id with Freud; the Conscious and the Unconscious Mind; the Body, the Spirit and the Soul in traditional Christian thinking; and the Faculties in faculty psychology.

Lakoff and Johnson have proposed that in folk theory, such divisions can be placed under the umbrella terms Subject and Self or Selves. They have not said whether these terms could adequately encompass all the theoretical schemes published in academic and religious literature. I suspect that an attempt to bring all the types of division of inner life under these few categories would miss significant distinctions. But importantly, they note that the nature and relations of whatever parts are named are conceived metaphorically. Metaphors for inner life conflict with one another and serve different purposes, but are limited to a basic few.¹³

Without going into the enormous details, suffice it to say that various parts of the self are structured metaphorically in our imaginations. They may fight, cooperate, nurture, suppress, hide, destroy, manipulate, merge, separate from, argue with and evaluate each other, like the objects and situations in terms of which they are metaphorically mapped.

(13) Mental health is conceived as a proper relation among these metaphorically understood parts whatever their nature, and mental illness as an improper relation. The cognitive model “Illness Is Disintegration” ties much of our thinking together here. Mental patients are “*deranged*,” “*cracked*,” and “*unhinged*.” They “*come unglued*,” “*fall apart*,” and “*flip out*.” This last, like the related “*are out of their heads*” neatly combines two metaphors, the literal disconnection of parts which is mapped onto mental disintegration, and Disorder Is Being In The Wrong Place. The even more vivid “*flip their lids*” involves three, the third being Strong Emotions Are Fluids Under Pressure In the Head. They also have “*nervous breakdowns*.” (Here Illness Is Mechanical Breakdown operates as well.) They are “*conflicted*.” Therapy helps the patients to “*reintegrate*.”

In addition to being mapped by Disintegration, mental illness is also modeled on Loss of Control and Imbalance. Patients are “*out of control*,” exhibit “*disordered thinking*,” are “*off their rockers*,” “*slip their trolleys*,” and “*have one oar in the water*.” They are also “*unbalanced*” and “*unstable*.”

Finally, there is a special metaphor for depression “Depression Is Being Down.” (Part of a large metaphorical system which relates many types of deficiency to being near the ground or supine.) People “*get low*,” and “*fall into depression*” from which they may further “*sink into despair*.” They are “*down in the pit*” or the “*black hole*” (It’s also dark down there – linking this type of suffering with night, evil and being lost in the dark) and “*trying to climb out*.”

I. Deficiency Diseases

This group includes all the diseases of undernutrition: malnutrition (calory deficiency), Kwashiorkor (protein deficiency), scurvy (lack of Vitamin C), Beriberi (thiamine deficiency), pellagra (nicotinic acid deficiency), iron deficiency, etc. Deficiency diseases differ from the prototypes in that: (2) They are chronic unless treated. They start gradually. (7) The victim often does not know there is anything wrong in the early stages. And (13) The metaphor most often applied here is Health Is Balance. Something is lacking which is important for balance. A related group of diseases is slow poisonings and chronic overload diseases caused by the excess

of certain nutrients, for example iron, or fat soluble Vitamins A and D. Here there is “imbalance” as excess.

J. Addictions

Addictions including tobacco, alcohol, caffeine and licit or illicit drug abuse are another variant illness. This category is shaded at the margins where there are incomplete “formes frustes” like so-called “sexual addiction,” gambling habits, “food addiction,” and other types of compulsive immoderation. In contrast to the prototypical diseases the addictions are very distant and aberrant in many features. Thus (1) Pre-morbid health is suspect with research showing more and more predisposing factors in neurophysiology. (2) They are not acute. (3) Causation is multiplex, being (4) both internal with susceptibility factors and external due to the attractions and entrapments of the addicting agents and behaviors. (5) Causes are dualistic, being both physical and psychological. (6) The disease effects are social and psychological as well as physical. (7) The sufferer is frequently seen to be “in denial” and attempts not to know that she or he has a problem. (12) The person is so consumed by the problem, in the usual portrayal, that he or she does not fully want to recover. (I note here that the word “disease” here fits so poorly that the term “problem” is more congenial.) The illness is thought to involve the “will” itself. (An important member, in much thought, of the internal cast of characters already mentioned.) (13) The idealized cognitive model of Being Under Attack is used to cognize addiction, but the enemy is often seen as an enslaver. We can have a “war on drugs” which becomes by metonymic extension a “war on drug users.” And the users themselves not only “battle” alcohol or drugs, but are “enthralled” or “enslaved by,” “taken over,” “imprisoned,” and “vanquished” by their addictions. They may by now have “surrendered,” having insufficient independent “will” to “battle” them any longer.

K. Character Disorders

Character disorders constitute an intriguing subcategory of disease very remote from prototypical diseases. People ending up with these diagnostic labels are well known to be the bane of the medical and legal systems. They flood clinics and emergency departments in order to use them for secondary gains like sympathy, compensation, drugs, notoriety or power; not to get well. We owe much of our present understanding of them to the work of Nietzsche, followed by Alfred Adler, and modified by newer work on etiology giving a significant role to childhood trauma. This subcategory includes malingering and its premier example, Munchausen’s syndrome, hysterical personality disorder (often appearing in clinics when not on talk shows, tabloid interviews or at tent revivals), sociopathy, psychopathy and borderline personality to name a few. Here there is bizarre behavior labeled “sick” by society but usually being what is called “ego syntonic” for the person affected. This person thinks his problem is the way society responds to him and except for not getting what he wants, is more a problem for society than for himself.

The character disorder is so marginal an example of a “disease” subcategory that it touches on neighboring categories such as “social misfit,” and “criminality.” Prosecutors argue for “criminality” and defense attorneys argue for “disease” in court. Neither legal nor medical remedies work well to resocialize these people, and both professions would be happy if only the clergy could do the job. Public perceptions waver depending on whether organic causes and remedies, social ones or moral ones are fashionable. Here there is (1) No pre-existing, contrasting state construable as “pre-morbid health.” The origin of these disorders seems to be either congenital, or perhaps more likely, to begin with effects of early childhood trauma or inadequate parenting, the later effects of which are extremely hard to undo. (2) The “problem” is chronic, not acute. (3) No single primary cause has been identified. (4) The cause seems to be part of the person, although no one has ever decided whether it is unwillingness or inability to change that has been incorporated into the character. (5) The cause or causes are still unknown. We do not know if they are “physical” in the usual sense. Severe childhood trauma or neglect is suspected. (6) Whatever the cause, it does not usually harm the body directly, but only indirectly as a result of self-destructive behavior. (7) The person with the condition, left alone, does not think there is anything wrong with her or him if he could only get his way. Distressing symptoms are more or less fabricated by the “patient” as ploys, and the surrounding society is itself distressed by the behavior. (8) Physical “signs” are not present except in the instance of self-induced stigmata. (9) There may be a diagnosis but there is no ready treatment. (12) Since the person gets “secondary gain” out of the symptoms, there is no sustained intention to recover. Attempts at treatment involve withholding this gain and imposing behavioral controls, upon which, the “patient” promptly goes elsewhere to seek his object, if not restrained. If restrained, he fabricates a convincing recovery, complete with well-acted “insight” into the problem, hoping to terminate the imposed treatment as quickly as possible, (13) “Imbalance” (intemperance) and “disintegration” concepts are used to portray the trouble, as well as “disorder” and “loss of control over order.” Improvement involves “controls,” “restructuring” and “reintegration.”

L. Others

Many other examples instantiate “disease” to a greater or lesser extent and are related in disparate ways to the core prototypes. “Iatrogenic illness” (caused by medical treatment) “auto immune diseases,” “degenerative disease,” diseases manifest only in certain environments, genetic “carrier states,” “allergies,” (immune reactions which are harmful to the host) and “plant and animal diseases” all have interesting similarities to and differences from the prototypes, whose details, however, would not further the present discussion. There are political, ethical, aesthetic and cultural differences about whether certain physical and behavioral phenomena not yet mentioned should be cast as “diseases” or “disabilities,” “crimes,” “eccentricities,” “normal variants” or “effects of aging.” These include senility, various sexual object attachments, personality types, cosmetic features and even left-handedness.

The label “normal variant” retains a semantic connection with the “disease” category on the basis of the “abnormality” construct.

“Disease” itself is a source domain which can be mapped on to conditions of anything which can be conceived of as analogous to an organism. Thus we have “pathological cultural developments,” “ailing organizations,” “cancers in the body politic,” “computer viruses,” “sick building syndrome,” “wheezing (economic) recoveries,” and bull markets which “are on their last legs” in addition to “unhealthy ecosystems,” “dying lakes” and “blighted neighborhoods.”

CONCLUSION

As ends to be avoided or sought, disease and health, far from being static and univocal, far from being literal and objective, are ambiguous and metaphorical moving targets. Although they are firmly grounded at the basic level in symptoms or the lack thereof (potential symptoms are not so well grounded) operational definitions of health and disease are necessarily multiplex and conflicting, inconstantly useful and metaphorically structured. The values underlying these concepts are dynamic and context-dependent. Symptoms we would like to abolish also turn out to be necessary warnings; weaknesses mutate into strengths depending on perspective and environment; categorical generalizations fail fully to capture particular and unique people and their problems.

The finding that disease is a radial category has important implications for medical reasoning. The traditional logic of decision making has never come to terms with the fact that not all members of radial categories can be treated alike, whether these are individual diseases as members of the whole category “disease,” individual cases classified by diagnosis, or particular experiences as exemplifications of a putative category of “benefits” or “costs.” Formal reasoning works with classically defined entities. Radially structured, metaphorically defined entities do not support classical inference any better than peaches support billiards. Hence there are serious limits to generalization which have not been sufficiently appreciated. The following problems have not been addressed:

1. Although attempts, usually unsuccessful, are made to set priorities *within* protocols, no priorities are set *among* them. Protocols for one condition do not admit of adjustment when multiple conditions coexist. Myopic programs of “disease management” fail to take into account the elementary fact that people usually have more than one disease.
2. Mandates for medical care fail to recognize non-medical considerations of value for the patient, in the practice situation, or for society as a whole. There is nothing about the actual operational concepts of value in medicine which sets them apart from general concepts of value and renders them immune to the relevance of non-medical concerns. “Disease management” thus ignores the fact that actual people with diseases have outside lives, and they have more to manage than just their diseases.

3. There are guidelines and criteria for establishing diagnoses, and protocols for dealing with diseases, but the more rigorous the diagnostic criteria, the fewer patients get the diagnosis. There are no protocols for patients without a conclusive diagnosis. Exacting therapy and exacting diagnosis require each other, leaving everything inexact in a therapeutic no man's land. As a result, clinicians have a tendency to force their observations to fit pre-existing categories rather than to admit the existence of the doubtful and to deal with it as such.
4. Measurable endpoints and outcomes are never the only outcomes of interventions. Clinicians, however, find their work judged only by whatever it is popular to measure or scrutinize, i.e., "survival" or "disease-free interval." There are always unmeasured consequences of attaining measurable endpoints. Therefore, whatever is scrutinized and judged "improves." Whatever is temporarily off the screen is neglected in order to pay attention to the spotlighted disease or problem of the day. This is one consequence of ignoring context in assessing value. No clinical action occurs in a vacuum; yet formal standards assume that this is so. In a 38 bed emergency department some standards for "better" care in beds 2 to 19 yield worse care in beds 20 through 38. No event occurring in the life of a patient gets its value solely by itself. All are valued in relation to the life context, and all affect one another, at least potentially. Healthier sometimes means poorer and it can mean sadder and less productive, whenever health standards are developed in isolation from other measures of well-being.
5. Quality of care standards do not reward flexibility, creativity, questioning, and genuine listening. Rather, they undermine them.

These are among the many reasons why good medical judgment is not just rule application. Informal reasoning, free from logical micro management yet able to avail itself when needed of logical aids, was evolved precisely for dealing with uncertain and dynamic circumstances. Reflective deliberation is the artful assessment of which models are appropriate, what their limitations are, and how they are normative in specific cases. Why, if such reasoning has been found defective, is the only popular response to abandon it altogether? The broad sweep and potential of clinical judgment in seeking and attaining ends is considered in the next three chapters, starting with a look at the innovative views of John Dewey. Whereas attempts to escape the inescapability of clinical judgment can only mean that it is used surreptitiously instead of up front, recognition of its necessity opens the prospect for improving it.

NOTES

¹ Dewey, John. "Theory of Valuation." In *The Later Works*, Vol. 13, p. 233.

² George Lakoff *Women, Fire and Dangerous Things*, p. 74.

³ *ibid.* pp. 75-76.

⁴ See Mark Johnson's comments on Hans Selye in *The Body in the Mind*, Chapter Five and Arthur Caplan, "The Concepts of Health, Illness, and Disease" in Veatch, Robert. *Medical Ethics*, second edition, Chapter 3.

⁵ See Arthur Caplan in Robert M. Veatch, *Medical Ethics*, (second edition) pp. 64-67.

⁶ For a discussion of issues concerning the term “fitness,” see Evelyn Fox Keller and Elizabeth A. Lloyd Eds. *Keywords in Evolutionary Biology*, chapters on fitness by Diane Paul, John Beatty and Evelyn Fox Keller.

⁷ Mark Johnson, *The Body in the Mind*, p. 130.

⁸ See Arthur Caplan. “The Concepts of Health, Illness and Disease” in Veatch, Robert, *Medical Ethics*, (second edition) p. 67.

⁹ George Lakoff, “Women, Fire and Dangerous Things, pp. 292–293.

¹⁰ *ibid.* p. 46. Note that the “image” in this case is not necessarily visual. We have mental representations of pain, fatigue and hoarseness which I doubt involve any activation of visual pathways.

¹¹ See Paula Caplan, *They Say You’re Crazy*, for how these distinctions affect the content of the D.S.M.

¹² See Lakoff’s discussion of stereotypes and representativeness in *Women, Fire and Dangerous Things*, Chapters 4 through 7.

¹³ George Lakoff and Mark Johnson. *Philosophy in the Flesh*, Chap. 13. “The Self.” pp. 267–269.