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H.G. Wright

Means, Ends and Medical Care



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OVERVIEW

BROAD CONSIDERATIONS IN THE RELATION OF MEANS AND ENDS, TREATING AND HEALING

INTRODUCTION

If, in Western society and medicine we already knew exactly what our ends were and what, in the light of each other, they ought to be; if we knew all the consequences of our acts; if all our values were fixed and could be quantified and measured on a single scale; if we knew exactly where in a chain of events to assign the worth; and if, correspondingly, the value of things were always hierarchically derived and not mutually supported; then our means/ends deliberations would be purely tactical. We would invariably know, in such fields as medical care, exactly what we wanted to do, and our only problem would be how to do it. We could speak without reservation about “costs and benefits” or “cost effectiveness” as though clinical encounters and situations were independent of context, would never generate new and unexpected values, could not fail to fit predetermined categories and could not have any transforming effect on the caregiver or the patient.

If the position, structure and significance of illness were so static and exact, and if “causes” were well defined, clinical encounters could specify “inputs” yielding well bounded, generic and mutually independent “diagnoses,” apply precise “interventions” and arrive at perfectly characterized “outcomes” already evaluated and statistically predictable. The assumptions of an industrial model might then replace those of a professional model; genuine inquiry would never mix with practice: diagnoses and treatments could become standardized and handled by protocol; doctors and nurses could become the tools of such protocols, but tools with a difference; they would have special spigots that could be turned on and off on cue to dispense appropriate quantities of “touch,” “warmth,” “judgment,” “compassion,” and “listening.” Only sincerity would be missing.

These *are* widespread assumptions and behavior based on them is already common. But value is not a set thing. I have no quarrel with decision research, which has showed much about how we attain and fail to attain fixed goals. What I will dispute in the following chapters is the presupposition that static and exact hypothetical imperatives, preset “if/thens,” apply as often and obviate as much as is being pretended in a field like medicine. It is my contention that “efficiency” and “economic rationality” have been conflated, that simple presumptions about means and ends which have proved very successful on limited application are being employed counterproductively in broader and more complex arenas. Speaking most generally, and I will get down to the specifics of it as we go along, “judgment” and “compassion” (part of the means) and “health” (the end) must

remain originals, recreated, reinterpreted, and revitalized to some degree with every clinical encounter.

Several authors, including Micah Hester, Glenn McGee and John McDermott, have pointed this out. What I intend here is to elaborate on their observations by detailing features of the categories, values and situations which underlie medical judgment and make it impossible to mechanize.

The statement that “It is irrational to endorse ends without endorsing the necessary means” is incoherently vague because logical entailment and cause and effect relations are only partly analogous. Experience is fluid; situations have vague and shifting boundaries; what is or is not relevant to them is not always apparent or constant. Some situations, like certain games, are artificially stabilized by rigid rules akin to the rules of formal entailment. In such situations ends are assigned, relevance is prescribed and possible behaviors are specified by rules at the outset. This is generally the case, for example, in a game like chess. The “problem” is winning and “winning” is defined. Purely tactical means/ends deliberations are somewhat less applicable but still of great import in activities like planning and applying drip irrigation and designing sails, catheters or heart valves. But they are greatly deficient in fluid fields such as internal medicine, pediatrics and psychiatry, wherein certain large consequences of the “means” are either unknown or likely to be overlooked, where valued qualities do not lend themselves readily to quantified ranking, where particularity makes much of the difference and where process and product are dissolved in each other.

This book argues that rationales appropriate for the solution of simple problems aptly modeled by games or nut and bolt reproduction are being inappropriately applied to complex and/or dynamic problems like those in health care; that they are damaging in practice when so applied; and that there are fuller models of rational deliberation available to us which are likely to be much more helpful.

Real people are getting hurt because of a theory that reasoning can be automated. Broad deliberation is needed even for choosing when to avail ourselves of mechanical decision aids. Such broad deliberation will be examined in order to understand why we still need it, and how it can be improved. And if, indeed, such deliberation is indispensable, then major alterations are needed in the environments of medical training and clinical care in order to facilitate it.

The argument for broad means/ends deliberation is in essence developed along four complementary lines. First, giving medical examples, a summary of evidence is presented showing that much reasoning is necessarily imaginative, not formal. In particular, a vast and indispensable complex of causal logics is outlined. Second, a tentative, but detailed outline is offered, demonstrating how the categories and cognitive models used to understand disease and health are imaginatively constructed rather than classically defined. Third, drawing on the work of John Dewey, the real subtleties involved in defining means/ends problems and in understanding the complex and dynamic nature of means and ends in practice are illustrated. Fourth, the axioms and assumptions of expected utility theory are reviewed, illustrating how ineptly it deals with clinical realities. Medical care examples

supplemented by ordinary life examples will be found throughout, since the points at issue are well illustrated by the demands of clinical judgment. Finally, suggestions are given for changes in training, caregiving and the evaluation of results which emphasize improving judgments, including value judgments, instead of dispensing with them.

FIRST LINE OF ARGUMENT: COGNITIVE STRUCTURES
AND CAUSAL LOGICS FOR MEANS AND ENDS REASONING

This argument is mainly put forth in Chapter One. Studies in cognitive science and linguistics have shown that our common sense deliberations about causation and means and ends avail themselves of deeply embedded categorical, imagistic and metaphorical structures which enable our thinking. Taking account of these deeply embedded and often unconscious structures makes it possible to propose that means and ends deliberation could be modified, opened up and hence improved. Our daily cognitive operations have roots going clear down into biology. These roots allow a certain amount of flexibility, but are not inessentials from which we can cut ourselves free. Now that we understand more about the embodied forms and origins of our concepts and the variety of metaphors which structure and facilitate our approach to means/ends problems, we should be able to determine whether we are making the best use of this rich imaginative endowment.

How much freedom do we have in conceptualizing means/ends problems in complex and dynamic areas like health care? Given whatever degree of freedom exists, can we make helpful choices among scenarios, metaphors and category understandings with respect to using them on different types of problems? Are prevailing approaches all that are available, and the best? Or, in spite of historic selection for certain thinking patterns is there still room for creativity and improvement? Enmeshed as we are in the most dominant of existing causal logics, from what standpoint can we imagine that we could do better? These questions may appear theoretical, but in the clinic and the hospital they have enormous practical importance. For example, conceiving of causation in mechanical rather than organic terms has much to do with the present emphasis on tertiary and rescue care over primary prevention.

SECOND LINE OF ARGUMENT: COGNITIVE MODELS OF HEALTH
AND DISEASE AND THE RADIAL STRUCTURE OF THE LARGE
DISEASE CATEGORY

This subject occupies Chapter Two. Although it is plainly evident that health and disease are not clear-cut, well defined concepts, the reasons for this fact, as well as its implications, have often been ignored. Chapter Two outlines the principal cognitive models which appear to direct the identification of disease. The role of symptoms in providing a literal starting point for disease is brought out. I claim that the category of "disease," its subcategories, and the individually named diseases is a radial

one, with central prototypical and universally accepted members, progressively less representative instances, and finally marginal, disputable or doubtful ones. A detailed outline of this “disease” category is proposed.

Because concepts of disease and health are partly metaphorical, graded in centrality, overlapping with cognitive neighbors, value-charged, ambiguous, disputed and ever-changing, they cannot be handled in a rigorous or mechanical fashion. But this does not mean that we cannot reason about them at all: it merely requires a broader view of what means/ends deliberation is all about.

THIRD LINE OF ARGUMENT: DEWEY’S BROAD VIEW OF MEANS AND ENDS DELIBERATION

The work of John Dewey already provides many insights into alternate relations of means and ends. His portrayal, in contrast to economic rationality, better accommodates the realities of clinical care. His concept of means and ends allows a broader representation of and response to people’s troubles. I will draw heavily on his work in trying to construct a comprehensive theory which does justice to the complexity of real care and thus promotes effective function, while denying that “effective” and “efficient” are the same thing.

A small group of pragmatically oriented medical ethicists including Micah Hester, John Moreno and Griffin Trotter have described the applicability of Dewey’s idea of intelligent inquiry to the assessment and resolution of clinical problems.¹ Chapters III and IV here should complement their work by gathering his scattered observations on the interaction of means and ends, and by showing their particular relevance in the cognitive and motivational landscape underlying medical care.

The approach to Dewey is detailed in Chapter Three. Certain general themes of his work on which his more focused discussion of means and ends depends are set forth in this chapter. These themes are: 1. His contention that values arise in nature, not from divine edict or as a consequence of reason turned in on itself. 2. His refusal to organize values in a hierarchy which privileges any one of them as foundational. 3. His view of qualities as both unquantifiable and fully real. 4. His idea that values interact despite and because of being qualitatively different, and therefore involve mutual support. 5. His contention that rationality is much more than deduction, calculation and the application of rules. 6. His emphasis on the crucial importance of context for means/ends deliberation.

The specifics of a Deweyan theory of means and ends, as best I can synthesize it from his various works, occupy Chapter Four. Dewey delineates a view of the situations which become problematic and require inquiry and the application of intelligence/judgment, as opposed to those more generic and less problematic encounters adequately handled through habit (or recipe). He then points out that resolution of a genuinely problematic situation involves creating unity and determinacy out of true indeterminacy. It follows that actual engagement in the process of inquiry and action is often necessary before a satisfactory outcome can be known. Therefore, values are partly created and are at least reinterpreted through engagement, not

simply given at the outset. In truly problematic situations, the ends are not fixed initially. The operational ends-in-view which are part of a developing plan, drawing us on in the process of diagnosis and treatment, are actually in part means, are malleable and are often to be distinguished from final ends or outcomes. Some final ends cannot be aimed at directly, and are achieved only as byproducts of other activity.

Dewey denies that means and ends can be sharply compartmentalized. He indicates that the value of an endeavor is spread out over its course and not only realized at the end. In assessing the prospects of any action or in evaluating it in retrospect, Dewey would have us look impartially at all of the consequences, not arbitrarily considering only specified ones. This view takes side effects or externalities fully into account.

Among the consequences of action frequently ignored are effects on the character and relationships of the agents themselves. These “feedback” effects on character are salient to debates about abortion, euthanasia, assisted suicide, surrogate motherhood and live donor organ transplants today. And they are particularly important to the alteration of character which may occur during medical education and training.

However, after reviewing Dewey’s work, although it has been my primary inspiration, I have found gaps and deficiencies. Some of these result from the fact that no complete or final theory of means and ends reasoning was ever articulated by him systematically in one place. Chapter Four ends with a presentation of problems in Dewey’s theory and areas needing further work. Dewey appears to think that problems are objective. He defines “objective” in a new and complex way, but then seems to trade off the traditional connotations of the word. This does not so much settle old arguments as start new ones.

The great insight of Dewey, I claim, is that he showed not only the indispensability of judgment, but how better to employ it. In the end, Dewey lays out the range of deliberation we need without giving us a blueprint for reaching accord. Given the nature of causal reasoning in medicine outlined in Chapter One, and the non-classical, imaginative character of categories conceptualizing illness presented in Chapter Two, the arena for means and ends reasoning in medicine is best dealt with in the manner largely put forth by Dewey.

FOURTH LINE OF ARGUMENT: THE LIMITATIONS OF EXPECTED UTILITY THEORY AND OTHER VARIANTS OF FORMAL MEANS/ENDS REASONING

Chapter Five presents the axioms of expected utility and criticizes both their assumptions and the claims made for their usefulness in fields like medical decision making. It reviews some ideas about a possible logic of values and expands on them.

Tied as it is to utilitarianism, rational choice theory and the many variations, subtleties and elaborations of it, has tended to dominate thinking about means and ends in this last century. But this theory or group of theories in application suffers from three major problems. First, there is an ambiguity about whether the theory

is a description of how people (and possibly other organisms) act or a prescription for how they should act in pursuing ends. Secondly, there are presumptions about the nature of ends, particularly “utility,” “self-interest,” and “winning” which need to be questioned more sharply. Thirdly, the theory fails to capture usefully many of the messy considerations involved in approaching real life problems like those in health care.

While proponents of rational choice theory seem to believe that with refinements this sort of reasoning can best do justice to all of our practical needs, others believe that even a maximally refined rational choice theory is incapable in principle of addressing many moral and practical problems. They, like Dewey, have tried to put forth expanded concepts of reason which assert its ability to cope with wider issues than they believe rational choice theory can handle. David Schmitz and Robert Nozick are among the several authors who have tried to show that reason applies to ethics and other values, not just to tactics. And many authors, among them Chaim Perelman and Lucie Obrechts-Tytica, contend that reason, rational argument (and therefore, rational decision making) cannot be limited to formal demonstration. Unabridged reason must be connected to emotion, not severed from it. With proper respect for the “facts on the ground,” a broader kind of reasoning about means and ends does much more for value problem discussion and resolution, and hence for effective action, than does the imposition of protocols based on narrow concepts of rational choice.

TYING THE FOUR ARGUMENTS TOGETHER

Certain intended ends are like “yearnings” or “openings.” Too much charting of them, too much planning and control, and too definite of an agenda is overmanagement which can foreclose on creative potential. Chapter Six illustrates the workings of informal reasoning as applied in clinical encounters. There are illustrations, added to the ones in the earlier chapters, of working to enhance the efficacy of a therapeutic relationship to achieve what can be accomplished in a particular encounter. In the caregiver-patient encounter, both parties help constitute the initial situation and problem, provide much of the means for the solution, are changed in the process of engagement and are involved in a resolution which to some degree must remain open at the outset. Potential benefits of slack, redundancy, meandering, drifting and slowing down are noted in this chapter.

Trust needs to be established and earned, relationships need to ripen, disease processes need to declare themselves over time, and mutual understanding needs to mature. For these among other reasons, growth metaphors for causation rather than mechanical ones, nurturing metaphors for action rather than forceful ones, and dynamic, interactive concepts of ends rather than static and atomic or hierarchical ones are often proper for means/ends assessment in the health care arena. Systems which allow for creative transformations to occur would be encouraged if an amplified Deweyan view of means and ends were adopted.

Chapter Six rounds out the sketch of what that amplified view would be. But how will we foster the conscientious use, as opposed to the abuse of discretion and judgment? Training programs for caregivers need both to recruit and inculcate the special abilities which foster well-grounded and compassionate clinical judgment. We need a practice environment which promotes, instead of frustrating, individualized interactions, listening as opposed to prior structuring of interviews, continuity of relationships, low turnover in personnel, and an ability to understand the situation as well as the actual and potential values in play for each patient. We need to take a harder look at the functions of continuing versus episodic care, including high technology specialized interventions. A new plague of machines in the same old environment will not nourish the human virtues required for responsive rather than imposed care. The ever strengthening science and technology of medicine must be matched by strengthening of the art. This is the art of the possible, an art working in the real world and not in an ideal one.

The reader may wonder how all this relates to medical ethics. What I want to outline is an ontology of value which underlies both the ethical aspects of medical decision making and all other aspects. In fact, ethical values exist “in solution” so to speak, with physiologic, economic, social and psychological ones. They are not walled off, but are mixed with and determined in relation to these others. Pragmatic concerns, I would contend, do not generate a whole new theory of ethics, but can support considerations based in virtue ethics, duty ethics, contractarian ethics and consequentialism or utilitarianism. What pragmatism contributes is a dose of reality; showing how our ethical concerns can work only in concert with our other knowledge of, and values in, experience as a whole.

The pretense that the categories, situations, persons and values involved in medical care can be described mathematically and addressed by rote is shown in the various chapters to be poorly supported. Virtues are indispensable both in making clinical decisions and carrying them out, and suggestions for nurturing them are given in conclusion. Let us get on with that task.

NOTE

¹ See, for example Hester, Micah: *Community As Healing*. Rowman and Littlefield, Lanham, etc. 2001.

COGNITIVE SEMANTIC STRUCTURES IN INFORMAL
MEANS/ENDS REASONING

“The physician is lost who would guide his activities of healing by building up a picture of perfect health, the same for all and in its nature complete and self-enclosed once for all.”¹

“HOW ACTUAL THINKING DIFFERS FROM FORMAL LOGIC...

- (1) The subject matter of formal logic is strictly impersonal The forms are thus independent of the attitude taken by the thinker, of his desire and intention. Thought carried on by anyone depends, on the other hand, upon his habits
- (2) The forms of logic are constant, unchanging, indifferent to the subject matter They exclude change as much as does the fact that two plus two equals four. Actual thinking is a *process*; . . . it is in continual change It has at every step to take account of subject matter
- (3) Because forms are uniform and hospitable to any subject matter whatever, they pay no attention to context. Actual thinking, on the other hand, always has reference to some context.”²

This chapter opens by giving an idea of formal versus informal reasoning when applied to worldly, as opposed to purely symbolic and mathematical problems. This distinction has become important in assessing how best to resolve clinical problems in medicine. A useful working distinction between formal and informal reasoning closely follows that of Dewey quoted above, between “formal logic” and “actual thinking.” Then, the main body of the chapter outlines work in linguistics and cognitive science which has identified imaginative structures important for the cognition of means/ends problems. The intent is to show how such structures contribute to our multiple senses of causation, and therefore inform diagnostic and treatment actions.

“FORMAL” AS OPPOSED TO “INFORMAL” APPROACHES
TO DECISION MAKING

Attempts to standardize work in the professions are ever on the increase. The use of standards, of course, rests upon the identification of commonalities among situations and often, indeed, upon forcing them into common molds. Standardization makes use of relatively *formal* means/ends reasoning. Formal means/ends reasoning requires not only the universalization of particulars but also the quantification of

qualities. The standardization project involves applying one or another variant of *economic rationality* to decision making. All of the varying formulae, however, make similar assumptions about the nature of entities, relations and categories of entities and relations, as well as similar assumptions about the assessment of value and the rules of reason.

Formal means/ends reasoning demands that particular entities must be classifiable according to their essential features, and that entities having the same essential features can be treated in a protocol as identical. Clinical situations amenable to standardization must be replicable ensembles of such entities which can also be treated as identical. Additionally, outcomes of professional work need to be specifiable ensembles which can be classified and thought of generically.

Just as situations must be specified, assigned to categories, and dealt with according to category assignment, there must also be a formula for valuation. Qualities, it is assumed, can be made quantifiable for evaluation. Values need to be fungible, i.e., measurable in terms of common units. Rational acts are those which maximize (and sometimes fairly distribute as well) these value units. The method of assessing value is predetermined and not subject to transformation through any particular professional encounter or experience.

Formal means/ends reasoning is also disembodied. Except for a defined set of considerations, it is context-independent. It is grounded in abstract relations which are mutually self-generating in an a priori symbolic realm and have nothing to do with the embodied circumstances of cognizing subjects. Emotions need to get out of the way of formal reasoning. So does contingency.

It happens, though, that for clinical reality to be specified and quantified as is claimed possible, it would need to have semantic elements (units of meaning) which could be related in the terms prescribed by this rational syntax, and causation would need to work for such reasoning much like entailment. In the calculus of economic rationality professional problems are compared to games. Such rationality assumes that we already know what winning and losing are. We must also know our present strategic positions and we must know which considerations are part of the game and what ones are not. Finally, we must know what the rules allow. Only if all this were possible would a "rational actor" be in a position to *prove* which strategies would maximize the chance of winning.

This chapter focuses on *informal reasoning*. Informal means/ends reasoning, in contrast to formal, is exemplified by clinical judgment. By informal reasoning, I mean the actual situated processes of human thinking and reasoning about ends and means. Informal reasoning of this sort is embodied, metaphorical and imaginative. This "actual thinking" deals in images, emotions, and sensations understood on the basis of bodily experience. Informal reasoning considers emotion to be a way of connecting with and understanding the world. The fact that emotion occasionally misleads no more invalidates it as a means of understanding for informal reasoning than the existence of illusions invalidates sensory perception as a whole. Informal reasoning "weighs," it "sifts," it "balances" and it tries to "see what fits." It works poorly in gambling or games, except when psychological acuity counts. Informal

reasoning *reformulates* as it goes. It starts with established values but expects that they will have to be renewed and sometimes reworked as they are instantiated in new experience. It is pervious to particular influences. It is qualitative. It individuates situations. The problems of informal reasoning have been well detailed, including casualness, sloppiness, susceptibility to certain fallacies, distractibility and bias. But the reasons why and when it works well have been underappreciated.

Empirical, informal reasoning about means and ends has been compared unfavorably with formal reasoning. However, sweeping conclusions about the inefficacy of informal judgments on how best to attain purposes should not be made until their true scope and application are recognized. The field of clinical medicine contains abundant examples which should demonstrate why premature conclusions about the broad failure of informal reasoning should not be made. Such conclusions have been based on a very narrow set of instances in which clinical judgment has been found wanting. The proliferation in clinical medicine of algorithms, protocols and rigid standards of care has occurred in response to a profound distrust of informal reasoning derived only from examination of these very limited and circumscribed situations.

If only there were atomic and static meaning-units whose relationships could be elaborated using formal rules; if only there were fungible and quantifiable value units for measuring the worth of inputs and outcomes across all situations and contexts; if only clinical reality would conform itself to such concepts so that their logical relations would mirror cause and effect in full blooded experience: then we could decide how to think and act in a truly rigorous fashion. There would be a marvelous mathematics of cost-effectiveness. We could plug solid "data" into a prognosticator, generate ironclad diagnoses, enter the health desiderata and read off the best action plan.

The trouble is that logical atomism (the idea that all meaning is reducible to minimal bits) binary truth functional logic (the division of all propositions into only the categories "true" and "false") and formal set theory work only for certain games, proofs and machines and to solve only strictly replicable problems. Even real atoms cannot be understood apart from their relations to an uncertain world. Complex entities still further defy understanding through analytical resolution into static bits. We know that a human is not just composed of elementary bits of matter arranged in dimensional bits of space. Human functioning on many levels is not susceptible to description in these terms. Contrary to the fond hopes of expert "consensus committees," the failures of clinical decision making do not often result from a failure to think formally and/or uniformly. This will become apparent once informal reasoning is better explicated. Indeed, many decisions later thought to be faulty result from the inherent ambiguity of percepts and values as well as the unpredictability in principle of clinical reality. Correctable failures mostly derive from the oldest causes: ignorance, greed, haste, fatigue, lack of imaginative reflection, deficient resources and overconfidence.

In actual practice we do not often reason formally in clinical problem solving. The main body of this chapter will first lay out some newly appreciated kinds of

embodied, imagistic and imaginative cognitive structures at work in all empirical reasoning and then show specifically how they contribute to our multiple senses of causation and their distinct logics. Given the importance of multiple causal logics in clinical problem solving, it should become apparent that restricting ourselves to the use of only one is counterproductive.

IMAGINATIVE STRUCTURES AND THEIR USE IN CAUSAL REASONING

Recent work in linguistics and cognitive science reveals previously obscure structures used to reason about goal setting and achievement. Forms of thought and language which were heretofore mostly implicit and rather automatic have now been made explicit and exposed to scrutiny. I will contend in this chapter that once such cognitive structures are unveiled, their justification in terms of use becomes more apparent. Not only are we learning how they have been used and why, but also we can now imagine how to use them better.

Natural languages are wondrous tools for communicating about experience and therefore for dealing with it. As John Austin pointed out in proposing speech act theory, words carry meaning many ways. Imagination and emotion are two aspects of meaning which are among the orphans of formal logic. The way imaginative structures work in cognition has recently been the focus of intense investigation and discussion. Although emotion and its connection to value is not entirely separable from imagination, the emphasis in this chapter is on imaginative cognition and its use in means/ends informal reasoning. Some aspects of a putative logic of emotion and values will also be sketched out toward the end of the chapter and in Chapter Five.

Extensive work in cognitive linguistics by Eleanor Rosch, George Lakoff, Mark Johnson, Eve Sweetser and many others has uncovered an array of cognitive structures we use both colloquially and philosophically as tools to conceptualize the means/ends relationship. Some structures used imaginatively to cope with experience, including means/ends problems in medicine, are textured or radial categories (at times with fuzzy and/or overlapping boundaries), several different image schemas to be explicated below, metaphors and scenarios for event structure, cause and effect, means and ends, and acts and consequences. These structures enable us to associate particulars in categories without imposing a straitjacket of rigid inclusion criteria over all individual differences. Fuzzy and partially portable boundaries allow variable splitting and amalgamation of continua into manageable numbers of parts for varying purposes.

Imaginative metaphors grow organically by describing the relatively distant and strange in terms of the close up and familiar. Because such descriptions are recognized not to be literal, multiple metaphors depicting events, cause and effect, and various cognitive models of goals such as "health" can coexist and contribute alternate perspectives without being mutually destructive.³

Large systematic metaphors are integrated into scenarios and elaborated to produce sustained narratives within which we undertake means/ends assessments. Most important for medicine are the partially metaphorical understandings of “health” and “disease” and narratives of helping, endurance and recovery which are built using these metaphors. Since understanding the semantic architecture of disease is so important as the cognitive background within which examples of means/ends reasoning used here work, the entire second chapter is devoted to that subject.

In reviewing the broad imagistic and metaphorical structure underlying informal means/ends reasoning in medical care we need to highlight its two great divergences from formal logics. First, it is neither arbitrary, in the way that the axioms of different logical systems as well as the entailment rules can be arbitrary. Nor is it any unique privileged system grounded eternally in a realm of reason and taking no measure of the human. It has grown organically out of our fundamental biological and existential embodiment.

We cannot simply set up rules for understanding and reasoning by fiat, nor have we inherited them for all eternity. While cognitive structures are somewhat flexible, it is not possible to depart radically from existing ones. The basic bodily predicament into which we have been thrown is the only starting point, the only jumping off place from which the rest of experience can make any sense and to which it can be referred. We are incarnated in our ways of thinking and it is from within them, not outside of them, that our degrees of freedom will be found.

But secondly, there are those degrees of freedom. Empirical thinking has slack, redundancy, room for ambiguity and even for multiple changing evaluations. It is loose jointed. Metaphors can be selected for aptness. Narratives can be transformed to become more comprehensive or fulfilling. There are no absolute rules forcing us to ride roughshod over variations and subtleties. Empirical reflection never wholly compartmentalizes experience. Novel concerns can be found relevant to the situation at hand. Such empirical and informal reasoning does more justice to many clinical encounters than do formal rules, which try to treat medicine like chess.

IMAGINATIVE STRUCTURES USED IN INFORMAL CLINICAL REASONING

1. Categories

Individual entities, as we choose to define and pick them out, are considered for different purposes as belonging in various types of groups. Classical categories of these individuals are sets defined by necessary and sufficient conditions for membership. Individuals possessing the specific required features or properties which characterize a category are conceived of as members of that category. Such categories are metaphorically conceived to be containers with rigid boundaries having inclusion or exclusion as an all or nothing matter. No member of a set is privileged over any other in reasoning about the set. The essence of an individual,

defined by the necessary and sufficient conditions, is all that counts in reasoning about that individual as a set member.

Membership in classical sets can overlap, be mutually exclusive, or hierarchical, and such relationships determine the ways that individuals can be reasoned about as members of more than one category. Hierarchical sets are often visualized as nested containers: thus the varieties of plants are nested within a species which is nested within a genus, etc. Their relations are ordered in this fashion. Some other hierarchical sets are arranged metaphorically more like pyramids: Admiral, Vice Admirals, Rear Admirals, Captains, Commanders, Lieutenant Commanders In this ordering the metaphorical pyramid shape reflects both “over and under” (a metaphor for power) and size relationships, with the more numerous members of the inferior categories represented by the wider bands on the pyramid. Yet a third type of hierarchy is conceived of metaphorically as a queue with ordered members. An example is the choosing order of a grade school basketball team. The fourth type of hierarchy that comes readily to mind is a metaphorical tree, which is so apt in representing the trunk and major limbs ramifying into lesser limbs, branches and twigs as the pattern of relationships among ancestors and descendants. There are no doubt other principles of hierarchical order and other types of one-way or more complex orders for classical categories.

Relatively good (but not perfect) representatives of classical sets are “all the positive integers,” “every symbol string in the dictionary of your spell checker,” “Greek letters,” and “metric units of weight.” *Especially bad* examples are “human beings,” “diseases,” “geniuses,” “genetic defects,” “pathogens,” “mental illness,” “mandatory” and other “indicated” treatments and tests.

A large literature of what George Lakoff and Mark Johnson call “second generation cognitive science,” summarized by Lakoff in *Women, Fire, and Dangerous Things* (1987), and again by Lakoff and Johnson in *Philosophy in the Flesh* (1999) as well as by Mark Turner in *Reading Minds* (1991) has revealed that classical category theory fails not only to describe how categories usually work but also to give any compelling prescription for how they *should* work.

These are the reasons:

- Many categories have fuzzy boundaries, such as the category of “tall men.”⁴ In such cases, category membership is not an all-or-nothing matter. The category of “tall men” is graded with degrees of set membership. The membership may also vary with context, so that the same individual who is “tall” when in one country or group can be “average” in another. Thus category boundaries may be indistinct in principle and vary with the context of use. To use Wittgenstein’s term, the meaningful boundaries may depend on the “language game” in which the category name is being used. Take, for example, the category “human being.” Readers of this text will presumably fit entirely in this category. Yet some candidate entities exemplify the borderline cases of humans, which may be included or excluded depending on our purposes at a given time: embryos, fetuses, neonates, anencephalics, patients undergoing attempted resuscitation thirty minutes into a cardiac arrest, those who are “brain dead” or in a persistent vegetative state, the profoundly retarded, the

terminally senile, cadavers, fictional characters and Theodore Roosevelt in an old newsreel.

Fuzzy set theory, developed by Lofti Zadeh, has enabled the assignment of numerical values to partial category membership, expanding set theory applications. Additionally, probability numbers could be assigned to set membership. The flexible adaptation of amendments to a fundamentally mechanical theory, however, requires the use of judgment, which is none other than informal reasoning from experience.

- Categories are textured; they have an internal terrain. We manifestly do not treat all their members alike and there are good reasons why. Eleanor Rosch discovered prototype effects. In a graded and indistinctly bounded category like “tall men” taller ones (unless exhibiting clear cut pathological features) are the best examples. But even categories usually taken to be well defined (they are not, really) like “bird, a feathered biped” have more or less representative, salient and ideal members as identified in studies of people using and dealing with the categories. In Western culture robins and sparrows are more representative of birds than emus and penguins. Desk chairs are more representative, prototypical chairs and come to mind more easily as examples than do dentist’s chairs and bean bag chairs.

Rosch found evidence that people rate certain members of categories as the better examples of those categories. Experimental subjects identified such prime examples as category members more rapidly than they did the poorer examples. For instance, subjects would more quickly identify a chicken as a true bird than an emu. Also, when asked to come up with an example of a bird, robins were given much more readily than, for instance, penguins. And she found that when judging similarity, there were asymmetries: penguins were thought of as more similar to robins than robins to penguins. Furthermore, when new information was introduced about a prototypical category member, this information was more likely to be thought of as applying to all the members than when it was first revealed about a less representative member. Thus prototypical category members carry more weight in determining our general sense of the category than do less typical ones.⁵ This work of Rosch has been amply confirmed and extended to many classes of categories. It has also been greatly refined and elaborated by Rosch herself, going far beyond the simple summary of her findings which is most pertinent here.

Representative members of categories are metaphorically placed in the center of a two dimensional category space, although three dimensional spaces representing categories and their neighbors seem possible. Less and less representative members are imaginatively farther and farther away from the center, giving the categories a radial structure. However, typicality is not the only feature of category members which accords them differential significance in reasoning. There is also the ideal prototype. Consider your own concept of a typical doctor and then your concept of an ideal one. The ideal doctor is selfless, always available, calm, caring, intelligent and well informed. The stereotypical one is

more likely thought of as rich, intelligent but arrogant, intemperate, ambitious and emotionally distant. And then there are salient members of a class: particular ones coming to mind because of recency (you heard of them lately) or primacy (you heard of them first) effects, or something else causing them to be especially vivid in the imagination: Hippocrates, Everett Koop, Jocelyn Elders, Michael Debakey, Jack Kevorkian, your childhood doctor. In these and many other ways categories have texture which affects reasoning about them and about individuals as members.⁶

- There are levels of categories. The “basic level” consists of middle sized enduring objects and vivid, relatively discrete actions or states of being with which we are intimate early and throughout life, with which we deal more facily, and which are the most accessible and recurrent entities in bodily experience. Ask someone under no particular mandate to describe objects in a waiting room and she or he will usually respond on the basic level, viz. chairs, tables, a desk, the counter, lamps, people and magazines. These are default, path-of- least- resistance answers. Other answers are appropriate only in less usual, more specified or constrained contexts of questioning: ladder back chairs, Mission end tables, torchere lamps, Italians, National Geographic; or legs, casters, light bulbs, fingernails, boards; or carbon, oxygen, sulfur, nitrogen, photons; or mammals and human made objects. This list illustrates how, in the absence of special discourse, the basic level categories are those which come to mind most readily. So the *default* category of “things in the waiting room” consists of the basic level objects there. More general and more specific levels of objects (“superordinate and subordinate”) are objects described in generic levels metaphorically “above” and more highly specified levels “below” the basic level. Other non-basic level categories are of parts of objects which are typically considered as wholes.

Cognitive scientists have discovered that the basic levels in general-to-specific hierarchies are at the mid-level, are usually learned earliest in life, often have the shortest names, take the least time to call to mind, are the level on which our common knowledge is best organized, are perceived holistically and thus are the highest level of which we can have a representative image (so we can imagine a generic chair or human but not a generic piece of furniture or mammal) and the highest level for which we have general motor programs directing our interaction with them.⁷ They are thus the categories best tailored to our bodies, our common purposes and our successful functioning in the world. This means that basic level categories are treated differently in informal reasoning and that there are reasons why they should be.

- Individual persons, places and things are categorized differently depending on how and for what purposes we want to consider them.⁸ Our purposes cause us to select categorizations to showcase or ignore particular features. For example, regarding one person it could be said:

- He is an orphan.
- He is a diabetic.
- He is a democrat.

- He is a department chief.
- He is a dandy.
- He is a skydiver.

We shall see later that the structure of certain categories like “cause,” “effect,” “goal” and “value” constrains and yet facilitates reasoning about means and ends. And in medicine, categories like “cost,” “benefit,” “health,” “disease” and “diagnosis” illustrate these effects.

Most discussions of basic level categories concern object classification. However, there are basic level concepts of illness, namely symptoms which are part of a conceptual hierarchy, but not a taxonomic one. They will be discussed in the next chapter. Also, there is the matter of other experiences basic to our concepts of value. I will defer addressing these until we have taken up metaphor later in this chapter, because the structure of value concepts is also not often taxonomic like the classification of objects. Instead, value is a large family of concepts generated often metaphorically from central, usually embodied, prototypical experience.

2. *Image Schemas*

Mark Johnson gave the name image schemas to recurrent figurative themes of experience on which conceptual relationships are often based. In his words, an image schema:

“...is a dynamic pattern that functions somewhat like the abstract structure of an image, and thereby connects up a vast range of experiences that manifest this same recurring structure.”⁹

“...consists of a small number of parts and relations, by virtue of which it can structure indefinitely many perceptions, images and events.”¹⁰

“...is a recurrent pattern, shape and regularity in, or of, these ongoing ordering activities. These patterns emerge as meaningful structures for us chiefly at the level of our bodily movements through space, our manipulation of objects, and our perceptual interactions.”¹¹

And image schemas

“...are a primary means by which we *construct* or *constitute* order and are not mere passive receptacles into which experience is poured.”¹²

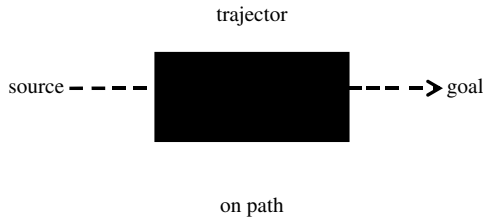
Therefore, like categories, image schemas shape the way in which we conceptualize means, ends and their relation, both in general and in the domain of medical care. An image schema is both abstracted from and affecting experience.

As embodied mid-size creatures we have a logistic orientation in the world. There are things in front of and behind us, above and below, things oriented horizontally and vertically, things connected and separate, large and small, heavy and light, active and inert, lasting and transitory, things inside and outside of others, things close up and far away, appearing and disappearing, obvious and hidden, changing suddenly and gradually, rigid and deformable, hot and cold, loud and quiet, grouped and single, similar and different, harmonious and clashing. And experience is often roughly divided into a foreground on which our attention is generally focused and a background on which it takes a special effort to focus, but which is also constitutive. These basic relationships are the simplest image schemas.

Image schemas are the general and recurring patterns of interaction among objects which are present to us in these fundamental and basic ways. They exist logically as “continuous analog patterns of experience or understanding with sufficient structure to permit inferences.”¹³ Conceptual metaphors, which I will speak more of later, often borrow the thoroughly familiar relationships within image schemas and apply them in domains removed from their primary source in our bodily existential situation. Thus the cognitive structures we all master and assimilate in everyday life facilitate understanding of things which are less concrete and elemental.

There is probably not any inclusive list of image schemas, but the following ones are important, along with textured categories, metaphors and embodied senses of value for structuring reasoning about means and ends.

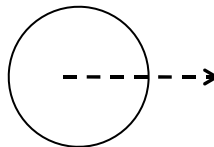
- **Source-Path-Goal.** This could be considered a compound schema made up of four elements which are, however, not elemental building blocks in the schema, but assume their full identity only as participants in the whole. In this schema a *trajector*, a foreground object which is the focus of attention and moves in relation to other objects, or *landmarks*, moves on a path from a source to an end point.



Reaching, running, walking, crawling and swimming are all unaided basic bodily means of getting from a source to a goal. Assisted transportation devices also provide resources for understanding goal attainment.

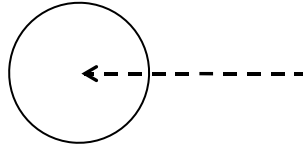
- **Emergence.** A trajector moves out of a bounded container.

Emergence. A trajector moves out of a bounded container.



- **Penetration.** A trajector enters a bounded container.

Penetration. A trajector enters a bounded container.

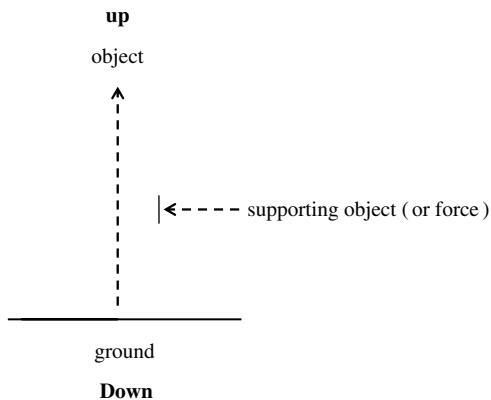


- Links. These can be made or broken, strengthened or weakened, lengthened or shortened, made broader or narrower. Grasping and letting go are basic embodied forms of link making and breaking. Causal connections are partly structured by the link schema as are mergers and separations.

- Contact. The most direct form of link.
- Blockage. Obstruction on a path.
- Enablement. Removal of a blockage or application of an impetus to movement.
- Near-Far. Objects close up, far away, moving toward or moving away from each other.

- Up-Down. Objects vertically or horizontally oriented or moving from one to the other. The prototypical bodily example of the sub-schema Assuming Verticality is standing up, and of Assuming Horizontality is lying down.

- Supported Objects. In our gravitational environment upright vertical or otherwise elevated objects need support. The default position of objects is horizontal and on the ground. So we have a schema for support: an object holds another object up. If the supporting object is not resting on another object or the ground, for instance when it is an arm, it is supported by a force.

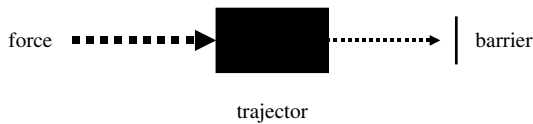


If the object (or the force as in the case of the wind under an airborne leaf) is removed, the object assumes a position on the ground. Internal structure, or rigidity, characterizes solids which protrude above the ground even when sessile,

and is conceptually similar to external force or support. The prototypical embodiments of the Supported Objects schema are to assume the standing or lying position and to lift, lower or drop objects. One understanding of cause is support. Form and order are understood to require energy (force) or support (structure) whereas chaos and disorder result passively from the withdrawal of energy or support. We will see, when looking at the category of cause, that prototypical causes involve the application of energy, whereas processes which are more passive seem relatively “uncaused.” (“They *keep* their house *up*” vs. “They *let* their house *fall* into disrepair.”)

- Forces. Prototypical forces are pushes and pulls applied by our bodies. Mark Johnson considers many aspects, entailments and variations of the force schema in *The Body in the Mind*.¹⁴

Forces compel actions unless *counterforces* (sometimes *barriers* or *restraints*) neutralize them. The following is a slightly elaborated version of Johnson’s schema for compulsion, in *The Body in the Mind*, p. 51.



Forces, as noted above, are central examples in the broad category of *cause*. Logic, as Johnson points out,¹⁵ is usually understood metaphorically as an overwhelming force which compels conclusions given premises. I will argue in this entire work that the analogy of entailment as an overwhelming force in formal logic to the relation of means and ends in a dynamic and value laden endeavor like medical care is often mistaken.

- Objects Starting And Stopping Movement. (A corollary schema is Objects Accelerating And Decelerating.) These are twin dynamic schemas for a trajector. Some trajectors follow a pre-ordained path from a source to a goal. Others create a path which is known only in retrospect. (“A rock fell off the truck and hit my windshield.”) Because of the universal presence of friction in everyday experience, we usually picture promoters of motion as more representative causes than circumstances which bring motion to a halt. There is an important exception to this rule, however. When an activity has been going on and we expect it to continue, even if that activity requires energy, we visualize the withdrawal or disconnection of the energy as an outstanding cause. (“They unplugged the respirator.” “The crankshaft broke.” “The trains stopped running because of a strike.”) So both the application of energy and the withdrawal of energy which interrupts an activity expected to continue can be seen as typical “causes.”

Rotational motion is a special case of starting and stopping, accelerating and decelerating. We experience rotation of ourselves with respect to objects and of objects with respect to themselves, each other or us. “Turning” is limited rotation.

With rotational movement and turning we experience both movement initiating forces and direction changing forces and these enter into the pantheon of “causes.” “The rehab program really *turned her around*.”

- **Front-Back.** Front and Back, Ahead and Behind, are embodied directions which change with rotational movement about the origin of our own subjective directional axes or about orientational axes which we project on objects, or with respect to their sides turned toward us. Where I am now sitting, the window is in front of me, the bookcase is behind and the walls are all around. I can see a squirrel coming down the neighbor’s roof ahead of me. These simple positional elements structure much that is neither positional nor simple, as we shall see.

- **Enlarging and Diminishing Objects.** Although increase and decrease of size is not mentioned by Lakoff or Johnson, examples of it are fundamental in experience, and size is metaphorically projected in many ways, especially onto forces and values. There must be an underlying schema of size change with many variants. Masses and numbers of objects are increased and decreased through active addition or subtraction, as with dirt piles (masses). Other objects grow and shrink without the application of any obvious discrete agency. These include bodies and organs, crystals, bodies of water, plants and fruits, and land masses. Based on the central cases of size and weight, many entities are quantified. To a degree this quantification is metaphorical, for example in the instance of values, emotions and forces where *intensity* is depicted as *size*, *weight* or *height*. (“He was in a *towering* rage.” etc.)

We know from longstanding and intimate experience that certain actions and environments promote growth, as with the cultivation of plants and nurturance of children. Growth, development and maturation are understood to result from causes which are not simple forces such as pushes and pulls. Organic growth, particularly, is not typically seen as forced.

- **Balance.** There are schemata for Balance like symmetry, a balanced beam, a stable gait and recurring cycles of opposites such as day and night or the seasons. These are projected onto “just enough” of any resource, quality, emotion, trait or action in relation to others. As Johnson notes, balance is experienced bodily as a quality in an activity or a perception.¹⁶ Aristotle depicted temperance in terms of balance. Dewey, often more in accord with Aristotle than he holds himself to be, sees the mutually enhancing balance of realized values to be the proper objective of means/ends deliberation. One metaphor for health is balance, as in Walter Cannon’s idea of homeostasis. Stability, literally integral to balance in bodily activity, describes steady metabolic states which are optimal for physiologic functioning. Opposites are seen as mutually compensating in medicine and life in general. Balanced states, including properly alternating cycles, are seen as fitting or ideal. Therefore goals in means/ends reasoning, particularly the goal of health, are often schematized in terms of balance.

An interesting aspect of balance schemas is that they relate both to cognition and feeling. Most of the schemata we have dealt with underlie cognition, primarily. But the optimal array and succession of emotions lends itself aptly to be mapped by balance imagery.

Only some of the balance schemas can be represented visually, and some of those involve colors. Others are kinesthetic, as with balanced weights in two hands and equilibrium on a tightrope. Certain metaphorical mixtures of “ingredients” like the emotional “ingredients” of temperament, the virtuous “ingredients” of character, and the balanced cyclical alternations of moods, energies, interests, appetites and passions do not lend themselves well to visual representation. Nevertheless, they are cognized in terms of other perceptual schemata like equilibrium or equable climate.

- Cycles. These recurring patterns are schematized as circles, sine waves or spirals. Waking and sleeping, hunger and satiety, night and day, seasons and the lives of the generations are omnipresent in experience. Cycle schemata, understood in terms of these primary, basic experiences are found everywhere, especially in physiology, and are fundamental, as noted above, to some notions of health. Wants and needs underlying values are cyclical, meaning that at least some important current valuations fluctuate, somewhat predictably.

3. Metaphors

Metaphor is the projection of a conceptual structure from a source domain, relatively literally understood, onto a target domain which is then partly understood in terms familiar from the source domain. Basic categories and their central prototypes as well as image schemas for organizing our primary and central existential situation and affects are pyramided into higher level, more abstract concepts and metaphors. For example, the position image schemas Front/Back and Ahead/Behind were outlined earlier. Numerous metaphors facilitating our understanding in varied realms of experience such as time, attitude and success or failure map them onto the position schemas of Front/Back and Ahead/Behind. The future is *ahead* of us. We try to put bad experiences *behind* us. We *face* the facts and *confront* the issues. We suspect that hostility is hidden *behind* a false smile. We *turn* the fortunes of the company *around*. A student is *getting ahead* in her pre-med program. The anchor cadet is *in the rear* of the class rankings. Each of these examples uses the literal and concrete cognitive structure of position to enable comprehension of something else. The word *comprehension* itself illustrates the historic pervasiveness of cognitive metaphor, cognizing understanding in terms of getting a grip.

Metaphors of Causation and Related Complexities. The informal reasoning used for construing and solving means/ends problems is based on several alternative metaphorical understandings of causation. The metaphorical comprehension of event structure, however, precedes the attribution and structuring of causation.

Lakoff and Johnson include “events, causes, changes, states, actions and purposes” in the group of event structure concepts.¹⁷ An event skeletally consists of an initial state, a change and a later state. The “state” is simply the status quo ante of whatever affairs are considered affected. An example is “Her memory” as in “Her memory worsened after the coronary artery bypass.” Note that any “initial state” is selected out of the whole array of affairs in the universe. *What* is selected to be referred to as the initial state depends entirely on what slice of the entire space-time

continuum is to be highlighted, in a particular instance, as an “event.” There is no general mandate requiring that space and time be carved up into any particular events, although experience lends itself, for certain purposes, to be divided most easily in certain ways. (For example, into “quanta” on one level of analysis.) We do the carving which is congenial to our interests. So an initial “state” is selected to be considered, certain changes for a certain duration are considered, and an outcome is identified as the final “state.” A person’s memory was of interest in the example above, and was noted to be different after a coronary bypass. Multiple possible states are amalgamated into two, and multiple, conceivably separable events are treated as one in this example. Informal, pragmatic reason decides what to showcase as an “event.”

Lakoff and Johnson point out that percepts of the world are organized conceptually into events in terms of notions like state, action and cause, but these notions are conceived metaphorically. However, the metaphors are not arbitrary or radically relative to history and culture. They have latitude, but it is limited by their grounding in universal bodily experience.¹⁸ Basic event structure metaphors according to Lakoff and Johnson are twofold: they call them the Location and the Object Event-Structure metaphors.

The Location Event-Structure metaphor maps the structure of a *source domain*, motion-in-space onto a *target domain*, the domain of events. This is a complex metaphor involving several sub-metaphors listed by Lakoff and Johnson as follows:

The Location Event-Structure Metaphor

States Are Locations (interiors of bounded regions in space)
 Changes Are Movements (into or out of bounded regions)
 Causes Are Forces
 Causation Is Forced Movement (from one location to another)
 Actions Are Self-Propelled Movements
 Purposes Are Destinations
 Means Are Paths (to destinations)
 Difficulties Are Impediments To Motion
 Freedom Of Action Is The Lack Of Impediments To Motion
 External Events Are Large, Moving Objects (that exert force)
 Long Term, Purposeful Activities Are Journeys¹⁹

Typical examples of how inferential structure is borrowed from the source domain and applied to the target domain are the following:

States Are Locations; “She *went into* a coma.”
 Changes Are Movements; “His hair *turned grey*.”
 Causes Are Forces; “My lack of business sense *forced* me into group practice.”
 Causation Is Forced Movement; “Hypoxemia *threw* him into ventricular fibrillation” (electrical chaos in the heart).
 Actions Are Self-Propelled Movements: “The code (resuscitation) *ran* well.”
 Purposes Are Destinations; “We are *on the way to curing leukemia*.”
 Means are Paths (to destinations); “Exercise is *the road to recovery*.”
 Difficulties Are Impediments To Motion; “The fact that she was a Jehovah’s Witness *blocked us* from putting her on cardiopulmonary bypass” (the heart-lung machine).

Freedom Of Action Is The Lack Of Impediments To Motion; “If the lymph node biopsies are negative, we should have *smooth sailing* from there on.”

External Events Are Large Moving Objects (which exert force); “*Things are going* out of control in the Emergency Room.” “Sepsis (infection diffused throughout the blood stream) was *overwhelming*.”

Long Term Purposeful Activities Are Journeys; “You have to be *in it for the long haul* to get tenure at this institution.”

Several important metaphorical systems have what Lakoff, Johnson and others call “*duals*.” Sometimes the dual involves a figure-ground reversal. A time like the future, for example, can metaphorically “move” toward me or I can “move” toward it. Other duals involve containing or being contained, as when we describe ourselves as having a temper tantrum or being in a temper. A location is a metaphorical container. Therefore, when an event is described in terms of movement from one location to another there is an implicit trajector moving from one container to another. The example given above could be restated, “Her memory *went from good to bad* after the coronary artery bypass.” The first location, a container, would be a good condition, the second location, a container, would be a bad condition. But what is the implied trajector of this event? This trajector must be that which is common in the two states, namely, her memory with all its other features except good and bad. The fact is, that unless something about the implied trajector or the background remains unchanged, there is no event, because the disconnect between the putative prior and subsequent states is so complete that there is nothing to mark the two states as related. Hence change cannot be utter; something must remain constant as its subject.

In the dual of the Location Event-Structure, the implicit trajector (that which is changed) is turned into a container of attributes, which are now transferred in and out of it. This dual is an elaborate Object Event-Structure Metaphor, which maps the inferential structure of a source domain, the possession of objects, onto a target domain, the experience of changing attributes. Events become metaphorical changes in the possession of attributes. This event metaphor is outlined by Lakoff and Johnson as follows:

The Object Event-Structure Metaphor

Attributes Are Possessions.

Changes Are Movements of Possessions (acquisitions or losses).

Causation Is Transfer Of Possessions (giving or taking).

Purposes Are Desired Objects.²⁰

Other sub-metaphors in this system are similar to those in the Location Event-Structure Metaphor:

Causes Are Forces.

Actions Are Self-Initiated Taking and Giving.

Means Are Affordances (availabilities).

Difficulties Are Impediments To Transfer.

Freedom Of Action Is The Lack Of Impediments To Transfer.

Long Term Activities Are Long Term Acquisitions Or Distributions Of Objects.

Some examples of how these metaphorical mappings work are given below:

Attributes Are Possessions (there is a gradation in this metaphorical system from a literal pole; “He *got* a tan,” through a middle range with mixed metaphorical and literal elements. “He *has had* a heart attack” [which is only partly contained in the body] to the completely metaphorical “They *took* command of the situation.” (Note here the Location dual, “They *reached* command of the situation.”)

Changes Are Movements Of Possessions; “Our troubles *came from* managed care.”

Causation Is Transfer Of Possessions; “Tranquilizers *took* my anxiety *away*.”
“El Nino *gave* Oregon a mild winter.” “Alcohol withdrawal *gives* people the jitters.”

Causes Are Forces; “The principles of confidentiality *were driven* into us.” The war *stole* our innocence.” “My self-confidence was *yanked out* from under me.” (This involves two metaphors: Causes Are Forces and Security Is Being On Firm Ground.) Note also that the image schema of support is invoked.

Actions Are Self-Initiated Giving And Taking; “My boss *gave* me a headache.”
“We *snatched* the advantage from them.” “It’s time *to take* the initiative.”

Means Are Affordances (availabilities); “Opportunity *came within our grasp*.”
“Several alternative treatments *present themselves*.” “We will only get the diagnosis when the illness *declares itself*” (becomes observable). “We can’t take preventative measures against amblyopia (loss of vision caused by disuse of one eye) after a certain age because they *are no longer available*.”

Difficulties Are Impediments To Transfer; “She *couldn’t stomach* nursing home care.” “We are having trouble *getting the idea through his thick skull*.” “The theory is *hard to grasp*.” “The truth *eludes* me.” “His denial *stands in the way of accepting* the prognosis.”

Freedom Of Action Is The Lack Of Impediments To Transfer; “They adapted to the new system easily because they *were willing to accept* change.” “The way *to give the lesson* suddenly *opened up*.”

Long Term Activities Are Long-Term Acquisitions Or Distributions Of Objects;
“You have to *accumulate a lot of experience* to be a good dermatologist.”
“Tobacco and alcohol *hasten the loss of health over time*.”

Purposes Are Desired Objects; “She is *angling for a promotion*.” (This combines Purposes Are Desired Objects With Trying To Achieve A Purpose Is Fishing.)

“They *thirst* for knowledge and *hunger* for success.” (This also has to do with Values Are The Objects of Visceral Desires, discussed later, and also in subsequent chapters.) Sometimes there is a metonymy involved when the named desired object stands in for something much larger. “I worked for years *to get that sheepskin*.”

Metaphors for causation dovetail with those for event structure, and growing out of them scenarios for means/ends deliberation become discernible. We have already seen causation represented by forced movement from one location (state) to another and by facilitated (or forced) transfer of object possession. The Location and Object

Event Structure metaphors are the basis for many important metaphors of cause and effect. But these are by no means the only ones. Prominent additional metaphors include causation structured as a *path*, by a *forced change of shape*, by a *forced change of category*, by *making* or *building*, as the *presence or forging of links*, by *upward motion*, by *production from a source*, by *emergings or motions out*, by *progeneration*, as a *lure* (like with Aristotle's final cause – an attractive goal, also described by Dewey, we shall see later, as an “end in view.”) as *arising from an essence, trait or character*, as a *reason*, as a *necessary concomitant of a state of affairs*, as an *enabling condition*, as a *stimulus to an emotion* and as a *biological inheritance*.²¹

In short, the categories of cause and causation, which are closely intertwined, are radial categories with prototypical central members and peripheral extensions. The central prototypes of causation, as Lakoff and Johnson²² and Lakoff²³ have pointed out, are manipulations of relatively passive objects by agents (pushes and pulls in particular). But given any happening which has been picked out and specified for some purpose as an “event,” there are innumerable preceding internal and contextual circumstances, not to mention goals hoped for by sentient agents, which can be adduced as “causes.”

Take the following description of an event, for example. “The patient got peritonitis (diffuse infection in the abdominal cavity) because the surgeon left a sponge in the abdomen.” Let the case be that this sentence is true, as far as it goes. For the named proximate cause to have actualized, infinite remote and/or contributory causes of decreasing immediate relevance to the situation must have been in place. Some are counterfactual conditionals, substitutes for actual events which *might* have happened had some necessary condition been absent. These are a marginal type of “cause.”

“The nurse failed to get an accurate sponge count.”

“The surgeon had been operating all night.”

“After a discussion, the surgical on call group decided to stay with fewer, busier single call on call nights instead of more, quieter double on call nights with a backup surgeon.”

“No money had been put into research on absorbable sponges.”

“The circulating nurse failed to focus the light well on the wound.”

“The day before, the patient went into shock and had a cardiopulmonary arrest from which she was successfully resuscitated.”

“If the patient's previous colostomy had not been reversed, she would not have had another bowel obstruction this time.”

“Anesthesia had been invented, enabling the performance of prolonged abdominal surgery.”

Thus, multiple contributory causes are seen as less central, as are remote causes as opposed to proximate ones. Also, *sustaining continuous conditions* are seldom mentioned, although they are necessary, as would be evident were they withdrawn.

“Funds were available to operate the hospital.”

“The ground was stable that day – no major earthquake occurred.”

“There was oxygen in the operating room.”

“The sun came up.”

So sustaining, relatively continuous and expected conditions, while absolutely essential causally, are peripheral semantically because they are taken for granted and are not a needed focus of interest.

Another type of cause which is “peripheral” on the usual default level of discourse is a cause on a different dimensional level. The events surrounding the onset of peritonitis in the patient alluded to above are usually described on the level of middle size enduring objects, but they are susceptible in special discourses to description on sub-atomic, molecular, chemical and biological levels. When asked to pick out the event of peritonitis, default discourse does not start off with the attachment of bacteria to foreign objects, for instance, or with the function of the immune system as it is affected by the presence of cotton fibers. Nevertheless, these are potential foci of interest and concern.

This means not only that there is no cut and dried, absolutist method of defining or circumscribing an “event,” a “situation” or a “state of affairs” but that there is also no universally applicable rule to direct the choice of “causes” which will be considered relevant or of interest in bringing about that event. Any rules or maxims which can be adduced to select the causes of interest are dependent on purposes, interests, context, commitments, traditions, values, etc. All we can do in selecting out events and their pertinent causes is to look at how people usually reason causally, at what options are available to them, at why they usually focus on what they do, and finally, at how they might use alternative causal logics which are available to them. Since our causal logics are subservient to various purposes, the choice of a causal scenario is at least partly value dependent. Actions taken to influence events are effective or ineffective depending on the values orchestrating concern at the time.

Is this relativism? In a word, no. The potential for multiple descriptions of events does not mean that anything goes. For instance, it would be incorrect to say that the sponge was not left in when it plainly was, or that it had nothing to do with the peritonitis, a fact which can be assessed on the evidence.

Having looked briefly at prototypical causation and event structure, let us go over a few other specific causal metaphors in some detail, because these will be important options for conceptualizing means and ends.

- Causes As *Paths, Channels* or *Conduits* (directing action and offering the least resistance to it). Knowledge about paths which facilitate and direct ambulation and which are means to get from one location to another is projected onto causation in general via the Source-Path-Goal image schema and the Location Event-Structure metaphor. The *means* is metaphorically described as the *way* to effect a purpose as in “The mental status exam is a *good route* to telling if someone is psychotic.” Protocols are offered as the shortest, quickest or least costly *ways* to diagnose or treat, say, breast cancer. There is a *way of going about* putting a child at ease for an examination. Just as we *start* on a path, *get part way along it, are blocked, have to make a detour, or go over an obstacle*; just as we can *lose the trail or find the going rough, or turn onto a different path*, we reason metaphorically about all kinds of projects in terms of our experience with paths.²⁴

An important feature of paths and channels is that they are enhanced or deepened with use. This means, typically, that they become both easier to use and harder not to use. This feature of paths projects well onto habits and character as a cumulation of habits. I may sit in a certain chair on the first day of class for no particular reason, but soon sitting in that spot becomes the easiest thing to do. Neural engrams for motor activity, memory association and speech patterns seem to be strengthened by repetition and to become, metaphorically, “the paths of least resistance.” It makes sense, if you want to find your way back to the edge of a strange forest, to retrace your steps. Habits, like paths, guide us automatically, relieving us of the task of finding our way anew. So the metaphorical “way things have been done” channels future action. Thus it is a cause. And energies, resentments, criticisms, hopes, expectations, self-interest, anger, etc. are seen as needing to be contained and applied through channels with boundaries (conduits). (This involves another metaphor which could be named Vital Energy Is A Fluid.)

Another aspect of paths is that they are ordered. Certain parts come before others. So when someone says of a project that “You have to begin at the beginning” the sequence of changes is being seen as necessarily ordered in a certain way. On the metaphorical “path” to a goal some steps cannot be skipped over. This metaphorical “path” is a *formal cause* of the endeavor. The endeavor has to, or tends to take this form because a prescribed or preferred sequence works logically like the experience of being on a literal path. Most importantly, *plans* are analogous to *paths* as causes.

- Causing as *Making or Creating*. As agents, we have everyday experience with making and modifying objects, shaping and assembling them. The experience of making is rich with variations. Materials are gathered, organized, assembled, cooked and melted, cut, chiseled, glued, forged, molded, bent, tied, nailed and screwed together, etc. Each variation on the activity of constructing objects has salient features, like the heating and melding of ingredients in cooking, which offer themselves as apt inferential source domains for causal understanding of other, less literally describable events. This causal mapping is of causing onto making and effects onto objects made.²⁵

The same mapping gives us the metaphor Theorizing Is Making, as in the “building,” the “assembly” and the “construction” of theories. There is also a system of metaphors about how childhood experiences and genetic inheritances “make” us into whatever kind of adults we are. Careers, institutions and programs are “built.” Armies are “raised.” Information is “assembled.” Character is “forged” and “molded.” Here making is a type of forcing, linking this metaphor with the metaphor “Causes Are Forces” as in “Alcohol *made* him become violent.” “Love *makes* us blind.” and “Prejudicial treatment *builds* animosity and mistrust.”

- A corollary to the metaphorical “making” is “shaping.” There is an alternative event-structure metaphor identified by Lakoff and Johnson.²⁶

- States Are Shapes.
- Causes Are (Shaping) Forces.
- Causation Is A Forced Change Of Shape.

Experiences of all kinds are seen especially as “shapers of character,” as in “Their character was *shaped* by the Depression” or “Military school will *shape* him up.” Exercise helps us get “*in shape*” partly metaphorically and partly literally. Lack of physical stamina is seen as “being *out of shape*.” So some events are characterized as changes of shape including losses or deviations from a normal or ideal shape.

Making and shaping typically change objects pervasively whereas acquiring or changing the location of something usually involves a less drastic and thoroughgoing alteration. Because of this, the targets that are aptly structured by the logic of making and shaping are those which are created anew or truly metamorphosed. “Illness *transformed* her attitude.” “We need to *reshape* medical education.” “Don’t get *all bent out of shape*.” “The sixties *molded* our generation.” “Four and five are the *formative years* for manners.” “We need to *reform* managed care.”

- Natural Causation Is Motion Out (including emerging and arising from a source). We have common experiences of things coming out of other things which previously contained them. Examples are springs, plants, lava, steam and ash coming out of the ground; babies coming out of mothers; animals coming out of dens, turtles coming out of shells, etc. These experiences create a source domain onto which cause as a *source* (a special type of container from which things originate) and causation as *arising* or *emerging* (often without mention of the source) is readily mapped.²⁷ Thus there is a complex of metaphors relating causal inferences to the structure of these prototypical experiences. Portions of this complex include the mapping of literal *sources* onto *situations* as well as *sources* onto *causes* so that situations are understood as sources. In this sense they cause events to *emerge*, *arise* or *be produced* like sources literally producing objects.

As we shall see in Chapter Four, John Dewey showed how reasoning adapts and is modified for application to particular situations. *Situations* are well modeled as sources. They don’t operate like simple forces such as push-pull or billiard-ball efficient causes. Situations, as we all know, are not discrete objects but are compositions of all kinds of things in relation. They are not as clearly bounded as middle size solid objects are, but are amorphous and vague. Thus there is some mystery about exactly how and when they influence events, and about what events they will precipitate. These features of “situations” or “states of affairs” have lent themselves well to being structured like similar features of sources such as the ground and mothers.

When the “force” conceptualization of “cause” is joined to the idea of emergence, as in the metaphorical uses of “sprang from” and “erupted” there is the special element of emergence from a pressurized container. Unpredictable, potentially explosive situations are aptly understood using this language. The force here is chaotic, unlike the ordered and determinate metaphorical “force” of say, deductive logic. In contrast, the particular process of emergence which is fertilization, gestation and birth (progeneration) provides the logic for gentler causal processes, an important sub-mapping of causation which is addressed below.

“Situations” and “sources” are not entirely captured as any one of Aristotle’s Four Causes, and yet we see them logically as necessary and sometimes sufficient conditions of events. “I yelled at her *out of* frustration.” “Dissatisfaction *emerged* from the meeting.” “After the assassination chaos *erupted*.” “His strength *sprang* from madness.”

- Causation Is Progeneration, Nurturance Or Cultivation (or their lack). We have repeated experience with the reproduction and nurturance of living things including ourselves and our children, the children of others and generations of animals and plants. This omnipresent experience offers a vivid prototypical domain whose structures and inferences can be projected metaphorically onto other happenings and endeavors. Lakoff and Johnson offer this mapping:²⁸

- Causation Is Progeneration.

- Causes Are Progenitors.

- Effects Are Offspring.

A related metaphor is:

- Causation is Nurturance.

- Causes Are Parents Or Guardians.

- Effects Are Maturing Offspring.

And also there is:

- Causation Is Cultivation.

- Causes Are Cultivators.

- Effects Are Harvests.

This metaphorical mapping is non-central in that causation here is far removed from the simple application of force to an object. Nurturance and cultivation involve actuating potentials in the objects cultivated which, unlike the potentials of lifeless things, are seen as flourishing or fulfillment of the objects themselves, not just of an external agent as expressed in or impressed on the object.

Since a progenitor may or may not be a nurturer or cultivator, mere progeneration, while it implies reproduction of inherited traits, does not always mean concern for or involvement with the offspring. Therefore, examples of the cause as progenitor are often like these: “The new supervisors *sowed* discord all through the department.” “Success *begets* envy.” “That was a *seminal* paper.” “The theory *gave birth* to many *offshoots*.” “A *second generation* of cognitive science *came out of* the first.” “Her style *spawned* a host of imitators.”

Typical examples using the related metaphor Causation Is Nurturance are given below. Note that nurturance is one of many causes of maturity, but is important enough to be writ large in our formulations of developmental processes. “Henry Ford *fathered* the assembly line.” “The venture capitalists *babied* their startup along.” “They *nursed* their resentment.” “The shocks of the depression and the war caused our parents to dedicate themselves to *the cultivation of normalcy*.” “Secularism in Turkey *grew under the protection of* Kemal Ataturk.” “The Marshall Plan *promoted the growth of* an economic miracle amidst the ruins of war.” “Political democracy *can only grow up under the influence of* a free and decentralized press.”

Everything we know about agriculture and animal husbandry can inform our understanding of other “growth” domains using the metaphorical extension Causation Is Cultivation. This metaphor is particularly apt for understanding the promotion of relationships, especially, for our purpose, the doctor/patient relationship. A few instances using this source of causal logic are: “He *cultivated* a relationship with the boss’s secretary.” “Genetics is a *fertile field* for discovery.” “We will *winnnow out* the poorer applicants using the MedCAT.” “Her vast clinical experience and inquiring mind *fertilized the imagination* of her residents.” “We need to discover why experiences with clinical care *fail to cultivate* compassion in many medical students.” “We must provide an *environment conducive to the growth* of trust and mutual forbearance.” “We are *pruning the dead wood out* of the department.” “Immunology is *flowering* with the support of the federal government.”

Metaphors for achieving a purpose are closely related to those for causation and event-structure as we have already partly seen. The strategy for achieving a purpose must have causal efficacy. These metaphors include reaching destinations and acquiring desired objects. Other metaphors for achieving purposes, similar to those for causation, include making and shaping objects and fostering growth and maturation.

4. Scenarios and Narratives

A scenario is a conventional sequence of events taking place in a setting which is culturally familiar and typical. “Situations” grade into scenarios in that they have expected entailments when they are commonplace. “Holidays *mean* trouble for the police.” “Epidemics *lead* to panic.” “Bull markets *bring out* consumer confidence.” Novel situations are not like scenarios because we don’t know what to expect from them. Some typical scenarios in medical care are “A Hospitalization,” “A Physical Examination,” “A Trip On The Ambulance,” “An Acute Illness,” “Terminal Illness And Death,” “Labor And Delivery,” and “Major Surgery.”²⁹ When we enter these scenes, we automatically know, in a shared culture, a great deal about the circumstances, the background, the expected order of events and the usual outcomes. In most instances, a piece of the scenario informs us about much of the whole thing. Sometimes, however, information about one scenario is projected onto another. Thus part of the “Fire Alarm And Response” scenario can be projected metaphorically onto a hectic night on call: “I just spent the night on the ward *putting out fires*.”

Large, complex scenarios with some conventional structure underlying a unique extended history are narratives. Many narratives are structured metaphorically as journeys. For example, in Western culture Life Is A Journey from a source, along a path to a goal. The tale of an illness is often structured as a journey as in the movie *A Brief Vacation* in which a life transformation is metaphorically structured as a journey in tandem with a literal journey for treatment in a tuberculosis sanatorium. Narratives of medical research are often structured cognitively like hunting trips or searches for buried treasure, to name a couple of the many types of journey which

can act as source domains. Narratives of caregiving are usually structured after nurturance or cultivation. The histories of medical institutions, organizations and professional specialties are commonly structured on the basis of our understanding of the growth of organisms. One effort to delineate some of many types of narrative structuring of illness is found in Arthur W. Frank's *The Wounded Storyteller*. He shows that a narrative has historical particularity about it which does not apply to the more generic scenario.

People have life narratives which are always in progress. The experience of being a patient is generally disruptive, and integrating that experience into the life narrative can be an arduous task. Frank points out both that this task can be approached in a variety of ways and that sometimes illness simply cannot be made to fit in any meaningful story. Many experiences of suffering are belittled by attempts to accord them redeeming value. Sometimes all that can be done is to bear witness to an experience. And Frank shows that some experiences defy even that attempt to package them.

The life narrative of a person intersects at various points with a career narrative for the caregiver. Careers are often judged by standards which refuse to recognize the particularities of patients encountered. For example, pediatricians may be subjected to audits assessing how well their patients are immunized, how many blood pressures were taken, or whether a particular checkoff list of desiderata was performed at each well child visit. These criteria are external to the particularities of the encounters. Rigid application of such criteria by any caregiver means that particular concerns are given less attention. People refusing to immunize their children, for instance, could be excluded from the practice. Important individual concerns could be silenced while the physician went on like a tape recorder addressing all the recommendations of the American Academy of Pediatrics. We will look in detail at external, rigid, standards versus mutable ones internal to particular situations and narratives in Chapters Four, Five and Six.

The most usual scenario for a clinical encounter is that a patient suffering illness requests relief with the aid of a caregiver. The caregiver makes a diagnosis, prescribes or performs a treatment and if all goes well, the illness is cured and suffering is relieved. The history of symptoms, physical examination, laboratory and other findings result in a diagnosis on the basis of which a treatment course with the best chance of cure or palliation (given the resources available) is undertaken. Such a process is metaphorically understood in terms of a prototypical point to point journey. Whereas in reality there are many kinds of journeys, only one kind has been projected onto clinical problem solving in diagnosis and treatment in American medicine, and that journey has the features of a commute, an ambulance call or a trip across a desert to reach an oasis before the water runs out. These are the key features:

- a. The journey is generic: all travelers have the same goals.
- b. The origin is a place solely to get away from.
- c. The destination is fully known at the outset.
- d. The entire purpose of the journey is to arrive at this fixed destination.

- e. No values are realized in transit.
- f. No values are changed in transit. The value of arriving at the destination is fixed in advance.
- g. All aspects of transit are “costs.” Therefore, it should be as short, fast and cheap as possible.

This means that the journey projected onto care is only a nuisance, to be dispensed with as far as possible.

Of course not all journeys are fire alarms, economy runs, or races wherein efficiency and routine modes of operation are paramount. Only this type of journey is valued solely as concluded. Its logic can be compared to that of formal proof, in that the shortest compelling argument to a determinate conclusion is analogous to the shortest, fastest and cheapest route to a predetermined destination. But there are also Sunday drives, walks in the country, hunting and gathering outings and other exploratory adventures whose goals are not so well demarcated at the outset. On some journeys, such as quests, we expect the travelers and their values to be transformed, which will also change the idea of a desirable destination. Thus one of our most important ends is the discovery of worthwhile ends. It is possible to reconsider old ends and discover new ones just because the logic of ends and values, like the logic of causation, is embodied and imaginative. It is neither eternally ordered from a transcendent source nor purely capricious and arbitrary. We can inquire in a preliminary way into that logic.

THE EMBODIED BASIS OF VALUATION

Most discussions of basic level concepts, category structure and image schemas concern the cognition of what are thought of as factual items. But there are categories of valuation to be found in everyday use which, like those involved in the cognition of objects and events, and those making up the framework of causal reasoning, have an embodied basic level with metaphorical extensions. This remains to be investigated empirically and worked out exhaustively, but since our relation to ends is primarily evaluative, an adequate discussion of means/ends reasoning demands a preliminary look at how we structure the desirable and the undesirable imaginatively. I will contend that this structuring of value language and thought begins at the level of physiological sensations of quality and quantity which we all experience, and universal embodied relations to objects.

Valuation is an experience of subjects in relation to objects (not necessarily material ones) and events. Naturally, objects are known first through their effects on subjects. Perceptions and emotions connect us sensually to objects in the non-verbal sense of knowing (*connaître*). Concepts organize this knowing for description (*savoir*) and communication both to ourselves and to others. Words, usually to a lesser degree than objects, can evoke visceral, affective responses in us which are part of what Hume called “Impressions of Reflection.” In these cases words “show” what they communicate rather than “telling” it. But unmediated visceral experiences are the raw material for basic categories of emotion and in turn, by

metaphorical extension, for more abstract expressions of valuation. Mark Johnson, in *Moral Imagination*, refers not just to basic-level categories in a narrowly cognitive sense, but to “Basic-level experiences of pain, pleasure, harm and well-being”³⁰ and to “Biological purposes . . . [which] . . . include bodily nourishment, sexual satisfaction, procreation, shelter, safety from bodily harm, and various forms of social interaction.”³¹

Values which are sought as ends can often be understood with reference to basic biological needs and satisfactions, even when such values are at some remove from any putative primary level. It would lead us too far astray to go over the many classifications of emotion which have been made, and I doubt that any one is entirely complete and satisfactory. Suffice it to say that certain values relate to physiological needs and their satisfaction: *hungering, thirsting, lusting, avoiding pain, being tired or cold or frightened*. Almost as central are our fundamental emotional conditions: *being lonely, belonging, being curious, restless, secure, amused, ashamed or caring for children*. Other value expressions begin more with schematic bodily positions, but always with a qualitative aspect. For example, *embracing, clinging, being let down, turning away, reaching out, pushing away*. Many others could be added to this short list, but the point is that many evaluative stances are understood metaphorically in terms of these basic, literal physical experiences and emotional states. The most pervasive and widespread metaphors of evaluation are what J. Grady identified as *primary metaphors*. These “pair subjective experience and judgment with sensory experience.”³² Examples important for evaluation include:

1) Affection Is Warmth. 2) Important Is Big. 3) Happy Is Up. 4) Intimacy Is Closeness. 5) Bad Is Stinky. 6) Purposes Are Desired Objects.³³

The prototypical ends are food, warmth, water, sex, companionship, security and freedom from symptoms, as discussed earlier. Here are a very few expressions about valuation which involve visceral metaphors. “He *lusted* for success.” “His maudlin story *left her cold*.” “Napoleon *was thirsty* for power.” “She *was drooling* over the prospect of an inheritance.” “We are *gobbling up* all our resources.” “He *was hot* for adventure.” (This uses two tiers of metaphor: Lust Is Heat and Strong Desire Is Lust pyramided onto it.) “The comic gradually *warmed up* the crowd.” Art, manners and experiences are portrayed in terms of taste and smell. “The exhibition at the Brooklyn Museum was *distasteful*.” “My divorce was *bitter*.” “The story *soured* her on sorority life.” “Their gesture was *sweet*.” “Something *smells* about the news reporting on election night.”

A particularly vivid language of evaluation involves *symptomatic* visceral states. Disgust can be described in terms of “nausea.” “The behavior of the President in the Oval Office *nauseates* me.” “The National Enquirer *vomited up* all the lurid details.” “I *couldn’t stomach* any more rap music.” “I just heard something that *turns my stomach*. The President has been shot.” Reluctant relinquishing can be metaphorically programmed on “coughing out.” “They finally *coughed up* the cash.” Restlessness can be “itching.” “She was still shopping but he was *itching* to go.” And need can be “hunger” or “thirst;” prolixity, “diarrhea of the mouth;” annoyances, “pains” (as in: “The accreditation process is *a pain in the ass*”);

complicated situations “bloody messes,” or “headaches.” Thorough absorption in or thorough knowledge of something is described in terms of immersion. “He was *not even wet behind the ears yet*.” “She was *immersed in thought* (or in a book).” “The public is *soaked* with advertising.” “They were *drowned in sorrow*.”

Descriptions in terms of visceral symptoms or visceral satisfactions are invariably evaluative. But visceral metaphors cannot be arbitrary. To say that “The behavior of the President in the Oval Office give me *dysuria*” fails to capture the elements “stimulation by a repulsive object” and “violent physiologic rejection response.”

There are schemas of bodily position or motion as noted above. The cognitive structure of nakedness (an example of a schema, *being uncovered*), or that of *being approached from outside the visual field* (usually from behind) for example, is mapped onto vulnerability. “Your portfolio of high flyers is *exposed* to excessive risk.” “Well, you don’t want to *go naked* (without malpractice insurance).” “Relax, I’ve *got you covered*.” “Disaster *crept up* on me.” “I was *blindsided* by an objection raised by my own wife.”

We experience large or heavy objects as having significant effects. The simple schema of heavy and light, based on our physical encounters with material objects, is the basis for a metaphorical mapping of “heavy” onto serious (“*Heavy, Man*.”), (“These are *weighty* matters.”) and “light” onto trivial (“Dan Quayle was a *lightweight*.”) Serious or important matters are also thought of in the ways we think of “large.” “These are *large* issues.”

The bodily experience of *holding tight* is the schema mapped onto prizing or strong valuing. “She *clung* to the old ways.” “The Republicans found that the public had *embraced* the concept of social security.” “The right to freedom of religion is *held dear*.” Denial is often depicted as looking away or refusing to hear. “The family *wouldn’t hear of it* when we said antibiotics would be useless.” “They *looked away* from the evidence that he was an alcoholic.” Finally, all types of rejection are structured on the schema of “pushing away.” “I tried to help but they *pushed me away*.” The act-consequence dual of this is *being repelled*. “Deceitful accounts of corporate behavior *repel me*.” (Or “*are repulsive*.”)

Not only do nausea, dyspnea, dysuria, arthralgia, itching and depression, for example, precipitate different reactions in us, they are also different experiences qualitatively. As everyone who has experienced distinct types of joy and suffering can attest, there are experiential differences which make qualitative comparisons problematic. While we might be able to rate nausea, dyspnea, arthralgia and depression separately on subjective scales of 1 to 10, and while we might prefer arthralgia of 9 to dyspnea or depression of 9 in the abstract, a great deal is lost by trying to convert these distinct experiences into common units of suffering. Qualitatively different physiological feelings, like different pieces of music, have the effect of distracting from each other. Our choices among different types of suffering depend on the particular suffering which is afflicting us at the time. Furthermore, I contend that there is not a neutral standpoint inside or outside of any particular pleasant or unpleasant experience from which it can be assessed. Actually undergoing an experience and reflecting on it later in the light of other

experiences is a continuing process which is never finished. These considerations frustrate the search in utilitarian thinking for any fungible unit of value and make precise talk about “cost effectiveness” incoherent. This subject is treated in detail in Chapter Five.

The category of value is enormously complex, containing present action-determining values, consciously unrecognized values, potential values, anthropocentric and non-anthropocentric values, constant values and fluctuating ones as well as plural bases for value such as life-promoting, aesthetic and moral groundings. Some partly literal and partly metaphorical concepts of what constitutes value are durability, weight, complexity, size, scarcity, and labor intensity. Additionally, some values can themselves be evaluated on the basis of other ones, which means that the category has a sort of internal dynamism and capacity to evolve. Based on values we have, we can decide that there are others which we *ought* to adopt. Finally, even on first glance it appears that certain valuable things, such as our children or our food, are centrally important, whereas others such as pre-Columbian art are less so. So value as a complex category, in addition to all of the above factors, must be partly radial with central cases and peripheral ones.

Evaluations of ends and outcomes which are qualitatively so diverse defy quantification in most instances. Does this mean that shared evaluation is impossible? Certainly not. No argument has been offered to prove that only the “quantitative” is “shared” and that “qualitative” necessarily means “idiosyncratic.” Qualitative evaluations arising from common embodied experiences should be considered potentially shared as well as mutually communicable until proven otherwise.

CONCLUSION

Moses did not come down from Mount Sinai with a commandment to cognize all of medical care in terms of the efficient pursuit of a fully understood end. We should ask which clinical situations are really illuminated by being thought of in such terms. The habitual use of prefabricated values congenial to the hurried journey scenario has monopolized our understanding of clinical medicine in the United States. Assumptions implicit in this scenario and metaphorical map lend themselves to the elaboration of rigid protocols for diagnosis, treatment, “disease management” and “case management.” These protocols have been efficacious whenever tying everybody’s hands and putting on blinders actually facilitates “success” in resolving well-defined problems about which there is near-universal agreement. Such protocols work best as “if/then” hypothetical imperatives which can be plugged in for generic situations. But less is generic than has been assumed.

Every clinician’s effectiveness has been at times increased by adherence to certain maxims: “Check the hip when there is pain in the knee.” “A good time to do a lumbar puncture (spinal tap) is when you think of one.” “If there is a rapid pulse and hypoxemia, exclude pulmonary embolism” (blood clot dislodging and migrating to the lung). “Chest pain radiating to the back is a dissecting aneurysm (blood tearing the layers of the aorta apart) until proven otherwise.” “Listen to both sides of the

chest after inserting an endotracheal tube.” “When in doubt, think of gout.” There are many useful protocols and algorithms to aid decision making when situations are strictly limited and circumscribed. Such protocols can be thought of as enlarged maxims.

Preformed strategies do apply helpfully in insulated, static situations which can be treated like self-enclosed games. This approach has proved valuable in such settings as the diagnosis and treatment of streptococcal pharyngitis, fever in the newborn, diagnosis of pulmonary embolism, investigation of pelvic pain, cardiopulmonary resuscitation, assessment of major trauma, interpretation of electrocardiograms, resuscitation of the newborn and the use of thrombolytic drugs in heart attack and strokes. Once it has been determined, using informal reasoning, that the protocol is germane, then submission to the prescribed entailments is more likely to result in the specified outcome than action based on informal judgment, susceptible as it is to all sorts of outside influence. Still, it should be remembered that former ironclad absolutes, even in protocols for say, infant resuscitation, are now on the trash heap. Pop off pressure release valves were recommended on air bags for resuscitation of newborns in the 1970’s, for example, which many of us knew then could not generate sufficient pressure to inflate an infant’s lungs before a first spontaneous breath. The valves and protocols have since been modified. Comparison of successive handbooks for cardiopulmonary resuscitation and advanced life support, as well as standard regimes for the treatment of some seizures and for asthma reveal not only gross contradictions of the successive standards, but sometimes even reversals. Few people with extensive experience in these activities adhere slavishly to the standards. Exceptions are made frequently.

Furthermore, many situations are not at all equivalent to games and must remain pervious to outside influence. In these settings, the perception of what is and is not relevant needs to stay open. Unfortunately, the protocol mentality which has been so helpful in some relatively straightforward settings is now being applied to others which are less and less congenial. Such applications to less typical scenarios produce progressively less and less benefit and, I contend, increasing harm. Behind the growth of this mentality, is the idea that there must be only one right way, and that caregivers will be judged by whether or not they adhere to it. Everyone is trying to stampede to the presumed security of the middle of the pack, if only a middle could be identified with certainty.

Since actually operative category structure, imagistic and metaphorical reasoning and narrative structures as outlined above are the way causal logic really works, the “standardization” mentality prevents us from reasoning comprehensively about cause and effect. This hampers care because of the material importance of the following facts:

- a. Patients are individuals and their illnesses are embedded in unique life narratives. The meaning and import of any particular symptom or problem depends partly on its place in the life story.
- b. Backgrounds, or contexts of care, differ one from another and, in addition, are constantly changing and evolving. Yesterday’s protocol may not conform to

today's science. Resource availability varies with place and time. Accordingly, what can be "mandated" or "indicated" depends entirely on resource availability. Priorities for the use of resources, including time as a resource are determined on empirical grounds using informal, not formal reasoning.

- c. There are multiple, conflicting and partly metaphorical concepts of "disease" and "health," as I will show in Chapter Two.
- d. Disease is undoubtedly a radial category with disputable, peripheral members. Its subcategories are often not discrete. Research on how this category is structured within and across various cultures and value systems is to my knowledge lacking. A preliminary sketch of the "disease" category in Anglo-American culture will also come in Chapter Two.
- e. The collaborative work of a patient and a caregiver can produce new values and should produce new knowledge for both in any circumstance which is not routine. No patient encounter can be successfully approached as "routine" for long, because novel discovery and mutuality in dialogue generates most of the benefit in any but the most superficial or purely technical relationship. A caring professional must be one whose values are not impervious and who can actually learn from shared experience with the patient.
- f. The caregiver-patient relationship is both a means and an end. Some actions need to be evaluated partly by how they affect this relationship, because the efficacy of much subsequent work depends on its strength.

This chapter has used the field of medical care to demonstrate how our everyday operational and common sense uses a deeply embedded yet informal semantic architecture. The topography of categories, the variety of image schemas, the multiplicity of metaphors and the plastic nature of scenarios and narratives provides a rich menu of possible alternatives for reasoning about means and ends. These cognitive structures, as opposed to those of formal logic, grow out of full-bodied experience not limited to the manipulation of numbers, symbol strings and propositions. Informal reasoning (the lately despised "clinical judgment") picks and chooses, but not in an arbitrary way, among these structures to apply them in fluid situations.

It is our job to appreciate the situations best understood by using a custom set of cognitive tools. The failure of a category, a metaphor, or a causal logic to give satisfaction when used in a given situation is not an adequate reason to strike that tool from our cognitive kit. This would be like throwing out the screwdriver because one couldn't saw with it. We have in our culture and language several conceptual alternatives which are not understood or appreciated by those who would dispense with them in the name of "efficiency."

The next chapter takes a more detailed look at the concepts of "disease" and "health." When we appreciate even part of what is involved in the semantic architecture of these concepts we will see why comprehending treatment metaphorically in terms of the prototypical journey, as well as attempting to convert quality into quantity to facilitate formal reasoning about means and ends is so hopelessly misguided a project.

NOTES

- ¹ John Dewey. *Human Nature and Conduct*. Modern Library Edition, New York, 1957, p. 261.
- ² John Dewey. *How We Think*. In *The Later Works*, Vol. 8. pp. 171–172.
- ³ See Chapter 11, Part II, “Events and Causes,” by George Lakoff and Mark Johnson, *Philosophy in the Flesh*.
- ⁴ George Lakoff. *Women, Fire and Dangerous Things*, p. 56.
- ⁵ See Lakoff’s summary of Rosch’s prototype work in *Women, Fire and Dangerous Things*, pp. 39–55.
- ⁶ For a thorough discussion of this subject, see George Lakoff. *Women, Fire and Dangerous Things*.
- ⁷ See George Lakoff and Mark Johnson, *Philosophy in the Flesh*, pp. 27–30 and Lakoff, *Women, Fire, and Dangerous Things*, pp. 31–38 summarizing work of Roger Brown and Brent Berlin.
- ⁸ George Lakoff and Mark Johnson. *Metaphors We Live By*, p. 163.
- ⁹ Mark Johnson. *The Body in the Mind* p. 2.
- ¹⁰ *ibid.* p. 29.
- ¹¹ *ibid.* p. 29.
- ¹² *ibid.* p. 29.
- ¹³ *ibid.* p. 4.
- ¹⁴ *ibid.* pp. 42–48 and 62–64.
- ¹⁵ *ibid.* p. 64.
- ¹⁶ *ibid.* pp. 74–75. See also the extensive discussion of symmetry in the various works of Mark Turner cited in the bibliography.
- ¹⁷ George Lakoff and Mark Johnson. *Philosophy in the Flesh*, p. 170
- ¹⁸ *ibid.* pp. 171–172.
- ¹⁹ *ibid.* p. 109.
- ²⁰ *ibid.* p. 176.
- ²¹ *ibid.* p. 221 (with slight modifications).
- ²² George Lakoff and Mark Johnson. *Metaphors We Live By*, p. 70.
- ²³ George Lakoff. *Women, Fire and Dangerous Things*, pp. 54–55.
- ²⁴ George Lakoff and Mark Johnson, *Philosophy in the Flesh*, pp. 191–192.
- ²⁵ *ibid.* p. 209.
- ²⁶ *ibid.* p. 207.
- ²⁷ *ibid.* pp. 213–214.
- ²⁸ *ibid.* p. 209.
- ²⁹ And Mark Johnson suggested to me “The Billing Process” (a scenario for the patient that most doctors would like to pretend does not exist).
- ³⁰ Mark Johnson, *Moral Imagination* p. 11.
- ³¹ *ibid.* p. 238.
- ³² George Lakoff and Mark Johnson. *Philosophy in the Flesh*, p. 49.
- ³³ *ibid.* pp. 50–54.

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	_____	Decompensation.
(Destabilization)		
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. (10) 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. (11) “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.

JOHN DEWEY'S PERSPECTIVES ON MEANS AND ENDS:
THE SETTING WHICH MAKES INFORMAL
DELIBERATION NECESSARY

*"...the physician perceives many things as he comes into the sick room that he regards as unimportant in signifying, telling the directive use to be made of them in treating the patient. But...he has no sure ground for deciding in advance just which of the things that offer themselves to sight and hearing are signs and which are not."*¹

*"The notion that moral judgment merely apprehends and enunciates some pre-determined end-in-itself is, in fact, but a way of denying the need for and existence of genuine moral judgment. For according to this notion there is no situation which is problematic. There is only a person who is in a state of subjective moral uncertainty or ignorance."*² [For our purposes, read medical for moral.]

Causal reasoning is embodied, imaginative and metaphorical as shown in Chapter One. The categories used to define, delineate and evaluate health and disease are not classical ones, as detailed in Chapter Two. In medicine, we traverse a moral landscape constituted by values which determine the relevance and importance of facts, and not a terrain composed of facts standing alone. Furthermore, as John Dewey brings out, these values are not impervious to new experiences and in fact are living and changing in all clinical experience. Therefore broad considerations requiring informal judgment cannot be excised from medical decision making.

There is nothing, however, about the necessity for using informal judgment which excuses us from attempting to understand it better and improve it. We need to know, now, what anchors informal means/ends reasoning and how its conclusions can be justified. John Dewey investigated that subject extensively, and while his picture of judgment and discretion often accurately reflects medical practice, it is pretended, in theory, that proper decision making should be formal. Indeed, when defending decisions or describing them in retrospect, physicians are tempted to portray considerations as more ironclad than they really were. I will have more to say on this in the final chapter, when discussing changes which should be made to assess decision making more realistically.

The present chapter considers Dewey's argument that significant means/ends decisions demand reflective inquiry. An account of several broad themes recurring in Dewey's work sets the stage for understanding how he thinks means/ends reasoning works in action. These themes include his grounding of values in nature, his

antifoundationalism, his view of qualities as real, his concept of rationality as conditioned by emotion and as adapted to and situated in the particular, and his emphasis on the importance of context in determining meaning. When these positions have been set forth, Dewey's view of means/ends decisions in practical action naturally assumes the distinctive characteristics which will come out in Chapter Four. Only decision making along the lines described by Dewey can function realistically and creatively in an environment apprehended by using multiple and overlapping non-classical categories, which are amenable solely to metaphorical and imaginative reason.

The purpose of these two chapters is not to present any optimally accurate, comprehensive and final account of Dewey's theory of means and ends. For one thing, his views and terminology gradually evolved, and no final account is set down in any one work. Rather, I want to highlight his insights for their potential contribution to a broader, not purely Deweyan theory of means and ends. The work on which I draw spans the decades from the publication of *Reconstruction in Philosophy* in 1920 to the 1951 revision of his typescript "*How, What and What For in Social Inquiry*."

When thinking about most means/ends problems, overwhelming numbers of considerations can potentially be taken into account. Our limitations as creatures prevent us from attending to the diminishingly remote, yet nonetheless potentially real influences of the entire past and present universe on the here and now. Dewey does give an account of what we do and should consider and ignore. But everything in this chapter prepares for that account, so I have therefore saved it for Chapter Four. I have also saved discussion of limitations and problems in Dewey's views, along with suggested amendments, for the end of that chapter, after we have entered as fully as possible into the substance and spirit of what he has to say.

NATURALISM

Dewey is a naturalist. He denies that moral, economic or aesthetic valuation can be imported into nature from any independent ideal, divine, noumenal or rational realm. Natural beings must judge the value of things and acts from within natural experience. They cannot, through supernatural revelation or rational detachment, transport themselves outside to an Archimedean point of reference from which evaluations of the empirical world are infallible. To put this another way, for Dewey, judgments about worldly things can only come from within the world which is being acted on. Even ideals and rational principles are generated in the empirical world, and "They represent intelligently thought-out possibilities of the existent world which may be used as methods for making over and improving it."³ Indeed by attending to resources naturally available we will, in Dewey's optimistic view, innovate more constructively than by trying to find and rely on any purported external absolutes.

In the preface to the revised edition of *Experience and Nature* (1929) Dewey sums up his view that philosophy is from and about life as we experience it.

"Philosophies have too often tried to forgo the actual work that is involved in penetrating the true nature of experience, by setting up a purely *theoretical* security and certainty. The influence of this attempt upon the traditional philosophic preference for unity, permanence, universals over plurality, change and particulars is pointed out. . . ." [and then later] ". . . the foundation for value and the striving to realize it is found in nature. . . ."4

I will claim that attempts to find some proxy for "unity, permanence and universals" in order to attain a certainty not insured in the realm of "plurality, change and particulars" in medicine today is undermining our ability to give truly responsive care.

ANTIFOUNDATIONALISM

According to Dewey, there is not, even within the natural world of our experience, any single foundational or primary source of value. Nor is there a fixed hierarchical organization of values.

"The business of reflection in determining the true good cannot be done once for all, as, for instance, making out a table of values arranged in a hierarchical order of higher and lower. It needs to be done, and done over and over again, in terms of the conditions of concrete situations as they arise. In short, the need for reflection and insight is perpetually recurring."⁵

In caregiving, for example, this means that no one value underlies and trumps all the rest. Sometimes being your own fool is better than being someone else's angel. Sometimes extending life is more important than having legs; sometimes relieving pain is more important than being fully alert; sometimes having a transplant is more important than leaving an inheritance; sometimes the pleasure of smoking is more important than reducing cardiovascular risk. [No? What if you are ninety?]; sometimes it may be preferable to take a chance on burning up in your own house than living safely in a nursing home; sometimes love or work is more important than life. Satisfaction for Dewey, cannot be measured in any one coin: neither length of life, nor sum of pleasures; neither mass of wealth, nor importance of work; neither extent of skills, nor number of children; neither breadth of experience nor extent of power. There is a balance to be sought among values, but no one is sovereign, and the balance itself is the product of problem solving, not a prescription for it.

Dewey was, in philosophical terms a *nominalist*, meaning that categories, including those about value, are created in the empirical world, not imported from the empyrean. Experience does not merely recite a differentiated list of pre-existing possibilities, but creates both values and the possibilities for novel value.

Within the world of concrete experience, values support one another in a cyclical manner. The chicken does not exist for the egg, nor the egg for the chicken. It eats to live, but it lives to eat, rests so it can become active again, but directs important activities toward attaining a peaceful rest. If there were a true foundational value, then all activities would be efficiently streamlined to support that value alone. Yet this is manifestly not the case. We linger, we execute flourishes, we elaborate, we get interested in what we are doing and not what we were doing it for, and we wander off on detours in ways irrelevant to and even impeding the attainment of

any one purpose. As a reminder and a warning, our literature is filled with one-sided characters whose obsessions with sex, possessions, power, righteousness, work or fame cause their downfall. A successful attempt to enhance values cannot seek in every end some manifestation of a foundational one, but will have to examine the mutual support among a genuine plurality. The alternative to finding a foundational value is to posit an interactive system of mutual support among plural ones. This will be discussed a little later in the chapter.

QUALITIES UNQUANTIFIABLE

The experiential qualities associated with values also cannot be quantified on any one scale. "Qualities as qualities do not lend themselves to division."⁶ "In quality, the good is never twice alike. It never copies itself. It is new every morning, fresh every evening. It is unique in every presentation."⁷ Therefore "Deliberation is not an attempt to do away with this opposition of quality by reducing it to one of amount."⁸ When pain control decreases alertness, the choice between two *qualities* of experience cannot be reduced to one of *quantity*. It can be argued, given that a decision between two alternatives is plainly possible, that there must be a greater quantity of some common matter denoted as *value* secured with the decision finally made. But in making a decision and understanding its consequences, the outcome is anticipated and understood in terms of quality, not quantity. People directly prefer one overall *quality* of a projected or attained outcome to the *different quality* of the alternative. Qualitative comparisons are not mediated by conversion into quantity, consultation of a table of generic "value" and selection of the largest sum. The *degree* to which one is attracted to one outcome versus another is not what decides the quality of the outcome. It is the other way around. This is simply to say that "better" and "worse" are not literally the same as "more" and "less" even though we often understand worth metaphorically in terms of height, weight, size or monetary market value.

Many qualities, such as electromagnetic radiation and sounds, are underlain and usefully analyzed in quantitative terms, Dewey acknowledges. They are narrowly thought of as quantitative to understand physical and chemical relationships and to increase our ability to manipulate objects. This understanding increases meaning for us, uncovering potentials of the objects exhibiting such qualities. These potentials would remain unknown and unavailable unless apprehended and related quantitatively. However, our understanding of such qualities as objects of science does not exhaust their reality. Red is not merely a wave function, not merely a "mental" epiphenomenon of neural firing, but also an immediate quality of particular gross objects. A diamond can be understood quantitatively in terms of spatial relations, numbers and masses of atoms in a crystal, dollar value on the market or aesthetics. Quantification has to do with establishing connections and generalizing about entities to serve a given purpose. Quality exists in the particular and existential.⁹

Dewey says that when actions have to do with unique and individualized objects of experience, as when physicians care for particular patients, qualitative

considerations decide how quantitative knowledge is applied.¹⁰ People can be quantified according to weight, age, vital capacity, intelligence quotient, cardiac output, percent body fat, "net worth," life expectancy, etc. for various purposes, but as patients in a particular encounter and relationship, they exhibit qualities which must be understood to some degree as uniquely present *this* time. Unique qualities recede more into the background, on the contrary, when people are studied, for the sake of scientific generalization to explain, for example, sodium clearance by the kidney. The usefulness of quantification as a strategy to manipulate, produce and understand certain relations among qualities does not metaphysically reduce quality to these associated quantities. Given this perspective on qualities, when Dewey suggests methods for deliberative judgment concerning means and ends, they will take quality as qualitative into account.

QUALITIES FULLY REAL

Philosophically, there has been much dispute about the nature and existential status of qualities. Since the time of John Locke, qualities have often been classified as *primary*, like mass and extension, and *secondary*, such as color, sound and taste. Primary qualities have been thought of by many authors to inhere in material objects. Secondary qualities seem to involve and depend on the participation of subjects. Dewey speaks of "tertiary" qualities, qualities inhering in and characterizing "situations," but I must leave an explanation of that term for later, when Dewey's idea of a "situation" can also be presented.

Conventionally, most of us think of perceptions, physiological states and emotions in terms of quality and intensity together, although the relation of intensity to the measurable quantity of an underlying stimulus is not one-to-one. While we think without question that a tree has leaves and our mind does not, we become confused when we ask whether the green of those leaves is in the leaves or in our heads. Better not think about it. Dewey claims that our confusion arises because we misunderstand what scientific objects like "wave lengths" and "neuronal excitations of the visual cortex" are all about. The "epistemological problem" (the problem of how we know "external" reality) arises because qualities have been expunged from objects as they are dealt with in the basic sciences. For physics and chemistry, qualities are only clues to the presence of quantities and quantitative relations among abstract entities. Dewey calls the objects of physics "instrumental" in that our use of them enables us to control, predict and make things. But the fact that qualities do not figure in the objects described and handled by basic science has meant that they "...were given an asylum 'in the mind;' they became mental and psychical in nature, and the problem arose how minds, composed of such elements, having nothing in common with objects of science – by doctrinal definition the real things of nature – could possibly reach out and know their own opposites."¹¹

If qualities are mental then it is easy to jump to the further conclusion that they must be attached exclusively to ourselves and not to real "external" objects. Dewey denies, however, that the "richly qualitative" objects of ordinary experience are

somehow inside ourselves, while the objects of basic science are independent.¹² The two are just different experiences of the same objects: objects as they are successfully conceptualized and measured for certain uses, and objects as they are experienced directly and sensuously. Successful scientific theory consistent with experimental evidence, usually called “knowledge” by Dewey, is not “the only mode of experience that grasps things.”¹³

Dewey describes qualities sometimes as “final,” sometimes as “termini” in experience, and sometimes as “immediate.” When qualities are understood as indicators or signifiers they become instruments, not finalities; more employed than enjoyed. This is not to say, however, that anything for Dewey is completely an instrument.¹⁴ “In itself, the object is just what it is experienced as being, hard, heavy, sweet, sonorous, agreeable or tedious and so on.”¹⁵ As for whether things are “in themselves” “agreeable or tedious” this seems a stretch, but it relates to Dewey’s attempt to establish “tertiary qualities” as inherent in and definitive of “situations,” the difficult topic to which we will return later.

Part of the problem about the “reality” of qualities involves the relation of the terms “subject” as perceiver of qualities and “object” as their putative source, to the usual connotations of the words “subjective” and “objective.” Qualities experienced by subjects are not necessarily “subjective” as this term variously implies: “illusory,” “unreal,” “representations” located in subjects’ brains, “epiphenomena” of the primary qualities mass, extension, motion, position and the like or of such scientific objects as waves and sub-atomic particles. And qualities integral to objects are not solely, especially with Dewey, those usually connoted by “objective,” i.e. potentially present to all subjects, measurable by a currently privileged set of instruments, or as known exhaustively only by God. Instead, qualities are directly perceived in transactions between objects and subjects.

Language has led us astray not only in trying to locate quality in a subject or an object, but also because the metaphors we use to conceive the relation of qualities to objects are inadequate. In his 1930 essay “Qualitative Thought” Dewey contends that the “primary qualities” are actually relations, quantified and located. When we speak of secondary (or, for Dewey, tertiary) qualities we conceptualize them either as attributes possessed by objects or as classes to which objects belong. This is a figure/ground dual although Dewey does not use that language. As attributes, qualities are things contained by objects, whereas objects are contained in classes identified by qualities. Dewey’s example is “The red Indian is stoical.”¹⁶ We conceptualize this by thinking of stoicism as an attribute possessed by the Indian or by thinking of this Indian as a member of the class of stoical objects. But in truth, qualities are built in, not stuck on, and they permeate things rather than simply locating them in a cognitive space. They are more like essences than accidents. And even though objects may have a center of gravity which could be called their originating location, they are diffused out to wherever their effects do or potentially could occur. “Stoicism” is no more literally located only in a place (like the hypothalamus?) than an explosion is located only where the dynamite once was. The upshot of the fact that being and its qualities are spread over time and space is

that the "being" of any thing is wherever its effects are.¹⁷ Qualities having effects on actual or potential subjects, or on other objects as affected by them (i.e., heat) are part of the *being* of things and are therefore not *ontically* epiphenomenal.¹⁸

Beyond the partially perceived but nonetheless real qualities of *actual* objects Dewey claims that experience is open ended and includes qualities or features of *potential* objects. In a 1941 essay entitled, "The Objectivism-Subjectivism of Modern Philosophy"¹⁹ Dewey asserts that

"...direct experience contains, as a highly important direct ingredient of itself, a wealth of *possible* objects. There is no inconsistency between the idea of direct experience and the idea of objects of that experience which are as yet unrealized. For these latter objects are directly experienced as possibilities. Every plan, every prediction, every forecast and anticipation, is an experience in which some non-directly experienced object is directly experienced *as a possibility*. And, as previously suggested, modern experience is marked by the extent to which directly perceived, enjoyed, and suffered objects, are treated as signs, indications, of what has *not* been experienced in and of itself, or/and are treated as means for the realization of these things of possible experience."²⁰

Again, scientific knowledge has to do with concepts useful in *causing* potential, envisioned experience.

"Physical subject-matter consists of the conditions of *possible* experience in their status *as possible*. It does not itself account for any actual experience. It is general and remote. Objects of direct experience are singular and here and now. The 'subjective' factor (using the word to designate the operations of an accumulated organism) is, like 'objective' (physical subject-matter) a *condition* of experience. But it is *that* condition which is required to convert the conditions of *kinds* of objects, which as kinds represent generic possibilities, into *this* object."²¹

And *this* object with its experienced possibilities, apart from scientifically determined relations of which we are not immediately aware, consists importantly of qualities. Experiencing subjects as evolved and "deployed," so to speak, and experienced objects as discovered, created, conceptualized and manipulated, interact to produce qualitative experience. The "conditions" of experience referred to above are the facts about subjects and about objects which make various kinds of experience possible.

Bats have evolved a sonar apparatus to appreciate space and surfaces, whereas we have evolved vision and touch. The facts about our two species' sensory systems are formal, material and quantitative, as are scientific facts about the objects we perceive. Very different experiences are made possible by the differences in us as subjects. We are not even remotely conditioned as subjects to experience the quality of bats' experiences. Quantitative, structural, measurable differences between us underlie our different qualitative experiences but do not in any way actually comprise them. Quantitative aspects of the objects perceived by us and by bats are similar, and certain quantitative isomorphisms of "large" or "smooth" or "impervious" must exist and affect, in vaguely similar ways, our experiences, but the qualities we experience underlying vaguely similar conclusions about spaces and objects must be radically different. Our differences exemplify the way quantitative relations underlie and make possible encounters of quality. But clearly, quality

cannot be reduced to its conditions. And, I should add, there is no basis for asserting that the quality of a space experienced by a bat is less real than that experienced by ourselves.

VALUES INTERACTIONAL, NOT RIGIDLY COMPARTMENTAL

In Dewey's work, "value" is a term which is closely related to "good" and "end." "Quality" underlies it in a more important way than "quantity" although both are significant in the determination of value, called "valuation." Individually named values, while not commensurable on a numerical scale are, for Dewey, interactive. It is perhaps only a truism that economic value does not, for example, exist in a vacuum. The story of Midas alone should prove that point. Things are only of economic value when they are perceived to contribute to biological, aesthetic or psychological satisfaction. The usual view of economic value is that it also involves scarcity or the need for labor. But people invent, labor on, search for and defend the possession of scarce objects only in a milieu of actual and potential biological, aesthetic, moral or psychological satisfaction. And resources like air certainly are of value (though not except in special circumstances of *market* value) even prior to and apart from being scarce or requiring the investment of labor.

There is no exclusively economic sphere for Dewey. He claims that there is no real distinction between *expedient* and *right* action when all the consequences are taken into account. In making this claim, he is focusing on and locating moral value especially in natural consequences, be they consequences for the actor or the objects acted on. His idea of expediency is not short term and narrowly construed gain at the expense of moral character, but the broad result of endeavor, reflectively assessed. The satisfaction of thirst, the provision of adequate shelter, the relief of pain, freedom of expression, the cultivation of temperance: all such desiderata are included within the spheres of both economics and morality. Only the intensity of moral versus economic implications varies.

No human need is relegated to a despised "animal part" as merely economic, nor does any one pertain only to an unsullied transcendental soul or purely rational and disembodied intellect. No concern is patronized and taken as unworthy. Each is examined in its context and can be the subject of compassionate attention. Good teeth, good shoes, honest law enforcement, quality medical care, well built homes, courageous citizens, peaceful conflict resolutions – none of these are excluded as subjects of intelligent deliberation with ethical as well as economic implications.

My reading of Kierkegaard's *Either/Or*, admittedly not the standard one, is that it demonstrates how aesthetic values, when attended to exclusively, undermine themselves. The aesthete who attempts to isolate and purify aesthetic or sensual pleasure ultimately is frustrated because aesthetic value cannot be maximized in the absence of moral respect for the valued object. As Judge William says in Volume II: "...it is essential for first love to be historical..."²² "However you turn and twist, you must admit that the girt of the matter is to preserve love in time."²³ The aesthete who toys with his "love" objects only for his own amusement

and titillation cannot really love *them*. While striving to preserve choice and avoid commitment as though detachment was the essence of freedom, this aesthete in fact makes no choice at all. Such freedom without commitment turns out to be pointless. Supposed intensity supported by narrowness is not only evanescent, but unsatisfying. The frenzied search of a pure aesthete for peak isolated moments is self-defeating and leads quickly to the very boredom that he thought was anathema.

But the moral dependency of aesthetics, which Kierkegaard demonstrates, is not all. Art and play, Dewey points out, have a "moral office." They "engage and release impulses" which soften rigidities, relax strains, allay bitterness, dispel moroseness and break down narrowness. And this is best done when art does not aim directly at any moral effect, but is true to itself.²⁴ With both Dewey and Kierkegaard,²⁵ aesthetic and moral values play off against one another. Art, and aesthetic environments as well, both give us joy and make us better. And truly better people create and respect more of beauty.

Similarly, none of the other categories of value are in "watertight compartments." They can be mutually enhancing or mutually destructive. Reflection on their conditions and consequences, in other words their interactions and the best way to find a mutually enhancing balance of all concerns of value, is a critical role of intelligent inquiry. Humans exist within nature, not as "little gods outside." This means that all states and acts are interactions.²⁶ Hence the generation of value is ultimately circular, involving mutual kindling of the partial aspects of experience. The fire is not brought from without.

Goods, although predictably rooted in embodied biological and social commonality, are also the outcomes of particular interactive life histories, stamped with the peculiar quality of those histories. We arrive plunged into a medium of sensations which already attract and repel. Valuations are omnipresent, integral to life and changing with our changing wants and gradually, and with both luck and intelligence, we develop some ability both to affect our experiences and then understand their connections and evaluate them more reflectively. But values, goods and ends are *there* in the interaction of an organism with its environment, not imported into experience from a separate realm. They are not something we know in advance and then seek to realize in experience. They are the products of experience and their nature is determined by it.²⁷

The view that values interact contrasts with a received view that there is a realm of absolutes containing The Good, The True and The Beautiful in which particular creatures and events participate or which they strive to imitate, and by comparison to which their value is determined. A corollary of this view, which seems to be typical of it although not logically entailed by it, is that these value realms are independent, not only of the created world, but of each other.

In contrast, values with Dewey are not derived from any fixed or foundational source. They are present willy-nilly in experience and are continually modified and created in it. We are presented with needs, problems and satisfactions. Some of these, such as the needs for food, water and rest recur, and we develop stock concepts of value based on seemingly standard fulfillment of these needs. But

every situation is unique, which is why the fulfillment of a need for sleep, for example, may not be the fulfillment of the moment if you are defending Britain from air attack. It is a matter for judgment, in any given situation, whether habitual satisfactions are appropriate or not. When they are not, creative decisions must be made.

Mutually complementary values create novel assemblages of “unity in variety.”²⁸ Although Dewey, as opposed to Whitehead, does not claim that unique individual *ontic* entities (“actual occasions” for Whitehead) are each novel ways in which the rest of the universe comes together, he more modestly and less metaphysically describes *values* in terms of relations. Ethical, aesthetic, biological, scientific, technical and even athletic satisfactions mark the coming of disparate elements into meaningful and mutually enhancing relationship.

In dialectical, process oriented thought, the achievement of value is thought of as the achievement of synthesis. Conceptual dichotomies are more like opposing perspectives than elemental separations in this tradition, which Dewey renews. Of all the conceptual dichotomies in need of reconciliation, means and ends are foremost. Dewey believes they should be in reciprocal relation.²⁹ Means should have value not simply derived from ultimate intended ends but also as materials and processes to be experienced on their own account. And ends are means when they are plans or aims-in-view for the endeavors which produce them, and also when they are not total cessations, but also “jumping off points” for other activities. Activities and their principal goals can enhance one another best if interaction and mutual modification is not only allowed, but promoted.

Engagement in an endeavor, with its existing materials and conditions, results in an improved understanding of what its *prima facie* goals actually mean. When initial goals are not sacrosanct, they can be reformulated, better specified and more broadly conceived. Such matured and reformulated goals in turn enhance our understanding of what means are really about, opening new possibilities for enhancing them as well.

The automobile as a means, and its overall primary goal, improved transportation, is a case in point. From the outset, the automobile became more than a means. Concepts of what it might do and images of how it might work fascinated the early technologists and inventors, who rapidly became engaged with the materials and processes of invention, design and production. These “tools” turned out to offer myriad satisfactions on their own. These were only partly, even sometimes casually related to their ultimate “use.” As the endeavor progressed there was an explosion of ideas about what sort of vehicles could eventually be made. Imaginations were fired up. And soon, appreciation of the possibilities for transportation was vastly expanded. In sum, engagement in the development of what would have originally been thought of as “mere means” revolutionized the original conception of possible ends. Not only was that true, but involvement with the “means” turned out to have enormous satisfactions of its own to the extent that getting someplace is often low on the list of reasons, to this very day, of why people get involved with particular vehicles.³⁰

Lately, we have begun to appreciate an even wider, more profound, and largely damaging set of consequences following the widespread manufacture and use of automobiles. We see only now that there are not only diminishing positive returns for more and more travel, but vast, unanticipated negative returns for society and the natural world. Once again, our concept of the "ends" is being transformed.

Means and ends significant in medicine as well cannot be reified into fixed compartments. It is a truism that health is something we seek as an end, but among the satisfactions of good health is the fact that it is the means for all kinds of fulfilling activities and enjoyments beyond itself. We quit smoking, have physical examinations, take medications, undergo surgery and diet in order to enjoy the outcome of good, or at least better health, which does indeed have a final, satisfying quality which Dewey would call consummatory. Yet that very better health, enjoyed for its intrinsic pleasures, also enables us to strengthen our families, serve our communities, enjoy exercise and recreation, keep working productively, defend ourselves against aggression, etc. In this respect it is a starting point and a means. Additionally, concepts of good health act, when treating or preventing disease, as motivating and instructing aims-in-view, to use Dewey's term.

What is more, good care is an end as well as a means. It is the preeminent intermediate end of medical research, education, licensing and much fund raising, with improved health in a community being the ultimate end to which it is ostensibly the means. At the same time, quality care is valuable ongoing. Here are found the validation and respect which two humans can give to one another, the friendship, the excitement of mutual discovery, the moments of humor and shared insight, the bridges built over success and sorrow to a common humanity. And, as with the process of building automobiles, the development of insights into human biology, psychology and disease processes, and the invention, use and care of instruments, have, at least for the caregiver, been the source of tremendous interest and satisfaction on their own account.

There should be a working, growing relationship of mutual respect when care is treated as a valuable end and not only as a means with completely extrinsic value. This relationship potentially improves both the formulation of ends and the attainment of them for both the caregiver and the patient. A really good pediatrician listens, learns from and delights in children and their families. When she does, they are interested as they have been found interesting. They respect as they have been respected. And they learn from one who is able to learn from them. It would be obtuse to maintain that such processes are solely instrumental on the one hand, or that they do not enhance instrumental effectiveness on the other.

VALUES ARE IMMANENT

Values for Dewey are not termini which pre-exist, to be *instantiated* in action; rather, values are *produced* in action and characterized as evaluated qualities of "situations." This is particularly true when there is a genuine problem to be solved rather than a routine task with a standard goal toward which habits and skills from

a staple repertoire can be applied. More simply stated, with reflective action values are created, not just reached.

Uncertainty often characterizes both the choice of means and the projection of ends. For example, there is nothing straightforward about treating an autistic child. Investigation must be undertaken to understand what we mean by “autistic” in the particular case of such a child, and it turns out that we never know completely. This is because our understanding of this child and her or his feelings and capacities is not static, but continually grows in not wholly predictable ways depending on interaction with and “treatment” of the child. Depending on what the child does, new potentials are uncovered. Special ends for this child continue to emerge as the particular relationship with the child and his family grows.

To a degree, we know good results because they conform to preconceptions: it is good if the child speaks, reads, laughs and shows awareness of others. But these are bare outlines. The full-fleshed values attained are recognized only after-the-fact in the qualities of acts and relationships participated in by this child. They confound anticipation. The major value of working with one child, for the child, the family and the community is something discovered as it is created uniquely in the work. The “problem” of the child’s autism and its unfolding resolution, (however satisfactory or unsatisfactory that might be) are not just clarified and understood, but modified and fleshed out as the work progresses. Successes and failures might be assessed externally to a degree, but full appreciation of what they might be is internal to this particular work.

We know Immanuel Kant asserts that rational beings have absolute worth in themselves. They are not, he says “a means to be arbitrarily used by this or that will.”³¹ The value of an end in itself, he explains, is not dependent upon any need or subsequent inclination. We are to respect persons as free agents who are able to dictate their own acts on the basis of the moral law. While it is poetically appealing to respect people as transcendental, apart from all their particularity and connections, I think the point is hyperbolic and so absolute as to undermine itself upon close examination.

Kant does not showcase a subtext which is entailed by this view; namely, that what we respect in other persons is not their inclinations, but only their freedom to legislate their own actions. In other words, their bodies, their material needs, their relations and attachments to objects or even to other people is not what we are to respect, but only their capacity to moral self-determination. Respect is not based on our own inclinations and it does not have any regard for the needs of the ones respected, aside from abstract “freedom.” This moral agency is radically detached from any valuation based on inclination, not only our own inclination to be attracted to love and have compassion for the worldly cares of others, but their own similar inclinations toward themselves. Leaving out all self-regarding or other-regarding concerns with any kind of particular creaturely basis practically empties respect of any particular content.

Empirical situations are particular interactions between concrete individuals and their environments,. For Dewey, as opposed to Kant, moral values relate to the

needs of situated beings, and are not generated by free-floating consciences (good or rational wills) coincidentally thrown together with irrelevant bodies. This view, as indicated above, connects moral with economic and other values. And, as a thoroughgoing naturalist, Dewey therefore rejects the idea that there are "ends in themselves." Does this mean that Dewey would not treat people with special respect? Not at all. It simply means that the respect is due to their natural flesh, blood and spirit, not to a disembodied rational will accidentally manifested in them.

INQUIRY AND CONSUMMATION

For Dewey, any endeavor to resolve a genuine problem requires some customized "inquiry," just because we are customized creatures in personalized circumstances. The inquiry assesses the particular problem and discovers its features and boundaries – all with the intent of deciding how it is different and how similar to other problems previously experienced. It differentiates an unsettled and undifferentiated discontent, or problematic situation, as much as possible before plunging into a course of action. This process is discussed more fully in Chapter Four.

"Consummations" for Dewey signify satisfactory resolutions of problems and indicate the value not of termini alone, but of entire endeavors. The purpose of endeavor is not to attain "consummation" as an end, but to engage in a process of the type whose successful conclusion will be marked by a sense of "consummation." Successful resolutions enhance the meaning of all parts and stages of endeavor. Feelings of "consummation" which signify such successes come out of the endeavor and all its unique internal and external relations.

If certain feelings were all that ends were about, then they could perhaps be produced using psychotropic medication and we could forget about actually real accomplishment. Dewey indicates the impossibility of doing this by denying that ends can be judged apart from their entanglement with actual particular means. The ends and means to a degree dissolve in and are flavored by each other.

"Classic theory transformed ends attained into ends-in-themselves. It did so by ignoring the concrete conditions and operations by means of which the fulfillments in question are brought about. The traits which marked. . . successful resolutions of problems of intellectual inquiry, of artistic construction and of moral conduct. . . were taken to be the external ideals and standards of the very operations of inquiry, artistic creation and moral endeavor, of which in fact they are generalized results. This hypostatization always happens when concrete ends in their terminal nature are erected into 'ends in themselves.'"³²

The categories characterizing values as they are realized in the concrete are thus partly after-the-fact, with prior values needing to be submitted for renewal in every problematic encounter. Each engagement or endeavor ends up having a unique quality which knits it together. When the quality is consummatory we judge that value has been realized.

As we have seen, the names under which we classify value, such as economic, moral and aesthetic do not signify rigid or mutually exclusive compartments. Yet there is mutual contrast causing the varied aspects of value to fortify or vitiate one another, even though they are not transformable one to another on a quantitative

scale. In fact, only truly *qualitative* differences *can* relate in this mutually self-generating way. Some arrays of economic, moral, and aesthetic value are mutually enhancing, and others mutually detract. It is a matter of balance. This is why with Dewey values have to do with the way experiences are pulled together, not with prior essences instantiated in events.

If compartmentalization, whether of categories in values, qualities, meanings, situational problems or means and ends is not absolute, then any pretense that clinical events can be treated in total isolation must be looked at skeptically. "Decision trees," "mandates," "dictums," and "protocols" *always* presume that values are standard, qualities are fungible, meanings can be anticipated, problematic situations are generic and "means" should be looked at strictly as costs with "ends" being the sole locus of benefits. The wholesale adoption of these assumptions is unexamined nonsense.

BROAD VIEW OF RATIONALITY

In light of Dewey's view of experience as complex, interactional and value creating, it is no surprise that he takes a broad view of rationality, claiming that it consists of much more than deduction, calculation and rule application. Indeed, his view is so broad, admitting much of what is usually referred to as "understanding" or "common sense," that he came to use the term "intelligence" for what he had previously called "reason," or "rationality." In *How We Think*, published in 1910 and "restated" in 1933, Dewey lauds "actual thinking" as opposed to "formal logic" for "reaching conclusions" and "arriving at beliefs and knowledge" in real "unsettled" situations.

Formal logic is impersonal and prescribes relations among universals which hold in all places and times, and among individuals only in as much as these individuals are members of classical categories. Actual thinking adapts itself to particular persons, places and times. It has local coloration, and hence has been called "situated rationality." And it can function with radial categories, graded category membership, and even cognitive models which are at variance with each other and which must be selected for appropriate "fit." This local and particularized rationality grows out of thinkers and their intentions, special situations and particular subjects rather than by imposing an outside rational canon on the concrete. Consequently, actual thinking is a work in progress and not a finished product which is merely applied repetitively. Reason, thus broadly defined, affects reflective work but is also affected by that work. Habits and rules of reason carry over from one problem to another, but not absolutely.

Consequently, actual thinking takes account of context. Experienced situations, not logical rules, determine the truth of the statement, "All men are mortal." This fact has been *observed* in experience. The fact that "Socrates is a man" was also observed and backed by concrete evidence. The syllogism is an abstraction from two pieces of evidence, and gives no evidence in itself. "No one ever arrived at the idea that Socrates, or any other creature, was mortal by following the form of the syllogism."³³

“The movement from one existential proposition to another through inference depends . . . upon non-existential universal propositions as an instrumental intermediary . . . a consideration which demands that there be scrupulous attention to formation of the universal propositions employed in discourse. But the movement of inference cannot be identified with that of rational discourse. . . . No amount of reasoning can do more than develop a universal proposition; it cannot of itself determine matters-of-fact. Only operational application can effect the latter determination. On the other hand, existential data cannot of themselves *prove* a universal . . . inference . . . is conditioned upon an existential connection which may be called *involvement*.”³⁴

The process of inference, here meaning just “reaching warranted conclusions based ultimately on evidence” involves using general concepts whose defined and logical relationships mirror existential relations evidenced in experience. Whereas cognitive science now approaches terms and their relations by describing how they are in fact used, there are two different traditional views about the formation of categories, their relations and their proper use. Definitions can be given a priori or by fiat and objects fitting them sought in experience. (Although experience usually has much to do with being able even to imagine things which could be arbitrarily defined.) Or, definitions can be abstracted from common characteristics of a group of similar objects.

In the formal tradition definitions are given a priori and relations among entities defined follow logically. This works best for mathematics. Logical, syntactic systems *may* be assigned meanings in experience: i.e., actual objects may be found which accurately fit the definitions given a priori, and whose causal and existential relations fit the deductive relations among formally defined entities. For example, weights are a satisfactory semantic interpretation of the number system.

Alternatively, there has been the more Aristotelian approach which starts with existing particular entities and groups them into classes based on abstracted and shared common characters. In the first tradition, the denotation of individual members of classes depends on the set connotation, whereas in the second, the connotation is more of a function of the denotation, having been intuited at first and then specified more exactly by scrutinizing the characteristics of the class members.

In medical diagnostic terminology these processes alternate. At times, usually originally, we identify syndromes or diseases by noting obvious similarities among cases. Then, we typically try to rigidify the case definition by establishing ironclad inclusion criteria. Here the major goal is to assist in communication so that everyone concerned is using terms in the same way, as noted in Chapter Two. But then the pendulum swings back because there are always borderline cases which ought to be thought of like the central cases for certain purposes, and mild or subclinical cases are found having the same etiology as the originally identified overt cases. Authorities pronounce, fashion sways, and the latest article prevails only to be dethroned the next year, all of which fails to enlighten us about what is really at stake in deciding inclusion criteria.

Dewey, confronted with these two tendencies and traditions, was one of the first to notice that in fact there are hardly any true semantic interpretations (empirical instantiations) of formal systems other than in mathematics and the basic sciences. The relations among formal conceptual structures, called by Dewey “universal

propositions,” are rarely helpful guides for understanding experiences. In addition, generalizations from prior experience, which he called “generic propositions” are useful only to the degree to which (never 100%) present situations duplicate preceding ones.

The interactive experience of living in an environment decides for Dewey what forms of inference (broadened to “involvement”) are valid. He could not have been farther from the position of those who, in his day and after, posited as real only those entities and relations which could fit (exemplify) those of a formal system.³⁵ Living in an environment depends on reconciling various impulses so that actions are both adaptive and satisfying. “Reflection” and “deliberation” are, with Dewey, intelligent approaches for harmonizing considered desire. (In some works he reserves the term “desire” for well considered and balanced impulse alone).

Reflection, which is well epitomized by the phrase “looking before (and while) you leap” appears to have four main aspects in Dewey’s work. First, there is considering and evaluating the claims of all the impulses; second, there is review of all the consequences (“imaginative rehearsal”) of alternate actions; third, there is thoughtful assessment of the relevance and applicability of established habits; and finally, there is creative engagement in action, which involves imagination, new discovery and the renewal of previous valuations.³⁶

In the essay entitled “Affective Thought” (1926) Dewey admits emotion into the sanctum sanctorum of “dispassionate” reasoning:

“We may begin with the field of reasoning, long supposed to be preempted by pure intellect, and to be completely severed, save by accident, from effectivity and desire and from motor organs and habits by which we make our necessary practical adjustments to the world about us. But a recent writer, Rignano, working from a biological basis, has summed up his conclusions as follows: ‘The analysis of reasoning, the highest of our mental faculties, has led us to the view that it is constituted entirely by the reciprocal play of the two fundamental and primordial activities of our psyche, the intellectual and the affective.’”³⁷

“The conclusion” says Dewey, “is not that the emotional, passionate phase of action be eliminated in behalf of a bloodless reason. More ‘passions,’ not fewer, is the answer . . . Rationality . . . is the attainment of a working harmony among diverse desires.”³⁸ Thus reason is not antithetical to passion, nor is it, as Hume said, the “slave” of the passions, but the passions are among the materials with which reason does its work. Emotions connect us to the world, by and large. The incidents in which emotion leads to misinterpretation and misunderstanding are the exception, not the rule. We could not possibly navigate the world without love, fear, suspicion, trepidation, gratitude, relief, shame, hope and trust to name just a few. Sometimes these emotions are misplaced, usually because of a misunderstanding of facts. But just as illusions do not invalidate the great preponderance of sensory experience, occasional examples of misplaced emotion do not invalidate its overarching role in connecting us to people, things and events. So full-bodied reasoning not only makes use of the typically special image schemas discussed in Chapter I, but also of the full spectrum of emotion. And especially, this spectrum of reasoning is needed to cope with the non-absolutes of medical care.

For all these reasons, “intelligence” replaces “reason” in Dewey’s philosophy, “. . . the marks of ‘reason’ in its traditional sense are necessity, universality, superiority to change, domination of the occurrence and the understanding of change.”³⁹ But “intelligence” involves an “active coping with conditions,”⁴⁰ as opposed to “reason” classically understood. Far from the empyrean realm where “reason” dealt with the immutable, abstract, universal, certain and necessary, “intelligence” delves into the messy practical world of the evolving, concrete, particular, uncertain (the “merely probable”) and contingent. This is the world where doctors and nurses work.

THE IMPORTANCE OF CONTEXT

Dewey addresses the importance of context repeatedly, but gives it the central place in the essay “Context and Thought” (1931) and in the section of his *Logic* entitled “Judgment as Spatial-Temporal Determination: Narration-Description.” (1938). Context is first the relatively stable background of interest, belief and knowledge which forms the setting for narration and description. This provides the physical, cultural and historical locus of activity and concern. Stories, the temporal accounts of events and acts, as well as descriptions, which are primarily spatial accounts, are the “ground” of propositions, whereas propositions themselves tend to be about central foci of concern. Background is relatively “stable,” “settled,” “assumed” and “implicit” whereas the most salient elements in means/ends problems, those “in play,” are changing, “unsettled,” and attended to explicitly. However, the great point that Dewey makes is just how the meaning of foreground action is context-dependent. Acts and events relate to specific beginnings and ends, and cannot be understood or evaluated apart from the contexts in which they occur. (This becomes especially evident if we want to understand actions in aberrant contexts like those in the New Orleans hospitals after hurricane Katrina.)

One of the points in deliberation is to decide just how well an habitual or default set of assumptions about what is “in play” makes sense *this* time. Context itself, while mainly assumed, can also be a matter of selective interest, particularly when there is the leisure to reflect. The “selections” of interest, however, are necessarily settled to some degree. Otherwise, resolution of any dispute or deliberation needed for action cannot occur, and paralysis ensues.

“. . . the whole contextual background . . . does not all come into question at once. There is always that which continues to be taken for granted, which is tacit, being ‘understood.’ If everything were literally unsettled at once, there would be nothing to which to tie those factors that, being unsettled, are in process of discovery and determination.”⁴¹

Any argument is stymied when too much context comes into question, as when we say, “If we can’t agree about that then we can’t discuss the subject at all.” More importantly in practice, the number of considerations which can be taken into account varies inversely with the urgency of a decision. In a medical emergency, for example, decisions open for reflection must be very few, else the outcome will be decided by default. Additionally, no suffering is relieved when debates about

which type deserves priority are unduly extended, and no problem is solved when attention is on them all at once.

It turns out that any expenditure of concern and effort can be questioned on the grounds that something else was more important. And any action whose meaning relates to a stable background can be called meaningless when it is pointed out that “in the long run” even the background will disappear. Ultimate transiency, however, is not self-evidently equivalent to worthlessness. Nor is the inability to do everything a license to do nothing.

As we have seen, Dewey begins with the idea that value generation does not depend on reference to an outside eternal or absolute standard. Nevertheless a background which is sufficiently stable even though empirical in origin must be assumed. We use clinical judgment, or “informal reasoning” to look at entire situations both as “given” by circumstance and “taken” by us in our present configuration as subjects. Creatures do partly select (and determine) their environments. We inquire in order to decide not only what information is relevant, but what and how much can or should be called into question at one time. Dewey has not solved this problem for us, but at least he has acknowledged it.

Should we evaluate “experimental” or “heroic” new treatments primarily as they affect the lives of the patients treated or in terms of possible future benefits to society? How do we present these considerations to the patients themselves, when we know that no presentation can be completely neutral? Were attempts to mechanically ventilate premature babies weighing less than 1,000 grams, uniformly failures in the 1960’s, justified by the learning which resulted in frequent successes today? What considerations were considered relevant to the rationale for early heart transplants? How seriously do you take chest pain in a person known to be a hypochondriac? Should resources be diverted from organ transplants to motorcycle safety? Exactly how and when is an arduous and painful diagnostic and treatment course justified for any particular person? Are resources spent on major surgery for pets justified when they could be diverted to the care of people? Are they justified if they cannot realistically be diverted to people? How much does a cultural or psychological attitude toward death influence care at the end of life in any particular case? How much should it influence this care? Should an aged Inuit be subjected to a medical or psychological evaluation if she feels ready to depart into the snow? What about an elderly philosophy professor who decides not to eat? Should a particular mother with HIV breast feed? In the United States? In Africa? When should a sick doctor keep working? These are the sorts of questions about the relevance of context which crop up. We cannot wish them away with rote formulas.

As Dewey explains, any action occurs in both descriptive and narrative settings. Descriptions report and narratives explain but there are multiple possible levels and extensions of reporting, and many possible narratives for explaining meaning. One act can be assessed in terms of a narrow or a broad descriptive focus and also can be subsumed under several narratives. Thus the “preventing a lawsuit” narrative and the “making a living” narrative can diverge from the “giving the best care”

narrative. *Choices* are involved in deciding the setting in which any action is placed. Sometimes such choices can be made ahead of time and sometimes not.

Recipes for clinical care are supposed to dictate choices when doing so is really helpful, but they always involve assumptions about narrative and descriptive context which need, at the proper time, to be examined. The fact that rigidity and automaticity work sometimes does not mean that they work all the time. Even in the greatest emergencies conditions may arise which demand that we not be creatures of protocol. We cannot renege on responsibility. We can only create conditions conducive to ethical and efficacious work.

The two great pitfalls around context which Dewey identifies are failing to consider context and its particularities, so that our actions become inappropriate in the light of it, and discounting central concerns and priorities because considerations are too diffuse. A balance must be found between attending to everything and a single thing. There is a time to assume context and a time to reflect on it. There is a time to discount and ignore and a time to pay attention to some individual fact; a time to accept the obvious and a time to question it. There is a time to concentrate and a time to look around; a time to make a judgment and a time to withhold one.

Bayesian reasoning, with its controversial concept of *prior probability* is one attempt to assess, semi-formally, the importance of context. "Prior probability" attempts to keep new information in perspective, assessing the predictive value of new information in the light of what was previously thought to be likely. In a nutshell, it offers a method for weighting the significance of an individual piece of data given certain aspects of the context in which it occurs. Informally, we do this all the time, for example when we decide to double check a laboratory value which makes no sense in light of what we know already about a case. We discount new information in the light of old. When studies come out "proving" that penicillin does not shorten the course of streptococcal pharyngitis, that antibiotics do not help cat scratch disease, that triglycerides do not affect heart disease, that ibuprofen is as safe as acetaminophen in children over six months and that post-menopausal estrogen causes breast cancer (or does not), that a high fiber diet can (or cannot) prevent colon cancer or that personality does or does not affect heart attack risk, we take all with "a grain of salt." That grain is nothing but the realization that other studies and experiences indicate the opposite conclusions. No matter how compelling the statistical evidence internal to one study may be, it does not exist in a contextual vacuum.⁴²

A simple way Bays' Theorem is already in wide use in medicine has to do with assessing the predictive value of laboratory test results. For example, suppose that a serologic test for HIV is positive in 95% of people actually infected with HIV and in 1% of people who are not infected. When such a test is used in a population "previously known" to have a low incidence of HIV infection, say "worried well college students" who have a 1 in 1,000 chance of being infected, a positive test has much less predictive value than it does in a population of 1,000 prisoners whose "prior probability" of being infected is, say, 10%. When prior probabilities are actually applicable to the group being tested, and in this lies the controversy, the predictive value of the test comes out as follows: For the 1,000 college students

there is one who will likely have a true positive test result and there are 10 who will have false positive tests. The prior probability of any person in the group having HIV is .001. After the test, the probability of anyone testing positive actually being infected is about .09, meaning that the predictive value of a positive test in this group is only .09. The predictive value of a negative test only improves the odds that one is not infected in this group from .999 to near 1. In contrast, for the prisoners, out of the 100 actually infected, 95 will test positive and out of the 900 not infected, 9 will test positive. The predictive value of a positive test in this group is .87. On the other hand, the predictive value of a negative test is only .994. A test is most useful when it most strongly changes the odds that a disease is present, and that depends on the setting in which it is used.

Bayesian theory is a wonderful way to improve the precision of informal reasoning about some contextual questions. It has many possible applications beside the simple one just mentioned. But, as Dewey has shown, informal reasoning deals with much more than just weighing the significance of prior probabilities. It considers matters of value and relevance, and juggles priorities. Informal reasoning even includes deciding when to use a more formal decision process.

CONCLUSION

Dewey's claims about natural and interactional values, real qualities, situated reason and the importance of context provide the groundwork for understanding what he means by a "situation." This will be elaborated in the beginning of the next chapter. After the discussion of "situations," a fairly comprehensive and direct presentation of his theory of means and ends can be made. I have saved discussion of the difficulties and problems with this theory, some of which I think are major, until the end of that chapter. Dewey appears to be overconfident that "situations" and "problems" are self-evident; that if there is no worry, there is no problem. However, modifications which might be required regarding certain of his claims do not render his insights useless. Already, in this chapter, we can see how his considerations make it totally inappropriate to put on blinders when making medical decisions, and how they show that common assumptions about "costs" and "benefits" misrepresent the nature of means, ends and values.

Dewey's work on means and ends reasoning dovetails with the discoveries of cognitive psychology and linguistics in showing us how our reasoning in many practical domains both is, and cannot escape being, informal. Chapter IV gives more detail of how Dewey thinks engaged judgment can grapple with amorphous and shifting circumstance.

NOTES

¹ John Dewey. "Importance, Significance, and Meaning." A typescript of 1950. In *The Later Works*. Vol. 16, p. 323.

² John Dewey. *Logic: The Theory of Inquiry*. In *The Later Works*, Vol. 12, p. 169.

³ John Dewey, *Reconstruction In Philosophy*, p. 122.

- ⁴ John Dewey. *Experience and Nature*. In *The Later Works*, Vol. 1, p. 5.
- ⁵ John Dewey. *Ethics*. In *The Later Works*, Vol. 7, p. 212.
- ⁶ John Dewey. *Art as Experience*. In *The Later Works*, Vol. 10, p. 219.
- ⁷ John Dewey. *Human Nature and Conduct*, p. 197. Dewey often failed to note that there have been many philosophers of process whose views should have been quite sympathetic to his own. For example, Heraclitus, whose words as reported by Plato this passage echoes: "Heraclitus somewhere says that all things are in process and nothing stays still, and likening existing things to the stream of a river he says that you would not step twice into the same river." Quoted by Kirk and Raven, *The Pre-Socratic Philosophers*, p. 195.
- ⁸ John Dewey. *Human Nature and Conduct*. p. 201.
- ⁹ John Dewey. *The Quest for Certainty*. In *The Later Works*, Vol. 4, p. 108.
- ¹⁰ *ibid.* p. 109.
- ¹¹ John Dewey. *ibid.* p. 98.
- ¹² *ibid.* p. 105
- ¹³ John Dewey. *Experience and Nature*. In *The Later Works*, Vol. 1, p. 75.
- ¹⁴ *ibid.* p. 82.
- ¹⁵ John Dewey. *ibid.* In *The Later Works*, Vol. 4, p. 106.
- ¹⁶ I hope that Dewey was speaking of an individual and not a stereotype.
- ¹⁷ John Dewey, "Qualitative Thought." In *The Later Works*, Vol. 5: 1929–1930. pp. 243–262.
- ¹⁸ If what objects actually or potentially *do* is part of their being, what actually or potentially can *be done* to them is likely the rest.
- ¹⁹ John Dewey. "The Objectivism-Subjectivism of Modern Philosophy." In *The Later Works*, Vol. 14, pp. 189–200.
- ²⁰ *ibid.* pp. 196–197.
- ²¹ *ibid.* p. 199.
- ²² Soren Kierkegaard. *Either/Or*, Volume 11, p. 47.
- ²³ *ibid.* p. 144.
- ²⁴ John Dewey. *Human Nature and Conduct*, pp. 151–2.
- ²⁵ Kierkegaard can be taken to make this reverse point only if we accept as real Judge William's various pronouncements on the essential place of aesthetics. These statements seem to be ignored by some.
- ²⁶ John Dewey. *Human Nature and Conduct*, p. 324.
- ²⁷ John Dewey, *Experience and Nature*, Chapter 10, In *The Later Works*, Vol. 1: 1925.
- ²⁸ This phrase appears in *Art as Experience*, p. 166.
- ²⁹ John Dewey, "How, What and What For in Social Inquiry." Typescript, 1951. In *The Later Works*, Vol. 16, pp. 333 and 337.
- ³⁰ Otherwise, Fiat, for example, would have gone out of business long ago.
- ³¹ Immanuel Kant. *Foundations of the Metaphysics of Morals*, Second Edition, p. 45 (Academy page 428). Trans. by Lewis White Beck, Macmillan Publishing, New York, 1985. Kant elaborates on the meaning of an end in itself in the following several pages.
- ³² John Dewey. *Logic: The Theory of Inquiry* in *The Later Works*, Vol. 12, p. 179.
- ³³ John Dewey. *How We Think*. In *The Later Works*, Vol. 8, pp. 172–175,
- ³⁴ John Dewey. *Logic: The Theory of Inquiry*. In *The Later Works*, Vol. 12, p. 276.
- ³⁵ See *Quest for Certainty*, Op. cit. p. 13.
- ³⁶ "These facts give us the key to the old controversy as to the respective places of desire and reason in conduct. . . . reasonableness is in fact a quality of an effective relationship among desires rather than a thing opposed to desire. It signifies the order, perspective, proportion which is achieved, during deliberation, out of a diversity of earlier incompatible preferences. Choice is reasonable when it induces us to act reasonably; that is with regard to the claims of each of the competing habits and impulses." John Dewey, *Human Nature and Conduct*, pp. 182–183.
- ³⁷ John Dewey. "Affective Thought." In *The Later Works*, Vol. 2, p. 105. Dewey quotes Rignano. *The Psychology of Reasoning*, p. 388.
- ³⁸ John Dewey. *Human Nature and Conduct*. Op. cit., p. 184.

³⁹ John Dewey, *Quest for Certainty*, op cit. p. 170.

⁴⁰ *ibid.* p. 14.

⁴¹ John Dewey. "Context and Thought." In *The Later Works*, Vol. 6, p. 12.

⁴² See David Leonhardt. "Adding Art to the Rigor of Statistical Science," In *The New York Times*, April 28, 2001, p. 15.

JOHN DEWEY'S VIEW OF SITUATIONS, PROBLEMS,
MEANS AND ENDS

The general purpose of reflectively based action for Dewey is to transform an “unsatisfactory situation” into a “satisfactory” one. Medical encounters, both narrowly circumscribed brief ones and broad continued ones, exemplify Deweyan “situations.” Such “situations” are states of affairs characterized and knit together by “tertiary qualities.” The terms “situation,” “satisfactory,” “unsatisfactory,” and “tertiary quality” are fertile with suggestion, but despite Dewey’s explanations are not easily clarified. While acknowledging that even after a close look there are residual ambiguities in Dewey’s theory of means and ends, the theory illuminates much of what is actually at stake in offering medical care, and what constraints exist on our responses to health problems in the real world.

SITUATIONS

Let us start with “situation.” “What is designated by the word ‘situation’ Dewey says, “is *not* a single object or event or set of objects and events. For we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole. This latter is what is called a ‘situation.’”¹ Although objects can be isolated for some purposes and studied focally as if apart from situations, they are never known in practice except in terms of their significance in situations.

The “situation” for Dewey encompasses the relation of an individual (not necessarily a person) to its surroundings. Shared situations are experienced in common with others. On many occasions (as Dewey indicates when discussing the quality which is shared by everyone at a ball game when the umpire yells, “You’re out!”) we automatically feel a commonality, although presumably it is never complete.² Language, when “. . . recognized as the instrument of social cooperation and mutual participation.”³ facilitates the sharing of situations. The “heart of language,” Dewey claims, is to establish mutual understanding. There would be no point in talking if we could not use the conventional commonality of words to enhance mutual participation in and evaluation of situations that underlie joint endeavor.⁴

Changes originating primarily within the individual or in the environment could naturally alter the situation. “. . . interaction is going on between an individual and objects and other persons. The conceptions of *situation* and of *interaction* are inseparable from each other. An experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment. . . .”⁵ And by “environment” here, he means the totality of persons,

places and things affecting an individual in a period of time bound together by a quality arising in an endeavor, a scenario or a narrative.

It should be noted that such an environment is not solely “given” and “out there” apart from the individual, but is in several key ways dependent on the individual. The capacities of the individual to be affected already equip and limit any possible environment. The physical disposition of a person, including positioning and focus of attention, screens potential environmental inputs. The interests of the individual introduce further selectivity. And finally, there are all the unintentional marks and intentional artifacts of individuals which shape their surroundings.

An illness exemplifies a situation marked by alteration in the relationship of an individual and her or his environment. Prototypically this comes from an environmental insult on the individual, as we have seen, but sometimes it arises primarily from what seems to be an internal source.

TERTIARY QUALITIES

Dewey gives several examples of “tertiary qualities” which define, delimit, characterize and “pervade” the various types of situations into which organisms and their environments can come. “. . . a situation is a whole in virtue of its immediate and pervasive quality.”⁶ “The pervasive quality is not only that which binds all constituents into a whole but it is also unique; it constitutes in each situation an *individual* situation, indivisible and unduplicable.”⁷ Hence any label given to the pervasive quality of a particular situation indicates only substantial similarity to the quality of certain other situations, not qualitative identity.

The primary and secondary qualities like mass, extension, density, hardness, color and shape are thought of as constituent aspects of entities, but “tertiary qualities” are not about parts or aspects of situations. Rather, they amalgamate or integrate the situations as a whole. Dewey compares them to overall impressions in aesthetic experience. He describes them as “immediate,” which means that they are experienced at once, not cognized after-the-fact and not wholly susceptible to generic labels. Yet, never at a loss for words, he proceeds to name some of them: “distressing, perplexing, cheerful, disconsolate.”⁸ And, in *Art as Experience*: “Situations are depressing, threatening, intolerable, triumphant. Joy in the victory won by a group with which a person is identified is not something internally complete, nor is sorrow upon the death of a friend anything that can be understood save as an interpenetration of the self with objective conditions.”⁹

A tertiary quality, as I noted of all qualities in Chapter Three, is not just the subjective side of a situation. Dewey is trying to get beyond the complete subjectivization of qualities. Situations are only there for the entities affected and effective in them. Reality, with a capital R, as a situation exhaustively understood from a comprehensive Objective Eye, such as the Eye of God, is a concept which does no work for a pragmatist. It cannot be appealed to as a standard of objectivity because it cannot, in practice, be appealed to at all. On this issue of “Things in Themselves” Dewey is in rare line with Kant.

Qualities also mark "experiences," another term never clearly distinguished by Dewey from "situations," although apparently often substituted for it, particularly when the "situation" has run its course and is reviewed.

"An experience has unity that gives it its name, *that* meal, that storm, that rupture of friendship. The existence of *this* unity is constituted by a single *quality* that pervades the entire experience in spite of the variation of its constituent parts. This unity is neither emotional, practical, nor intellectual, for these terms name distinctions that reflection can make within it. In discourse *about* an experience, we make use of these adjectives of interpretation. In going over an experience in mind *after* its occurrence, we may find that one property rather than another was sufficiently dominant so that it characterizes the experience as a whole."¹⁰

Dewey failed to comment on the intensity or strength of the tertiary qualities which might characterize different situations, but it seems self-evident that some of these would be strong and others weak. Presumably, situations would be more distinct and easily identified if marked by intense tertiary qualities.

SETTLED AND UNSETTLED SITUATIONS

Two general types of situations occur, Dewey says in *The Quest for Certainty*. The first

"...take place with only a minimum of regulation, with little foresight, preparation and intent. Others occur because, in part, of the prior occurrence of intelligent action... The first are not known; they are not understood; they are dispensations of fortune or providence. The second have, as they are experienced, meanings that present the funded outcome of operations that substitute definite continuity for experienced discontinuity and for the fragmentary quality due to isolation."¹¹

An example of the first type might be stepping out the front door and discovering the evening air filled with fireflies. The experience is immediate, final, unplanned and unarranged. But suppose there are also mosquitoes which soon drive one indoors. The second kind of experience might involve conscious valuation of the first, assessment of its not fully satisfactory nature and a rehearsal of possible responses to improve it. This could result in screening in the porch, followed by more benign but somewhat managed experiences of summer evenings. A "funded" satisfaction of having improved the porch, making it more usable, is now fused with subsequent immediate enjoyments taking place there.

Both "funded" and "unfunded" or accidental situations can either be integrated and settled, or unsettled and "problematic." In settled, integrated situations spontaneous or habitual responses suffice. These experiences do not require reflection. In contrast, the "unsettled" situation requires an imaginative response. An illness is an "unsatisfactory" situation, but some responses to it are automatic and settled, while others require deliberation and/or creative insight.

The most difficult and puzzling part of Dewey's work on means and ends is this concept of the "problematic situation." The problematic situation is the one which requires reflection for action. But how do we know what it includes? How do we recognize it, and how do we mutually agree on what it is? Is it fixed or in

development? Do we *decide* what situation we are in, *intuit* it as a *given*, or realize it as we go along and then *develop* or *transform* it? How it is ultimately defined? We cannot begin to comprehend the working of means and ends in a particular case until we clarify the origin and the scope of the problem which needs to be addressed.

When situations are “unsettled” or “uncertain,” the “uncertainty” “. . . is not just uncertainty at large; it is a unique doubtfulness which makes that situation to be just and only the situation it is.”¹² In these situations the relation of an organism and its environment is unsatisfactory and the action needed to improve that relation is not either an established habit or obvious and ready to hand. This seems to be a matter of degree.

Metaphorically, Dewey describes a problem in the interaction of organism and environment as an “imbalance,” which we have already seen, is one cognitive model for illness. Wants or needs can be described in terms of “excess” and “lack.”¹³ (Usually, both, as when one has an excess of hunger and a lack of food, or an excess of curiosity and a lack of stimulation). The solution to satisfying these wants however, demands “inquiry” only when the action required needs to be discovered. In such cases, situations are truly “indeterminate” and thus “problematic.” They also can be “problematic” when something is amiss but we are not sure what. When we have to figure out even our goals, situations “. . . are disturbed, troubled, ambiguous, confused, full of conflicting tendencies, obscure, etc.”¹⁴

Dewey would deny that the statue is there in the uncut stone, so to speak. Unsettled situations are not problematic only because we are ignorant of pre-existing solutions, known either by others or by an omniscient God. They are not merely unsettled from a subjective or partial point of view. They are really doubtful.¹⁵

“Inquiry,” for Dewey, is the process of formulating problems out of our vague discontents, and then determining how we can go about working on them.

“Inquiry is the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole.”¹⁶

Inquiry cannot be separated entirely from action because actions are involved in the inquiry. We have to move around and try things out with the materials at hand in order to improve our understanding of the situation. Also, inquiry does not cease when endeavor begins, but continues throughout an endeavor until the satisfactory resolution of the unsettled relation of organism and environment is attained.

The process of inquiry cannot be automated because the actions predicated on it become evident only as it unfolds. Inquiry improves our chances of satisfaction, but given the nature of a problematic situation, it does not aim at proof that an unassailably “correct,” “appropriate” or “optimal” course is “mandatory.” By explaining an inquiry we can often persuade others that our actions were well-founded. However, the results of inquiry do not *compel* assent, and therefore fail

to provide the kind of absolute justification needed by those who would absolve themselves of all personal responsibility.

One result of successful inquiry can be consensus among interested parties about the nature of the problem as seen from a starting point, and about the initial hypothesis as to steps which could yield a satisfactory resolution. However, "consensus" cannot be the *sine qua non* of successful inquiry and action initiation. It is often a byproduct of free, open minded and wholehearted engagement by participants, but its absence does not mean that a satisfactory resolution cannot be obtained. Nor does its presence guarantee one. If "consensus" were the direct goal of and criterion for successful inquiry, there would be many paths to it other than true engagement of the problem at hand. Many kinds of denial, substitute gratification and manipulations of opinion could achieve a consensus of sorts without engaging the problem at all.¹⁷

The impulse to find a justifying formula on which all responsibility can be placed is so strong that it figures in most criticisms of Dewey's inquiry. Such inquiry has its limitations discussed below, and is only more or less effective, but it is still the best approach we have. Some inquiries are sketchy, some thorough, some narrow, some broad, some better and some worse. Still, there is no requirement that they be perfect in order to be essential in reflective action. They improve on reflexive and arbitrary responses in circumstances unmanageable by rule, impulse or routine.

In medical care, little thought is given to how we identify a problem beyond trying to get at a chief complaint. Our default assumption is that we know the problem, more or less automatically. But physicians must admit that responding to needs explicit or implicit in "problematic" or "unsettled situations" would be premature if thoughtful identification of the problem had not taken place. And, in actual clinical practice, patients often complain that they cannot get a hearing for their real concerns. Physicians may fail to attend to what patients tell them because they have decided what will be meaningful in advance. They discount particular and anecdotal points whose relevance is open, but unproved statistically. They frequently presume that unless they have heard of something, then it could not exist. Additionally, there is the suppressed problem, the one the patient hesitates to mention ("I know you're busy Doctor, but could you just check this lump on my neck?" "By the way, does it mean anything that every once in awhile I can't see for a few minutes out of my left eye?" "Well, if you really want to know, I couldn't afford those blood pressure pills.").

Other potentially relevant troubles fail to come to light initially either because the doctor and patient are strangers or because they are such close friends. We may assume that we know what is included in or relevant to a given problem and what needs to be excluded or ignored, but we should never be too sure. There may even be "potential" problems which are not yet present in anyone's awareness, but need to be sought out in order to make the most of our actions now. And it may turn out that what is relevant or irrelevant shifts dramatically during the action, as, for example, when the wife of a man being resuscitated arrives with an advance directive.

MEANS AND ENDS

Although Dewey rejects the notion that there is a rigid dichotomy of, or an unbridgeable polarity to, ends and means, these terms remain useful in describing aspects of problematic situations. Discourse cannot capture experience completely, but it remains our major aid to shared reflection. It involves separating, for cognitive purposes, aspects and parts of that which is not separate as given, and then recombining them imaginatively. Therefore, we usefully separate means and ends discursively although they are not mutually exclusive in actual occurrence. As we have seen, aspects of reflective engagement can appear in the guise of means at one time or from one perspective, and as ends in another. In addition, during reflective engagement nothing is permanently fixed. In action, means are improved, new means are discovered, motives are modified, the understanding of ends is refined, and unexpected consequences are discovered and assessed.

During this process established values are not to be abandoned lightly. Novel experience does not eradicate all history and memory. In fact, as William James pointed out in *Pragmatism*, we have layers of beliefs and values, some of which are more superficial, more easily changed or amended than others which are the core beliefs and values funded by long experience. Part of wisdom is brokering between old convictions and new experience. Properly weighting the value of each is related to the Bayesian reasoning mentioned in the last chapter.

Deliberation is required in unsettled, truly problematic situations. It is, according to Dewey (much as it was for Aristotle), a consideration of the consequences which can be foreseen as a result of various optional actions. One point requiring deliberation is whether or not to accept the dimensions and qualities of the problematic situation as they *seem* to be given initially. Sometimes, indeed, “deliberation” merely means not being too sure of ourselves. Inquiry first determines what particular “take” we will be disposed toward in conceptualizing an initial discontent.

Consider the problem of a person presenting with apparent anguish from a headache. Is the problem best described as a migraine, drug addiction, hypertension, or addiction in the setting of migraine? How sure are we that there is not also a stroke, along with migraine and addiction? How appropriate is searching for obscured and unappreciated aspects of this particular problem? Which potentially hidden factors should be sought out and considered in its setting? The “tertiary quality” of the situation as initially presented is constituted by outcries, grimaces, tears, head holding, perhaps anger and impatience or appeals for pity in addition to background features such as the time of day and how busy it is in the clinic. This “quality” can be accepted at face value or altered by diagnostic investigation, i.e., an inquiry whose extent is a matter for deliberation. Nearly universally, we hope, the blood pressure will be taken. Will the old chart be obtained? Will the nurse who thought she saw the patient last week with a toothache seriously consider her fleeting impression that he then gave a different name? If the patient has an alias, will we still bother to find out that his twin died suddenly of a stroke at age 35? The results of this inquiry will cause the “tertiary quality” of the situation to evolve, and perhaps will even transform it.

As a working impression of the unsettled situation develops, various possible actions take shape in our imaginations. We then engage in what Dewey called a "dramatic rehearsal," depicting to ourselves and sometimes to one another the probable consequences of acting. The best depiction of consequences and outcomes for various acts depends of course on the knowledge, the imagination and the experience of those who deliberate. Experience, foresight and sensitivity afford moral and tactical advantage, and time for reflection can be critical as well, to help us envision a rich population of possible consequences from engagement. Ignorance, limited vision, lack of information, haste and self-deception are often punished. Unhappily, the punishment does not fall fairly on decision-makers perpetrating ill-considered acts, but on all those who suffer from them.

For this reason, Dewey does not accept an individualized, narrow view of expediency as a valid measure for the success of action. There is no special discount of responsibility for "downstream" effects and "externalities." Rather, he proposes a much broader more catholic view of expediency: the widest range of consequences upon all suffering and enjoying persons affected (he does not go so far as to include all sentient beings), is to be the measure of that expediency. Defined in this manner, the expedient result is also the moral result. [It is not true that] "... the instrumental nature of thinking means that it exists for the sake of attaining some private, one sided advantage upon which one has set one's heart."¹⁸ "Certainly nothing can justify or condemn means except ends, results. But we have to include consequences impartially."¹⁹ And "It is willful folly to fasten upon some single end or consequence which is liked, and permit the view of that to blot from perception all other undesired and undesirable consequences."²⁰ The authors of "rapid process improvements" focusing on isolated specifics of clinical care, should please take note of this elementary fact: "outcomes" are not only what you have decided to measure. "Speed of medication delivery to the floor," for example, was the targeted outcome of one such intervention without any study of whether speed was associated with error.

Envisioning consequences rather than examining motives is most important for Dewey's moral theory, but among the consequences of action are effects on the actor which may influence future capacities. Dewey is concerned with the nurture of human capability. As a naturalist, he seeks to work on and with human inclinations, developing and engaging them for beneficial purposes. His view contrasts sharply with Kant, who thought that will could and in fact should control action based on rational considerations alone and that action based on inclination alone could not be morally meritorious. We need to be cultivating inclination according to Dewey, not counting on emotionally unsupported "will." In the medical setting, this means asking what effects interventions have on the character of both caregivers and patients, a subject which has received little notice thus far. To state explicitly what is implicit in Dewey's moral work, virtuous characters and virtuous actions are mutually reinforcing, and can either be seen as means or ends.

Some tasks involve the character of the performer and are colored by it, whereas others can be accomplished by any character who learns a technique. Attending

a terminal patient, for example, is one of the former whereas deciding whether a biopsy slide indicates malignant melanoma is one of the latter. I have been contending throughout this work that clinical judgment often properly involves experience and breadth of spirit, which is why robots will never be more than adjuncts to physicians.

Dewey, in *Democracy and Education* refers to four “traits of individual method” which are essential for teachers.²¹ These attitudes, essential for successful inquiry in truly doubtful circumstances, would now be called “epistemic virtues.” Interestingly, they describe character traits producing a desirable method, and not a method which can be undertaken by anyone, regardless of character. The flexibility, adaptation, responsiveness to context and ability to innovate required for teachers in many unsettled situations is also needed in commonly unsettled medical settings. When we doctors exercise poor judgment, or run from responsibility by pretending that judgment is not our job, we cannot simply be taught techniques which will obviate our incapacity. Real transformation of character – the inculcation of virtues, is needed to perform this trick on us. Here again, the personality of an inquiring caregiver cannot be separated from the results of her or his endeavor. Only in those less common than assumed situations when technique alone counts, does personality fail to leave an imprint on results.

Four virtues requisite for successful inquiry are described by Dewey. I should note that this list has been greatly expanded by later writers on the topic of “epistemic virtues,” and I will not argue for any particular list as being either exhaustive or entirely correct. Dewey’s suggestions are as follows:

1. Directness

This is a character trait enabling caregivers (Dewey’s example, again, is teachers) to immerse themselves in the work. To the greatest extent possible, and obviously this increases after one becomes relatively at ease with one’s general scientific and technical competence, the caregiver needs to focus on the “doing” and not the “How am I doing?” aspect of the work. In other words, self-consciousness and performance anxiety get in between the caregiver and the goal rather than facilitating pursuit of it. In particular, a physician who is responding to the potential chart reviewer or plaintiff’s attorney is not responding directly in that measure to the needs of the patient in this particular unsatisfactory circumstance. Looking good is not equivalent to doing good.

2. Open mindedness

One must not be too proud or sure that one knows what is going on, but must look for clues and accept them from everywhere. It is very possible that a medical student, a nurse, a nurse’s aide, or the patient’s twelve year old child will present information or come up with an idea which is crucial to the case. The attending, and especially the senior attending physician should be the most, and not the least receptive to helpful information and suggestions, whatever their source. I, myself recall taking a somewhat extended history about a critically ill infant who turned

out to have Reye Syndrome, when an office aide brought me back to reality saying, "Doctor, I think the baby is really sick." I took another look, grabbed the baby and headed for the pediatric floor. Open mindedness as Dewey describes it means we can continue to expect the expected, but not stop looking for the unexpected. Certainly, we often form hypotheses about what is occurring on the sketchiest of preliminary data and impressions, but such hypotheses should not be prematurely converted into conclusions which are proof against expanded or contrary information.

3. Single-mindedness

(I would call this whole-heartedness.) At bottom this means whole-hearted love of the work. External pressure cannot foster full engagement. Whereas we cannot purge ourselves of outside concerns, such as earning a living, getting home to our families, gaining a good reputation and taking care of our biological needs, we will not be good teachers (or nurses or doctors) if we do not feel called to do our special professional work. So some of the most important questions for a potential medical student or for a graduate nurse who is choosing a field are: "Do you feel a knack for doing this?" "Will you look forward to going to work?" And, "Is this work satisfying to you apart from its external rewards?" Because if the answer to any of these questions is no, then the effective application of specific skills will be impaired. When the answers are yes, then we can attend to our professional duties more single-mindedly. "External discipline" as Dewey calls it, cannot substitute for inner motivation.

4. Responsibility

This refers to rigorous projection of consequences and acceptance of one's own role in producing them. Patients do not want us to throw up our hands and abjure responsibility by claiming that we are only cogs in a large industrial machine. We are, whether we accept it or not, either responsible as parts acquiescing in the workings of a system or as agents asserting our independence from that system. If a surgeon refuses to treat someone whose insurance will not pay for gastric stapling, she is not the puppet of policy, but an active enactor of it, whatever its merits and demerits. Dewey speaks of responsibility as "seeing things through."

But is it true that "inner motivation" is unaffected by external conditions? Not at all. Nothing Dewey encourages prevents us from trying to arrange external conditions in such a way that our inner fires remain lit. Overscheduling, poor equipment, indifferent colleagues, impossible demands for paper work and lack of appreciation can and do wear caregivers down. And opportunities for education, consultation, sharing of experience, clinical investigation and interesting, engaging patients can nourish them. But it should be apparent that these things nurture the spirit of inquiry only when it is already there in force, whereas distracting goals and fearsome strictures tend to stifle it.

Not every desirable consideration can be fully explored in advance of engagement in action, lest paralysis ensue. In no way does Dewey, despite all the above desiderata, advocate waiting to act until the final answers about the problem, the

alternatives and the consequences are in. In fact, this is impossible because we learn through reflection and experimentation. Besides, as already noted, there are penalties for indecision, of which he is well aware. "... while saints are engaged in introspection, burly sinners run the world."²²

"Answers," in problematic situations are partly forged in the process of action. We cannot, in genuinely unsettled situations, have finished preconceptions of our aims because, in fact, we are just about to learn something. We honor our values most by leaving them permeable to modification in the course of experiences occurring as we attempt to actualize them. This capacity to learn while doing exemplifies the virtue of open-mindedness as Dewey describes it.

Dewey seems confident that the ongoing modification of values and strategies during action will be enhancement and not vitiation, but he does not fully explain how. Be that as it may, congealed values truncate experience in addition to foreclosing possibilities for their own growth. Our psychic investment in experience is lessened when we make our values sacrosanct and keep them closed. To the degree that we protect our values from the influence of experience, we diminish its power to *move* us.

J. E. Tiles draws attention to the dynamic, although not infinitely malleable quality of ends in his book *Dewey*. In contrast to the final cause of Aristotle, which has to do with completion of an entelechy involving the expression of a pre-determined essence, Dewey denies that the end, the fulfillment, can be so largely read out of the beginning. This is because he has a more plastic idea of the nature of organisms, particularly humans, than did Aristotle. As Tiles notes, the thoroughly reciprocal relation of ends and means for Dewey requires some interdeterminacy of ends. "The reciprocity arises, according to Dewey, because our ends are not always determinate, and it is only in working out the means to some vaguely specified end that we come to discover at what, exactly, our activity is aimed."²³

The projection of an end which can be a fulfillment as opposed to a mere conclusion is also a means, because it informs and motivates those actions directed at it. Dewey calls this end-as-means an "end in view." "In a strict sense an end-in-view is a *means* in present action; . . ."²⁴ "... the ends, objectives, of conduct are those foreseen consequences which influence present deliberation and which finally bring it to rest by furnishing an adequate stimulus to overt action. Consequently ends arise and function within action. They are not, as current theories too often imply, things lying beyond activity at which the latter is directed."²⁵

A fairly straightforward example of how means and ends might reciprocate, both acting in motivation, is the case of thirst. Here the intravascular volume contracts or the osmolarity increases, renin, anti-diuretic hormone and other hormones pour out, and water seeking behavior plus the qualitative subjective state of "thirst" is generated. Visions of water and its possible location are produced in the imagination. These aims-in-view or "final causes" exert what might be analogous to a "pull" as opposed to the "push" of hypovolemia and a dry mouth. They act as cues which further reinforce both the subjective state of thirst in its dominance over consciousness, and its production of water seeking behavior. The "push" of the

drive, habit or trait is reinforced by the "pull" of the cue or aim-in-view which could either be present in the environment or produced in fantasy. The final ends are twofold: one is the correction of a physiological imbalance manifested by thirst and perhaps other sensations like a dry mouth, fatigue, dizziness and overheating; the other is the pleasurable sensations accompanying and following quenching of thirst. But thirst as a means generates ends-in-view, i.e., the visions of water and anticipated drinking which reinforce water-seeking behavior.

We have now seen partially how "ends," at least envisioned fulfillments, can operate as means. But there is more to it. Dewey reevaluates, as noted in the last chapter, certain things which have usually been seen as ends in themselves, placing them in context. It turns out that the whole notion of anything "in itself" is suspect when the very nature of any entity has to do with its relations. We have seen that art, knowledge and character are both ends and means. "Character is the interpenetration of habits."²⁶ While the development of character is on the one hand still a worthy end, character is in part the means of its own development, as it is a means for attaining many other goals.

Also both an end and a means, knowledge is, for the pragmatist, opinion which has been *tried out* and found effective in handling situations. There is debate, of course, about what constitutes proper "handling" of a situation and whether there is something sufficiently objective about a situation that "proper handling" of it can be justified to everyone's satisfaction. In the absence of any common basis for understanding the nature of situations, any assertions about the "truth" of knowledge which results in proper handling of them look purely idiosyncratic. Nevertheless, on this view, while knowledge remains an end, and while the attainment and use of it have their own intrinsic delights, the criterion by which it is ultimately validated is its usefulness as a *tool*, i.e., an instrument or means.

With this view of knowledge, things are "known" in the role of means. Scientific knowledge, which quantifies objects, asserts their characters in definable categories and reduces them to formulae for manipulation, brackets objects for certain uses. "Concepts" of objects themselves are means for handling the objects. Scientific concepts have to do with commonalities, e.g., "universal aspects" of objects and relations. "In truth, the universal and stable are important because they are instrumentalities, the efficacious conditions of the unique, unstable and passing."²⁷ The natural histories of entities are depicted in terms of these operational concepts and universals, and "physical science...reveals the state or order upon which the occurrence of immediate and final qualities depend."²⁸

The term "knowledge" in Dewey's work does not apply to immediate experience of the "terminal qualities" or "final qualities" of things. These qualities are evanescent and fragile, aesthetic, moral or spiritual qualities which elude comprehension within the categories of instrumental knowledge. We had to drop the immediacy, the intangible aesthetic and other final qualities of things so that science could render our understanding of them useful in material manipulation. In their immediacy we "can do nothing" with the terminal qualities "save have, suffer and enjoy them."²⁹

What this means, I think, is that for Dewey “to know” is *savoir*, to know in an instrumental sense and not *connaître*, to be intimate in a phenomenal sense. Sensuous immersion in and experience of the immediate qualities of things is something most of us would refer to as a kind of knowledge, but this is not the knowledge of science. Science knows things in order to *deal with them*, whereas qualitative understanding is final. This does not mean that qualitative experience is atomic, I should note. The quality of my experience of this “home” is related to qualities and values of many other past and present things. Nevertheless, it has nothing to do *qua* quality and value, with manipulation. In contrast, it has a great deal to do with the establishment of values and ends. Although experience provides the raw material for both “knowledge” and qualitative familiarity, only that replicable part of experience which can be placed under concepts and stored for future instrumental use keeps the name of knowledge for the pragmatist. The aesthetic and emotive dimensions of experience cannot be retained in the same sense and drawn upon for instrumental use. Accordingly, as already noted, objects as “known” for science are primarily means, whereas as they are encountered directly and enjoyed or suffered, they are ends and fulfillments. Emotions are not looked upon, it appears, as a bridge to “knowledge,” but instead have to do with “familiarity” (phenomenal knowledge, although Dewey did not use that particular term). This has to do with values. We “understand” things apart from our scientific or strictly instrumental “knowledge” of them by becoming familiar with them qualitatively. The distinction between knowledge and familiarity in this sense undergirds a meaningful polarity, although not an absolute dichotomy, of means and ends in Dewey’s work.

The instrumental and “consummatory” qualities of ends cannot be kept artificially apart, as we have seen in the case of art. Dewey thought that a union of the instrumental and “consummatory” was the ideal to be sought in both crafts and arts. When something is aimed at as if it could be a purely disinterested aesthetic object, apart from a network of value, it becomes an escape, a titillation, a thrill and in fact the very exemplification of an alienated end.³⁰ In Dewey’s view the best art is relevant to social life and serves beneficial purposes outside of itself, i.e., it is also a *means*.

“In an imperfect society—and no society will ever be perfect—fine art will be to some extent an escape from, or an adventitious decoration of, the main activities of living. . . .”³¹ [But] “Works of art that are not remote from the common life, that are widely enjoyed in a community, are signs of a unified collective life. . . . In the degree in which art exercises its office, it is also a remaking of the experience of the community in the direction of greater order and unity.”³²

In my own (and not necessarily Dewey’s) words, art as *pure* aesthetic experience serves, without any moral or spiritual bearing, in a compensatory role for alienated life in a defective society. As society improves, art becomes less a *medicine*, a balm and an escape, and the places of art become less like *asylums* where we go to recover from a Philistine world. Then art is better integrated with and a part of the whole social life.

Although many in the arts have no doubt been offended that Dewey did not regard “art for art’s sake” as the best art, the “art world” should take note of its present role of sycophancy to the rich. Art which indulges a leisured “in” crowd and is exclusive, but is not seriously threatening to the politics of the patron, is exactly that art which has permitted itself to become neutered and sequestered, declawed and toothless.

I think that Dewey was on to something here even though the opposite danger, that art becomes a lackey to causes and not patrons, thus losing its integrity by becoming excessively instrumental, is always present. Nevertheless, if we see art in its role of means as transformative, then it cannot be tamed and put in a subservient role to any power. It will bite back, just because as means it is transformative of ends. The proper balance for art as both aesthetic end and transformative means is essential to the integrity of art as an endeavor.

In the making of a work of art there are instrumental means, such as the grant of the patron, and there are constitutive means such as the paints, the canvas (the media) and the plans of the artist. Dewey asserts that constitutive means which become incorporated in the final work partake of that finality and are the model for the type of means which he regards as non-alienated and participatory in ends. “. . . not all means are media. . . . There are two kinds of means. One kind is external to that which is accomplished; the other kind is taken up into the consequences produced and remains immanent in them. There are ends which are merely welcome cessations and there are ends that are fulfillments of what went before.”³³ The medium is taken up in the end, which is an expression of the artist carried in the medium.

Ideally, other occupations should work this way to the maximum extent possible. Illnesses are challenges we would rather be rid of, but it makes a difference in character and life experience whether we face them, try to learn from them and live in spite of them, or merely run away. When the entire experience of medical care is treated as a worthless annoyance or a meaningless ordeal, either by the patient or the caregiver, no values are realized. Even suffering which can never be redeemed or justified is best treated as part of life, connected when possible with the meaning of the whole, rather than disconnected and suppressed as an episode. There are values to be realized even in the Valley of the Shadow of Death.

If aesthetic experience on the whole is currently being treated as if it were a disconnected, purified end, illness experience and medical care is being treated as though it were a purely noxious means disconnected from all possible fulfillment. As such, it is disincorporated, walled off and *subtracted* from “really living.” This attitude means that little concern goes on for any “real living” that might occur during that medical treatment or experience of illness, namely the occurrence and nourishment of courage, honor, humor, insight into the experience of others and deepening of moral, spiritual or aesthetic values.

The term “ideals” usually means extremely pure ends. Dewey still uses this term in his *Reconstruction in Philosophy*, but he attacks and modifies the conventional connotations of fixity, eternity and other worldliness in ideals. Already in that work,

he moves away from ideals which are enshrined and displayed as unattainable perfections. Such ideals are counterproductive in that they inspire disaffection and resigned cynicism. He sees less absolute ideals instead as functionally related to particular concrete situations. [The ideal] "... ceases to be something ready-made and final; the ideal and rational also ceased [sic] to be a separate ready-made world incapable of being used as a lever to transform the actual empirical world, a mere asylum from empirical deficiencies. They represent intelligently thought-out possibilities of the existent world which may be used as methods for making over and improving it."³⁴

Later in *Experience and Nature*, *Human Nature and Conduct*, and *Art as Experience* Dewey mostly discards the term "ideal" partly because process, with all its labors is part of any natural product. Instead of judging isolated "ends" by measuring how well they instantiate transcendent concepts of perfection, Dewey introduces "consummation" as a technical term for that feeling of fitness or satisfaction which accompanies the resolution of a problematic situation. Consummation marks satisfactory resolution but comes out of the particular, not from above or beyond it. This resolution completes engagement affirmatively. It is ideal only in that it is a successful natural completion marking an advance or improvement over the initial relation of elements in a situation.

Initially, a resolution with its attendant sense of consummation may be imagined, but finally a differentiated and developed version of this end becomes concrete as a satisfying actuality. Robert J. Roth comments that "Each consummatory experience quickens and heightens our power of discrimination and creates standards of apprehension so that we are better able to grasp the meaning of future situations."³⁵ There is an element of surprise, accident and delight in consummatory experience. It does not exactly correspond to what was anticipated, and represents the latest twist in development of an aim-in-view. Mistakes are sometimes turned to account. The experience itself is given rein to permeate and color its own resolution, instead of merely concluding in a pre-ordained way.

Dewey has very little to say about endings which are not satisfactory resolutions and which yield no sense of "consummation," i.e., compromises and failures. It should not go unnoticed, in my opinion, that there are many situations in which there is no way to win. In them, we must take what little satisfaction we can from minimizing the damages. A truly naturalistic philosophy should not shrink from descending into the greater and smaller hells of the world, where children survive on prostitution, starving families commit infanticide and tortured depressives end their lives. Any adequate theoretical program of problem solving must be capable of being carried into all the precincts, however bleak. Perhaps if Dewey had written his major work after the abysmal horrors of the Second World War he would not have used a term like "consummation" to describe the heavy hearts with which we must emerge from some endeavors, even when we have done the best we could.

The cash value of the concept, however, is not in the name, but in the working of harm reduction as applied wherever action is called for, even when the best outcome is not good. In these unfortunate situations, a feeling that some result of

worth has been produced, and elements we were given to work with have been turned to some advantage over doing nothing will mark a resolution, call it what you will. Dewey's description of "consummation" answers to that feeling although the name does not.

We have seen that rules and principles cannot just be applied to circumstances without rejuvenation and amendment in the process. Hence the question arises of how one can be steadfast in the pursuit of flexible ends which are moving targets, using plastic rules which evolve while going along. There must be some limit to the elasticity of ends and principles of action or else one might abandon any project upon encountering the first difficulty, naming new goals and revising all previously tested rules on the basis of convenience. Surely on Dewey's account we are not undertaking any serious work simply to flit about from flower to flower: there must be some curb on distractibility and some goad to perseverance. Partly, experience is the answer; perseverance has paid off in the past.

We should not abandon ideals and methods funded by long success. Most ongoing experience has relatively slight weight compared to that of the entire past. Projects undertaken and aims projected for well established reasons will not be lightly abandoned as long as the significance of past experience, the preponderant stability of our long-term needs and the inexorability of a future populated with largely predictable consequences is kept constantly in mind. The past remembered and respected acts as a ballast which stabilizes methods and anchors purpose.

Nowhere does Dewey counsel us to become slackers. But his theory of means and ends implies that moral psychology needs to become more important than unsupported "will" in deciding how and when to apply rules. This requires attention to human nature. Dewey is confident that with improved understanding of what is plastic in our nature and circumstances and what is not alterable, better decisions about when and how to use rules will be forthcoming. Determination, dedication, caution, humility, and compassion among other virtues, cultivated habit and skill, plentiful resources, encouragement by mutual support and discipline with the prospect of rewards or punishment, add up to "willpower." With Dewey, this "willpower" which underlies commitment has natural biological and social sources, not transcendental rational or supernatural ones. The psychobiology of individuals and communities as it underlies moral behavior is the place to look for methods to strengthen commitment.

There is a serious issue about who should have discretion to make *any* kind of medical decision and how extensive the exercise of that discretion should be. Abuses of discretion are real and egregious. Treatments are given solely for pecuniary advantage. Unqualified decisions are made without the benefit of consultation. Bossy physicians misinform patients and ignore their preferences. Difficult or impoverished patients are abandoned. Unwarranted promises are made. Caregivers participate in insurance fraud, and "skimming" of desirable patients with profitable conditions for private clinics while turfing difficult ones over to public institutions. Sometimes they over-prescribe drugs of abuse, indulge other unreasonable demands, etc. But the usual response when problems come to light is to write

more rules. These rules cut two ways, reducing both the harm and benefit of discretion. The many possible ways we could improve discretion instead of eliminating it need more emphasis. We cannot be humane unless we are allowed to be human.

If we consider a sequence of actions necessary to reach a goal, such as the sequence needed to minimize violent behavior in a community, we may well find that the method of indirection is the only feasible one. The reason is that the long-range goal, the vision of a peaceable community, is not immediately operative in altering the events, places and persons which predispose to violence. Perhaps people who are idle need to be put to work, babies need to have more nurturing contact with their mothers, anesthesia is needed for circumcision, noise levels need to be reduced, guns taken out of harm's way, colors muted in some public places, the use of alcohol on election days curtailed, etc. Perhaps preliminary, seemingly very adventitious ends for the relevant players in possible future violent scenes need to be made the operative ends very early in the process. An example is establishing mentoring relationships for young males on the loose.

Dewey calls this a "flank movement," whereby impulses not directed at the long-term goal are drafted into service of intermediate aims. "To *reach* an end we must take our mind off from it and attend to the act which is the next to be performed. We must make that the end. . .the main thing is to find some act which is different from the usual one. The discovery and performance of this unaccustomed act is the 'end' [an intermediate end-in-view] to which we must devote all attention. Otherwise we shall simply do the old thing over and over again, no matter what is our conscious command. The only way of accomplishing this discovery is through a flank movement."³⁶

This is to say that distant goals toward which we have no immediate compelling motivation plus acts of raw will do not equal progress. We have to find sequences of acts induced by cues and directed at intermediate goals which recruit effective impulses, often unrelated to the distant goals, to get ourselves off dead center. Long-term "will" must harness more immediate desire and impulse.

So it is that physicians, nurses and health educators trying to work with tobacco addiction in young people have learned that distant dangers like threats of cancer and heart disease after decades have no compelling immediate effect on behavior in the young. It is far more useful to find out what immediate positive values are being served by smoking (sometimes it is even bravado in the face of distant dangers) and look for substitutes to fulfill the same needs once they are understood and respected. Is nicotine working as an antidepressant, for example. Moreover, important present values for young patients may be getting undermined by tobacco use in ways that some have not fully appreciated, and these can be brought to the fore. Adverse and ongoing cosmetic, physiologic, and social harms and increases in price have motivated tobacco cessation far more effectively than health concerns for a distant and, for many adolescents, practically unreal future. Finally, the very relationship with the medical practitioner, cultivated apart from the smoking issue, can be a positively efficacious therapeutic force.

THE STRENGTHS OF DEWEY'S THEORY, IN SUMMARY

a. It is Possible to Reason About Value

While denying the existence of external sources and criteria for the grounding of values involved in choosing our ends, Dewey nevertheless shows that such values are not arbitrary. They arise in the interaction of our embodied, biological natures with social and material environments. It is true that these natures and environments differ in great degree from one instance to the next, but Dewey shows that such differences have their limits. What individuals and groups have in common as revealed by reflection on and the investigation of human nature is vastly more considerable than individual biological differences, or cultural and environmental ones. Because of our shared psychobiological and social proclivities, we can share ideas about the range of reasonable response in problematic situations. With mindfulness toward these commonalities, there *can* be meaningful dialogue about value choices, and it is not true that “anything goes.” At the same time, real individual, cultural, situational and experiential differences guarantee that within this range of reasonable choices, legitimate disagreements will remain from one circumstance to another. Dialogue about value is thus very possible, while enforced, absolute agreement has no valid basis.

b. Means and Ends are Mingled

Dewey shows that means and ends are not things in themselves, but aspects of things in relation, and he shows this, as we have seen, in rich detail. It is enlightening to recognize that actions and objects have value in both their roles as means and as ends, processes and products mediating and giving immediate satisfaction. We can benefit by caring about means not only because of the ends toward which they are mainly directed, but also because we live there with them as ends themselves, and as means to many things other than the initially intended end. When means are judged in terms of *all* their consequences, including the accidental and unintended ones, the concept of “efficiency,” whereby means are judged simply in terms of their contribution toward an intended end becomes highly suspect. In terms of that showcased end, the unrelated consequences are “side effects,” “externalities,” and sometimes “bonuses.”

We are belatedly appreciating, long after Dewey, more and more of the waste which is laid by detrimental externalities. But we still, by and large, fail to recognize the positive immediate values and positive unintended consequences of processes which are seen solely as means to a directed goal. For example, in medicine, we might someday invent a hand-held body scanner which obviates the physical examination as a means for diagnosis. But before giving up the physical exam, we ought to consider therapeutic and relationship-building aspects of that process. Sometimes slower and more personal work is better overall. Certain processes take time; time for the assimilation and digestion of new experience and information; time for new values and relationships to come to fruition. There is much to be slept on.

c. Value is Importantly Qualitative

Dewey's work points to the conclusion that value is in large part qualitative. It will never be adequately measured in numbers. The number of patients we saw in a given day is little related to the amount of help we gave. The length of life is very poorly related to the value of life, unless Jesus, Mozart, Joan of Arc and Shelley were failures. Poverty is one thing, insight another. The name "suffering" covers a multitude of incommensurables. Importantly, in this respect, Dewey shows that the claims for cost-effectiveness analysis are vastly overstated. "Costs" and "benefits" are qualitative, and much more subtle and complex than they are treated by the usual economic assessment.

d. We can Work Rationally Yet Uncertainly

The acceptance of uncertainty is another Dewey contribution. Dewey has highlighted the difference between situations which are routine, generic and adequately handled by habit or protocol, and those which have genuinely uncertain elements. In such genuinely problematic situations the initial dissatisfaction leading to goal directed action is often itself ill-defined, inchoate and obscure. We cannot presume to know what our full situation is prior to reflective inquiry. Correlatively, we cannot be too sure of exactly what we want, or should want, until we engage the materials which present themselves, discovering their true potentials and limitations.

This is especially important in the work of the professions, as Donald Schön has demonstrated in his large body of work on reflective practice.³⁷ Mass production, standardization and commodification foreclose the possibility of individualized, creative engagement attuned to the peculiarities of circumstance. Admitting uncertainty opens a window for new learning about our situations, ourselves, our needs and our possibilities. Determinacy, such as it is, is created out of interdeterminacy during successful inquiry and action. Final values typically differ from initial ones.

e. Qualities Help Define Situations

Although beset with many difficulties, Dewey's proposal that a "situation" is integrated by a "tertiary quality" also offers significant promise. The tertiary quality characterizes the uniting of subject and object, agent and environment. Qualities of situations can only be guessed at by those outside them, but are lived uniquely by those participating. Their names, as we have seen, are only gross generalizations. But it makes all the difference, in characterizing a scene, to include all aspects contributing to its quality, rather than to pretend that the only relevant features in that scene are those which centrally identify it as a case of "pulmonary edema" or "jealousy."

f. The Ultimate End may not be the Effective Motivator

Finally, Dewey had valuable insights about tactics. Realizing that ultimate goals are not always immediately motivating, and that poor pedestrian slogging along

deserves attention, Dewey was interested in how we can bring about genuine change at street level. He fully appreciated actual as opposed to idealized starting and end points for goal-directed activity. His concept of an operative "end-in-view," grounded in the motivating needs of the moment, focuses our attention on the truly productive point at which genuine change is possible. One of the first lessons medical students need to learn, and then relearn continually throughout their careers, is to meet actual patients on their own ground and to start the work there, which is the only place it *can* start.

PROBLEMS OF DEWEY'S MEANS/ENDS THEORY

a. Not all Problems Generate Sufficient Unease

There is need for a more detailed discussion of exactly when and why habit and instinct are appropriate for dealing with felt needs, and when reflective inquiry is demanded. We often proceed overconfidently, assuming that everything is just as it appears at first take, and that our automatic responses are perfectly adequate, when in fact we ought not to be so sure. Some situations are unsettled or unsatisfactory in spite of the fact that major players in them may be unaware. What precautions do we need to take to find out if there are real problems which are not felt problems?

Dewey does not adequately consider how we should judge the factors which limit or enlarge our scope of concern. I think a jogger is more likely to assist a fallen pedestrian than a commuter is. People are more considerate of one another in face-to-face encounters than over telephones. Physicians who expect to encounter and depend on one another recurrently treat each other with more respect than those in large organizations who rarely interact. Cruelty to animals from which you benefit is easier to ignore when someone else carries it out. Thus the situation-identifying emotions on which our responses often depend may not adequately signal true import. Work is needed on the cultivation of adequate and practicably fair situation-defining emotions. I discuss this further in Chapter Six.

b. The Degree of Urgency Rightly Affects the Type of Inquiry

The importance of the pressure of time needs to be fleshed out. Just as problems can be ignored through haste, opportunities can be lost in dithering. The theory fails to discuss adequately how urgency necessarily limits considerations. Also, it fails to discuss factors which might affect our attention to central concerns as opposed to peripheral ones. When performing coronary angiography we are not required to consider opportunity costs of failing to promote dietary alteration and exercise. But there are forums in which such considerations are appropriate. Similarly, an artist designing the lobby of a courthouse is rightly exempted in the process of the endeavor, from her failure to demonstrate outside for better housing. Yet, she should not be immune to consideration of the source of her materials, their cost to the county, to labor and to the environment.

c. The Quality of our Situations is Altered by our Structured Roles

Part of what defines a situation for us is what we claim as our role in it. If three people discover an unconscious victim on the street and one says “I know CPR” that person has represented himself as qualified to play a certain role, making new factors relevant in the situation for him. Ambulance sirens had a different import for me on nights off call, when not covering the emergency department of a small town, than they did on my work nights. Structural factors as well as qualitative ones affect situations.

d. More Needs to be Understood About Sharing Situations

Dewey does not give a full account of when, how and to what extent situations can be shared. The quality of a deathbed scene is one thing for the person dying and another for a medical student present for the first time with a dying person. In order to discuss what is relevant to a situation and what actions are appropriate in it we must be able to know if and how much the quality for us is shared. And, as Hume pointed out, we must cultivate an ability (sympathy) to sense the quality of concurrent situations for others.

There are many *scenes* in the delivery of medical care, for example the scene of a delivery room, and all present share the *scene*. To what extent do they share the *situation*? Dewey certainly cannot mean for individuals sharing scenes to respond only to private qualities, going off on their own without reaching out to understand how other participants experience a “tertiary” quality concurrently. Communication with others is used to bring participants in a scene into sufficiently harmonious understanding of their situations.³⁸ It is one thing to act based on the given quality of a situation for an individual: it is another to justify that action to other participants. We need a more fleshed out account than Dewey gives of exactly how situations are shared, are not shared, come to be better shared and when this matters.

e. What a Problem is or should be is Arguable

Dewey did not acknowledge up front that what is “problematic” or “unsettled” is often a matter for dispute. The claim that, “It is... a mistake to suppose that a situation is doubtful only in a subjective sense.”³⁹ makes the unsatisfactory situation sound as though it exists in the same sense as a floor or a broken hammer. This is manifestly not the case. There is no objective proof such as walking on the situation or trying to drive a nail with it to settle arguments about its nature. The nature of a problematic situation, in contrast to that of an objective fact, depends on the values held by the individuals in it.

As I write, there is a “problematic” “unsettled” situation about getting enough electric power in the state of California. But some people think that most of the problem is not enough power, some think that most of it is unnecessary use of power, and some think it is collusion and market manipulation by suppliers. These are three ways that this problematic situation can be construed, contrastingly defined by diverging values. Similarly, there is a problem with the fit between hyperactive

children and their environments. Depending on the values held by families affected, the problem could be with the children or with the available environments. Likewise, some people have a problem with fuzzy images on their televisions, others have a problem with television as a whole. And a rattle in the dashboard is a problem for me but not for some of my passengers. Whose problem and what problem it is depends here on values and sensitivities.

“Problems” do not exist even initially apart from the incoming values. I am not saying that these values are never consistent from person to person and culture to culture. Aches and pains in old age are a problem for anyone, anywhere who is lucky enough to live that long. But to call a problem which exists in the interaction of an organism and an environment “objective” is misleading if taken to mean inarguable and independent of values. Values and sensitivity figure prominently in how the organism “takes” what is “given” as a problem.

f. The Boundaries of an “Unsettled” Situation are not Self-evident

All of these problems with Dewey’s work on means and ends relate to the one big difficulty, deciding what is involved or should be involved in an unsettled situation. When Dewey says a situation is “perplexing” and that this quality is definitive of that situation, much remains unsaid. I am perplexed about the rattle in my dash but my passengers are not. Is this my situation? Is it “objective” for me (certainly a new take on “objective”) because it involves objects, but not objective in the sense that it is present for all observers? What if I am, while pondering this rattle, negotiating a four-way stop of two lanes of traffic in every direction? Am I in one situation or two? Are we not, indeed, in multiple “situations” most of the time?

Dewey must admit that all these separately characterizable situations affect the qualitative experience of the subject involved, but he never gave any guidance about whether and to what extent each should or could be compartmentalized and dealt with on its own. It would be possible to construe all the “tertiary” qualities like the flavors in a soup, which meld into one, or it would be possible to think of them like pieces of fruit on a plate, which we sample one after another. This makes a difference for means/ends reasoning. Being “single minded” depends on being able to identify and bound the situation needing resolution. The lack of criteria for deciding what is relevant to what, and what should be considered when undertaking action, is the glaring deficiency of Dewey’s work.

Dewey seems to have thought that his conception of means and ends reasoning would settle a lot of arguments. In my view this is not the case. Instead, the real success of his discussion is to show what we need to argue about and why our differences matter. Our means/ends deliberations will be more focused and profitable when first they are recognized as necessary, not avoidable, and second, when they attend to the aspects of means/ends endeavor which he so carefully identified. Put another way, we cannot avoid informal reasoning so we had better appreciate and nurture it. Some suggestions for how to do that will come at the end of Chapter V and in Chapter VI.

CONCLUSION

There are substantial elements of uncertainty in medical caregiving. When these are present, Dewey's insights about "informal" means/ends reasoning can help us negotiate among mutually disparate and even contradicting values which are permeable to change and dynamically evolving. Billiard-ball models of efficient causation fail to do justice to the varieties and levels of causal influences which might potentially matter for a caregiving endeavor. Patients and their caregivers, being organisms situated in shifting environments, are done more justice by seeing their interactions using causal models like Causation is Cultivation, Causation is Nurturance, or Causation is Progeneration.⁴⁰

If an illness and its treatment is seen as a metaphorical journey, it is a meandering one with preliminary, modifiable, and even unanticipated goals. Indeed, the journey story of an illness contains many characters in development, with meaning and significance gathered together throughout as the narrative progresses, not located only at the end. The story creates value and does not merely instantiate pre-existing value, as Dewey pointed out.

Regarding disease models, we can readily see how mechanical breakdown, abnormality, disintegration, disorder, imbalance, loss of vital fluid or being under attack all could be characterizations of "unsettled" or "unsatisfactory" situations as Dewey described them. But those medical problems which lend themselves best to description as mechanical breakdown, and some of those described best as "being under attack," are the most straightforward and the least problematic: For example, congestive heart failure caused by a leaking aortic valve, a first streptococcal pharyngitis or a broken arm. Unless matters of valuation and motivation become conflicted, these conditions require mainly technical help. The elements needing inquiry are minimal.

In contrast, conditions which are less well defined, where patient motivations are critical, or where multiple alternative therapies could be suggested, require more in the way of reflection and judgment along the lines Dewey suggests. Here, as in the case of chronic obstructive pulmonary disease, manic depressive illness or diabetes, creative inquiry, relationship building and mutual deliberation between doctor and patient are essential. These illnesses and problems are often best described as imbalances, losses of order or losses of wholeness.

We should note in addition that the less typical or central a disease is as an example of the category of disease, the more likely that approaches to it will be controversial, non-apparent initially, and tentative. Deliberation over such cases is often full-blown and prolonged. Similarly, much weighing and discussing of strategies is needed when multiple illnesses are present, when cure is out of the question, or when the conditions fail to fit neatly into well-defined diagnostic slots. Caregivers and their patients in all these muddy circumstances would be well served if respect for Deweyan inquiry and training in the virtues which support it were prominent in the medical profession.

We now need to take a closer look at formal reasoning, considering how and when it falls short, despite being trumpeted as the solution to every problem of health care. This look occupies most of Chapter Five.

NOTES

- ¹ John Dewey, *Logic: The Theory of Inquiry*. Op. cit. p. 72.
- ² John Dewey, *Experience and Education*. Op. cit. pp. 32–33
- ³ John Dewey, *Experience and Nature* in *The Later Works*, Volume 1:1925. Ed. by Jo Ann Boydston, p. 6
- ⁴ John Dewey, *ibid.* pp. 140–141. Also, see John Dewey. *Logic: The Theory of Inquiry*, Chapters 2 and 3. “The Existential Matrix of Inquiry,” pp. 30–65.
- ⁵ John Dewey, *Experience and Education*, Op. cit. p. 25
- ⁶ John Dewey, *Logic: The Theory of Inquiry*, Op. cit. p. 73.
- ⁷ *ibid.*, p. 74
- ⁸ *ibid.*, p. 75.
- ⁹ John Dewey, *Art as Experience*, Op. cit. pp. 72–73
- ¹⁰ John Dewey, *ibid.* p. 44. We are left to wonder how the qualities of nested experiences such as the quality of that rupture of friendship which occurred during *that* meal during *that* storm on *that* vacation are marked off or related. It appears that there must be some selection among the various genera of experience going on, at least whenever we try to evoke or refer to tertiary qualities in retrospect. A similar problem about the scope of the “situation” one is experiencing at a given time will be pointed out later in the chapter.
- ¹¹ John Dewey, *The Quest for Certainty*. p. 194.
- ¹² John Dewey, *Logic: The Theory of Inquiry*. Op. cit. p. 109.
- ¹³ *ibid.*, p. 3..
- ¹⁴ John Dewey, p. 109.
- ¹⁵ *ibid.*, p. 110.
- ¹⁶ *ibid.*, p. 108.
- ¹⁷ For a detailed examination of consensus, see Moreno, Jonathan. *Deciding Together: Bioethics and Moral Consensus*. New York: Oxford University Press, 1999.
- ¹⁸ John Dewey, *Reconstruction in Philosophy*, p. 146.
- ¹⁹ John Dewey, *Human Nature and Conduct*, p. 212.
- ²⁰ *ibid.*, p. 212.
- ²¹ John Dewey, *Democracy and Education*, pp. 173–179.
- ²² John Dewey, *Reconstruction in Philosophy*. p. 196.
- ²³ J. E. Tiles. *Dewey*, p. 156
- ²⁴ John Dewey, *Human Nature and Conduct*, p. 210.
- ²⁵ *ibid.*, p. 207
- ²⁶ John Dewey, *ibid.* p. 37.
- ²⁷ John Dewey, *Experience and Nature*. p. 116.
- ²⁸ *ibid.*, p. 136.
- ²⁹ *ibid.*, p. 116.
- ³⁰ J. E. Tiles, *Dewey*, p. 190.
- ³¹ John Dewey, *Art as Experience*, p. 80.
- ³² *ibid.*, p. 81.
- ³³ John Dewey, *ibid.* p. 197.
- ³⁴ John Dewey, *Reconstruction in Philosophy*, p. 122
- ³⁵ Robert J. Roth. *John Dewey and Self Realization*, p. 44.
- ³⁶ John Dewey, *Human Nature and Conduct*, p. 36
- ³⁷ See Donald Schön. *The Reflective Practitioner. How Professionals Think in Action*.

³⁸ His account is given partly in *Experience and Nature*, op cit. The issue of how meaning develops in relation to sharing situations is discussed by Scott Pratt in "'A Sailor in a Storm:' Dewey on the Meaning of Language." In *Transactions of the Charles S. Peirce Society*, Fall, 1997, Vol. XXXIII, No. 4, pp. 840-862.

³⁹ John Dewey, *Logic, The Theory of Inquiry*, op. cit. p. 110.

⁴⁰ And what, most importantly is being nurtured? The therapeutic relationship.

PREFERENCE, UTILITY AND VALUE IN MEANS
AND ENDS REASONING

“That all interests stand in the same footing with respect to their function as valutors is contradicted by observation of even the most ordinary of everyday experience. It may be said that an interest in burglary and its fruits confers value upon certain objects. But the valuations of the burglar and the policeman are not identical, any more than the interest in the fruits of productive work institutes the same values as does the interest of the burglar in the pursuit of his calling – as is evident in the action of a judge when stolen goods are brought before him for disposition.”¹

“...the necessity for judgment and choice comes from the fact that one has to manage forces with no common denominator.”²

INTRODUCTION

Medical decision making in these times is being scrutinized from the standpoint of closely related decision theories variously known as “rational actor theory,” “expected utility theory,” “subjective expected utility theory,” and “economic rationality.” These theories, arising especially from game theory and economics, define rationality as acting or thinking in accord with certain axioms and basic assumptions which they hold largely in common. Theorems of decision making are derived from these axioms and used to critique medical decisions, among others, in terms of their adherence to the basic canons. In some carefully selected actual and hypothetical clinical settings, rigidly defined, it can be shown that errors in prediction, diagnosis and therapeutic choice are decreased when informal decision strategies, known as “heuristics,” are replaced by formal procedures consistent with these axioms and theorems.

Inasmuch as theorems of decision making generated mathematically from the purported axioms of rationality are put forth as correct reasoning, and inasmuch as decisions and subsequent actions violating the axioms are labeled “irrational,” these theories are “normative” or “prescriptive.” If people were rational actors, defined by their adherence to the canons, the theories would be descriptive as well. The *Theory of Games and Economic Behavior*, by John Von Neumann and Oskar Morgenstern (1944) from which most other variations of expected utility theory are descended, proves in detail that mathematically based strategies consistent with the axioms win certain types of games. The authors assert that economic behavior can be described in terms of these game strategies.

While economists have had success in describing much economic behavior in terms of these rationality assumptions (and may still think of those who stray from them as mere “fools” and “suckers”) psychologists have found behavior which violates the axioms and have sought to explain and understand it.³ Over time, the psychology research shows that violations of expected utility theory, while leading to losses in games and similar endeavors, cannot only be understandable, but adaptive in other settings. These findings have led some researchers to question whether preferences and values in practice are well-defined in the way, which we shall see below, the foundations of rational choice theory require.⁴

Specific construals of “preference” and “value,” derived from utilitarian thought, underlie the mathematical superstructure of expected utility theory. I will argue in this chapter that except within some games and game-like situations, preference and value cannot be reduced to be well-defined as Von Neumann, Morgenstern and their successors posit. There is no generic “utility” which can be mapped onto the number system. Accordingly, there is no possible function or transformation factor to generate an isomorphism allowing utility to be represented and manipulated in terms of number. Similarly, as we have already seen, there is no general and literal concept of health which could be plugged into the “winning” formulae as a stand-in for utility in the healthcare field.

GENERAL ASSUMPTIONS OF EXPECTED UTILITY THEORY

In the opening chapters of *Theory of Games and Economic Behavior* Von Neumann and Morgenstern make several revealing qualitative statements. Their remarks apply to preferences and values operating in games (mainly competitive ones) and in economics represented as an activity involving the game-like maximization of gain.

“... this theory of games of strategy is the proper instrument with which to develop a theory of economic behavior.

One would misunderstand the intent of our discussions by interpreting them as merely pointing out an analogy between the two spheres. We hope to establish satisfactorily, after developing a few plausible schematizations, that the typical problems of economic behavior become strictly identical with the mathematical notions of suitable games of strategy.”⁵

First, the authors acknowledge that:

“One of the chief difficulties [in describing rational behavior] lies in the assumptions which have to be made about the motives of the individual. This problem has been stated traditionally by assuming that the consumer desires to obtain a maximum of utility or satisfaction and the entrepreneur a maximum of profits.”⁶

But despite any such difficulties, they go on to say:

“We wish to concentrate on one problem – which is not that of the measurement of utilities and of preferences – and we shall therefore attempt to simplify all other characteristics [of rational behavior] as far as possible. . . . We shall therefore assume that the aim of all participants in the economic system,

consumers as well as entrepreneurs, is money, or equivalently a single monetary commodity. This is supposed to be unrestrictedly divisible and substitutable, freely transferable and identical, even in the quantitative sense, with whatever “satisfaction” or “utility” is desired by each participant.”⁷

Thus Von Neumann and Morgenstern do not really argue for their concept of utility, focusing instead on how such a notion works mathematically. Indeed, the suitability of their notions of preference, utility and value for mathematical use is the principal argument, if not the only one, for adopting them.

So: “The individual who attempts to obtain these respective maxima is also said to act ‘rationally.’”⁸ This idea that maximization of something called “gain,” “satisfaction” or “utility” equals rational action is something which all the economic rationality theories share. But discussion of the exact nature of that “gain” and why it should be possible to “optimize” it is seldom as explicit in the later proponents of such thinking as it is with Von Neumann and Morgenstern, who flatly equate it with money or a fungible commodity.

Furthermore “. . . if the superiority of ‘rational behavior’ over any other kind is to be established, then its description must include rules of conduct for all conceivable situations – including those where ‘the others’ behaved irrationally, in the sense of the standards which the theory will set for them.”⁹ And “This holds equivalently for a social economy and for games.”¹⁰ Points and scores in competitive games are transparently equivalent to skeletal utility conceived in these terms. What I wish to point out is how difficult it is to flesh this skeleton out when utility is supposed to represent value in general.

Von Neumann and Morgenstern say that “the immediate sensation of preference” permits an ordering of utilities as greater or lesser, but “. . . is not in itself a basis for numerical comparison of utilities for one person nor of any comparison between different persons. Since there is no intuitively significant way to add two utilities for the same person, the assumption that utilities are of non-numerical character even seems plausible.”¹¹ Nevertheless, they go on to look for the potential which “theoretical explanations of the formal possibilities of a numerical utility” might have.¹² “For the moment” (a moment which lasts the rest of the book) they “. . . accept the picture of an individual whose system of preferences is all-embracing and complete, i.e., who, for any two objects or rather for any two imagined events, possesses a clear intuition of preference.”¹³

If an individual could compare events quantitatively, then she could plausibly compare combinations of events with stated probabilities.¹⁴ Von Neumann and Morgenstern argue that people have clear intuitions about such preferences as that for event A over the combination of a 50% chance of B and a 50% chance of C. (B and C are disjunctive possible events: if B occurs, C will not; if C occurs, B will not. Also, the alternative B or C will occur if A does not and vice versa.)

To establish the feasibility of a cardinal gradient, and not just an ordinal sequence of utilities, Von Neumann and Morgenstern make the following observation: Suppose that individuals are always capable of making a preference judgment favoring, say, event A over B, but C over A as well. In this instance, let the individual *also* have a clear preference for A over the combination of event B with

a 50% probability and event C with a 50% probability. The two preferences imply that the preference for A over B is *stronger* than the preference of C over A. A key assumption here is that the utility of a certain event multiplied by the probability of its occurrence if it is uncertain yields a utility.

A is greater than $.5B + .5C$

Therefore $2A$ is greater than $B + C$

A is greater than $C - A + B$ (subtracting A from each side)

Hence $A - B$ is greater than $C - A$ (subtracting B from each side)

We have learned that the difference in the utilities of A and B is greater than the difference in utilities of C and A. Given exhaustive known preferences, sufficient questioning about theoretical choices could quantify all utilities in terms of each other. "... thereby utilities – or rather differences of utilities – become numerically measurable."¹⁵

Measurable utilities would provide a basis for comparing desirable outcomes of all sorts of endeavors to winning scores in games. In a social economy, particularly "... the complicated combinatorial catalogue – which we expect from a solution ¹⁶ permits a very brief and significant summarization: the statement of how much the participant under consideration can get if he behaves 'rationally.' This 'can get' is, of course, presumed to be a minimum; he may get more if the others make mistakes (behave irrationally)."¹⁷

These remarks by Von Neumann and Morgenstern indicate that rationality is a means to winning, getting rich, or getting your way; and that all these things can be quantified. Rationality conspicuously does not have anything to do with decisions about what to value, only about how to attain whatever is arbitrarily coveted. It also seems to rule out altruism.

The subsequent literature is in accord with such instrumentality. In his lucid work *Rational Choice in an Uncertain World* Robyn Dawes says he writes, "Not about what to choose, but about how to choose."¹⁸ He reviews studies of decision making showing that there are systematic, recurring patterns of deviation from rationality as it is defined primarily by Von Neumann and Morgenstern. These deviations Dawes uniformly characterizes as flawed thinking.¹⁹ He also discusses, predominantly to refute them, arguments that there may be valid reasons for certain of these systematic errors; arguments with the notion of rational choice itself.

THE AXIOMS OF EXPECTED UTILITY THEORY: OBJECTIONS AND RESERVATIONS

Dawes lays out and explains the basic assumptions, or axioms, of expected utility theory. In commenting on the axioms, I rely mostly on his portrayals of them because I think they are clearer for the general reader than the original formulations in Von Neumann and Morgenstern's treatise.

As Dawes states, the *entities* with which the axioms deal are alternative actions with their probable consequences. The basic *relationship* of alternatives thus

described as utilities, called the *natural* relationship by Von Neumann and Morgenstern, is preference. Sometimes one unitary outcome can be selected to the exclusion of all others. Frequently, however, because of contingencies, one alternative action can result in several possible outcomes having different utilities.

Von Neumann and Morgenstern claim that the system of utilities contains a natural *operation* in addition to the natural relationship, preference. This is combination. Utilities of outcomes with different probabilities adding up to 1, can be combined. If p is a probability, then consequences A and B comprising a set with the total probability of 1 can be combined as $pA + (1 - p)B$. This combination of utilities is also a utility. Dawes uses the word *alternative* to describe any decision resulting in consequences (hence utilities) or a set of probable consequences (describable as a utility also).

Studies of decision making by psychologists and others²⁰ have shown that it is some distance from the gaming place to the market, despite initial assumptions to the contrary. I contend that it is even farther from the market to the exam room. In fact, the intrusion of a market mentality is precisely one of the worst faults in medicine, and has caused the profession to be untrue to its calling.

It is necessary to look at each specific axiom of expected utility theory and how it cashes out in practice to see its shortcomings. Following a brief explanation of each axiom roughly as Dawes sets them forth, I will present certain reservations. The intention is to show that a theory of how to win games must disappoint any hopes for a revolution in professional decision making.

Axiom 1. Comparability

If A and B are in a set S of alternatives, then either A is preferable to B, or B is preferable to A, or they are equally preferred. (Preference here is locked to expected utility.) This axiom means that, for purposes of the theory, preferences are assumed to be exhaustively complete. Given any actual or hypothetical choice, a person should have a stable preference. This implies complete knowledge of at least the order of her or his subjective utilities for any possible sets of consequences.

We can see how this axiom works for games of strategy. The rules are static and unchanging in most games. Scoring and winning, i.e., utility within the game, are defined; so the value or probable value of any result of a move is set.

In his article, "Value Elicitation. Is There Anything in There?" Baruch Fischhoff points out that while values may be clearly and thoroughly articulated in some regards, as with those set under rules and contracts to which we are committed, they are definitely not in others. Under familiar conditions, when choices stand out within stable contexts, when consequences are few, well understood and easily compared, and when tastes are stable, then values are often well articulated.²¹ But when situations are new, consequences are unfamiliar or far in the future, and desires and tastes are changing or undeveloped, people have trouble choosing. When choice is artificially forced in an experimental setting over alternatives which are meaningless, disconnected from life, or previously unexplored for the subjects, results cannot identify well-grounded preference. Studies designed to force choices in such esoteric settings

can be interpreted to show that people have well-defined preferences even when they do not, simply because such options as “I don’t like playing this.” “Why should this matter?” and “None of the above,” are not offered to subjects.

Experimental subjects often find it outlandish to be asked to value choices (other than among commonly marketable goods) in monetary terms. We are nonplussed when trying to calculate something like “the monetary value of a life.” When investigators are convinced that people have static, well-articulated preferences and values, study outcomes showing that they do not act that way are interpreted to mean that the subjects are irrational. Fischhoff points out that an alternative interpretation for some of these results is that the experimental tasks or questions do not allow unformed or changing values and preferences to show themselves as such.

Some situations are game-like in that they can be walled off from background matters: success within them is well-defined and possible outcomes are understandable, familiar and mutually exclusive. Clinical situations can be presented as though they were games. Usually this means putting them forth as hypothetical imperatives: “If you want to avoid incurable colon cancer after age 60, the best strategy is to have a colonoscopy every X years.” Such presentations are invariably compartmentalized, ignoring any outside factors which might impinge on a maximization strategy for obtaining the particular objective. Sometimes, however, such dictums apply so widely as to merit nearly universal observance: “To reduce the risk of aspiration, do not perform elective surgery under general anesthesia unless the patient has an empty stomach.”

As noted, game rules define utility or value within games. But they do not set the value of games within the wider world. Decision theorists try to avoid suggesting to people what their values should be, but they have traditionally trusted that “utility” is a meaningful concept, and that preference marks it out.

Originally, Bentham defined utility in terms of pleasure and pain. Intuitively, pleasure is remembered, experienced or anticipated roughly in “greater and lesser” terms. A utilitarian must either think that pleasures are self-evident and agreed upon, or find out what pleases people by observing what they do. When pleasure is defined in terms of what people have *usually* done, then a problem arises when they do something else. *Unusual* pursuits indicate irrationality or else fickleness, and hence unstable utility. A certain circularity has been obvious to the critics of utilitarian thought. To stabilize the hedonic calculus it would be necessary to have a standard outside of observed preferences themselves.

When a person appears intentionally to play a game to lose, we look for reasons outside of the parameters of the game. Thus a losing tennis player might decide (petulantly, we judge) to serve out of bounds just to “get the match over.” Judged by the values within the game, this person is being irrational. In the arena of wider concerns, however, this player might be realizing the value of relief from an unhappy situation, judged at the time more significant than any loss (also outside the game) from being seen as a quitter. Similarly, the person who hates colonoscopies more than he fears colon cancer, or who finds worrying about cancer risks destructive to his life view, risks “losing” the game of colon cancer prevention while honoring a

dislike or a valued optimism. And the person in a country with no colonoscopes is not playing that game.

The idea that people act to maximize subjective utility except when being irrational can be made impervious to refutation by rendering the concept of utility sufficiently elastic. "Hedonic utility" is similar to "self-interest" in this respect. If our determination to believe that all acts are "self-interested" is sufficiently strong, we can interpret any act of caring, generosity or apparent self-sacrifice as somehow satisfying the person engaging in it, and therefore "self-interested." Alternatively, a philosophical position allowing for genuine altruism argues that any satisfaction involved in altruistic action is not well described as hedonic, instead just proving that the actor cares about another. And that is the very thing which self-interest is not. On the surface, this dispute is about who controls the definition of a word, but in depth, this is about what people are really like.

"Utility" can work the same way. Those theorists bound and determined to say that people are utility maximizers start with a hedonistic version of utility, but broaden and stretch it to fit all diverse motives. Hence people drink not to satisfy thirst, but to actualize utility. Likewise, they raise children, enter nursing school, polish silver, play music, take care of aged parents, preach the gospel, and collect matchbooks all to maximize utility or "create value." What sense can "utility" with such an infinite reference have? To repeat a remark Gertrude Stein is said to have made about Oakland, California, "There's no There there."

This thinking puts the cart before the horse. We do not first know what "utility" is and then select activities to produce it at all. As Derek Parfitt points out,²² there is a difference between doing something to be happy or satisfied and being happy because you did something. Positive feelings about many experiences are their byproduct; not their goal. Bernard Williams argues, in a related vein, that meaningfulness and happiness are not equated.²³ Genuine interests are in our varied endeavors themselves, not in tangential, averaged-over outcomes. It would be a poor artist whose main reason to paint was to attain a generic "happiness." Philosophy, music, medicine, engineering and science could not even get off the ground if people were not interested in their qualities as activity and their special results.

I am not saying that all meaningful activity is an "end in itself" but that as an end *or* a means, its worth does not derive from "utility." There is no generic "utility" lurking behind, for example our love of our children, and from which that love can supposedly be derived. "Utility," apart from that defined in games and monetary equivalents, is a term with no connotation, denoting anything regarded as "favorable" or "preferred." And these words as used in the theory mean nothing more than "selected."

It is said that choices reveal preference, and preference can only be among alternatives that are commensurable. Therefore, there is plausibly a numerical scale, the "utility scale" on which the alternatives are measured. But while choice often reveals preference, and preference means we would rather, say, have glasses than contacts, nothing is added to this fact by talking as though something quantifiable like "utility" or even "pleasure" lay behind the choice. When we say, "I would

like the dining room blue, not green” it is because the *quality* of blue there is chosen over the *quality* of green. *Liking*, I would claim, is secondarily abstracted from the overall quality of blue in the setting, but it is really nothing separate from that overall quality, and a generic feeling of “liking” has nothing at all to do with this particular choice. We do not go through “liking” to get to “blue,” but through “blue” to the generalization, “liking.”

Many behaviors fail to reveal settled preference. For example, much behavior is exploratory. As Dewey pointed out, we not only seek things we know how to value; we seek to find and experience things whose value is unknown before-the-fact. Then there is arbitrary choice, like picking one product off a shelf for no reason except to get the decision over. This choice does not necessarily reveal true indifference, but only impatience. And there are the agonizing choices of moral dilemmas. These say more about *duress* than about unfettered preference.

In sum, there are good reasons not to generalize the assumption of comparability beyond the original application to games of strategy and pure profit-seeking. Outside of these realms, decision making is partly a process of creating and discovering values, and only partly the business of realizing them in ways previously anticipated. We cannot refer to a stable “value” dictionary for guidance. Many decisions are made to explore and critique goals. And most goals cannot be compared quantitatively. For all these reasons, preference is not universally well-defined, “complete,” or “comparable.” Nor is there any good reason why it should be.

Axiom 2. Transitivity

If A, B and C are set S of alternatives, when A is preferable to B and B is preferable to C, then A is preferable to C. “Preferable” is equivalent to “has greater expected utility than.”²⁴

If alternatives A, B and C could each be converted into money, B would be worth less than A and C would be worth less than B. An individual violating the transitivity axiom would pay to have B instead of C, pay again to have A instead of B, and pay yet again to have C instead of A. Assuming the process went on indefinitely, the inevitable result would be bankruptcy, with the individual repeatedly paying just to get back what she or he already had.

Intransitivities are related to *preference reversals*, and can result from changes in the context of an evaluation or of the perceived baseline or status quo. Lichtenstein and Slovic showed in 1971 that both experimental subjects and real gamblers in a Las Vegas casino frequently and characteristically reversed preferences when their *choices* between alternative bets were compared with *prices* they would pay for the same alternative bets.²⁵ For example, one pair of gambles contrasts a high probability of winning a small amount (called the P bet) with a low probability of winning a larger amount (called the \$ bet).²⁶

The P bet was: 11/12 chance to win 12 chips and
1/12 chance to lose 24 chips.

The \$ bet was: 2/12 chance to win 79 chips and
10/12 chance to lose 5 chips.

First, the subjects were asked which of the bets they would choose. Then, they were asked to set a price at which they would sell the bets. Although an approximately equal number of subjects chose each alternative bet, the \$ bet was assigned a higher selling price about 88% of the time. Slavic notes "of participants who chose the P bet, 87% gave a higher selling price to the \$ bet." Preferring one of two choices you would sell for less than the other can cause sure losses in certain gambling settings.²⁷

Experimental psychologists have studied preference reversal in detail, finding that these reversals can relate to the procedural settings of choice. In the example above, from Slovic's early work, different procedures for determining the worth of a bet, i.e., choosing or measuring numerically, elicit reversed preferences. Tversky and Kahneman found that preference reversals could be induced by alterations in the *framing* of situations. It appears that people avoid losses more fiercely than they seek gains in many settings. (This is not true when they are already desperate and have, as Kris Kristofferson wrote, "nothing left to lose.")

In a representative study, Tversky and Kahneman (1981) put the same hypothetical choice, framed in two different ways, to experimental subjects. These formulations were called Problems 1 and 2.²⁸

Problem 1 sets forth a situation in which a disease is expected to kill 600 people and asks for a choice between Program A, which will save 200 people for sure, and Program B, which offers a 1/3 probability that 600 people will be saved and a 2/3 probability that no one will be saved. 78% of responders chose Program A and 28% chose Program B. Problem 2 sets forth the same situation. A disease is expected to kill 600 people. If Program C is chosen, 400 people will die, and if Program D is chosen, there is a 1/3 chance that no one will die and a 2/3 chance that 600 people will die. Only 22% of respondents picked Program C, and 78% picked Program D. In problem one the reference state is 600 deaths and events are described as "lives saved." But in Problem 2 the reference point is 600 presently living and the events to take place are described as "lives lost."

We often assess consequences and even present situations in terms of "aspects" or "dimensions." One aspect of the situation presented above by Tversky and Kahneman is people dying and another is people being saved. When our attention is focused on deaths, we seem unable to give lives saved the same value as when our attention is focused on lives saved. It appears that it is difficult to hold two different considerations before the mind in an equally vivid and efficacious fashion, even when the two considerations are so closely related as life and death. The difficulty has been shown to exist when patients are presented with information relating to possible outcomes of treatment such as the risk of immediate death, average length of survival, monetary costs, probability of disability, likelihood, type and intensity of pain, etc. One studied example showed preference reversals in choices between hypothetical radiation and surgical treatments for lung cancer depending on how the alternative outcomes were framed.²⁹

That greater qualitative disparities among dimensions should cause greater difficulties in homogenizing them on utility scales is no surprise. We should expect

people to come up with a variety of strategies for choosing among incomparables, and to find that not all of these are consistent or even stable. Tradeoffs often have to be made. “Grounds” will be found for them, or cues will trigger them (sometimes unconsciously) often because; (1) any procedure is better than none, when no justified procedure can be found, or (2) because a habit which is useful in a different setting gets carried over by default.

Amos Tversky, Paul Slovic and Shmuel Sattah studied differences between “choice” and “matching” procedures for making decisions about alternatives which vary on two or more dimensions.³⁰ A hypothetical example (not theirs) of this type of problem would be the choice of a medical residency between options A and B, as described below.

Option A.

Salary:	\$20,000	
Location:		San Francisco
Prestige of program:		Medium
Collegiality in program:		High

Option B.

Salary:	\$25,000	
Location:		Detroit
Prestige of program:		High
Collegiality in program:		Medium

A graduating medical student could choose between these options by picking on the basis of her most important concern, say prestige or location, or by deciding to take the option which is superior on more of the three most important aspects, or by eliminating an option which fell below a certain standard on any one aspect, to name three of many possible choice procedures.

Alternatively, the student could try to *match* the options by weighting individual aspects more quantitatively in terms of their importance, then sizing the discrepancies among the choices on each aspect, and comparing the totals. This procedure, matching, involves trying to imagine what each value is worth in terms of another, for example, what salary sacrifice it is worth making to live in San Francisco instead of Detroit.³¹ This works more easily when money is the measure of utility, but it can be attempted using other grounds of comparison. Obviously, it is harder to estimate how “much” collegiality one would “pay” to get a higher salary or for a more prestigious program, but people do attempt these things, especially when experimenters tell them they have to.

When Tversky et al. studied and compared choice and matching procedures for decisions in several settings, they found important discrepancies in the “utility” assigned to aspects under each procedure. The discrepancies were characteristic and replicable. Different choice procedures could result not only in different evaluations, but in opposite judgments and decisions, depending on the task. The authors propose a formal theory of “contingent weighting” to account for how procedural variance elicits different valuations. I will not attempt an exposition of their theory here, but refer the reader to the original article. The relevant point here is that marked liability

of preference was exhibited in these experimental settings. The authors comment that this lability

“...raises difficult questions concerning the assessment of preferences and values. In the classical analysis, the relation of preference is inferred from observed responses (e.g., choice and matching) and is assumed to reflect the decision maker’s underlying utility or value. But if different elicitation procedures produce different orderings of options, how can preferences and values be defined? And in what sense do they exist? To be sure, people make choices, set prices, rate options and even explain their decisions to others. Preferences, therefore, exist as observed data. However, if these data do not satisfy the elementary requirements of [procedure] invariance, it is unclear how to define a relation of preference that can serve as a basis for the measurement of value. In the absence of well-defined preferences, the foundations of choice theory and decision analysis are called into question.”³²

Transitivity fails for many applications broader than the original games because it applies only to static and exhaustive preference, as Von Neumann and Morgenstern clearly stated in the beginning. While we have stable core values grounded in our embodied relation to ourselves, others and our environment, even those values are subject to some modification with experience. There are less central values which are more mutable. Additionally, vast potential realms for experience are unknown to each of us, known very sketchily, or known vaguely but of no concern. Values relative to potential engagements in such areas are poorly formed, if formed at all. A map could probably be made of each person’s value structure, showing central deeply held values, both well understood and articulated; unconscious values; progressively more peripheral and labile values; poorly realized and casual marginal values; and outer zones of value terra incognita.

We change some opinions and tastes cyclically. The fact that someone now prefers water to food, now food to rest and later rest to water does not make him into a “money pump.” That last year I wanted novelty and this year I need familiarity does not involve me in a logical contradiction. Such alteration merely means, as we always knew, that desires wax and wane depending on physiological cycles, environmental cues and availabilities, and present goal attainments.

The finding that some people have no opinion as to whether the earth should end by fire, flood or freeze would not make them irrational. Nor would failure to establish a rate of exchange between lying in the sun after a swim and having a Ming vase indicate unreason. In living outside of games, there is growth; there is development, there are changing wants; there is changing your mind. Intransitivities may occur for *reasons*, or when there is *no reason for consistency*, and they limit the realm of application for Axiom 2.

Axiom 3. Closure

If A and B are in alternative set S, then ApB is as well, where ApB means A with a probability of p and B with a probability of 1 - p. This axiom simply means that a probability mixture of outcomes can be treated as an outcome, and the probability total of all possible outcomes must be treated as 1. A composite of outcomes which individually have assigned utilities and assigned probabilities has an assignable utility.

In settings such as games involving chance, in order to find the best strategy, uncertainty has to be quantified. The rules of these games allow this to happen. Thus we define the probability of heads in flipping a fair coin as equal to the percentage of heads which is approached in an indefinitely long series of flips. And we similarly determine the probability of appendicitis in a patient with a certain well-defined constellation of symptoms, physical findings and laboratory values by looking at the final diagnoses in a long prior series of demographically similar patients with these same features. Within limits, correlations of presenting matters of fact with some especially clear-cut diagnostic categories or easily specified prognostic outcomes can be established. In such cases probabilities can be given for the outcomes, for example, of operating or not. What has been said, however, about the non-classical, not well-defined nature of many diagnostic categories should be recalled.

Psychologists have seen, though, that how people *value* these outcomes can depend on seemingly adventitious factors such as the order in which they are presented, the framing of them in terms of gain or loss, and inclinations or aversions to risk per se. In addition, no one knows fully how to appreciate any new experience until after-the-fact. Many are the physicians who thought they were familiar with the quality of an illness or an experience and then exclaimed after having actually suffered through it, "If I had only known then what I know now I would have been a different doctor." Sometimes we have distinct, well founded and intimate understanding of what an experience might be like. But other times, previous experience is so irrelevant that, when forced, we pull our estimates of consequences right out of thin air.

Even when we try to relate facts to facts rather than facts to projected values, there are different orders of uncertainty which are not accounted for given the single concept of "probability." Hillel J. Einhorn and Robin M. Hogarth show that the nature of the uncertainty in gambling is often different from that faced in other arenas.³³ They note that some probabilities are "exact," as in gambling, where there are explicit descriptions of the degree of uncertainty. But in ordinary life, as well as in many clinical situations, there is uncertainty about the nature of the uncertainty – a higher order uncertainty. For example, much of psychopharmacology still involves treating people as black boxes. The ontic status of the "mental illnesses" is uncertain, the assignment of diagnosis is uncertain, the way the treatment works is hardly known, the subjective value of various outcomes for patients is not clear cut, and there is no accurate measure of the chance that any particular therapy will, in the particular person treated, produce targeted outcomes or adverse effects. In short, the therapist is like a card player who does not know either what cards she will draw or what they mean after they are drawn. Despite all efforts to make psychiatry rigorous, our beliefs about many cases must remain, to use Einhorn and Hogarth's phrase, "loosely held and ill defined."

Daniel Ellsberg discovered a paradox which can only be resolved by recognizing that it is "rational" to treat "exact probability" and "ambiguity," as Einhorn and Hogarth name them, differently. Einhorn and Hogarth present Ellsberg's paradox as follows:

Consider two urns containing red and black balls. No information is given about the number of red or black balls in Urn 1. Urn 2 contains 50% red and 50% black balls. Already we see that drawing a ball from urn one involves two layers of uncertainty; the unbounded uncertainty about what balls are in the urn, plus the uncertainty about which would be drawn from any particular array of red or black, even if we did know the array.

A gamble is offered, to bet on red or black. If you bet on red and red is drawn, you win \$100 but if black is drawn, you win nothing. Likewise, a bet on black pays \$100 if black is drawn and zero if red is drawn. Looking at Urn 1, would you bet on red or black? Most people are indifferent. Expected utility theory indicates that their subjective probabilities for drawing red, $p(R_1)$ [in Urn 1] and for drawing black, $p(B_1)$ must be equal. So $p(R_1) = p(B_1)$ must be equal. So $p(R_1) = p(B_1) = 0.5$ [because the total probability of the two choices must be one].

Now consider the choice of balls in Urn 2. Again, most people are indifferent about whether they would bet on red or black. Thus $p(R_2) = p(B_2) = 0.5$. But when asked, given a bet on red, whether they would prefer to draw from Urn 1 or Urn 2 respondents usually pick 2. This implies that $p(R_2)$ is higher than $p(R_1)$. And if asked whether they would rather, given a bet on black, pick from Urn 1 or Urn 2 they also chose Urn 2, implying $p(B_2)$ is higher than $p(B_1)$.

If we try to combine what is implied in both of our choices we get $p(R_2) = 0.5$ which is more than $p(R_1)$, and $p(B_2) = 0.5$ which is more than $p(B_1)$. So the sum of $p(R_1)$ and $p(B_1)$ is being treated as though it were less than 1, or the sum of $p(R_2)$ and $p(B_2)$ is being treated as though it were greater than 1.³⁴

There are different orders of uncertainty which are properly treated differently in reasoning. We are in *complete ignorance* about the distribution of red and black balls in Urn 1. But if we began to draw balls, each draw would diminish our ignorance of that distribution until the last draw eliminated it altogether. Einhorn and Hogarth call degrees of uncertainty between complete ignorance and defined probability *ambiguity*. They note that Ellsberg himself pointed out that ambiguity is related not only to sample size, but is also high when evidence is unreliable or conflicting or the causal process generating outcomes is poorly understood. These factors all contribute to the truly nebulous probabilities involved in many clinical situations such as choosing psychotropic medication.

Einhorn and Hogarth, in their article, begin to develop models for how people deal with ambiguity as opposed to specified risk or traditional probability. Their work on the subject goes far beyond the scope of the present chapter. But it is their conclusion which is especially telling and germane. "The study of risk has been dominated by a single metaphor – the explicit lottery with stated probabilities and payoffs . . . We believe that it is time to move beyond the tidy experiments and axiomatizations built on the explicit lottery. The real world of risk involves ambiguous probabilities, dependencies between probabilities and utilities, context and framing effects, 'illusions of control' and superstitions. Given the richness of the phenomenon before us, our biggest risk would be to ignore them"³⁵

The little "p" that stands for probability in games is not a univocal concept outside of games. Expected and subjective expected utilities of imagined alternatives are for good reason not always firm. When uncertainty is multiplied by ignorance we have ignorance squared in these settings. So the problems presented by pretending that utility is well defined are only multiplied when all the variants of uncertainty are treated as well-defined probability. In some sets of possible outcomes S, no classical probability can be assigned to each outcome.

Axiom 4. Distribution of Probabilities Across Alternatives

If A and B are alternatives (with their consequences) in choice set S, then $[ApB]qB \sim (ApqB)$, where p and q are different probabilities and \sim means “is indifferent to.”

A “distribution” axiom can be written for adding probabilities or for multiplying them, but the main principle is the same for both: That the order in which these operations are undertaken does not alter the probability of any outcome. Different orderings of the same operations are called equivalent.

Mathematical entailments are extra-temporal, but most choices and actions occur sequentially in time. As we have seen, Von Neumann and Morgenstern could successfully treat games of chance and strategy as static because the range of possible inputs, however great, is fixed, and the rules are fixed. They did not claim that this axiom or the others would turn out to suffice in erratically fluctuating, dynamic settings. But oddly, it is doctors and other professionals who fail to act as gamblers should, and not mainly wayward gamblers, who are labeled as “irrational actors” for violating these axioms.

Let us suppose, for instance, that an elderly patient with prostate cancer could live through both a single high-dose course of radiation or two low-dose courses. Option 1. Treatment in two stages with a lower dose: The outcome of Course 1 is A (cure) or B (survival without cure) with $pA = 0.5$ and $pB = 0.5$. If the patient goes through Course 1 and is not cured, Course II of low dose radiation has a 25% chance of cure (A) and a 75% chance of failure (B). Each course has half of the total side effects (i.e., impotence, radiation burns to the skin and rectum, incontinence, etc.) The probability of A (cure) of both courses combined is .625 and the probability of B (survival without cure) of both is .375. Option 2. Treatment in one stage with a higher dose: The outcome is A (cure) or B (survival without cure). The risk of side effects equals the combined risk of Course I and Course II above. The probable outcomes are A (cure) with a probability of .625 and B (survival without cure) with a probability of .375.

In this example, a two stage procedure with a final outcome equal to a one stage procedure would seem preferable nonetheless. There would be an advantage to halting and reassessing in the middle of the process, since going further would be unnecessary 50% of the time. Such a decision, however, violates Axiom 4 which says that combining probabilities in different orders should make no difference. It would not violate the axiom, however, if the side effects were factored in to the outcome.

To give another example, imagine a person with a knee contracture (inability to move the knee through its full range of motion) resulting from arthritis. This person must go through 10 physical therapy treatments, one each day for 10 days. Five of these treatments are very painful, involving stretching the knee farther each time than it can go without severe pain. Five of them are pleasant, using ultrasound and heat to warm the joint. Suppose the order of the treatments makes no difference to the success of the outcome. Would it be counter to reason for the patient to want alternation of the treatments, or all the painful treatments first, or to prefer any

particular order? Many decisions for patients involve this sort of choice about how to *spread* pain or risk, and for such decisions the order of operations matters.

Finally, imagine the situation of a pre-medical student who needs to take calculus, chemistry, biology, organic chemistry, physics and English as prerequisites to entering medical school. English and biology are easy subjects for this student, chemistry is moderately difficult and mathematics and physics are very difficult. Will the order in which this student takes these courses affect his success in the courses? Is it contrary to reason for him to take the easy ones first, when he is just getting used to college?

The point of these examples is that probable outcomes and estimates of probable outcomes vary greatly depending upon the order in which real-life operations are undertaken, as opposed to redistribution of additive or multiplicative operations on static probabilities.

Axiom 5. Independence

If A, B and C are in alternative set S, A is preferable to B if and only if (A_pC) is preferable to (B_pC). The principle involved in this axiom has forms called “cancellation” and “substitution” as well. Cancellation has been written as follows: If u is greater than v, then (u if a) is greater than (v if a), where u and v are utilities associated with alternatives and a is an independent event.

“Independence” means that preferences between two alternatives (A and B) should persist even when the possibility of attaining neither, but a third (C) instead, is introduced. In a gambling context, some violations of this axiom illustrate a phenomenon called the “pseudocertainty effect.” Dawes gives the following example:³⁶

Alternative A. Receive \$30 for sure.

Alternative B. Receive \$45 with a probability as of .8.

Given these choices, most people choose A, even though the average value of *repeated* iterations of choice B is higher, namely \$36. But since repeated iterations are not offered, to avoid disappointment, we usually choose a sure win. Now, let C be a third alternative, that of receiving nothing. Let the probability of introduced alternative C be .75.

This offer is (A .25 C) and can be stated:

Receive \$30 for sure with a probability of .25 or nothing with a probability
Of .75. But this is just getting \$30 with a probability of .25 or nothing
with a probability of .75.

The alternative (B .25C) can be stated:

Receive a .25 probability of getting \$45 with a probability of .8 or a .75
probability of nothing. But this is just receiving \$45 with a
probability of .2 or nothing with a probability of .8.

Given *these* choices most people prefer a .2 probability of receiving \$45 to a .25 probability of getting \$30, despite their original choice of alternative A over B.

The introduction of a third alternative here *does* result consistently in a preference reversal. Such a reversal violates the independence axiom. This reversal would cause losses in games or gambles having repeated iterations and would, in such situations, be “irrational.” In the single iteration, the reversal indicates that certainty has a value leading to the choice of A, but in the absence of certainty, one might as well take a bigger chance for a higher payoff.

Sometimes there is a hidden payoff, like the payoff for certainty, which is not explicitly given in the formulation of the choice, but is nevertheless relevant. Incomplete formulation of payoffs is certainly one big problem with almost all “cost/benefit” analyses of medical treatments. But the larger question for decision making in general is, of course, “What is really ‘independent’ as a presence or a possibility?”

Suppose a professor is deciding whether to attend next year’s meeting of the American Philosophical Association, at which she could present an important paper, or to go to her 40th high school reunion in Jonesboro, Arkansas (occurring on the same dates) where she has not been in 40 years. Call the A.P.A. meeting alternative A and the high school reunion alternative B. She makes a decision (either one). The next day on a routine physical exam she has a chest x-ray showing inoperable cancer. She consults lung and tumor specialists who give her a .7 chance of living until the date of the A.P.A. meeting and the reunion. She is now faced with alternative C, a .3 chance of dying before either event. (And in the background there is the change of context: next year’s events will be the last for her of either type.)

If she first chose A as preferable to B then will (A.7°C) still be preferable to (B.7°C)? If she chose B, will (B.7°C) still be preferable to (A.7°C)? C has to do with the context in which preferences between A and B are chosen, and they are not truly independent of context. Multiple possible events could impinge on this professor’s choice. Even in games, external, supposedly “independent” events can impinge. I might truly prefer to try to finesse my opponent’s queen rather than to take out trump from the top only *before* he choked on a peppermint, after which I wouldn’t care about cards at all.

Cancellation depends on irrelevancy. We recall that this can be written, “If u is of greater utility than v, then (u if a) is of greater utility than (v if a) where “a” is an independent event. The cancellation axiom allows us to ignore only states of affairs whose presence is truly irrelevant to the value of choices u and v “in themselves.” But herein lies the rub, because we can only specify the utilities of parts as walled off. Some things are “walled in” as relevant, and some are “walled out.” But there is no objective rule for what to wall in or out. Any rules for deciding relevance or irrelevance are *conventions* which are usually of practical value; but they are not divine commandments. Obviously and conventionally, if choice u is buying an umbrella and v is buying sun screen it is uncontroversial to include the expected weather “a” (in a relevant time frame) as part of what cannot be walled off from their utilities. Changes in the expected weather are not irrational considerations. But the purveyors of expected utility theory, given its initial application to static situations and compartmentalized parts of experience like games, fail to appreciate

the enormous relevance of context and the subtlety and the surprises in it outside the game setting.

The probabilities for various consequences of our acts can be affected by various “outside” events; at least by events which were not originally anticipated to be relevant: Here are a few examples of alterations in probable outcomes which would typically result in preference reversals:

1. The probability that a conversation would be significant.
A college student had decided to do an extra swim workout after class rather than “shoot the breeze” with his roommates. When he arrived at the class, the ashen-looking professor said: “Class is canceled. I am sick at heart. President Kennedy has been shot.”
2. The chance that wearing a new red dress would draw positive attention at a party.
A socialite went home to change from her new, supposedly unique, designer red dress when she saw a friend arriving at the dinner party in one that was identical.
3. The chance that a decision to buy a vehicle would make one’s neighbor envious.
John had decided to get a Jeep rather than a convertible, but changed his mind when his neighbor came home with a new Land Rover. He wanted something different from his neighbor if he could not have something which was perceived as better.
4. The expected enjoyment of a dinner in Paris.
The Smiths canceled a planned weekend flight on the Concorde for dinner in Paris after Mrs. Smith’s brother got laid off. Now they thought the trip “unseemly.”
5. The anticipated results of living in pain.
Ralph, who had thought he would rather die than continue living with painful and incurable paresthesias in his feet, felt differently after visiting an old and very humorous friend who had been made paraplegic by an auto accident thirty years before.
6. The value of staying at a job.
Andrea, the chief executive officer of a small metal fabricating firm, was planning to accept the vice presidency of a Fortune 500 company, but decided to stay on. She changed her mind after a tornado hit the small community where she lived and severely damaged the metal fabricating plant, threatening the loss of many jobs.
7. The significance of service.
Mason, a cosmetic plastic surgeon, was planning to retire to a villa on St. John, but had a heart attack. Upon recovery, he went to work at a medical volunteer hospital in Jamaica instead.

Dynamic circumstances sometimes call forth latent preferences we never knew we had. Other times, values depend upon contrasts, as in the case of envy or the novel realization of unfairness. Experiences can change our characters – sobering us up or intoxicating us in general ways which affect choice. Even such a seemingly adventitious occurrence as a dream, a prophecy, or the appearance of a comet can trigger the reorganization of preferences and expectations. Some connections between events and valuations are obscure – the subject for psychological investigations in the future. Others are arbitrary, capricious or random, but not inconsequential.

Violations of independence resulting from all these factors can be looked upon as irrational. They *are* irrational in game settings which exclude all considerations not accounted for by the rules. But outside of such settings, and outside of formal systems of logic incorporating this axiom, the mutual irrelevance of things is not absolutely firm. It is presumptuous to assume that we always know what is independent from what. The related independence, cancellation and substitution axioms are appropriate as properly applied. They are just inapplicable more often than has been appreciated; and so is the decision theory based on them.

Axiom 6. Consistency

For all A and B in alternative set S, A is preferable to B if and only if A is preferable to (ApB) which in turn is preferable to B. A less preferable alternative with any probability of a more preferable one is preferable to certainty of the less preferable one. This axiom is indisputable as long as changes over time are excluded from consideration. But change *is* inconsistency, and is the falsifier of propositions applying to those artificially frozen frames of time we usually call “states.” The consistency axiom applies to static preferences.

Axiom 7. Solvability

For all A, B and C in alternative set S, if A is preferable to B and B is preferable to C then there exists some probability p such that B is preferable to (ApC) . This means that any two choices which have utilities can be combined, with some probability, so that the utility of their combination is less than that of an alternative whose utility is intermediate between them. For example, there is some chance of winning a million dollars which is so negligible that if added to an overwhelming probability of getting one dollar, it would not change one’s prior preference for a certain two dollars over one dollar. An axiom of this type is needed if utilities are to be modeled by the number system.

I have already argued, and will some more, that values, when they relate to incommensurable qualities, cannot be fungible. Even if people have to choose between the cost of seat belts and the lives of their children, the choice does not make lives equivalent to dollars. We choose between the qualities of things directly in most instances; not by converting them into utilities and multiplying them times probability. Further, our choices do not imply the existence of such quantification.

Suppose I want an apple high up in my tree. I cannot reach it or climb to it but my child could. Is there some risk of injury to my child that is equal to the value of that apple? On the one hand, we could say yes. Supposing the apple to be lower and lower on the tree, there is probably some benign position with some very low risk to the child that would seem safe enough to send him up. But is a decision to send the child up really equating a low risk to the child with the benefit of the apple for me? Manifestly not. If it had to do with the value of an apple alone versus any risk to my child, I would never send him up. The real reason we expose our children to such risks is not the gain of the prize, but the awareness that living with

cognizance of risk and taking small chances for our own benefit or that of others is necessary lest we be paralyzed with worry.

We *are not* actually making mini-decisions every few seconds between minimal risks of horrible consequences and the utilities of everyday items, but are going about our business because confidence is valuable itself. We cannot be daunted by every remote possibility, not because we have equated, say, some risk of injury to our daughter with the benefit for her of jogging. To some degree, she must be free, and freedom of choice is often what is really important as compared to the risk, not the utility of some particular choice. Many choices would perhaps be “irrational” if we looked on them solely as utility tradeoffs: but not to be constrained by “utility” considerations in choice is itself an overriding value at times.

Choice is simply necessary. We like to have it, make it and have done with it. The trouble with axiom 7 is that it puts all the value on the outcome difference among choices, and none on the implications of the choice procedure itself.

TWO GENERAL PROBLEMS EMERGING FROM INSPECTION OF THE AXIOMS

Two general problems needing summarization have emerged in consideration of the axioms of expected utility theory. First, experiences are not all games although all games are experiences. Second, utility is even less of a well-formed concept than health.

1. Games

Games of strategy are radically unlike most other experiences. Open experiences are pervious to one another and cannot be completely compartmentalized, in contrast to games, which have discrete boundaries and can therefore be treated narrowly, as if they were isolated from everything else. Games have distinct insides and outsides with immovable boundaries set by their rules. Experiences have more or less loosely set boundaries which often shift or dissipate. The more seriously a player takes a game, the less she allows herself to be distracted or affected by anything outside, whereas an experiencing subject who is also an active agent in broader living cannot insulate any of her concerns entirely from the rest. The serious bridge player, say a duplicate player, is not, within the confines of the game, anything else; not a friend, a mother, a humorist, a businessperson or a cook. She attends, as such, only to the values *within* the game, internal values established by its rules and parameters. Her success is “winning” as defined by the rules.

Internal values established by the rules and parameters contrast with external values, which are the values *of* the game outside it. No rules within the game of bridge establish that the game shall have any merit in the general context of experience. Just as the value of any play *in* the game is supported by the framework of the game, the value *of* the game depends on the framework of living. Parenthetically, it is of note that the rules and parameters of most games are not generated within them, but are fixed from the outside as well.

Non-game-like experiences differ in that they remake rules and redefine parameters to a greater or lesser extent as they unfold. This is what Dewey highlighted. Individual experiences can be partially comparable to games, depending upon the extent to which they are insulated from wider experience, the stability and replicability of that insulation over time, their hospitality to fixed rules and their susceptibility to classification in stable categories. Inasmuch as experiences cannot be disconnected, and resonate with the whole, they participate in the changes of the whole and are enhanced by reflective, not automatic or prescribed approaches.

A GAME AS A VEHICLE

I digress now to describe the metamorphosis of a bridge club. This short history illustrates how values and rules internal to a game, generating strategies for winning and losing, interacted with and became fully subordinate to other concerns in one instance over time. A particular bridge club was formed in 1947 by nine women, mostly excellent players, who gathered once or twice a month at the home of one of them to form two tables of bridge. At each meeting, the hostess sat the game out and served refreshments. The club continued to meet throughout the 1950's and 1960's while the women raised their families. Occasionally a member would move and drop out, to be replaced by a new member. At each meeting the women played, changed partners and played on.

The club continued to meet in the 1970's and the 1980's, but by the late 1980's some of the members had failing vision. They changed to large number cards. The members had grandchildren. In the early 1990's, some could no longer drive. The others picked them up. One woman needed a special chair because of a bad back, so she no longer sat at the table. The number able to play actively was reduced to four. Others attending socialized at another table, sometimes coming into the game.

Several of their husbands retired. Others died. The member with poor vision could no longer see her cards. The others arranged them for her. Sometimes a member at the social table helped one at the playing table with her hand. Many of their children divorced. One of the players became forgetful and was clearly developing Alzheimer's disease. Yet, she wanted to play, so others helped her. One player became deaf. The club accommodated. Another developed a speech defect after small strokes. She knew what she wanted to say but it took a long time coming out. They played more slowly.

By 1998 it was plain that not enough members were capable of playing to keep up a table of bridge. The club decided to meet for lunch only—but it was still “our bridge club.” Preparing a meal was too difficult for most of the hostesses, so the club moved to a restaurant. The member with Alzheimer's disease could not order for herself. The others ordered for her. By the year 2000 they were cutting up her food and feeding it to her.

As I write, this club still meets. Two or three of the members, when they want to play cards, play duplicate bridge elsewhere. The club was about a game, primarily,

at one time, but the game gradually dropped out of the picture. Internal values of the game were realized less and less effectively over time while external values intruding on it were realized more and more.

This chronicle of a bridge club shows how it became plainer with time, in a situation never impervious to outside considerations, that the internal values of a game were a mere vehicle for the flourishing of much broader and deeper concerns.

WHEN GAMES ARE POOR MODELS

Whenever internal values are maximized, external concerns tend to get short shrift, which has been pointed out by many authors in many contexts. What has not been brought out so distinctly, however, is the absolute dependency of games on their external support, and the vulnerability of such games to failure and abandonment in the wider context when externalities are ignored. Here are the examples of boomerang effects from overreaching:

- A. Maximization of "winning" in college athletics. The big money, petulant behavior and lack of respect for academic values which has been increasingly manifested in college sports risks undermining university-wide support for the emphasis on winning itself.
- B. Maximization of return on capital.
 - a. High-debt strategies for maximizing the return on equity leave companies with no reserves for coping with downturns.
 - b. Layoffs and plant closings in rapid response to drops in demand, when widespread, accentuate drops in demand and sharpen recessions. Jobless workers buy little.
 - c. "Just in time" low supply inventories cause plant shutdowns during supply disruptions.
 - d. Over aggressive sales policies, poor quality control, careless environmental protection, cuts in research and development and discontinuation of low-profit product lines result in adverse publicity, lawsuits, high insurance costs, fines, antitrust actions and consumer dissatisfaction.
- C. In the medical arena, specifically, "charging all that the market will bear" on the part of drug companies, insurance and health organization executives and certain physicians degrades the standing of the entire health system and risks a response that may throw out the good with the bad. The last few dollars of profit generate the most ill-will per dollar.
- D. Maximal adaptation. Species most perfectly and efficiently (and therefore narrowly) adapted to their environments go extinct more easily with environmental fluctuation and permanent change.
- E. Maximization of longevity. Extreme preventive regimens and onerous treatments may make life not worth living.

Thus, the long term survival and flourishing of activities promoting specific values depends upon reasonable integration with and respect for other values. As was indicated earlier with respect to economic, aesthetic and moral values; when one leg of this tripod gets too long it will tip over. There must be some balance in the proportion of the legs.

2. *Utility.*

A. Hedonistic or “Experienced”³⁷ Utility.

If games are poor stand-ins for most endeavors, “utility” is even less representative of various satisfactions. Bentham’s original identification of utility with pleasures and pains at least had the merit of excluding something, since not all behaviors were interpreted as somehow maximizing pleasure and minimizing pain. It was assumed that we know what pleasures and pains are without taking a poll based on imputations from observed behavior. But establishing any connotation for pleasure and pain necessitates the inconvenience of arguing for it. Arguments for a hedonistic utility must show that intuitions about pleasure and pain are widely shared, and also that they are “justified” in the sense that indulgence of them is not self-defeating. The pleasure-principle itself does not sufficiently adjudicate between immediate and long-term pleasures, for example, or between the pleasures of a despot and those of his slaves. Considerations of justice and fairness keep creeping back in, with all their attending controversy. Enormously complex decision rules for honoring whose pleasure, when and where can become even more formidable than the hedonistic calculus itself. And then, as many authors have pointed out, qualitatively disparate pleasures and pains truly do not fit any mold or measure.

As if these difficulties were not enough, the hedonistic theory does not know what to make of shortcuts like direct electrical and chemical stimulation of the brain to produce pleasure. Why undergo any kind of prolonged endeavor or delay of gratification if the most intense ecstasies can be produced instantly? Eventual suffering weighs only quantitatively against drug derived or electrostimulated instant gratification for this theory; and according to many eyewitness reports, these experiences can be so intense that merely quantitative arguments against them, based on adverse consequences, are not compelling.

B. Decision Utility.

Difficulties with quantifying pleasure as well as the seeming crassness of hedonism invite the consideration of alternate concepts. The most prominent of these, called “decision utility” by Daniel Kahneman,³⁸ infers utility from preference. The idea is that strengths of preference might be easier to measure than strengths of pleasure or pain, so that a study of preferences could be the key to determining the utility of their objects. But subjective expected utility, outside of games, requires that preferences as indicated by people’s decisions stand in a one-to-one relationship to the utility of the ends preferred.

Multiple problems with this notion have become apparent, as already discussed in connection with the basic axioms and enumerated below:

1. Prospective and retrospective evaluations of preferences are not the same. This has been extensively discussed by Kahneman and Tversky.³⁹ Experiences naturally affect our judgments about ends. These judgments are subject to continuing modification because perspectives and context alter, contrasts enhance or dim, and remembrance is not reduplication. Try to remember the quality of one piece of music, for example, when another one is playing.

2. Much behavior is loosely tethered to identifiable ends. People are not always serious and thoughtful. Silly and nonchalant actions are just “noise” for the decision researcher. Therefore, as noted previously, attempts to identify ends on the basis of behaviors can overestimate the extent to which those behaviors are goal-directed as opposed to merely expressive or random. In addition, we have seen that intentions can be quite different than they appear to an observer. For example, some experimental subjects in studies of reasoning probably do not want to succeed in the assigned task so much as they just want to get out of there.
3. People do not always know what they want. As pointed out above, they explore, try out and sample actions and objects. Exploratory behaviors do not indicate any preferences or confirm utilities except a preference to explore. And there is no label saying “exploratory” which identifies such behavior with certainty for an interpreter.
4. Motivations are in conflict. If we look at what people *do* rather than what they *say* preferences appear simpler than they are. Reluctant choices do not have the same ramifications for utility assignment that wholehearted ones do. The unity of a person at any given time is incomplete, just as character over a lifetime is in flux.

It has sometimes been argued that changes over time make us into several serially different persons and that ambivalence at a given time implies that we have double identities. If this portrayal was accepted, it would follow that separate subjective utilities would be needed for each subdivision of a self and each successive self. Richard Thaler and H.M. Shefrin actually show how our partially separate selves act to exert constraints on each other.⁴⁰ And Thaler points out that we put our assets in separate mental accounts rather than regarding them as equivalent parts of one pot. This means that we treat some dollars, i.e., the ones in our Christmas accounts, as different from other dollars such as those in checking. Even funds are not fungible!⁴¹ Such separate accounts answer to different and potentially conflicting needs within us.

An alternative view of the self, more appealing to process philosophy, is that individual personalities encompass not just static states, but narratives or patterns of progression. Accordingly, ambivalence and self-contradiction can be considered to be a feature of an overarching personal identity rather than a fissure in it.

Disputes about the implications of change and disunity go back at least to the Eleatics in pre-Socratic philosophy. The difficulty has been to capture wiggly and mottled things in static conceptual cages. How can a thing be both One and Many? How can it be the same thing and yet change? But whether we look at persons as if they were multiple individuals or single conflicted and changing ones, it matters not for the issue at hand. The point is that there is no central, univocal and unchanging core identity out of which preference and utility arises.

5. There can be coercion. At least some choices are made under duress. In the case of duress, preference cannot be read directly out of behavior. Experimenters are well aware of this problem, and have tried to remove subtle pressures which

might bias the behavior of subjects. Yet, this has been difficult to do. The range of choices offered is often so limited that selections tell little about what would actually be preferred, if offered. Subjects can rebel against restrictions, behaving in anomalous ways which fail to reveal their actual preferences. Fischhoff points out that what experimental settings often emphasize is gambling, hedonic behavior and selfishness. No venues are presented for the expression of other values.⁴²

The power to select the array of options for another person is at least a country cousin of coercion. Choices are not expressive of true preference to the degree that problems presented to subjects are not representative of the range of real situations.

6. Preference is not only a single order concept, as noted above. We can step back from our desires, evaluate them in terms of practicality or ethics for example, and conclude that we should change them. Utilitarian thinking usually assumes that getting what we want, not reforming our wants, or even learning to appreciate what we have, is the totality of preference. Dewey pointed out that the desired and the desirable cannot be lumped together as one. Within limits, desires can be changed to better aim at realistically possible and more likely fulfilling ends. We are capable in a number of ways of exacerbating, limiting and otherwise altering our desires: by manipulating environmental cues, by creating distractions, through sublimation, by substitution, by foreclosing on options (for example, first getting groceries with money we could have spent on alcohol) by submitting ourselves to the influence or discipline of others, by changing our diets, residences, medications or exercise, etc.

Because we have some self-altering abilities, two more questions arise with regard to utility theory. First, which is the real preference: unevaluated desire or evaluated and cultivated desire? And secondly, what is real utility: attaining one's initial objectives or appreciating and enjoying evaluated objectives? "Fulfillment" or "flourishing" rather than "utility" is the name usually given to this latter attainment.

In sum: For at least six reasons, if not more, "decision utility" cannot be accurately defined or measured. Hence neither hedonistic ("experienced") nor "decision" utility is well defined for general applications.

UTILITY IS NOT FULFILLMENT. FULFILLMENT IS NOT UTILITY

There seems to be a meaningful distinction between the idea of eating to satisfy hunger and eating for pleasure; between drinking to quench thirst and drinking to please taste; between sex for pleasure and sex to procreate; and between huddling around a fire to get warm and bathing in a spa. Although satisfying a need is almost always pleasurable, pleasure can be sought apart from need, although perhaps not in the presence of surfeit. Still, it is not easy to pry these pleasures apart qua *pleasure* from specific physiologic gratifications. Nevertheless, it is not too great a stretch to speak of pleasure in these physiological cases as an object in itself, and not simply the concomitant of addressing a particular need.

However, many endeavors yield pleasure without pleasure being describable as their main aim. We do things for aesthetic, moral or religious reasons, and if those actions happen to give pleasure or yield happiness, well and good. But this does not mean that such acts aimed at pleasure or happiness in the first place. Again, as Bernard Williams has stated,⁴³ most action is directed at goals which are *meaningful* in one way or another, not at their mere byproduct, happiness. Happiness does not stand behind every other motivation as its “true” or “real” object. We miss all the other purposes when interpreting all acts as aimed at happiness, while we simultaneously dilute the meaning of “happiness” to describe all objectives. The case is similar when all motives are reduced, as I already mentioned, to selfishness, or to “power,” or “greed.” And I would argue that the same distortion is involved in asserting that all our acts “really” aim only at spreading our genes around.

Additionally, we need to understand why and how value gets assigned to certain portions of cyclical processes. Frequently, some stage in a process gets assigned a role as the foundation of value for the entire cycle. But the justification for this assignment is lacking. Do we eat to live or live to eat? Do poetry and art have survival value or does survival have poetic and artistic potential and value? Does the chicken live to make eggs or do eggs exist to make chickens? Do organisms serve genes or genes serve organisms? Are not suffering and joy ends on one level but biological means on another? Perhaps we should not dispute endlessly about whether wholes derive value from parts or parts from wholes, but instead appreciate that values in processes and life cycles are mutually supporting and derived: from top to bottom and bottom to top in scale; from past to present to future and back in time; from every part and experience to every other part and experience in organism; from individual to group and group to individual in society.

Fulfillment, or “*eudaimoneia*” as Aristotle conceived it cannot be “utility” as put forth in expected utility theory. Neither can it be “happiness” as we usually understand that word. The primary reason is that fulfillment is not the immediate goal of any act, but is instead the efflorescence of a balanced, lucky and well-lived life. This “human flourishing” cannot be aimed at directly, and is more in the nature of a gift of grace than a specifiable objective. We can put ourselves in the way of it, but we cannot wrest it from fate by following a system or using main force.

UTILITY AND THE PAST

In explaining rational choice as it is usually defined, Robyn Dawes states that one criterion of such choice is that it is based on the possible future consequences of the choice.⁴⁴ He points out that our desire to view our lives as cohesive or consistent leads us to honor “sunk costs,” thus throwing good money and effort after bad.⁴⁵ Numerous examples can show that the time, money and effort previously invested in some projects or commitments, no longer recoverable, is nevertheless realized as a loss on our emotive ledger only when the project is abandoned. Even when the future costs of continued involvement clearly outweigh the future benefits, we tend to enter the sunk costs into the balance as *future* costs of abandonment

or, conversely, benefits of continuance. “The past” Dawes says, “is relevant only insofar as it provides information about possible and probable futures.”⁴⁶

“Utility” for rational actors, thus inheres only in consequences, not in antecedents. In this respect, “utility” excludes considerations of “integrity.” While the past is allowed to inform the present and the future, i.e., to be a repository of facts, the significance of present and future, according to the theory seems unrelated to any particular treatment of the past. C. G. Jung once said that he would not divulge Sigmund Freud’s dreams, told to him in confidence, even though Freud had been dead for decades. When asked why, he said, “Respect lasts longer than life.” From the rational actor point of view, Jung could not have made this statement for the sake of Freud, who was long dead, but only for some future benefit. “It makes him feel better about himself if he keeps Freud’s confidences” would be the typical explanation of such behavior for utility-based decision theory. But is it not possible that Jung might have gotten far more gratification out of telling Freud’s dreams than keeping them a secret, and yet still have remained loyal to the deceased Freud? Is it not possible that we do some things because our acts nourish our characters (souls, to use another word) and because we want integrity itself, not just good feelings about apparent integrity?

To decide that anything past should be honored only if doing so makes us feel good is a large leap from the simple observation that sometimes it is a good idea to quit a losing cause. The narratives of our lives are not properly carried out only by considering their endings in isolation from what has gone before. The outcome of a piece of music is not the same as the end: it is the integrated whole. The *quality* of the beginning is affected by what comes later. Value is spread out over the full extent of many processes. The past clings to us. Our present projects are rooted in it.

Lives grow into stories. We are not born again every second without prior attachments. The long sweep of living reaches back, confirms, affirms, respects, regrets, justifies, embraces and rejects aspects of the past. Present and future are not amputated from their roots. We cannot just “put a thing behind us” as though it was disconnected from our present selves, without diminishing those selves. Our ballast and inertia is our ontic and moral mass. This is why economic talk about “sunk costs” is not sufficient to dismiss much concern about the past.

I will go so far as to assert that our present and future acts and experiences actually have a sort of consequence for the past. What a thing is, at least qualitatively, depends partly on later events. What whole sections of the past are in terms of value, can be altered and completed in the present and future. It can be argued that the past is not final because in the qualitative sense it is not wholly over. Freud, dead though he was, could have been betrayed by Jung. Jung’s action affected not only himself and his contemporary world, but even Freud, although Freud was not aware of it. Actions have all sorts of “effects” on their antecedents: on how we must interpret those antecedents, and on how we remember, value and evaluate them.

This means that while we can and should write off some things as “sunk costs,” and while we need to let go of old convictions, hopes, plans and goals in the appro-

priate circumstances, we cannot write off the past as a whole. There is the saying: “A dead lion is better than a live rat.” Utility fails to encompass considerations of integrity.

BROADER REASONING ABOUT ENDS

The rational use of instruments (means) just cannot be separated for most purposes from the reflective consideration of ends. The many shortcomings of “utility” already enumerated render it unfit as a standard for judging the worth of ends. We must reason otherwise about them, and willy-nilly, we are. Several authors have suggested ways that ends cannot only be described but also justified. Perhaps there is some reasonable “logic of values” even if such logic does not absolutely compel assent as demonstrative proof would.

a. Michael Stocker

Michael Stocker, in *Plural and Conflicting Values*, argues that rational deliberation about ends is indeed possible even in the presence of true value multivalence. The existence of plural values⁴⁷ means that internal and interpersonal conflict cannot be merely averaged over. However quantitative weighing is not necessarily the only means of adjudication among them.

Stocker suggests that disparate vectors of value, representative of the qualitative differences among our goals, could be conceptualized as directions on a pan. Quantities could be represented by weights and intensities or intricacies perhaps by distances. If we imagine a pan suspended on a cord through its center, we can also imagine many different arrays of weights at various positions on the pan, some affording balance and others not. Stocker posits that contrasting values need to be in equilibrium, represented as a balanced array on the pan. Many possible arrangements of that equilibrium could correspond, conceptually, to different ways of balancing the pan. “Equilibrium” or “coherence” describes a mutually enhancing arrangement of values.⁴⁸ This is admittedly a difficult concept to flesh out and is fraught with potential controversy. With this model, however, qualitative differences, contrasts and other relations are retained, an infinite number of equilibria are feasible, and arguments can be constructed to show that many constellations of value are *not* in equilibrium and thus mutually upsetting.

Such a metaphorical arrangement of coherent values, or desirable states, of course does not lend itself easily if at all to mathematical treatment. The simplicity of expected utility allows for the success of a rational actor calculus in the realm of games and their strict analogues. Stocker notes that the mutual determination of values and virtues described by Aristotle is so complex that “. . . we might as well expect there to be no algorithm giving us the mean of each and all – at least none available to us. Our pan is a device for combining incommensurable values. And the comparability of incommensurables also seems to ensure the impossibility of an algorithm for discerning the best or even a good mix of values. Thus, we see

the need for practical wisdom and why practical wisdom ineliminably involves judgment.”⁴⁹

If, as Stocker asserts and I have argued here, there are plural sorts of value, then “... choice is importantly among different sorts of goods, not simply of amount of good.”⁵⁰ Also, judgments about *lacks* and *sacrifices* can be made on qualitative as well as quantitative grounds. Our lives and choices can be fulfilling in one respect such as pleasure and deficient in another, such as wisdom. Decisions about ends truly may involve giving something special up, not just getting less than the maximum of that common coin, “utility.”⁵¹ According to Stocker, this implies that judgment is not simply factual, but evaluative.⁵²

Evaluative judgment would be, if its nature could be specified, a part of rationality broadly considered. Any putative “logic of values” would have to consider types and levels of values and relationships among them. This logic should afford at least some reasonable way to bring them into beneficial relationship with each other so as to bear on practical problems. If “Disease is Imbalance” there could be more than one “Balance” potentially attainable, depending on person, place or time.

b. Robert Nozick

Robert Nozick, in *The Nature of Rationality*, also indicates that thinking about ends lies within the scope of rationality. We can critique our values and preferences. Rationality extends well beyond the bounds of “instrumental rationality,” narrowly taken. He describes *instrumental rationality* as causal reasoning about the effects of action, *evidential rationality* as reasoning about information potentially obtainable through action, and *symbolic rationality* as reasoning about how acts express and reinforce character and commitment. Among these three, only instrumental rationality cuts any ice in expected utility theory. Nozick indicates that all three should count in a more comprehensive rational decision theory.

But he goes further, adding considerations about the relations of first, second and possibly other orders of preference to the canon of reason.⁵³ As I said in discussing the complexity of preference, we evaluate our desires. We note that some of them will lead eventually to our destruction, or to the destruction of other conditions required for their own satisfaction. It becomes apparent that such first order desires are undesirable because they conflict with other priorities, or because they undermine themselves. Nozick gives the example of a heroin addict who evaluates her or his desire for heroin as undesirable. He argues that it is rational, in the absence of specific reasons to the contrary, to embrace this default principle:

“The person prefers that each of the preconditions (means) for her making any preferential choices be satisfied, in the absence of any particular reason for not preferring this.”⁵⁴ So, it is rational except in extraordinary circumstances for us to prefer that we retain the ability to make choices, which includes, Nozick notes, “... being alive and not dying, having a capacity to know of alternatives and not having this capacity removed, having the capacity to effectuate a choice and not having this capacity destroyed and so on.”⁵⁵ Nozick elaborates on the rational as

well as the biological conditions for efficacious desires and choices, and proposes that it would normally be rational for us to prefer that all such conditions remain in place. I refer the reader to his chapter, "Instrumental Rationality and Its Limits" for that discussion.⁵⁶

More or less in passing, Nozick suggests that desires having a biologic basis could be considered justified, unless proven otherwise. In other words, one could argue that certain common embodied needs are universal in humans, and that behaviors which frustrate the fulfillment of those needs are irrational by default. I have already noted in Chapter Two some of the difficulties inherent in deciding what needs, capacities and characters should be called "natural." Nevertheless, an embodied theory of value might be constructed on the basis of our obvious physiological commonalities, although any specification of "rational desire" under such a theory could not be exhaustive or hold in every circumstance. To say, other things being equal, that we all should satisfy our thirst, is evident on the basis of our embodied predicament. But to say that we should all love opera is not. There is a limit to judgments which can be grounded on universal needs, and I am not sure how many arguments about ethics, economics or aesthetics can really be settled through ingenious references to physiology.

c. David Schmidz

David Schmidz proposes a circular model of human concerns which includes the rational evaluation of ends. In his view, there is not some foundational set of desiderata which must be accepted as self-evident and from which all other judgments are derived. Rather, the achievement of final ends, or enjoyment of activities and states of affairs normally viewed as termini for evaluations is itself part of a cycle of meaning and action. In his view, we have what he calls "maieutic" ends which are the most general ones, supporting specific choices. For example, we might have needs for "a life companion," "a career," or "a home" which get satisfied as we commit to individuals, vocations and places. These "needs for ends" can be viewed apart from the particular satisfactions of our defined choices. Thus a physician's job produces satisfactions in itself, apart from any higher end, but also can be evaluated in terms of more general needs: to settle on a career, to have an identity in a community, to be useful to others and to be counted on for something.

Inasmuch as this career choice satisfies such needs, it can be evaluated and compared, say, to a choice which might have intrinsic satisfactions, like life riding the rails, but which might fail to give one of these particular "reasons for living." Schmidz points out that our need for a variety of settled ends satisfies the overarching general end of *having something to live for*. And our drive to survive depends on how much we have to live for. To make the circle complete, the drive to survive supports instrumental (but also in themselves satisfying) ends such as finding food, water, safety, shelter, etc. With Schmidz's model, the whole cycle of ends is self-supporting, and every end can be evaluated in terms of its contribution to the richness and intensity of the cycle.⁵⁷

d. Ch. Perelman and L. Olbrechts-Tyteca

If reason were confined to formal, apodictic demonstration, with all conclusions incontestably derived from self-evident axioms or postulates using agreed entailment rules, then its application would be strictly limited. “Rationality” would then mean solely analytical demonstrations in mathematics and logic. We have seen that concepts of health and illness, categories of disease and categories of valuation are not, in the main, conducive to such treatment.

In their comprehensive work, *The New Rhetoric. A Treatise on Argumentation*, Chaim Perelman and Lucie Olbrechts-Tyteca renew the rationale for the dialectical proofs of Aristotle, pointing out that reason can comprehend methods for changing and increasing adherence to points of view as well as compelling adherence with demonstrative proof. (The “analytical” proof of Aristotle.) The realm of self-evident truths universally compelling for all rational beings is narrow, whereas that of initial assumptions and starting points on which large audiences can agree is wide. To insist on absolutely unquestioned axioms and universal contexts for rational discourse would render rationality almost wholly irrelevant to, for example, the thinking in and discussion of the practice of medicine. Is reason, these authors ask “...entirely incompetent in those areas which elude calculation?”⁵⁸

When logic limits itself to a few entailment rules, even including those for calculable probability, no methods of persuasion which merely improve adherence or agreement between interlocutors without making it total can be considered better, from the standpoint of reason, than arbitrary fiat, bribery, coercion or violence. But there are methods of argumentation, which Perelman and Olbrechts-Tyteca present in great detail, which are very plausible and persuasive, without being compelling once and for all. These are “dialectical proofs,” apart from necessary ones.

We have need, for the many reasons I have already recounted, for what Perelman and Olbrechts-Tyteca call “vague ideas.” These vague ideas, including nonclassical categories, metaphorical descriptions and incompletely formulated preferences and values, contrast to the well-defined, univocal terms of formal systems. “. . . a notion can be considered univocal only if its field of application is wholly determined, which is possible only in a formal system from which every unforeseen element has been excluded: the notion of ‘bishop’ in the game of chess satisfies this condition.”⁵⁹

Clear concepts cannot capture unclear realities, such as the fit of patients in diagnostic categories. As Perelman and Olbrechts-Tyteca say, “The necessity for a univocal language, which dominates scientific thought, has made clarity of concepts an ideal which one feels bound to try and achieve, forgetting that this very clarity may stand in the way of other functions of language.”⁶⁰

In that broad zone of reflection lying between deductive proof and unsupported assertion or dogmatism, informal reason operates as “dialectical argument.” The validity of such argument is context and audience dependent, but within contexts and for particular audiences there are more and less rational methods of persuasion. A demand for absolute certainty is unwarranted as the criterion

for rational argument in this zone. On the contrary, such a demand precludes the possibility of rational argument. While not every rhetorical device in every context can be called reasonable, many elaborated by these authors can be justified as part of the canon of broader, more widely applicable rational discussion. Such broad reason in the assessment of values and goals removes the impetus simply to assert and then coerce.

CONCLUSION

The deficiencies of expected utility theory leave us wanting other ways to reason about ends. The common theme among several authors who have considered this problem is that reasoning about ends, in addition to reasoning about means, is needed and possible. With careful work, ample justification can be found for informal, dialectical rationality. Real qualitative differences can be compared and contrasted within reason, but in non-quantitative ways. As Dewey set forth, solutions to problems are not just findings of univocal "best means" to fixed ends, but may involve true growth and discovery of values.

We can evaluate our values. There are associations of our usual concept of value which relate it to weight, duration, usefulness, scarcity, complexity, labor intensiveness, influence and fame. Some of these connections assume in our minds their importance without explicit examination, and there may be times when they are appropriate criteria for value and times when they are not.

In many areas work to understand and justify values better is within reason. It is possible, in reasoning about ends and values, to discover ways that diverse, non-fungible values can enhance and diminish one another. It is possible to establish as reasonable by default certain ends common to similarly embodied creatures with largely similar physiological and often similar psychological needs. It is plausible, based on an understanding of relationships, to argue that there is a rational basis for caring. It is not contrary to reason to discover reflectively that some ends are self-defeating, generating boomerang effects. Thus it is common to go too far in the pursuit of seemingly desirable ends until such pursuits undermine their own necessary support. Desires can be modified toward realism. We can study the evolution and development of taste, contrary to the assumption that there is no accounting for it. Most ends, indeed, are everything but self-evident or arbitrary. The rational actor genie that we let out of the casino, hoping that it would perform magic everywhere, needs to go back where it came from.

The "art" of medicine is not just public relations. It involves broad-based reasoning about situations, characters, possible means and the development, as well as the choice of ends. I hope that this is evident by now in the minds of most readers. But what is not evident is how the profession could change in order to enhance and make use of this broad-based and emotionally, as well as factually, grounded reasoning. Some preliminary thoughts about reforms which could enhance this "art" occupy the next, and final chapter.

NOTES

- ¹ John Dewey. *Theory of Valuation*, in Vol. 13 of *The Later Works*, p. 207.
- ² *ibid.* p. 280
- ³ See Robin M. Hogarth and Melvin W. Reder, Eds., *Rational Choice. The Contrast Between Economics and Psychology*.
- ⁴ See Baruch Fischhoff "Value Elicitation. Is There Anything in There?" *American Psychologist*. August 1991, pp. 835–847; Amos Tversky, Shmuel Sattath and Paul Slovic, "Contingent Weighting in Judgment and Choice," *Psychological Review*, 1988 Vol. 95 No. 3, pp. 371–384 and Hillel J. Einhorn and Robin M. Hogarth, "Behavioral Decision Theory: Processes on Judgment and Choice." *Annual Review of Psychology*, 1981. 32: pp. 53–88, particularly the section "Are Optimal Decisions Reasonable?" pp. 55–59.
- ⁵ John Von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior*, pp. 1–2.
- ⁶ *ibid.* p. 8.
- ⁷ *ibid.* p. 8.
- ⁸ *ibid.* p. 9.
- ⁹ *ibid.* p. 32.
- ¹⁰ *ibid.* p. 33
- ¹¹ *ibid.* p. 16.
- ¹² *ibid.* p. 17.
- ¹³ *ibid.* p. 17.
- ¹⁴ *ibid.* p. 17.
- ¹⁵ *ibid.* pp. 17–18.
- ¹⁶ i.e., from a prescription for the best choice.
- ¹⁷ Von Neumann and Morgenstern, *Op cit.* p. 33.
- ¹⁸ Robyn Dawes, *Rational Choice in an Uncertain World*. Harcourt Brace Jovanovich, 1988. p. 2.
- ¹⁹ *ibid.* p. VIII.
- ²⁰ Richard Thaler and other "behavioral economists" are important among these "others." See Richard H. Thaler. *Quasi Rational Economics*. The Russell Sage Foundation. N.Y. 1991 And Thaler. *The Winner's Curse. Paradoxes and Anomalies of Economic Life*. The Free Press, a division of Macmillan Inc. N.Y. 1992.
- ²¹ Baruch Fischhoff. "Value Elicitation. Is There Anything in There? *American Psychologist*, Vol. 46, No.8,
- ²² Derek Parfitt. *Reasons and Persons*, Clarendon Press, 1984. p. 465.
- ²³ J.J.C. Smart and Bernard Williams. *Utilitarianism, for and against*. Cambridge University Press, 1973. pp.. 112-113. p. 845.
- ²⁴ This can also be put as Dawes does: If A is equally or more preferred to B, etc.
- ²⁵ S. Lichtenstein and P. Slovic. "Reversals of Preference Between Bids and Choices in Gambling Decisions." *Journal of Experimental Psychology*, 89(1) pp. 46–55. 1971.
- ²⁶ This example comes from an article by Paul Slovic entitled, "The Construction of Preference" in Daniel Kahneman and Amos Tversky, Eds. *Choices, Values and Frames*. Cambridge University Press, 2000. pp. 489–502.
- ²⁷ *ibid.* p. 492.
- ²⁸ Amos Tversky and Daniel Kahneman, "The Framing of Decision and the Psychology of Choice." *Science*, 211 (4481), pp. 453–458.
- ²⁹ B.J. McNeil, S. G. Pauker, H. C. Sox, Jr. and A. Tversky. "On the Elicitation of Preferences for Alternative Therapies." *New England Journal of Medicine*, 306: 1259–62.
- ³⁰ Amos Tversky, Paul Slovic and Shmuel Sattah. "Contingent weighting in Judgment and Choice." *Psychological Review*, 1988, Vol. 95, No. 3, pp. 371–384.
- ³¹ Having been born in San Francisco I have to assume that living there is worth a sacrifice.
- ³² Tversky, Slovic and Sattah. *Op cit.* pp. 383–384.

- ³³ Hillel J. Einhorn and Robin M. Hogarth. "Decision Making Under Ambiguity." In *Rational Choice. The Contrast Between Economics and Psychology*. Ed. by Robin M. Hogarth and Melvin W. Reder. University of Chicago Press, Chicago and London. 1986. pp. 41–66.
- ³⁴ *ibid.* pp. 43–44 paraphrased here.
- ³⁵ *ibid.* pp. 63–64.
- ³⁶ Robyn Dawes. *Op. cit.* p. 159.
- ³⁷ This term is used by Daniel Kahneman in "New Challenges to the Rationality Assumption" in *Choices, Values and Frames*, Ed. by Kahneman and Tversky, pp. 758–774.
- ³⁸ Daniel Kahneman, "New Challenges to the Rationality Assumption." *Op. cit.*
- ³⁹ See Daniel Kahneman, "Evaluations by Moments. Past and Future." pp. 693–708 and Amos Tversky and Dale Griffin, "Endowments and Contrast in Judgments of Well-Being." pp. 709–725 in *Choices, Values and Frames, Op. cit.*
- ⁴⁰ Richard Thaler and H.M. Shefrin. "An Economic Theory of Self-Control" in Richard Thaler, *Quasi Rational Economics, Op. cit.* pp. 77–90.
- ⁴¹ Richard Thaler. "Savings Fungibility and Mental Accounts." In Richard Thaler, *The Winner's Curse. Paradoxes and Anomalies of Economic Life, op cit.* pp. 107–121.
- ⁴² Baruch Fischhoff, *op cit.* p. 843.
- ⁴³ J.J.C. Smart and Bernard Williams, *Utilitarianism, for and against.* pp. 108–109.
- ⁴⁴ Robyn Dawes. *Op cit.* p. 8.
- ⁴⁵ *ibid.* p. 24.
- ⁴⁶ *ibid.* p. 31.
- ⁴⁷ Stocker quotes Aristotle in the *Nichomachean Ethics*, saying (I have used a slightly longer version) "...if the things which we have named are also things good in themselves, the account of the good will have to appear as something identical in them all, as that of whiteness is identical in snow and in white lead. But of honour, wisdom, and pleasure, just in respect of their goodness, the accounts are distinct and diverse. The good, therefore, is not some common element answering to one idea." From the Oxford Translation, Ed. W. D. Ross. 1.6. 1096b 21 ff.
- ⁴⁸ Michael Stocker. *Plural and Conflicting Values* p. 148 ff.
- ⁴⁹ *ibid.* p. 149.
- ⁵⁰ *ibid.* p. 169
- ⁵¹ *ibid.* p. 170.
- ⁵² *ibid.* pp. 172–173.
- ⁵³ e.g., "reasons for reasons," "value of values," and "desirability of desires."
- ⁵⁴ Robert Nozick. *The Nature of Rationality*. Princeton University Press, Princeton. 1993. p. 142.
- ⁵⁵ *ibid.* p. 142.
- ⁵⁶ Of course, as already discussed, we sometimes, for special reasons want *fewer* choices as when Ulysses tied himself to the mast to avoid giving in to the temptation of the Siren's song.
- ⁵⁷ See David Schmidz. *Rational Choice and Moral Agency*. Princeton University Press, Princeton, N.J. 1995. Chapter 3, especially. pp. 58–79.
- ⁵⁸ Ch. Perelman and L. Olbrechts-Tyteca. *The New Rhetoric. A Treatise on Argumentation*. Trans. by John Wilkinson and Purcell Weaver. Univ. of Notre Dame Press. Notre Dame and London. 1969. p. 3.
- ⁵⁹ *ibid.* pp. 130–131.
- ⁶⁰ *ibid.* p. 133.

FULL SPECTRUM MEANS AND ENDS REASONING

“...something unpredictable, spontaneous, unformulable and ineffable is found in any terminal object. Standardization, formulas, generalizations, principles, universals, have their place, but the place is that of being instrumental to better approximation of what is unique and unrepeatable.”¹

The first part of this chapter recapitulates and fleshes out a portrayal of how means and ends reasoning works in practice. The second part of the chapter will offer suggestions for bettering our individual and institutional capacity for deliberation and judgment. The glory of the medical art is the creative ways it negotiates the interface of fact and value, weaving the two together.

FIRST PART. INFORMAL JUDGMENT AND THE ART OF MEDICINE

Behind the closed door of every examination room there is a surprise. Whether the patient is familiar and has a routine problem named on the chart, or is a stranger with a mysterious complaint, no true physician can open that door without some thrill of anticipation. Something new is about to happen. There is always at least some surprise. Is it an adolescent with a sore throat whose arms, when the pulse is taken, reveal neat parallel scratches of self-mutilation? Is it a newborn whose father says, “Remember, you treated me for meningitis when I was at college in 1976?” Perhaps it is a little girl who was bitten by her pet mouse, and when asked why, says, “I squeezed it too hard.” Or maybe you pull back the curtains in the emergency room to find a 96 year old woman whose skin is so fragile it comes off with her socks, but she reaches up to straighten your tie before she can tell you her troubles.

Sometimes action must precede any chitchat. The patient has a falling blood pressure and is becoming confused. On another occasion, seemingly idle talk during the freezing of a wart leads to the discovery of an unsuspected pregnancy. Perhaps the workup for a patient’s numbness in the feet reveals not a neurological disease, but a short in her electric blanket. The balls of uncertainty are always up in the air. There are times to keep the eye fixed on one, but it is well to remember that others are circulating.

Haste really does make waste. We cannot be open to possibilities when we have a fixed agenda. Recognizing that there are instances when speed is of the essence, assumptions must be made rapidly, constellations of signs and symptoms recognized hurriedly and acted upon; still, such instances should be few. The pursuit of a preordained end along the shortest, cheapest path between beginning and end

points which are presumed to be known and unalterable is rarely all that can or should be going on. Lost opportunity might not make a return visit.

I have argued that informal means/ends reasoning, exemplified in but certainly not exclusive to medical care, applies to situations and in contexts which are inhospitable to formulaic treatment. The prevalence and variety of such situations is larger than has been appreciated. Unexpected contingencies frequently intrude even upon encounters which initially look routine. The full spectrum consideration of means and ends makes use of all our abilities: perception, knowledge, emotion and reason.

To get any endeavor off the ground, there must be many unconscious or unexamined assumptions already in place. Means and ends deliberation *this time* necessarily involves a limited number of matters. How stringently limited such matters are depends on the clarity of the problem, the level of urgency when it becomes clear, the degree of typicality, the detail and seriousness of agreed commitments, and whether the endeavor to be undertaken is immediate and specific or long range and comprehensive.

While formulaic protocols and decision trees have “decision nodes,” these are only metaphoric forks in the shortest roads to fixed ends. At such nodes, alternatives are excluded in a compulsory fashion depending on particular prescribed inputs. Such allowable inputs are “facts” captured through specified investigation. No inputs outside of the specified ones are recognized to be significant. Investigative nets of this type insure thoroughness and rigor in a limited way. It is presumed that nothing which could go around or through them is relevant.

We have seen detailed reasons in the previous chapters why informal means/ends reasoning is different. Adapting to fluid contexts, it takes account of the non-classical internal structure of categories as well as their vague, shifting and overlapping boundaries. It selects metaphors for causation judged appropriate to the circumstances, rather than using only the billiard-ball model. It considers what *level* of causation to address, recognizing that proximate causation at the level of middle sized objects is only one among many types predisposing to an event. Such reasoning can conceptualize the pursuit of ends in terms of progeneration, nurturance, adventure, exploration, acquisition and so forth; not merely as a journey with only cost and length needing to be minimized.

Compared to formal procedures moving from concrete “facts” to fully known goals, informal reasoning looks differently at ends. They can be evaluated in terms of each other, criticized and adjusted. They can evolve and be transformed. They depend upon particularities: person, place, time and practicality. In addition, as Dewey brought out, means and ends interdigitate. Processes are partly products and products are parts of new processes. Some ends are effective as lures, or final causes. But they can fail in this role. Then intermediate motivators (“ends-in-view”) can be sought, and roundabout approaches taken, to valued but not yet sufficiently desired long-term ends.

Means, despised in theory, turn out in practice to have their own great satisfactions. Value of whatever kind is often recognized by informal means/ends reasoning

to be spread out over endeavor, not simply concentrated at its terminus. Furthermore, specific values attain their significance not by themselves, but in relation to one another. Informal reason considers the effects of harmony and disharmony on the mutual enhancement of particular ends.

Instead of the “decision nodes” in algorithms, informal reasoning centers on what I will call “foci for judgment.” Such foci are centers of concern; the various matters which are potentially up for judgment in one endeavor or another. They are locations of meaning in a metaphorical “cognitive space,” not points in physical space or time. Inputs to and outputs from such foci of deliberation potentially come from and go out to all of experience; past, present and future. At these foci, interacting facts and values are brought to bear on problems of action, always with one eye open for novel possibilities.

Many matters for judgment have emerged in the previous chapters, and I will not try to review all of them here. There could be no exhaustive list, considering all the surprises that experience has yet to reveal. But, to recapitulate and offer illustrations, I offer some of the important foci of judgment here.

1. Judgments About the Setting

In the example of medicine, clinical judgment takes account of and depends on the setting. When the setting is accustomed and stable, few decisions related to it are needed. But unusual settings or changing ones affect what can be accomplished. Judgment becomes activated in adapting decisions to the setting. It makes an obvious difference whether care is occurring on the street, in a clinic or in the hospital. It makes an obvious difference whether one is working in a tent near battle lines, an impoverished clinic in Afghanistan, a rural area or an inner city, a helicopter or the intensive care unit of a university hospital. The availability of resources including information, specialty care, medication, equipment and transport has to be taken into account in deciding what to do. Within any of these settings, activity can be affected by sudden shifts. Disasters call for triage, shortages for substitutions, threats for security measures, epidemics for higher indices of suspicion.

Regarding diagnosis, the Bayesian concept of “prior probability” is all about assessing the setting. For example, in a college health setting working with generally healthy young adults, very few laboratory tests are likely to turn up positive diagnostic results. The sensible practitioner learns in this setting to be very conservative about conducting “fishing expeditions” for pathology. But in an emergency department used by many old and/or very ill people, the yield of positive and significant results on extensive testing is generally much higher. In this setting, it is proper to conduct much more aggressive diagnostic testing lest something important be missed. A sense of what is likely to be found, or researched data on “prior probability” if available, affects the chance that specific investigations will make a difference. Even when adequate numbers for formal Bayesian analysis are lacking, informal reasoning can supply appropriate “fudge factors” to specific patient populations in particular settings. These will change decisions regarding effective diagnosis and treatment.

2. Defining the Problematic Situation

For Dewey, as we have seen, a “tertiary quality” fuses cognitive, sensory and emotional awareness into a problematic situation. Remembering that a “situation” does not exist apart from participants in an environment, “tertiary quality” names an integrating mechanism which ties the elements of the situation together. The problematic situation is characterized by indeterminacy, dissatisfaction and unease, indicating a need for inquiry, means/ends deliberation and action.

We are all potentially involved in several situations at once. This presents the problem, to be addressed by future philosophic and psychological work, of how exactly they color each other. It also presents a practical problem for informal reasoning in any particular set of circumstances. Which one or ones of the concomitant situations should be attended to first? This issue needs, at least tentatively, to be decided. Then, when we commit to collaborative involvement in addressing situations with others, we need, for the sake of effective mutual action, to be sure that our individual situations intersect. The overlap must be substantial in order to support a shared endeavor, although absolute convergence does not seem necessary. In fact, patients, for instance, are often very forgiving toward doctors who have multiple responsibilities and cannot immerse themselves wholly in the patient’s particular situation. Such generosity represents an openness of patients to admit consideration of others as relevant.

Similarly, physicians and other caregivers should recognize that patients have more than one concern; and in particular, that they have lives outside of their illnesses which not only are ongoing, but which in the large determine the very importance of dealing with the illness at all. We are not, despite what our doctors might think, illnesses with lives secondarily attached any more than we should be, for our dentists, teeth which coincidentally are in people. Mutual forbearance and accommodation of the differences for participants in overlapping situations helps minimize friction caused by incongruities. Any pretense that participants are not engaged in situations apart from the shared one at front and center is potentially counterproductive.

The training and socialization of professionals and the structuring of institutions providing for their work is enhanced when it supports the shared identification of situations between them and their clients. Thus there needs to be constant vigilance regarding conflict of interest as well as encouragement (instead of the usual discouragement) of feedback from clients encouraging accountability, and emphasis on understanding the perspective of others. But no matter how well care systems and training (in the case of medicine) are designed to align the concerns of patients and caregivers, there will always be work to do in particular cases.

On occasion, it is easy to step into a well-shared situation as happened once to me when I was walking in to begin my shift at the emergency room. A sweating middle aged man drove under the entrance canopy, opened his door and fell out of the car while clutching his chest and saying: “Help! I’m having a heart attack.” In such a situation, every instinct and habit of the caregiver is attuned appropriately.

In other instances, however, mutual participation in a common situation is seriously incomplete, and efforts are needed to bring the parties into a workable alignment. For example, I once treated an older physician who came to the ward with congestive heart failure. He said, "I gave myself a shot of merc² and it didn't work, so I came here to die." As I saw it, the situation was problematic in that an adequate treatment for congestive heart failure needed to be found. As he saw it, he needed morphine – not for treatment – but to be comfortable and die in the hospital without excessively distressing his family.³ The incongruence in our situations needed serious work.

"Getting on the same page," as the expression goes, can require adjustments of perception by any of the several participants or by all of them. Sometimes such adjustments fail, and then either the enterprise must be abandoned or one party must take control coercively. The latter occurs when patients walk out "against medical advice" or physicians take them to court to impose treatment. It also occurs in cases of toxic delirium, psychotic thought disorder and panic, for example, when actions may be required to get the patient out of a situation which she or he cannot assess adequately. States of confusion, obtundation, paranoia and panic may preclude participation on the part of the patient in any constructive response. But for the most part, the appreciation of discordances in the apprehended situation is the job of reflective inquiry, while the matter of resolving them requires dialogue and flexibility.

Cultivating the proper degree of mutuality is one task for informal reason in establishing concerted action. Remaining open to the emergence of unnoticed or novel factors which could be relevant is another. Indeed, there can be latent "actual" or highly important situations hidden behind the initially "apparent" ones. Indications that more is going on than we thought can supersede preliminary impressions. Such revelations often identify what we finally conclude is "really" at issue.

For example, a situation can be vastly different than it appears when a caregiver discovers that some of her own important assumptions are not shared by the patient: The patient might not share the physician's "scientific" view of the causation of symptoms; the patient might have very limited resources—no financial support, no family and no home; the patient could be unusually suspicious and mistrustful;⁴ the expectations for what can be accomplished might be very discordant between caregiver and patient; differences of economic, cultural or religious background could cause unexpected offense; the patient might be far more expert and up to date on the science of his diagnosis than the physician; threats of violence or of lawsuits could crop up; it might come out that the patient had one of several agendas other than getting better; a family might have exhausted its ability to cope with relatively mundane symptoms or problems; a patient might not be able to communicate honestly in the presence of a friend or family member; and initial investigation could uncover unsuspected, medically serious problems so radically different from those expected that their finding would transform the situation for all concerned.

Clinical acuity is thus pressed into service to confirm the nature and extent of situational boundaries. The focus of judgment centered on ascertaining and redefining the relevant situation can be quiescent, but it is always potentially active.

3. *Judgments About the Problem*⁵

Whereas a problematic situation is characterized by potential, latent or manifest unease and dissatisfaction, it takes further inquiry to specify the problem as well as what aspects of it can aptly be addressed. In the instances of prevention and discovering latent or incipient disease, it even takes inquiry to uncover an unsatisfactory situation about which there is no initial unease. We may actually have to generate worry (a very unpleasant process) to arouse interest in prevention.

Just as perceptions of the situation are not usually entirely shared, perceptions of problems among physicians or other caregivers and patients do not entirely overlap. The parties involved must educate one another about unshared aspects of the problems as they see them. Dialogue of this nature helps formulate a problem amenable to mutual action.

In general, patients want relief from symptoms and physicians want diagnoses, although both goals are often shared. The patient is usually dealing with the problem at the level of the symptom, whereas the physician seeks a diagnosis explaining the symptoms and as a key to definitive treatment. We have seen that symptoms are the literal and most basic core elements out of which concepts of illness develop. There is a focus of judgment, not a decision node in a protocol, about deciding whether and when symptoms should or can be alleviated prior to the establishment of a diagnosis. This often requires negotiation. Diagnostic protocols, however, prescribe and judge evaluations solely on the basis of adherence to themselves, never minding that the patient has a say in whether to sign on. There is little appreciation of the fact that patients undergo pain or discomfort, delay, anxiety, indignity and expense in the pursuit of a diagnosis. There is almost no provision in any diagnostic algorithm for measures needed to elicit consent and intelligent participation on the part of the patient. The quality of participation in a medical history or exam is often influenced, for example, by the presence of pain, nausea, vertigo, anxiety or fever. Relief of at least some symptoms is an end-in-view which serves as a means to reaching the sometimes more distant end of a diagnosis and definitive treatment.

The *process* of diagnosis needs the kind of attention which has heretofore been paid only to the outcome. For one thing, a diagnosis may not be forthcoming quickly or ever. Meanwhile, the patient is living with the symptoms. For another, failure to address issues of comfort, combined with the imposition of various indignities, expenses and ordeals, discourages some people from seeking or co-operating in needed care at all. Therefore, problem-defining activities work best when tailored to individual personality, symptom severity and tolerance. Any protocol, guideline or algorithm for diagnosis needs to be supplemented and tempered with compassionate discretion. Unfortunately, retrospective reviews for “quality of care” fail to acknowledge the existence of individual factors at all. A robot applying the protocol

mechanically would get higher ratings on such a review than a compassionate and flexible clinician. The robot would do less of use, but look better in retrospect, solely because of the myopic view of value incorporated in the protocol.

In the instances when problems are not clear cut, a degree of leisure may be required to formulate a problem constructively. Very few problematic encounters requiring means/ends reasoning are so emergent that rapid decisions are worth the concomitant risk of tackling the wrong job. In medicine, a relationship of mutual understanding and trust needs to be established, often before much else can be accomplished. Stories and anecdotes must be told and insights shared, often unrelated to the apparent trouble. Frequently, several visits giving routine, minor service in a conscientious way open up the possibility for more significant service later. Another detour frequently needed to facilitate problem formulation is simply *letting time pass*. Patients need time to assimilate first impressions and reflect on them, as well as to decide how to use opportunities which have been offered. In the case of the physician, time for imaginative reflection and research can be essential. There are innumerable instances in most practices when reflection at the end of a busy day facilitates the formulation of a problem. Also, the passage of time is the best of all diagnostic tests whenever it is feasible to wait for a disease or problem to "declare itself." Many an ill-advised diagnostic test could be obviated if waiting a day or two was considered an intelligent and tolerable option. But patience is built on trust.

Finally, problems can be so unique that they do not sort well into diagnostic slots. In such cases, the problem discovered and its relation to established categories can afford new knowledge. For example, one patient with all the findings of a type of vascular inflammation called Kawasaki disease developed shock (low blood pressure with inadequate organ perfusion) and disseminated intravascular coagulopathy (diffuse clotting with consumption of clotting factors then leading to bleeding). Initially, this patient was treated for toxic shock syndrome and septic shock, since no expert had heard of shock or coagulopathy with Kawasaki disease. But "just in case," she also received intravenous gamma globulin, the treatment of Kawasaki's. In retrospect, no evidence for toxic shock or sepsis was ever found. So when the patient had a relapse, she was treated solely for Kawasaki disease with a complete response. From this case alone it could be concluded that Kawasaki disease may lead to shock and disseminated intravascular coagulopathy. A focus of judgment within the general category of defining the problem is thus how to classify a constellation of findings when they fit all known categories imperfectly. Whether to consider such a problem as allied best with one category, or as truly partaking of characteristics of two or more is critical for planning action. There can be no recipe for such a decision.

Most patients perceive themselves even at a given time to have several actual and potential medical concerns, not just one problem. Doctors recognize their patients to have multiple problems as well, although the list might not be the same. Some important work involves reconciling these lists. And prevention often requires imaginative rehearsals to conjure up visions of covert or future trouble. Primary

care relationships (whether they be with a generalist or a specialist) have long been recognized as vehicles for working on these problem lists, in contrast to episodic care focused mainly on a single priority. But in either setting, the complete ensemble of problems affects the inquiry into and the resolution or palliation of whatever problem gets cast as the first order of business. Determining the degree to which that problem can be treated in isolation from the rest requires clinical acumen, and is another focus of judgment related to problem setting.

Suppose, for example, that there were standardized guidelines for the treatment of diabetes, asthma and depression, but one patient suffered from all three. Not only would this person have several diagnoses, but she or he might “have” each of them in a partially unique way. Modifications to all standard guidelines would be needed. Priorities would have to be juggled. Problems as well as their proper treatment are matters for individual and not only categorical judgments.

4. Judgments About Ends and Values

As shown by Dewey, some values are imported into means/ends endeavors and others are generated in action. Contractual obligations, for example, are established at the outset. In the case of medical care, default values such as that harm should not be done, suffering relieved, life prolonged, confidentiality maintained, and autonomy respected are in force unless such goals come into conflict with each other. When conflicts among these basic values arise, judgment and negotiation, not rules, are needed to establish a workable equilibrium. Establishing that equilibrium is a focus for judgment which is always to some degree active.

Patients and physicians are constantly confronted with tradeoffs among plural ends. These are not always so dire and fundamental as the tradeoff between suffering and survival, autonomy and recovery,⁶ or between certain disability and some risk of death. There can also be choices between sedation and pain, candor and kindness future suffering and present pain, independent living and safety, blissful ignorance and anxious knowledge, or headaches and eating cheese.

Obviously, the availability of choices alters in the course of experience. Some options open up; others are foreclosed. However, besides affecting choice options, experience changes our goals. New perspectives alter the importance of previous concerns. Old values come into question and are critiqued. Our bodily abilities and desires change. We “learn the value of” new things and “learn to value” some old ones more, and others less. We find that hopes and expectations can willfully or involuntarily be revalued.

Medical care, like most goal-directed activity, reveals itself to be a process containing, and not merely attaining, value. Means are not dominated by or subservient to ends, but reciprocate with them. Some acts and experiences look more like means, with value external to them, and others look more like ends – immediately satisfying. But neither means nor ends are pure. Also, values, as argued in Chapter Five, are not self-sufficient elements isolated one from the other. They resonate. They clash or harmonize. They weave into aesthetic and narrative

wholes. However, they are qualitative, not quantitative. Their resonance depends on qualitative contrast.

So care has multiple goals, as enumerated above. Among them is the added goal of maintaining and enhancing its own value as an activity. So a frequent focus for judgment in the delivery of care is to consider the effect of what is being done now on the efficaciousness of the institutions, people and skills of the profession itself.

Life does not cease at the hospital entrance and resume at the exit. Much of value goes on within, both in the instrumental, extrinsic sense and in the intrinsic and final sense. This is why “outcome” cannot be attended to as though it were severed from “process.” Every element of process deserves careful consideration to enhance its participation in the value of the whole.

5. Judgments About the Treatment

Because individuals and their situations are more or less unique, because resources and skills available vary from place to place and time to time, and because discoveries in medical science occur daily, treatments are more or less unique as well. The tolerance for risk, varying valuations of particular outcomes, and the possible benefit or harm of taking a particular chance based on such valuations also add to a general need for flexibility in treatment. The need to apply judgment depends largely on the typicality of the illness and situation of the patient and the caregiver. Judgment about treatment focuses on all the specific factors which individuate one therapeutic endeavor from the others; person, place and time. This major and continuing focus concerns how to adapt general knowledge, values and skills to the particular.

Treatment also exemplifies Dewey’s point about learning as you go. The skilled caregiver remains vigilant toward all feedback. How is any particular treatment working? How does the patient experience the effect? Are any such experiences altering previously desired ends? Does the treatment response reinforce or call into question earlier conclusions about diagnosis? Is the particular response telling the caregiver something new about the disease? Are there any researchers currently investigating problems which have come up in the course of this treatment? No formula gives the answers to these questions and most discourage even the asking of them.

SECOND PART. PROVIDING FOR THE ART OF MEDICINE

The art of medicine, and the character virtues on which it depends, are surviving in spite of conditions in Anglo-American medicine; not thriving because of them. Once we recognize, as readers of this book hopefully will, the nature and importance of that art and its underlying virtues, we will naturally wonder what could be changed so that these are encouraged, and not frustrated. This section offers a few suggestions in that direction, with confidence that many others would be forthcoming if our educational, legal, research and care institutions were to recognize the need. These suggestions are preliminary, undoubtedly controversial, and are certainly not the

last word on the subject. I have divided them into sections relating to various institutions and practices.

1. Medical Education and Health Care Education in General

Life experiences, and not just scientific aptitude, need to be taken into account in recruiting and selecting health care students. This means that students of various ages should be accepted, not just those who have graduated from college at age 21. Nurses, medical technicians, farmers, stockbrokers, military people, teachers and others add to the educational mix of a medical school, for example, and bring important perspectives to traditional medical students. In addition, a medical student body needs strong multicultural representation, not for the sake of the minorities accepted, but for the sake of other students also accepted and for the sake of the profession as a whole. Among “minorities” who should be encouraged to apply are, very importantly, the ill and the disabled, as well as those who have either survived serious illness or dealt with it in their families. Such students would bring to a medical class a much needed dose of realism about the experience of being a patient. They would bring, hopefully, some appreciation for what goes on in the lives of patients and families outside of the direct medical encounter, and of how that wider experience largely determines the value of that encounter.

Given the great multiplicity of roles in medicine, including research, practice, teaching and community outreach, medical schools should seek undergraduates with interest and experience in the humanities and the social sciences, as well as those in engineering and the biomedical sciences. The efficacy of the healing professions of course depends on sound and well-learned science; but it also depends on engagement with patient and community facts and values. A profession dominated by people passionate for cell biology and genetics alone is not a profession which can reach whole persons and interface well with struggling communities. The profession needs diversity of interest for effective balance just as a person needs balance for health.

Preclinical and clinical training could also better support sound informal reasoning, deliberation and judgment in the practice of medicine. There was once a tradition of future doctors acting as orderlies (now known as “technicians”). This should be renewed and strengthened. Potential physicians need to know first hand what patients experience in the halls while waiting for procedures, in the emergency department while waiting for help, and in their rooms after ringing the buzzer in distress. They need to see close up from the patients’ and families’ eye view what a hospitalization or outpatient experience means.

This process of staying close to the patient should continue in the pre-clinical years. There should be chances for medical and nursing students to listen to the unstructured narratives of patients: to the stories of their illnesses and their efforts to cope; to their accounts of encounters with doctors and medical institutions; to their stories of seeking care and trying to find ways to pay for it. We need, in fact, a whole course in the preclinical years which is supplemental to the courses given on medical histories and physical diagnosis – a course on patient experiences.

Medical students by and large arrive at school with the idea that they should become skillful in order to serve patients. Unfortunately, the four years of medical school often communicate another idea: That students are learning to serve an ideal called “health” (assumed to be precise without having ever been precisely articulated), and that their job will be to foist this ideal on patients. We should not inculcate an ideal which has an abstract existence outside of actual patients. Such an agenda leads to the view that patients are obstacles to the external ideal, and not the very parties who ultimately determine what ideal goals should be in play. The perception that patients are difficult, stubborn, and foolish increases when ideals are anchored outside of those patients. This perception, whatever real justification it might sometimes have, becomes exaggerated and gets in the way of accomplishing anything. It would be well to replace the concept of ideal health with the concept of the possible, relative to particular patients. Training should focus on that point.

To facilitate wise decision making, the medical curriculum needs to focus on functioning with uncertainty, not arriving at premature certainty as though it was required for functioning. Professors should reveal the well-kept secret that not everything can be diagnosed to fit our existing categories of illness. They should admit that “illness” is not a univocal concept, but a vague one with borderline cases. They should acknowledge that triage is not something that happens only after a train wreck or a bomb explosion, but that it happens all day long every day, because not all concerns can be met at once – they have to be prioritized. Instead of teaching students that they have to do everything, and that anything less than absolute adherence to the ideal is total failure, the educational system needs to get real and teach how to prioritize – how to do the most necessary, the most practical, and the most important items for and with the patient first.

Clinical teaching needs to emphasize that there are many ways to the promised land. Tertiary hospitals are not always the best place to be. The gold standard of care in Massachusetts is, surprise, looked down upon in Texas and California. The “mandatory” prophylactic colonoscopy enjoined by the American College of Surgeons is, wonder of wonders, an air contrast barium enema when ordered by the radiologists. Schools need to teach that recommendations which are at odds with one another can in some circumstances, far from being a scandal, be beneficial to medicine as a whole. Teachers need to be more tentative and less dogmatic, more skeptical and less religious about their current recommended practices.

We need to recognize, once and for all, that diagnoses are in patients. Patients are not diagnoses. For one thing, as noted previously, they often have many diagnoses, uniquely mixed. For another, the importance of their diagnoses is for their lives, not the other way around. Patients do not and never will do everything their doctors tell them. This lack of compliance is not, as medical education traditionally has let young doctors think, pure irrationality. If physicians were to ask why patients fail to come in for follow up, for example, or fail to get their prescriptions filled, or fail to take medications or comply with dietary and lifestyle advice, the patients would offer many sound reasons. Physicians need to hear these reasons and make allowances for them. Instead, we are taught an “all or nothing” approach to good

care which too often results in patients going AWOL. Medical schools need to teach students how real patients act and how to deal with those realities, not send them out furnished only with rigid agendas which fail to interface with actual lives.

Finally, let us take a critical look at hierarchies in medicine and the ordeal theory of medical education. Medical training is difficult enough without unnecessary shaming and humiliation for the trainees, and without subjecting them to impossible hours and patient loads, especially, at times, without adequate supervision and help from attending physicians. With the entry of women into medicine and a little help from the nascent efforts of medical residents to bargain on their contracts, some earlier abuses have been mitigated. And of course, there are vast differences between the various programs, with some being collegial and others completely authoritarian. But too often, the graduate of a training program which resembles boot camp, who has survived unnecessary hazing and servility, now thinks of him or herself as better than others and somehow deserving of special honor and recompense. But that is the very attitude that gives physicians the reputation of arrogance and greed with the general public. In the name of the humility we need and not humiliation which is compensated later by pomposity, the schools, by example as well as precept, should teach mutual respect and cooperation.

Collegiality also means sharing of knowledge, not thinking of it as something which should be anyone's private property. Some senior physicians share knowledge freely with students, patients and other caregivers. Instead of rattling off the legal minimum to obtain "informed consent" from patients, they engage in teaching and learning give and take. Instead of intimidating students by ridiculing their ignorance they encourage and value questions. Instead of withholding secret and esoteric knowledge in an attempt to impress nurses and other team members with their own significance or that of their specialty, they enjoy enlightening and empowering others. Instead of clinging to the small comfort of being special through separation, they have the great comfort of honoring and nurturing common humanity. These are our finest teachers and the models for a better medical education.

2. The Course of Medical Care

It would be wise, in order to locate our medical encounters properly in lives, to ask patients whenever possible, an open ended question such as "What is going on in your life right now?" We should set aside time to listen to the answer. In addition, as often suggested, but more often honored in the breach than in the observance, we should give most patients a few minutes to give a freewheeling, unstructured account of their problems. People like to tell a story, and they like to think their stories are worth hearing. It is very difficult to bond with a caregiver who starts right out managing the way you tell your tale. Doctors are not usually well taught the elemental fact that communication is a two way street. The specific, very useful and very structured medical history can afford to wait a bit, in most circumstances, while the patient gets a little off his chest. Then, the caregiver must look for the uniqueness and interest in every situation, as well as the features it has in common with others. And the caregiver must be attuned to what the patient is ready to hear,

and not go on like a tape recorder just to prove to a later chart reviewer that advice (even though counterproductive and not worthwhile for *this patient this time*) was complete. In other words, we cannot hold ourselves rigidly to routine advice about “procedures, alternatives and risks” simply to look good on paper, but must tailor all our comments to the people and the circumstances.

The industrial model of “productivity” in medicine has to go. No one knows how to judge productivity except in terms of the money brought in. There is no insurance or health maintenance administration, and no government review process which can, given current assumptions, measure the real value of the “product” of care. We should encourage very broad-based measures of value used inclusively. Survival alone has little meaning apart from quality of life. And the quality of treatment and results for any one condition does not necessarily correlate with the overall quality when patients have multiple conditions and concerns. “Patient satisfaction” at any given time is very tenuously related to long-term benefit. So, if we are going to assess results we need to take a much more sophisticated and complete view of what those are than we have done using narrowly focused snapshots.

Administrators have decided that they can reform and revolutionize care by imposing industrial methods of production and evaluation on professionals. However, they usually do not bother to find out the reasons why things are as they are, and they do not want to hear what caregivers have to say about the administrative initiatives. The mantra of administrators is that professionals are “resistant to change.” This resistance is supposed to result from territoriality and laziness, or perverse conservatism. However, everyone knows that caregivers have not resisted drastic changes resulting from advances in medical science and technology. There is resistance based on the real inappropriateness of the industrial model, and based on the fact that the industrial initiatives are imposed by administrations rather than grown organically out of practice. “Information technology,” in particular, has come from the top down and has been imposed indiscriminately, at great cost, rather than used selectively. Physicians are letting computers, both literally and figuratively, come between them and their patients. Recording care has become more important than giving it.

Furthermore, time is of the essence, but this does not always mean that haste saves time in the long run. It is better to spend a longer time on one visit actually listening to the patient, addressing at least some problems adequately, and eliciting a good chance of understanding and compliance, than to do a superficial job in haste, generating numbers for the administrators and shekels in the till, but failing to make real progress. A few longer visits will often prevent multiple unnecessary ones later.

And speaking of shekels in the till as well as monetary measures of production, physicians in general charge too much. They are separated by an economic chasm from most of their patients. Illness should not be the reason for major wealth transfer from the sick to their caregivers. A partial solution to this problem would be a requirement to post charges publicly so that patients would have some idea what they were getting into financially. Doctors are well known to be ignorant of

the costs of the tests they order and the drugs they prescribe, if not of their own charges; and all these prices should be made public up front.

The relationship among different caregivers is another aspect of care which needs scrutiny. There is a lack of respect and valuation of nurses, their skills and their insights in the health care profession today. Should we be astounded that there is a nursing shortage when nurses are not respected for their skill, intelligence and insight which they have to offer, and not especially valued for their unique closeness to patients? Should it amaze us that underpaid and overworked nurses frequently drop out of the field? The medical profession needs to count the terrible cost of turnover among nurses. Such turnover disrupts critical relationships with patients, causes unnecessary short staffing, and increases costs of recruitment and education. It is all too rare to see a physician explaining a procedure or a finding to a nurse. But again, knowledge and skill should not be regarded as a proprietary secret for the medical profession. Nurses who could be drawn into a more collaborative and central role in care represent the greatest waste of a resource in the health professions today.⁷

Another relationship which needs to be further examined, granting that there are some existing efforts in that direction, is that between specialists and primary care physicians. When primary care physicians are treated as screeners and gatekeepers, and when the relationships they can develop with patients, families and communities are not valued and encouraged, then they are naturally seen as having relatively little to offer in the way of skill and value. But, as I have tried to show in the previous chapters, and as others before me have kept crying in the wilderness, relationships with whole patients as opposed to eyeballs and kidneys, are crucial. And preventive care is crucial. Until our society begins to honor primary care and give it recompense which is closer in line to that of specialty care, primary care physicians will be treated too often as second class citizens of the medical community.

Specialists and the secondary and tertiary centers where they work are often neglectful of primary care practitioners. The office notes, letters, and previous hypotheses and work-ups of the primary care physicians may be ignored or needlessly duplicated. Specialists frequently fail to ask for ideas from the primary care physicians, not realizing, as I have tried to emphasize, that a good idea can come from anywhere. Feedback to the primary care doctors can be poor or even non-existent. The result of these problems in primary care is again, shortages, turnover, lack of continuity and poorer care in general.

In general, turnover is bad. The relationship of continuing caregivers with patients is, for the many reasons given throughout this work, the foundation of good medicine. Any physician knows how much more satisfactorily, on average, the entire visit goes when the patient and physician have an ongoing relationship of familiarity and trust. The efforts of medical schools to have students follow patients for several years should be applauded. Confined or complicated patients need an occasional home visit from their own nurses and doctors. Physicians need to take another look at flexible clinic hours so that patients can see their own doctors as

often as possible, instead of being referred to strangers in urgent care clinics and emergency rooms.

This is not to say that a patient cannot have a continuing and relatively comprehensive relationship with a specialist or even an emergency physician. These relationships also should be encouraged when much ongoing specialty care is needed. Specialists as well as generalists need to be selected for and trained in the professional virtues. And these virtues grow in relationships among caregivers and between caregivers, patients, families and communities. The art of developing and growing in all these relationships is a great part of the art of medicine: And on the foundation of such relationships, good judgment can flourish.

3. The Integrity of the Health Care Profession

A profession which fears diversity of practice, customized treatment, and informal judgment is a profession which attempts to hide its responsibilities behind rules. A profession in which members seek to abdicate such responsibility by subscribing to impersonal, averaged-over and legalistic “standards of care” is a profession of fault-finders and not a profession characterized by mutual support and improvement. The standards we seek are illusions whenever contexts vary. And as defenses, they are traps. Physicians are undervaluing their greatest talent, the ability to adapt resources to needs. The medical profession has allowed the public to believe that there is only one way to do anything; that all actions are classifiable in categories, and that the labels of such categories dictate the best actions. A public which believes in a simplistic Holy Writ of good practice is a public ready to misunderstand subtleties. We can pretend to have abdicated judgments even though we know we make them all of the time, or we can showcase the value and importance of judgment and ask the public to help us make it better.

If caregivers were to drop the pretense that they always adhere to a single gold standard; if they were to stop dictating boilerplate notes which were window dressing only, and which misdescribe actual encounters; if they stopped pretending that they had secret knowledge on which they had a patent; if they made it plain to all that they shared common human foibles; and if they realized that other callings and ways of life were equally as special and important as their own; then they could elicit trust and support from an intelligent society.

CONCLUSION

Means and ends deliberation is properly broad, not narrow; dynamic, and not static. The categories it uses are not classical, but are radial, generated by various imaginative modes of extension from prototypical core examples. It conceptualizes problems and situations metaphorically, taking advantage of basic embodied image schemas and applying them imaginatively to domains which lend themselves to this type of understanding and no other. Among such conceptions are multiple metaphors

for and levels of causation which fail to be analogous to logical entailment. Anglo-American medical care exemplifies such reasoning with its complex, multiply metaphorical conceptualization of disease and the causation of disease.

If anything typifies full-spectrum means/ends reasoning it is reciprocity, as opposed to rigid compartmentalization. John Dewey discussed the interrelation of means and ends extensively, as well as the dynamic and not static process involved in developing and attaining ends. Qualities as he thought of them cannot be reduced to any underlying quantity. Yet, they relate one to another and affect one another in the processes and outcomes of means/ends activity. Balance or harmony, much as Aristotle understood it, has much to do with this relation of qualities. Mutually enhancing contrast partially describes this balance. Narratives are arrangements over time which allow qualities in experience to form an array in which they are mutually enhancing.

Values are realized in narratives that relate process and product without compartmentalizing them. Good medicine is the intersection of many narratives. These narratives realize old values only as they rejuvenate them in the creation of the new. Because values support each other and are neither isolated nor fungible, expected utility theory is not suited for application to most aspects of an endeavor like medical care. Qualitative, dynamic and interacting values just cannot be modeled on the number system.

Emotion is an essential part of medical judgment. If we think that it leads us often astray, there are ways other than cutting ourselves off from it, to correct many of its errors. Despite the usefulness in certain instances of conceptualizing mind as a machine, the mind is not a machine. It is what has been meant traditionally by heart and soul as well. Let us temper distrust of our own capacities for means/ends deliberation with an appreciation of how, why and when they do work well.

There is an inverse relationship between virtues and rules. Whenever virtue is lacking, rules are called upon. When rules are felt to be self-sufficient and superior to judgment, then the cultivation of good judgment, as well as the intellectual and moral virtues underlying it, languishes. But rules have glaring defects, as detailed here. The healing professions need to recruit, entrain and respect the virtues that make us worthy of trust. This is not to say that the particular emotional attachments which drive and motivate individual practitioners should be the paramount virtues of public policymakers. Indeed, objectivity, justice and fairness are essential in formulating policies which must apply to all, such as government regulations and the financing of health care. However, the impartial policymaker must be aware of the limits beyond which impartiality will not carry him. Unless uniqueness of caring and care is allowed its proper place overall, the general enterprise of medicine will fail.

Although the health professions use and still exemplify the use of informal means/ends reasoning, many caregivers have been in denial of that fact, and others fail to appreciate it. A profession is not an industry and cannot function or be assessed like an industry. Attention to the many aspects of means and ends deliberation which have been outlined in this book would benefit health care and other humanistic professions.

NOTES

- ¹ John Dewey. *Experience and Nature*, p. 97.
- ² Mercurhydrin; a toxic and now obsolete but very effective diuretic.
- ³ And it turned out that he was correct in his perception. Our “modern” methods failed just like the “shot of merc” and he died suddenly on the second hospital day.
- ⁴ An important cause of mistrust is previous failed encounters with medical care.
- ⁵ Dewey often used the term “problematic situation,” knowing that defining the situation and defining the problem are often combined in inquiry. The “problem” and the “situation” are part of each other, although somewhat separable as foci of judgment. The distinction is partly artificial.
- ⁶ As may be the case in mental illness or with other causes of incompetence.
- ⁷ A number of authors have looked into the problem besetting nurses today, and one in particular, Patricia Benner, has made observations which parallel those of Donald Schön regarding professions in general, and also the critiques of mechanized decision making given here. See Benner, Patricia, et al. *Expertise in Nursing Practice: Caring, Clinical Judgment and Ethics*. Springer, NY 1996 and Benner, P. and Wrubel, J. *The Primacy of Caring: Stress and Coping in Health and Illness*. Addison-Wesley, Menlo Park, California, 1989.

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