

The Quest for Holism in Medicine

When David Eisenberg finally told the secret about the appeal of complementary and alternative medicine (CAM) in America, it sent shock waves through the biomedical establishment.¹ Conventional medicine had enjoyed a hegemony since World War II that suddenly appeared to be in jeopardy. Its sanctimonious authority was being disputed not within the medical schools or clinical journals, and not even in Congress, but through the persistent walking of patients to other kinds of practitioners. This social revolt has gained increasing attention through the 1990s, and this collection of essays acutely reflects the legitimate basis for a fair hearing of the alternative challenge. The discussion of the nature and place of so-called complementary medicine relative to conventional medicine has no readily accepted structure, and consequently this collection reflects the various agendas underfoot.

Given the various ways we might approach the general question, I see three issues dominating the discussion about CAM. The first is a "local" problem: the need for data and criteria for evaluation of so-called nonorthodox therapies. This is hardly a minor challenge, but in many ways it is the most accessible. Such issues as the design of clinical trials, the assessment of the placebo effect, and the need for appropriate clinical response criteria all fall under this category. The second matter is to unpack the implications of the challenge to conventional medicine. To the extent that alternative therapies are regarded as contesting the sanctity of scientific-based clinical medicine, the struggle between "orthodoxy" and "alternatives" has far-reaching repercussions. Putting aside the semantic difficulties of defining each camp, I am referring to how "conventional" medicine might adjust to public demands and admit certain kinds of therapies that both originate outside scientific biomedicine and have, as yet, no scientific basis for adoption. What are the politico-economic and ideological implications of such an accommodation, if one is even possible to negotiate?

The third area of discussion concerns defining *what*, indeed, is being debated under the rubric of "alternative medicine." Looking at these

essays in a broad historical and philosophical context, I believe we are witnessing only the latest chapter in an ongoing debate that dates back to the nineteenth century concerning the reductive versus holistic basis of medicine. This struggle appears in various guises, some pertaining to different epistemological strategies—for example, the dominating role of positivism as opposed to other modes of knowing—and others having even broader cultural and historical roots that reflect differing visions of the individual as a social entity, a biological creature, and a spiritual being. Despite the complexity of these issues, I will make an effort to delineate the problem using these three basic divisions.

The Call of Data: Evidence-based Therapy

Part of the conundrum of this exchange is finding a common basis for discussion. Loretta Kopelman has clearly outlined the difficulty of finding adequate definitions to differentiate conventional and alternative medicines, and by implication she accepts that each system occupies some terrain of common ground in the social world of health care and that we must proceed as best we can to compare them. This seems perfectly appropriate to me since, as discussed below, I am distrustful of drawing boundaries too rigidly. Independent of the particulars of the discussion engaged here, certain underlying precepts frame any comparison of health care systems. Disease and human suffering cannot be understood solely from one perspective. The experience of being sick and caring for the ill are different. There are multiple systems of meaning that confer significance and an ordering to such experience. Biomedicine, for all of its explanatory power and therapeutic triumphs, is, finally, an approach to care in constant evolution as it seeks to optimize its own methods and successes. Once those rather self-evident and modest admissions are made, then perhaps we might begin to discern possible links between contesting orientations.

To pursue this point, consider the following schematized version of health care. The ABCs of care fall into a developmental pattern, one in which we might easily regard CAM therapies on a continuum with “conventional” ones. The developmental pattern is “C” (controversial), followed by “B” (clearly best or beneficial), followed by “A” (atavistic) as new therapies evolve. Let us begin with the last. Discarded therapies are regarded as atavistic or archaic. They were regarded as useful and appropriate at one point but now are seen as ineffectual. But such therapies may still be indulged in either out of ignorance or bias. For

instance, I might treat a patient with a drug recently shown to be either ineffective or deleterious, or that was simply superseded by a better drug. My use of the older medication reflects my ignorance of the latest data or perhaps a bias against it. The point is, simply, that many patients of conventional practitioners suffer the application of outmoded (and even useless) therapies for one reason or another. These matters are ultimately decided through comparative studies, education, and peer pressure under the guise of practice standards.

The "B" component of clinical care refers to beneficial care. This category reflects the conventional wisdom of the medical community and refers to that body of uncontested therapy, such as iron supplements for iron deficiency anemia or antimicrobials for urinary tract infections. Failure to prescribe such medications for diagnosed ailments would constitute malpractice. By definition, "alternative" therapy falls outside the "B" category. If it were otherwise, there would be no controversy, which introduces the most immediate line of combat, the "C" category.

The "C" therapies are the controversial ones, those conventional and CAM therapies that remain outside broad acceptance because no consensus exists as to how a particular disease should be treated. Even within orthodox practice, all too often data for a given therapy are ambiguous or even nonexistent. There is simply too much ignorance or latitude for interpretation to discern the "best" approach. CAM therapists deserve the same process of judgment, but as Tom Whitmarsh laments (and documents), we have a dire paucity of studies to examine even well-demarcated clinical syndromes such as migraine.

Part of the problem of a fair adjudication is that, in more instances than not, the design of the clinical study is not up to proper scientific standards, reflecting the inexperience of the practitioners. Here we come face to face with the chicken-and-egg imbroglio of assessing CAM therapies—how do we enlist those most capable of conducting rigorous clinical studies? If one decides, a priori, that acupuncture, for instance, is placebo at best because the basis of its effects seems preposterous from biomedicine's perspective, then such alternative care is placed in the atavistic category out of hand. But if, as Howard Brody argues, when one examines the data more sympathetically (i.e., assesses efficacy as opposed to consistency with present scientific theory) and concludes that the acupuncturist is achieving therapeutic effects, then acupuncture is moved from an archaic therapy to a controversial one. And, indeed, there is disagreement among medical doctors as to the efficacy of acupuncture.

But this is not the place to argue this example, or any other. More saliently, I wish to move beyond the particulars and make the general claim that the dispute lies at a deeper level than the simple evaluation of the data. As Paul Root Wolpe observes, the truth claims made by each group are radically different when seen within the context of their encompassing belief systems. I maintain that this is the level of real confrontation and will return to this matter later.

Here, I will make a simple assertion built upon the ABC structure: if one appreciates the dynamics of biomedicine's own evolution, then I think it obvious that the position of boundaries between conventional and CAM therapies is ever-changing and therefore difficult to pin down. What is "alternative" at one time might well become "conventional" at another. What some take as wild inference may be a question for another of considered judgment and justifiable interpretation. Medicine is not a formal science and intuition plays a role more prominent than we might like, and physicians often must practice the "art of medicine" with a lack of authoritative scientific knowledge that plagues nonconventional therapies. Be that as it may, a steady stream of so-called alternative approaches enters the medical canon, and one must be wary of dogmatism or predetermined negative prejudice—considering how much of biomedicine itself depends on the ethos of progress and entertainment of fresh ideas. Succinctly stated, it is inappropriate simply to dismiss CAM out of hand, and I suggest that we instead place the discussion of alternative therapies in the "C" category of controversy. And here the call for data is sorely felt.

Despite the National Institutes of Health mandate to explore alternative therapies in a serious and systematic fashion (with a budget of nearly \$70 million in 2000),² the problem is daunting. Not only is there dispute about the character of such studies (considering the difficulty of defining psychosocial factors), it is vexatious to prioritize among the competing alternative systems being actively pursued by the public. When one considers the state of evidence-based conventional medicine, it is easy to understand the laments of those who see the attention to acupuncture or homeopathy as misplaced as compared to expenditures to assess more "rational" approaches.

But the case for measuring the effects of CAM remains compelling. We must peer, as Janus, simultaneously in two directions. On the one hand, alternative medicine challenges orthodox medicine to examine its own assumptions, its methods of evaluation, its outcomes, and its truth claims. A crucial element of biomedicine is its own critical self-

evaluation and scrutiny of its bona fide claims—exactly the same judgments orthodox medicine claims to place before its contenders. This is where David Hufford's critique of Marcia Angell and her fellow travelers is so compelling. The out-of-hand dismissal of claims simply because they do not appear consistent with current dogma is myopic in the extreme. Such a "know-nothing" position seems to me untenable, both practically and philosophically, as Hufford cogently details.

On the other hand, orthodox medicine appropriately demands some measure to assess alternative approaches. While open to anomalies and unknown or unexplained effects, alternative medicine must abide by some judicious assessment. That being said, as Bonnie O'Connor and others argue, the criteria of judgment may need to be broadened in scope to deal more adequately with social and psychological factors. The exercise must be beneficial and useful to society if for no other reason than that orthodox medicine will be strengthened in its self-examination and alternative medicine will either attain or lose its legitimacy beyond simple folk belief. Even if alternative therapies prove to be placebo effects, this does not in itself exclude their efficacy. Ultimately, given the limits of knowledge, we must be satisfied with efficacy and aspire to growing veracity.

Again, hardly anyone would contest the legitimacy of establishing bona fide criteria of care, and the demand for clinical trials of CAM therapies resides in this domain. While I see no realistic alternative, it is important to understand that data alone may not settle the various claims made by nonconventionalists in any final sense, for the contention arises at a deeper level, namely on contested foundations or criteria for assessment. If knowledge is legislated by a particular form of discourse, other rationalities may be either ignored or, when translated, may appear unintelligible. Our only choice is to go forward, but it seems clear that only certain kinds of questions will be addressed, leaving others to be resolved in different ways. Controlled clinical trials are mandatory, but they will fail to address the basic issue: the legitimacy of belief systems seemingly incompatible with Western biomedicine.

CAM and the Legitimacy of the Placebo

Medicine's ancient and still primary calling is the care of the ill. Western societies have endorsed and followed the practice developing from a scientific model of disease, in which a reductive strategy has been employed to dissect the body in molecular and genetic terms.

Having a rational scientific basis, patients who endorse such approaches to their illness enlist the diagnostic and therapeutic tools that have been acquired as products of this belief system. The efficacy of such an approach is undoubtedly effective for certain diseases, but not for all. A host of chronic ailments, nuisance conditions, and psychologically oriented problems have thus far proved resistant to effective therapies from this scientific orientation. For an impatient public whose medical ailments persist in the orthodox setting, other kinds of therapies beckon effectively.

One response on the part of the conventional medical establishment has been the strategic decision to capture these patients because of their economic significance. Paul Root Wolpe notes, correctly I think, that academic departments of medicine have been slow to embrace the challenge of alternative therapies and that the primary impetus for hospitals to offer such services has arisen from those watching the financial ledger. They see lost revenues, and under the rationale of "If we don't get them, others will," various marketing ploys have been instituted to capture those who have wandered astray. The academic medical centers embrace this option under the moral mandate of care. Even if only placebo effects are offered, the ethics of "comprehensive" care affords the justification for opening CAM clinics. If such therapies are offered in a setting where one might assess that no harm is being done—either by commission or omission—then the public is well served.

Placebos are gaining legitimacy in the popular press, not only for the interesting scientific questions they pose but because placebo is also being understood as "effective without scientific explanation." This is the wedge required by those discarding conventional medicine who need a rationale for adopting courses of action other than those prescribed by orthodoxy. The public has been alerted that much of what passes for conventional therapy is placebo. The syllogism being invoked is a simple one: placebos work, we do not know how, but if scientific medicine is also contaminated with "bogus" therapies, who is in a position to judge patient satisfaction more reliably than the patient herself? Howard Brody has taken pains to demonstrate the distortion of such a position, but his insights, which would help frame discussion of this difficult topic, are not acknowledged by all critics.

The opening of the academic center to CAM is seen by many as allowing the fox into the chicken coop. Consider a recent diatribe by Norman Levitt, whose *Prometheus Bedeviled* is an impassioned defense

of science.³ When considering contemporary medicine, the rhetoric becomes almost hysterical. Levitt asserts that scientific medicine is under siege by proponents of CAM. Never mind that he does not (and probably cannot) define "alternative medicine." He sees the ascendancy of public support for clinical nonorthodoxy not only as a sign of science in retreat but also as an alarming public health menace. The "argument" is tortured, but it goes like this: charlatans, like Deepak Chopra, are selling the public a bill of goods that is a mixture of religious and folk beliefs, with some pseudoscientific buzz words, so that the gullible seek in such approaches a reconstitution of their spiritual and material selves. Sidestepping the reasonable allure of such a goal, Levitt again ignores the complexity of the issues he is raising—the nature of healing as both a physiological and psychological/cultural process—and places illness solely within the province of scientific medicine. He sees this as an (exaggerated) opportunity for the forces of antiscience to gain momentum and sweep aside the standing of conventional medicine. Simply denying the legitimacy of such practices is hardly consistent with the openmindedness supposedly characteristic of the scientific mentality.

But putting that matter to the side, Levitt goes on to the second stage of his analysis of medicine by reviewing its sociopolitical history in America, specifically the politico-economic structure of medicine's ruling elite, the recent loss of public trust, the "black box" character of the clinician's technical tools, and seeing in all of these factors elements that conspire and aggregate to work against the scientific ethos of medical practice. The public's awareness of scientific uncertainty is coupled to these forces to undermine the legitimacy of the scientific approach. Levitt regards all of this as playing out some basic irrationality. Here the structure of his thought is revealed: one focused on combating what he perceives as a deeply embedded counterforce to science, not because of any weakness in the philosophical strength of the scientific outlook but rather because he would "acknowledge that some law of intellectual entropy may be a given of the human condition."⁴ Medicine is in particular danger because times of pain and fear of death "seem to call forth aspects of our mental proclivities that work at cross-purposes to logical and systematic thought."⁵ This is but the most dramatic consequence of our intrinsic irrational, antiscientific characters. On this view, science is indeed precious and precariously holding the forces of darkness at bay.

Accordingly, critics in Levitt's camp argue that medicine in the twenty-first century aspires to a scientific ideal, and therapy must thus

be determined by strict criteria of efficacy. If the data are not available (category C, above) then we rather err to the side of conventional approaches, if for no other reason than ideology. Why accept any therapy that arises from a system of thought so alien to our own and of no proven efficacy or veracity? On what basis does a patient determine the course of professional action? Where is the line drawn between patient satisfaction and honest brokering? After a century of a certain model of disease and intervention, why should the fundamental legitimacy of that approach be so easily overturned? If not by our rational standards, by what criteria should we act?

Trained in this tradition, I find it difficult to counter the arguments in these questions as posed. Indeed, I personally do not pursue CAM therapies, and so my response is intellectual, based on philosophical and historical considerations, which I hope can shed some light on the nature of the issues that these plaintive questions address. For me, the "answer" does not lie in testing therapy X or Y (advocates will never be convinced by testers alien to their own tradition) but rather in understanding that reductive-oriented medicine, by its very character, cannot address certain metaphysical issues of the ill. The orthodox versus alternative controversy is not really about which therapy is better but rather which philosophy is better attuned to address the ill. Or perhaps, rather than making an either/or decision, might we better accommodate complementary belief systems to offer patients more comprehensive care or, at least, to accommodate their perceived needs better? Ultimately, this is the question that must be answered.

Historical Perspective

This last question arises from the particular historical development of Western medicine as it became a product of the scientific ethos of the mid-nineteenth century. At that time, two philosophies of science—positivism and reductionism—emerged that decisively shifted the character of medicine toward a new scientific ideal. Neither was a totally novel philosophical strategy—indeed each has a venerable history dating to at least the early modern period—but by the 1850s they were articulated within a new context and were joined to set a new agenda for clinical medicine.

By the end of the century, medical training had been transformed, and application of a laboratory-based approach to therapeutics established revolutionary aspirations for medical practice. The impact of this new

objective attitude had a profound influence on the doctor-patient relationship and, even more importantly, gave new meaning to illness and the body. The holistic construct of Man and the medicine that served him were replaced by a fragmenting clinical science that in its powerful ability to dissect the body into its molecular components failed to address the person qua person. In other words, the laboratory context replaced the integrity of the individual with a different standard of fragmenting analysis.

The repercussions of this movement away from a holistic approach to one that celebrated the reductive scrutiny left medicine with a deep contradiction. Initially designed to address the patient's illness as experienced in an array of meanings directly accessible to the sufferer, disease of a system or organ became the focus of concern, and medicine thereby made a Faustian pact with valueless science. Amending, and oftentimes forgoing, integrated care—one that addressed the psychological and spiritual dimensions of illness as well as the pathophysiological—medicine too often was accused of losing its deepest commitment to the patient. Alternative medicine appeals to this deep, metaphysical yearning for wholeness, and, in this sense, the crisis biomedicine is facing (namely, the challenges posed by alternative therapies) represents an accounting for its neglect of this broader human need. Let us delve a bit into the historical and philosophical roots of this issue.

Positivism

For the past century and a half, mainstream science has assumed a positivist stance, one that increasingly seeks to describe the world in nonpersonal terms.⁶ Positivism carries several meanings and has been notoriously difficult to define, yet certain precepts may be identified, especially as espoused in its nineteenth-century format. Foremost, it championed a new form of objectivity, one that radically removed the personal report in favor of one that was universally accessible. To be "true" and "real," knowledge had to be attested to by a community of observers who shared common observation. This move from the private sphere of experience to a communal one had begun at the dawn of modern science, but in the mid-nineteenth century the ideal of truth became clearly enunciated as a scientific principle.⁷ Thus, positivism sought a collection of rules and evaluative criteria by which to distinguish true knowledge from what Wittgenstein famously called "nonsense," a normative attitude that would regulate how we use such terms as *knowledge, science, cognition, and information.*

As developed in the 1850s, positivism came to be understood as a philosophical belief that held that the methods of natural science offer the only viable way of thinking correctly about human affairs. Accordingly, empirical experience—processed with a self-conscious fear of subjective contamination—served as the basis of all knowledge. Facts, the products of sensory experience, and, by extrapolation, the data derived from machines and instruments built as extensions of that faculty, were first ascertained and then classified. "Hypothesis" was defined as the expectation of observing facts of a certain kind under certain conditions, and a scientific "law" could be defined as the proposition that, under certain conditions, facts of a certain kind were uniformly observable. Any hypothesis or law that could not be defined in terms such as these would be written off as "pseudo-hypothesis" or "pseudo-law."

Positivism contrasted with, indeed was constructed in opposition to, the romantic view of the world by denying any cognitive worth to subjective value judgments. Experience, positivists maintained, contains no such qualities of men or events as "noble," "good," "evil," or "beautiful." In radical reaction against the romantics, positivists sought instead to objectify nature, banishing human prejudice from scientific judgment. The total separation of observer from the object of observation—an epistemological ideal—reinforced the positivist disavowal of "value" as part of the process of observation. One might interpret, but such evaluative judgments had no scientific (i.e., objective) standing. Simply put, where the romantics privileged human interpretation (exemplified by artistic imagination), the positivists championed mechanical objectivity (e.g., thermometer, voltmeter, and chemical analysis).⁸

The radical separation of the observing/knowing subject and his object of scrutiny is the single most important characteristic of positivist epistemology. Because of this understanding, positivists claimed that science should rest on a foundation of neutral and dispassionate observation. The more careful the design of the experimental conditions, the more precise the characterization of phenomena, the more likely the diminution of subjective contaminants. Thus the strict positivist confined himself to phenomena and their ascertainable relationships through a vigorous mechanical objectivity. Most pertinent to our interest here, in the life sciences, positivism exercised new standards in the study of physiology that applied the objective methodologies of chemistry and physics to organic processes. This approach allowed newly adopted laboratory techniques to establish physiology as a new discipline and gave birth to biochemistry, whose central tenets held that the fundamental

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principles of organic and inorganic chemistries were identical, differing only inasmuch as the molecular constituents of living organisms were governed by complex constraints of metabolism.

Reductionism

Positivism's methodology was intimately linked to the assumption that all of nature was of one piece, and the study of life was potentially no different in kind than the study of chemical reactions, the movement of heavenly bodies, or the evolution of mountains. Thus, if all of nature was unified—constituted of the same elements and governed by the same fundamental laws—then the organic world was simply on a continuum with the inorganic. According to this set of beliefs, there was no essential difference between animate and inanimate physics and chemistry, and the organic world was therefore subject to the same kinds of study so successfully applied in physics. Medicine was to treat the body essentially as a machine, governed by uniform chemistry, and thus susceptible to mechanical repair. The new problem was both to reduce the organic to the inorganic, that is, to exhibit the continuity of substance and operation, and concomitantly to understand the distinct character of life processes. To accomplish this twofold agenda, positivism was soon coupled to another philosophy, reductionism.

The reductionists were initially a group of German physiologists, led by Hermann Helmholtz, who in the 1840s openly declared their manifesto of scientific inquiry.⁹ They did not argue that certain organic phenomena were not unique, only that all causes must have certain elements in common. They connected biology and physics by equating the ultimate basis of the respective explanations. Reductionism, specifically physical reductionism as opposed to the later development of genetic reductionism, was also a reaction to romanticism's lingering attachment to vitalism, that notion that life possessed a special "life force." Vitalism was attacked because it belied the unity of nature offered by various mechanistic philosophies.

The debate was largely resolved by three key discoveries: Helmholtz's demonstration that heat generated by contracting muscle could be accounted for by chemical metabolism (1847) (that is, no special vitalistic force was necessary); Louis Pasteur showing, about a decade later, that bacteria could not arise through spontaneous (that is, vitalistic) generation; and finally Darwin, who in the *Origin of Species* (1859) presented the case for a blind materialism to explain the evolution of species. The appeal of vitalism was not totally extinguished by mid-century, but certainly a new scientific ethos had taken over the life

sciences by 1890. And medicine was radically changed as a result of these developments. In the United States the establishment of the first research-based medical school, Johns Hopkins, the subordination of contenders to biomedicine through the Flexner Report (1910), and the enthusiastic application and still unrealized expectations for the elimination of infectious diseases each date to this period.

Kenneth Schaffner clearly discusses how philosophy of science is now grappling with a fundamental anxiety concerning the "unity of science," where the original aspirations of the reductionists are being modified by the increasingly "local" character of scientific knowledge. If the natural world is seamless, then presumably our scientific approach to its study should also be unified, both epistemologically and metaphysically. But there is growing evidence that the various scientific approaches applied by the different kinds of scientific inquiry are not easily linked to each other to offer a coherent and seamlessly unified picture of the world.¹⁰ Glaring rhetorical and cognitive gaps have been highlighted by historians and sociologists of science, who have claimed that the context of discovery is a critical parameter for truth claims.

Both the pluralism of methodologies and the diverse questions posed by different kinds of study point to the inevitability of disunity, which beyond fragmentary knowledge reflects the relative isolation of highly specialized sciences pursuing their own highly specific agendas with their own highly evolved (and therefore peculiar) methodologies. While science continues to pursue a comprehensive and coherent world view, these critics argue that it is not at all certain that the various strands of scientific pursuit will be unified in any fundamental sense. So, from this critical perspective, it remains highly problematic in defining the basic elements whether parts will effectively be put back together as integrated wholes.

While the debate concerning the eventual success or failure of the reductive program continues, almost all concur that, regardless of current reductive strategies and their accompanying aspirations, more comprehensive modes of organizing and resynthesizing complex systems are required to understand complex physiological function. This conclusion may be drawn as we appreciate the limitations of simple cause and effect relations as defined by linear mechanical models. We are in the infancy of utilizing complexity and chaos theories to address the limits of models developed three centuries ago, but, notwithstanding the applications of these newer orientations or others that will inevitably develop, I believe there is a deeper issue at hand, one perhaps best summarized by William James in 1902:

[Nature] is a vast *plenum* in which our attention draws capricious lines in innumerable directions. We count and name whatever lies upon the special lines we trace, whilst the other things and the untraced lines are neither named nor counted. There are in reality infinitely more things 'unadapted' to each other in this world than there are things 'adapted'; infinitely more things with irregular relations than with regular relations between them. But we look for the regular kind of thing exclusively, and ingeniously discover and preserve it in our memory. It accumulates with other regular kinds, until the collection of them fills our encyclopedias. Yet all the while between and around them lies an infinite anonymous chaos of objects that no one ever thought of together, of relations that never yet attracted our attention.¹¹

If this "selection" argument is applied to medicine, we see how, if we cast our conceptual net wide enough, CAM may be regarded as another instance of legitimate study/practice. Operating in a different therapeutic context, truth claims may be fairly championed on the basis of cultural diversity (David Hufford), folk belief/psychology (Bonnie O'Connor), spiritual values (David Larson), and the instability of communal standards for objectivity (Paul Root Wolpe). Thus, advocates of CAM argue that final adjudication about CAM claims must reside in the efficacy of response. Different standards of testing might be applied by different kinds of practitioners (Loretta Kopelman), and if we can somehow find some underlying unity among various approaches, it must be found not in some future "scientific" understanding but in a pragmatic assessment, now (Howard Brody). Each of these discussants argues, explicitly or implicitly, that the verdict of care must occur at the practical level of deciding "what works best." Accordingly, stepping outside current positivist/reductionist boundaries may be required to answer certain clinical questions.

The Quest for Holism

Medicine, of course, was never monolithic, and well into our own century renewed challenges to reductive orthodoxy have appeared, even within mainstream conventional medicine: constitutionalism, psychosomatic medicine, neo-Hippocratic medicine, neo-humoralism, social medicine, Catholic humanism, and, in Europe, homeopathy and naturopathy.¹² These "holistic" systems not only have been espoused by various kinds of practitioners, but, in noteworthy instances, they have been championed by "legitimate" basic scientists—for example, Henry Head,¹³ Walter B. Cannon,¹⁴ and Alexandre Besredka.¹⁵ Through histori-

cal reflection, we can see that the discussions of today are directly linked to similar debates held between 1920 and 1950, which in turn were reframed arguments dating back to the nineteenth century.

The term "holism" was coined by Jan Smuts in a 1926 bio-philosophical text entitled *Evolution and Holism*.¹⁶ When applied to medicine, holism refers not only to the relational character of medical description and therapy but to the scope of the medical gaze. And more deeply, holism "has not only been about the object of knowledge but about the nature of knowledge,"¹⁷ specifically the requirement for seeking a synthesis of increasingly fragmented knowledge to understand the character of integrated wholes.

This was both an epistemological project and a moral one: the ethical imperative to maintain human relations always marked holism in opposition to the underlying positivist orientation that sought to minimize the human element.¹⁸ The conflict rightly has been seen as an extension of deeper cultural conflicts, and in some contexts, such as in France and Germany, the polemics extended quite clearly into the broadest of political and philosophical ideologies. This is hardly the place to pursue this aspect of the holism/reductionism debate other than to note its broad application beyond medicine proper, suggesting that the cultural forces at play in the specific medical setting are composed, at least in part, from contributing elements arising from other social and intellectual agendas. So while the holist rejoinder of the interwar years has been well studied, it is perhaps less evident how our own era may be showing similar protestations and unease with the conditions of contemporary life that are reflected in the current espousal of alternative therapies.

Another critical caveat about the reductive-holistic balance is each position's unsteady configuration with the other. As Charles Rosenberg has observed, holism is ultimately defined in contrast to, and in the context of, the prevailing reductionism of the era: holism and reductionism are inexorably coupled and cannot be defined independent of each other.¹⁹ He further opines that, in general, holism's plea is not against reductive explanation but a warning against premature and unsophisticated reductionism, where the limits of a reductionist approach are either unknown or unacknowledged.

These points are quite germane to this discussion, for I believe that the doctor-patient encounter is by its very nature a negotiated attempt to coordinate, if not combine, different frames of reference. In treating disease, medical science employs a reductive approach, while the patient experiencing illness assumes a holistic stance. Each has its place and

each must accommodate the other. So it seems to me that the recurrent question plaguing a reductionist, positivistic clinical medicine is to what extent the mechanistic, dehumanizing experience of becoming a medical object of scrutiny and therapy can be mitigated by counterbalancing factors. I have argued elsewhere for the primacy of the humane calling, subordinating science and technology to the broader ethical imperative.²⁰ Here I would only suggest that if contemporary orthodox medical care is facing a crisis in public confidence, then the answer lies in its failure to address the humane needs of its patients. How to reestablish a stable balance of reductive science and holistic care must dominate the agenda of proving or disproving the efficacy of alternative approaches. Ultimately, clinical science will "win" only if it can effectively deal with the same humane issues CAM currently often addresses more effectively.

In short, if we pragmatically move beyond the dispute about relativism (which is really an argument about the dominance of one world view over another), then the discussion begins where my comments were initiated, namely, that there is a sociological question that must be answered: why do so many people flock to CAM? The trivial answer to this filtered question is that, presumably, their respective illnesses/discomforts/maladjustments are more effectively addressed in these alternative settings. The significant question is *why*? Underlying each chapter of this volume lurks this question, and the various "answers" offered refract the problem in different ways and thus arrive at various "solutions." In their composite we witness not only the fragmented character of how we regard the question but the obvious complexity of formulating a comprehensive response.

I have taken some pains to place the discussion framing this collection of essays within a particular philosophical and historical context because I see the discussion as pointing back to a historical period when a turn in the road was made, when the path of holism was sidetracked to make room for a strategy of reification that left issues of integration subordinate to the technical mastery of disease. Despite the extraordinary power of this new approach and its undeniable success, we are facing a crisis of public dissatisfaction. The debate about CAM, however, is not "simply" about medicine but spills over into a deep conflict about differing world views. To initiate debate, CAM advocates demand acknowledgment of the plurality of science and the necessary limits of scientific medicine. This may well be the most contentious and single greatest obstacle to effective debate about alternative medicine because the issues are so firmly embedded in beliefs inaccessible to open discussion.

Because differing metaphysics generally remain intractable to resolution, I regard any accommodation to CAM from the biomedical perspective as following two courses already established within scientific interest. The first is continuing study of the placebo. Howard Brody makes the cogent point that the placebo response minimizes the difference between conventional and alternative medicines, and in appreciating the placebo effect we are alerted to the difficulty of teasing out the various silent factors of natural disease, psychosocial influences, and "hidden" physiologies. But obtaining data in even the best-intended of studies cannot necessarily decide the matter in dispute. The placebo is probably our best bridge concept for linking scientific medicine with its contenders, but the very notion of "placebo" is itself poorly understood, representing an array of unknowns. It demands even more careful scrutiny than we already afford to that proportion of patients whose diseases evolve from one state of illness to another. Perhaps one of the most important contributions alternative medicine will make to orthodoxy is the renewed demand on the part of conventional methodologies to find the means for assessing clinical outcomes, in whatever setting.

The second conduit for study of CAM is the randomized clinical trial (RCT), the gold standard of clinical evaluation for the past fifty years. But the RCT itself is facing new challenges, beyond the obvious needs of appropriate application to assess CAM therapies, an issue well discussed by Asbjørn Hróbjartsson and Stig Brorson. We have long realized that RCTs can only give us relative, not absolute, responses, but as Wayne Jonas shows, the complexity of assessing alternative therapies demands that we review and revise the RCT to include factors that may not be adequately assessed by current methods. Kenneth Schaffner thus argues that "what works" incorporates two core senses of causation—an efficient cause (typical mechanical cause/effect relationships), where manipulation or intervention initiates effects we can measure, and a final cause, which incorporates the notion of a "required" way. This second modality refers to the need of the assessment to follow conventional understanding of cause/effect relationships, which in the medical setting may not always be possible to apply, for patient participation or community development often appear as a crucial element in the therapeutic intervention. In such cases, the RCT cannot be employed effectively, and its role as final adjudicator is undermined. In other words, the positivist ideal is not always applicable.

I do not see the limits of the RCT as a manifestation of the disunity of science so much as the disunity of experience. "Science" has a circumscribed domain whose boundaries, as changing and elusive as

they might be, must be acknowledged. And it is here at this definitional ambiguity that the character of medicine becomes more fully portrayed, breaking through its enclosure within the walls of the laboratory. While I see the arbitrating role of the RCT and better appreciation of the placebo, these paths of inquiry seek to bring CAM into the biomedical fold. I doubt that such a strategy will quell the revolt, for the crisis facing orthodox medicine is over a deeper issue, namely a struggle of defining medicine. In accepting that medicine is a science, it well behooves us also to acknowledge that the traditional aspirations of science are simply inadequate to address medicine's moral mission of care. Care encompasses more than understanding genes, proteins, and organs; it also must address the needs of the psyche and the person embedded in culture. Compromising the deep commitment to comprehensive care in the name of "science" is to forfeit medicine's ultimate responsibility, which is not toward the establishment of its scientific character but rather toward its mandate to care for the patient.

Alternative care providers have reminded physicians of the principal commitments to the ill and the basis of public confidence. Authority resides not only in knowledge but in the trust engendered by compassion. These are lessons that arise outside the boundaries of science and clearly mark those limits. Even if the challenge of CAM offers no new therapies, it has, at the very least, forced the American public to reassess the character of our medicine and consider the need for substantive examination of assumptions that have been firmly in place for over a century. To those decrying the mode or origin of this critique, I would only note that CAM's own approach need not be "correct," it must only be effective in nudging our complacency into more creative pathways of self-examination. My own faith in science's power and its humane application motivates me in welcoming all honest brokers into dialogue. For those seeking a well-balanced representation of that discussion, this collection is a superb place to listen.

NOTES

1. David M. Eisenberg et al., "Unconventional Medicine in the United States. Prevalence, Costs, and Patterns of Use," *NEJM* 328, no. 4 (1993): 246–52.
2. Erik Stokstad, "Stephen Straus's Impossible Job," *Science* 288, no. 5471 (2000): 1568–70.

3. Norman Levitt, *Prometheus Bedeviled: Science and the Contradictions of Contemporary Culture* (New Brunswick, N.J.: Rutgers University Press, 1999).
 4. Levitt, *Prometheus Bedeviled*, p. 206.
 5. Levitt, *Prometheus Bedeviled*, p. 209.
 6. Walter M. Simon, *European Positivism in the Nineteenth Century* (Ithaca, N.Y.: Cornell University Press, 1963).
 7. Leszek Kolakowski, *The Alienation of Reason: A History of Positivist Thought*, translated by Norbert Guterman (Garden City, N.J.: Doubleday, 1968).
 8. Lorraine Daston, "Wordless Objectivity," in *Little Tools of Knowledge: Historical Essays on Academic and Bureaucratic Practice*, ed. P. Becker and W. Clark (Ann Arbor: University of Michigan Press, 2000).
 9. David H. Galaty, "The Philosophical Basis for Mid-nineteenth Century German Reductionism," *Journal of the History of Medicine and Allied Sciences* 29 (1974): 295–316.
 10. Peter Galison and David J. Stump, eds., *The Disunity of Science: Boundaries, Contexts, and Power* (Stanford: Stanford University Press, 1996).
 11. William James, *The Varieties of Religious Experience* (New York: The Library of America, 1987), p. 394.
 12. Christopher Lawrence and George Weisz, "Medical Holism: The Context" in *Greater than the Parts: Holism in Biomedicine 1920–1950*, ed. Christopher Lawrence and George Weisz (Oxford and New York: Oxford University Press, 1998), pp. 1–22.
 13. L. S. Jacyna, "Questions of Identity: Science, Aesthetics, and Henry's Head," in *Greater than the Parts*, pp. 211–33.
 14. Allan Young, "Walter Cannon and the Psychophysiology of Fear," in *Greater than the Parts*, pp. 234–56.
 15. Ilana Lowy, "'The Terrain Is All': Metchnikoff's Heritage at the Pasteur Institute, from Besredka's 'Antivirus' to Bardach's 'Orthobiotic Serum,'" in *Greater than the Parts*, pp. 257–82.
 16. Jan C. Smuts, *Holism and Evolution* (New York: Macmillan, 1926).
 17. Lawrence and Weisz, "Medical Holism," p. 3.
 18. H. Stuart Hughes, *Consciousness and Society: The Reorientation of European Social Thought, 1890–1930* (Frogmore, St. Albans, United Kingdom: Paladin, 1974).
 19. Charles Rosenberg, "Holism in Twentieth-century Medicine," in *Greater than the Parts*, pp. 335–55.
 20. Alfred I. Tauber, *Confessions of a Medicine Man: An Essay in Popular Philosophy* (Cambridge, Mass.: MIT Press, 1999).
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