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Emerging Views of Health: A Challenge to Rationalist Doctrines of Medical Thought

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The purpose of the present paper is to provide an historical and metatheoretical context for evaluating current views of health and disease as encompassed by the field of behavioral medicine. Toward this end, the antithetical relationship between Rationalist and Empirical traditions of medical thought is chronicled with particular emphasis upon its most recent historical expression in allopathic and homeopathic approaches to healing. A brief historical sketch of the development of the field of behavioral medicine is offered followed by a description of its recent differentiation into "behavioral" and "biopsychosocial" camps. From this analysis, the basic ideas advanced in the final portion of this paper reveal that behavioral and biopsychosocial formulations may be contrasted along metatheoretical lines (i.e., mechanistic and systemic "world views," respectively) and that this conceptual bifurcation may well represent yet another expression of the age-old Rationalist-Empirical dichotomy. While behavioral models appear to be most closely aligned with the interventionist ideology of the Rationalist doctrines of medical thought, emergent biopsychosocial formulations clearly indicate a trend toward an holistic, Empirical philosophy of health and disease.

A new world view of health is emerging. This view has all the attributes of a paradigm shift (Kuhn, 1962) and offers a clear challenge to the sovereignty of the prevailing *biomedical model.* The technologically-oriented biomedical perspective has dominated Western medical practice for decades and maintains a rich historical legacy in the Rationalist tradition of medical thought (Coulter, 1977a, 1977b, 1977c) and concomitant allopathic approaches to healing (Grossinger, 1980; Vithoulkas, 1980; Weil, 1972, 1983). With molecular biology as its fundamental scientific discipline, the biomedical model assumes that disease may be fully accounted for in terms of quantifiable somatic variables independent of social, psychological, and behavioral dimensions of illness (Engel, 1977).

Although advances in the biomedical sciences have played an important role in the control and eradication of a host of infectious diseases associated with viral and microbial pathogens, the shift in disease patterns toward

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chronic/degenerative disorders has not been met with the same degree of success by this approach. The failure to isolate a single biological pathogen as a cause for each chronic disorder has forced a reexamination of the basic assumptions of the biomedical view. According to Karoly (1985)

> . . . it is now taken as axiomatic (by most medical and nonmedical health authorities) that illness and disease in modern industrialized societies are not rigidly bounded biological events resulting solely from the action of specific microorganisms and requiring specific biomedical treatments. (p. 4)

Rather, one salient group of etiological factors to emerge from the matrix of chronic disorder correlates has been that associated with *individual behavior and lifestyle*—leading a number of prominent health experts to characterize such disorders as "diseases of choice" (Eliot and Breo, 1984; Goodfield, 1977). As Knowles (1977, p. 79) notes in an oft-quoted passage: "Over 99% of us are born healthy and suffer premature death and disability only as a result of personal misbehavior and environmental conditions." In an overview of the relationship between health and habits, Matarazzo (1984) has further differentiated between high risk behaviors harmful to health ("behavioral pathogens") and behaviors that can reduce the risk of disease as well as enhance health ("behavioral immunogens"). His timely article underscores the need for increased personal and social responsibility in matters of health maintenance and disease prevention. It is this general shift in emphasis toward behavioral and psychological influences that has fostered the rapid growth of such health-related specialties as behavioral medicine, behavioral health, and health psychology.

Even in the case of infectious diseases there is a greater recognition that we are not merely passive recipients of microbial pathogens which "wage war" upon our bodily systems—but rather, that we are active participants in the disease process. Whereas some infectious agents will almost invariably produce a disease state, most fail to do so. This is because a number of psychosocial factors are believed to influence a host's resistance to infection and determine whether a particular disease will occur in a particular organism (Jemmott and Locke, 1984; Rogers, Dubey, and Reich, 1979; Weiner, 1977, 1981, 1982).

Due to an increasing appreciation of the role of multiple, interactive factors in both chronic and infectious expressions of disease, emergent conceptualizations of health and illness embrace a *biopsychosocial* perspective. Grounded in systems theory and "multicategory, multicause, multieffect" models which recognize the confluence of physical, psychological, social, and ecological factors, the biopsychosocial paradigm clearly represents a dramatic shift from the reductionistic, single-cause biomedical view (Battista, 1977; Bertalanffy, 1968; Engel, 1977, 1982; Leigh and Reiser, 1980; Leventhal, 1983; Miller, 1978; Schneiderman and Tapp, 1985; Schwartz, 1979, 1982, 1984).

Moreover, this emerging "holistic" perspective parallels many of the essential features associated with the *Empirical* tradition of medical thought (Coulter, 1977a, 1977b, 1977c) and may hold considerable promise toward the articulation of a comprehensive and integrative conceptualization of health and disease processes (Pelletier, 1979; Tapp and Warner, 1985).

Historical Contexts: The Rationalist and Empirical Traditions

In his classic analysis of medical thought from 450 B.C. to A.D. 1914, *Divided Legacy*, Coulter (1977a, 1977b, 1977c) has documented the perennial relationship between two opposing paradigms: the Rationalist and Empirical approaches to therapeutic method. Historically, Rationalist methods have largely been concerned with isolatable, physiological processes governed by the laws of logic, while Empirical approaches have emphasized the whole organism and its interaction with its environment (Pelletier, 1979).

The Rationalist Tradition

The most profound influences upon contemporary Western medical philosophy, theory, and practice have been those associated with Rationalist doctrines (Coulter, 1977a, 1977b, 1977c). According to Coulter (1977a) the Rationalist view first emerged in recorded history in a body of ancient Greek writings traditionally referred to as Group III of the Hippocratic Corpus (*Airs Waters Places, The Sacred Disease, Nature of Man, Regimen in Health, Breaths, and Regimens I-IV*). The major precepts of the Rationalist doctrine presented in these writings have been summarized as follows:

> the internal processes of the body are knowable *a priori*; the functioning of the organism as well as its relations with the environment are analyzable in terms of chains of causes passing from the external exciting causes to the internal (proximate) causes and ultimately to the symptoms; medical doctrine is a body of logically coherent theory reflecting the essentially logical structure of the human organism; the aim of medical diagnosis is to discover the disease "cause," and the aim of therapeutics is to counteract or oppose this cause by the appropriate "contrary" medicine; the emphasis on "contrariety" leads to an interpretation of symptoms as harmful, morbific, phenomena. (Coulter, 1977a, p. 89)

After the Hippocratic Corpus, the most significant influence on Western medical thought has been the philosophy of Aristotle. Aristotelian logic and cause-and-effect relations formed the cornerstone of ancient Rationalist ideology. Within the Aristotelian system the "proximate" causes of disease were described in terms of the hot, the cold, the wet, and the dry (or a combination thereof) and medicines were analyzed in a similar fashion. For each disease, the appropriate medicine was the one with the "opposite" qualities. Thus, within the practice of "contrary medicine," once a diagnosis was made,

the proper treatment could be found by logical deduction (Coulter, 1977a; Grossinger, 1980).

Aristotle's influence upon the analysis of health and disease and the structure of the medical *tekhne* (applied science) is readily apparent throughout the history of medical thought. The Iatrochemists of the 17th century, for example, utilized the contrary properties of acids and alkalies in their medical treatments, while their Iatromechanical colleagues viewed the human organism as an hydraulic system, ascribed diseases to "obstructions" in the veins and arteries, and selected medicines on their ability to "dissolve" them (Coulter, 1977a). In a similar fashion, the Cartesian revolution in 17th century Europe led to a view of the body as an intricate machine. This notion readily fostered a Rationalist view of disease as "the consequence of breakdown of the machine, and of the doctor's task as repair of the machine" (Engel, 1977, p. 131). When in the late 19th century bacteriology emerged as the principal Rationalist discipline, diseases were reinterpreted as the products of pathogenic microorganisms. Medicines which could "kill the germ *in vitro* were thought to remove the associated disease *in vivo*" (Coulter, 1977a, p. xvii). Biomedical science, in adopting this functional-analytic perspective, continues to look to biological processes as the locus of disease to the exclusion of behavioral and psychosocial factors (Engel, 1977).

The Empirical Tradition

According to Coulter (1977a) the ancient Greek view of health as set forth by the earliest writings of the Hippocratic Corpus (*Coan Prognosis, Epidemics I and III, Prognosis, Aphorisms,* and *Regimens in Acute Disease*) was clearly Empirical in that it emphasized the importance of a dynamic equilibrium among the bodily humors and underscored the establishment of a harmonious relationship between the body, the individual's living habits, and the totality of environmental influences (e.g., quality of air, water, and food). Within this perspective, illness represented a disruption of this intricate interplay of factors. In his essay, "Neo-Hippocratic Tendency of Contemporary Medical Thought," Castiglioni (1934) captured the essence of this view:

> This Hippocratic conception considers man as an indestructible part of the Cosmos, bound to it and subject to its laws: it may be called, therefore, a universal, cosmical, unitarian, conception. Disease, according to it, is a general fact which strikes the whole organism and has its origins in a perturbation of natural harmony. (cited in Coulter, 1977a, p. xi)

In addition to this "holistic" perspective of health, Empirical doctrines have traditionally expressed a strong vitalistic belief in the innate curature powers of the individual and have stressed the importance of the quality of the physician-patient relationship: Coulter (1977a) states

> Their observation of symptom-patterns led them to the conclusion that the organism can manifest sickness and disease in an infinite number of different ways, each of which represents a different dynamic pattern taken by the body's innate healing power (the *physis*, the *natura*) in its effort to effect cure. (p. xiii)

Following from this premise, effective medicine is that which is practiced in an emotionally-charged context in which the physician develops a sense of empathy and appreciation for the patient's uniqueness and personal experience of illness. This philosophy, evident in the earliest Hippocratic works and later reaffirmed by Paracelsus (1493–1541) has also been an integral feature of the folk traditions of several cultures, including the Navajos (see Twaddle and Hessler, 1977). It is this dynamic view that is also reflected in current systems-oriented, biopsychosocial conceptualizations of health and illness (Janoski and Schwartz, 1985; Schwartz, 1984; Tapp and Warner, 1985).

Allopathy and Homeopathy

According to Coulter (1977c), the most recent upsurge of this perennial antagonism between Empirical and Rationalist views is ideally represented by the *allopathic* and *homeopathic* practices of 19th century medicine.

Allopathy. The term *allopathy* (from the Greek: *alloin pathos*—"unlike disease") was coined by German physician and theorist Samuel Hahneman (1775–1843) to describe the orthodox medical tradition of his time and distinguish it from his own system of medical practice which he termed *homeopathy* (from the Greek: *homoin pathos*—"similar disease"). Since that time the term "allopathic medicine" has been used interchangeably with "regular medicine," "orthodox medicine," "conventional medicine," "scientific medicine," and "rational medicine" (Coulter, 1977c; Grossinger, 1980; Kaufman, 1971; Vithoulkas, 1980; Weil, 1972, 1983). Weil (1983) asserts

> Allopathic medicine . . . is now the dominant system of therapeutics in the world . . . . In Western, urban society allopathy is the only form of medicine taken seriously. Backed by vast sums of money and the intellectual prestige of great universities, decked in all the trappings of modern laboratory science, and supported by an impressive record of clinical success, allopathic medicine exerts an influence on our lives and thinking equal to that of law and religion. (p. 81)

The unifying precept of allopathic practice is its philosophy of treating illness primarily through measures designed to counteract or eliminate the symptoms of illness. This idea is readily traceable to the "contrary medicine" of the ancient Greek Rationalists. While more recent foundations of allopathy are rooted in the heroic tradition (1780–1850) of symptom removal through such practice as venesection (blood-letting), use of leeches, cupping and scarification, blistering, purging, and sweating (Kaufman, 1971), present-day extensions of this approach to healing are apparent in the use of *anti*hyperten-

sive drugs to lower high blood pressure, *anti*-inflammatory medications to remove inflammations, and *anti*biotics to eliminate certain microorganisms believed to be causally related to the symptoms of the illness.

The cornerstone of contemporary allopathic practice is the widely accepted "germ theory" of disease which states that certain microscopic entities, because of their association in space and time with certain manifestations of illness, are causative of illness (Weil, 1972). One of the primary contributors to this theory was Robert Koch, a 19th century founder of modern biology and author of "Koch's Postulates." This allopathic dictum asserts that one must unequivocally reproduce the symptoms of the disease in an organism under controlled conditions in order to lay claim to a causal relationship between a specified microorganism and concomitant disease state. Thus, injecting an organism with a particular microbe that has been grown in a pure culture *in vitro*, observing the onset of a particular disease, and once again isolating the microbe from the experimentally induced disease, creates a basis for understanding the "cause" of that disease. Following this line of reasoning, it is assumed that infectious illnesses can best be treated through allopathic methods intended to force these entities out of existence.

The allopathic assumption, however, that particular microbes *directly cause* particular disease states is at issue. While the fulfillment of Koch's Postulates has been used to logically derive a causal relationship between the presence of specific microbes in the body and the occurrence of various physical symptoms of disease, it has been argued that the experimental rigor required to demonstrate such effects in the laboratory severely compromises the relevance of the data to the world at large and does no more than establish a correlative association between these observations (Weil, 1972). The allopathic position becomes increasingly less tenable when one considers the concept of "host resistance" (Antonovsky, 1979; Berkman and Syme, 1979; Jemmott and Locke, 1984; Weiner, 1977). According to this view, many exogenous *and* endogenous factors patterned over time determine whether a particular disease will occur in a particular organism. Although some infectious agents almost always produce a disease state, *most* fail to do so because a particular organism at a particular point in time may be capable of withstanding the specific demand. Thus, disease may be said to occur "by courtesy" of the host organism. Claud Bernard, the 19th century experimental physiologist, expressed this notion well.

> Illnesses hover constantly above us, their seeds blown by the wind, but they do not set in the terrain unless the terrain is ready to receive them. (cited in Jaffe, 1980, p. 15)

This interactive position not only represents a challenge to the linear, "billiard-ball" determinism espoused by the exponents of germ theory conceptualizations of disease, but also serves to underscore the active, participatory role

of the organism in the disease process. As Weil (1972) has pointed out, the implication of this position is

> . . . not that germs appear to attack the body but that something happens in the person that permits a breakdown of the normal harmonious balance between the body and the microorganisms surrounding it. (p. 142)

Formative expressions of this view are evident in the 19th century philosophy and practice of homeopathy.

Homeopathy. Having origins in early European folk medicine and healing practices, homeopathy (referred to as "unorthodox medicine" by some medical historians) is formally dated from 1810, the year of publication of Hahnemann's most important work, the *Organon of the Art of Healing* (Vithoulkas, 1980, p. 11). Hahnemann, a prolific writer, flouted the heroic medical practice of his day which ran counter to his fundamental beliefs about health and healing. Instead of bleeding, blistering, and purging, he prescribed exercise, a nourishing diet, and pure air (Dudgeon, 1852).

Credited by some writers as the father of experimental pharmacology (e.g. Weil, 1983), Hahnemann drew up a set of rules for testing drugs and from his experimentation formulated the basic *laws of homeopathy.* Two of the most fundamental Hahnemannian precepts pertaining to the use of medicinal substances in homeopathic practice were:

(1) *Law of similars:* The central notion here is that diseases may be cured by substances which produce in healthy persons the symptoms found in those who are ill.
(2) *Law of infinitesimals:* This refers to the idea that the smaller the dose, the more effective it would be in stimulating the natural "vital forces" within the individual.

Hahnemann hypothesized that people became ill in unique ways and that such individuals could be cured by administering minute doses of substances that, given in large doses to healthy persons, would produce the unique patterns of symptoms. It is interesting to note that this idea is the very basis of current immunization procedures—one of the unique preventive practices widely accepted by modern-day allopaths. An important distinction, however, is that allopathic interpretations of this phenomenon are grounded in materialism and emphasize the production of antibodies and their counteractive effects upon specific infectious agents. Hahnemann's interpretation of this process was holistic in nature. From his point of view these "similar medicines" were thought to affect the reactive and curative power of the individual—the *vital force.* Hahnemann's concept of vital force underscored his belief that there was an interrelationship between the "spiritual" and "material" aspects of life. He theorized that disease, rather than being an entity with a specific knowable cause, represented an impairment of the spiritual "vital force." In his words

> Disease . . . considered as it is by the allopathists, as a thing separate from the living whole, from the organism and its animating vital force, and hidden in the interior, be it of ever so subtle a character, is an absurdity, that could only be imagined by minds of a materialist stamp.
>
> No diesease . . . is caused by any material substance, but . . . every one is only and always a particular, virtual, dynamic derangement of the health. (cited in Coulter, 1977c, p. 14)

The "vital force" could be affected by a multiplicity of external influences. Consequently, each disease was different for each person and could not be classified with respect to an internal cause. In other words, the disease process for each person was inimitable and only revealed by a unique pattern of symptoms. The laws of "similars" and "infinitesimals" both ran counter to the heroic practice of "contrary medicine" which used large doses of emetics, cathartics and diaphoretics intended to purge the system of all irritants and impurities. As a result, Hahnemann's critics were quick to refute the notion that diseases were immaterial, spiritual manifestations. Their arguments typically were in defense of the allopathic views that diseases were entities with knowable causes which could be classified with respect to these causes, and that symptoms were significant indications of cause.

Perhaps the most striking characteristic of the historical relationship between allopathy and homeopathy was its high degree of mutual antagonism. Introduced to America at a time when the excesses of heroic practice were being challenged, homeopathy was able to take root and blossom into a large, fairly well-educated medical sect—one strong enough to encourage serious opposition to the allopathic medical establishment. In spite of homeopathy's fertile beginnings, homeopathic practitioners were eventually expelled from well-organized allopathic medical societies and all professional intercourse between the two groups was prohibited by the American Medical Association's Code of Ethics (Coulter, 1977c). Due to the political clout and exclusionary tacts of the allopathic establishment, American homeopathic practice soon become torn by internal dissension. The rapid growth and popularity of technological medicine and its materialistic precepts, further served to signal a decline in the influence of the more philosophical and theoretical homeopathy (Weil, 1983).

Salient Contrasts Between the Two Paradigms

Upon examination of the antithetical traditions of Rationalist and Empirical approaches to medical thought, a number of significant distinctions emerge concerning the interpretation of symptoms, prescriptions for medical practice, and representative definitions of health and disease. According to the Rationalist view, symptoms represent signs of morbidity and are direct effects of the operation of proximate causes, while the Empirical perspective

holds the belief that symptoms are indicative of the curative effort of the *physis* and should be interpreted as positive, beneficial phenomena. This dichotomy is particularly evident if one juxtaposes the allopathic "germ theory" view of symptomatology with the homeopathic concept of "vital force."

Rationalist practice is predominantly founded upon the doctrine of contraries (derived ultimately from Aristotle's "principle of contradiction") in which neutralizing or opposing the disease "cause" is the primary, logical goal of medical practice and is equivalent to curing the patient. The social psychological implications of this doctrine have been eloquently expressed by Coulter (1977a).

> It [doctrine] elevated the physician above the patient psychologically. Not only did it draw on a body of arcane knowledge which was qualitatively different from any ordinary knowledge possessed by the patient and exclusively a province of the physician, but it strengthened the physician's self-esteem in another way besides—by casting doubt upon the patient's self-healing capacity. Healing by contraries is a form of self-assertion: the physician cures by *opposing* and conquering something within the patient rather than by aiding and cooperating with the patient's own intrinsic healing power. (p. 508)

In contrast, because the Empirical approach represented symptoms as the body's own curative effort, they are the physician's best guide and he/she need only ascertain how to aid this innate force for cure. Accordingly, Empirical physicians throughout history have tended to espouse a theory of "similars" and have concentrated their therapeutic efforts on practices which they believed aided the *physis*. This philosophy was clearly fundamental to the practice of homeopathy and its emphasis upon medicines which were hypothesized to further and promote the inherent self-healing effort of the organism.

Lastly, contrasting definitions of health and disease emerge from these two respective paradigms. The Rationalists clearly demarcated health from disease. Health was defined subtractively as the condition in which the physician could diagnose the presence of a disease *entity*. Disease, according to the Empirics, was not an entity but a *dynamic process*. Health was also characterized as a process. Both health and disease represented a dynamic interplay between the whole individual and his/her environment (Coulter, 1977a).

In his concluding analysis Coulter (1977c) has differentiated these two opposing traditions accordingly:

> . . . Empirical assumptions have served periodically to correct the excesses of Rationalist doctrine. Empiricism is the mirror image of medical Rationalism and thus compensates for the latter's defects. It is holistic instead of analytical, mild instead of violent, curative instead of suppressive, and it proceeds cautiously instead of dashing headlong after every supposed "discovery" by the pharmaceutical industry. (p. 507)

The Emergence of Behavioral Medicine

Historical Contexts

Although an awareness of the interaction between psychological factors and somatic expressions of disease has existed for centuries, it was not until the turn of the 20th century that the field of psychosomatic medicine began to systematically address such relationships. Predominantly based upon psychoanalytic doctrines, psychosomatic medicine sought to identify constellations of repressed intrapsychic conflicts and personality traits purported to be associated with such "psychosomatic" disorders as asthma, migraine headaches, and hypertension. For example, in discussing the emotional etiology of asthma, Franz Alexander (1950) asserted that

> The nuclear psychodynamic factor is a conflict centering on an excessive dependence upon the mother. As a defense against this infantile fixation, all kinds of personality traits may develop . . . aggressive, ambitious, argumentive persons, daredevils, and also hypersensitive, aesthetic types. (pp. 133–134)

Despite its important historical role in sensitizing physicians and psychologists to the interplay of psychological factors and physical disorders, psychosomatic medicine has not had a dramatic impact upon the general medical community. One reason for its lack of influence has been that the field has largely been plagued by anecdotal case studies and paucity of experimental research (Walker and Shelton, 1985). In addition, Agras (1982) has pointed out that psychosomatic medicine's progress in generating effective psychological intervention procedures has been disappointing. According to Agras, this lack of attention to the area of intervention created a dissociation between basic research and applied interests within the specialty and left practitioners with no solid basis on which to plan treatments. These theoretical, methodological, and applied shortcomings of psychosomatic medicine seemed to necessitate a new approach to the interface of psychology and medicine.

Behavioral Medicine: Development and Differentiation

Blanchard (1982) attributes the origins of behavioral medicine to the confluence of three separate sets of events in the late 1960s and early 1970s: (1) the extension of behavior therapy technology to medically related problems; (2) the development of biofeedback technology and its application to psychophysiologic disorders; and (3) the shift in disease patterns from infectious to chronic.

Agras (1975) has documented the first set of events. In the late 1960s behaviorally oriented clinicians began to step outside the bounds of traditional mental health problems and apply behavior therapy strategies to more

medically related problems such as obesity and smoking. Unlike its psychosomatic medicine predecessor, behavior therapy seemed to represent a powerful technology for reliably changing behavior, and soon was met by growing interest and acceptance from the general medical community. As Karoly (1985, pp. 4–5) has pointed out, the experimental analysis of behavior seemed to offer medicine a compatible clinical partner.

> The concepts and procedures associated with the learning-theory tradition, particularly the operant and classical conditioning and modeling perspectives, proved especially timely and quite compatible with the molecular, external control-oriented medical world view. (cf. Melamed and Siegel, 1980; Pomerleau and Brady, 1979)

At the time the behavioral psychology movement entered into the medical domain, the development and application of biofeedback technology was also making similar inroads. In fact, the first formal appearance of the term "behavioral medicine" has been credited to Birk (1973). In his edited volume, *Biofeedback: Behavioral Medicine*, Birk described the merits of biofeedback in treating a variety of medical disorders (e.g., asthma, tension and migraine headaches, epilepsy, and Raynaud's disease) and set forth the view that behavioral medicine represented the application of behaviorism to medicine.

As Blanchard (1982) points out, the formative influences of behavior therapy and biofeedback were embedded in a larger context characterized by a shift toward chronic sources of adult mortality. This shift, accompanied by a greater recognition of the role of *behavior* in the etiology and maintenance of such disorders, produced a "set of medical problems for which the technology of behavior therapy and biofeedback were well suited" (Blanchard, 1982, p. 796). This state of affairs not only served to legitimize the role of the behavior therapist in medical settings, but also catalyzed a virtual explosion of research and clinical interest in the application of behavioral interventions to medically related problems (Gentry, 1982).

The first signs of a conceptual differentiation within behavioral medicine became apparent following the historic 1977 *Conference on Behavioral Medicine*. Bringing together senior researchers in behavioral science (psychology, sociology, epidemiology) and biomedical science (psychiatry, medicine) disciplines, the participants at the Yale Conference challenged the narrow "behavioral" view of behavioral medicine and instead endorsed a broad "interdisciplinary" conceptualization of the field. This challenge served to divide the field of behavioral medicine along theoretical and professional lines. Prevailing definitions and practices continue to reflect two distinct definitions of the field—one ascribing to the traditional behavioral view and a second aligned with the Yale Conference interdisciplinary formulation (now called the "biopsychosocial" perspective).

Two Tracks: The "Behavioral" and "Biopsychosocial"

In a recent review of research trends in behavioral medicine, Gentry and Miller (1985) have concluded that behavioral medicine is currently comprised of two clearly identifiable tracts of activities that may be differentiated along theoretical and professional lines. According to their analysis, *Track I* represents an outgrowth of behavioral medicine's initial functionalist foundations and is essentially concerned with the application of behavior therapy and behavior modification research methods and treatment techniques to medical problems. Representative proponents of the Track I, the behavioral approach, have defined behavioral medicine as

> . . . an empirical discipline, whose efforts are directed at discovering and manipulating the relationship between observable behaviors, physiological function and disease. As such, it has given birth to a new technology whereby principles of behavior control are applied to the treatment, prevention and rehabilitation of various physical disorders. (Surwit, 1982, p. 1)
>
> (a) the clinical use of techniques derived from the experimental analysis of behavior therapy and behavior modification—for the evaluation, prevention, management, or treatment of physical disease or physiological dysfunction; and (b) the conduct of research contributing to the functional analysis and understanding of behavior associated with medical disorders and problems in health care. (Pomerleau and Brady, 1979, p. 13)

The applied behavioral psychology view has clearly been a *fast track* of activity, as evidenced by its high level of research productivity (Gentry and Miller, 1985). During the past decade the wide range of behavioral techniques employed, as well as the diversity of medically related problems addressed by this definition of behavioral medicine, have been clearly presented elsewhere by Daitzman (1983, 1985), Davidson and Davidson (1980), Doleys, Meredith, and Ciminero (1982), Ferguson and Taylor (1980a, 1980b, 1981), Gentry (1975, 1976), Katz and Zlutnik (1975), McGrath and Firestone (1983), McNamara (1979), Melamed and Siegel (1980), Pinkerton, Hughes, and Wenrich (1982), Pomerleau and Brady (1979), Pomerleau, Bass, and Crown (1975), Surwit, Williams, Steptoe, and Biersner (1982), Turk, Meichenbaum, and Genest (1983), and Williams and Gentry (1977).

Track II, on the other hand, reflects a consensus definition emanating from the Yale Conference which set forth an inclusive and broadly integrative agenda for health care and health research. According to this view, behavioral medicine is defined as

> . . . the interdisciplinary field concerned with the development and integration of behavioral and biomedical science knowledge and techniques relevant to health and illness and the application of this knowledge and these techniques to prevention, diagnosis, treatment and rehabilitation. (Schwartz and Weiss, 1978, p. 250)

Acknowledging the multidimensional nature of the complex problems of health and disease, the Yale group has sought to encourage communication

among a number of behavioral, social, biomedical, and medical specialties not previously well connected. As a result, it is within this broad, multidisciplinary context that biopsychosocial approaches to health and illness have emerged and continue to evolve (Jasnoski and Schwartz, 1985; Schwartz, 1982). In contrast to Track I, this interdisciplinary view of behavioral medicine represents a *slower track* of research activity—although one which appears to be gaining momentum (Gentry and Miller, 1985).

In addition to theoretical and conceptual differences, the "behavioral" and "biopsychosocial" perspectives are further differentiated along professional and affiliative lines. Both tracks have developed thier own professional organizations—the *Society of Behavioral Medicine* (closely affiliated with the *American Association for the Advancement of Behavior Therapy*) versus the *Academy of Behavioral Medicine Research*—all of which serve as vehicles for advancing and further defining respective goals. As Gentry and Miller (1985) note

> . . . the "behaviorism" track seeks to legitimize and extend the clinical application of behavioral psychology to traditional medical problems. In contrast, the Yale Conference definition offers a more inclusive, broad-spectrum approach to health care and health research, one that goes beyond the intellectual confines and dogma of any single biomedical or behavioral science discipline. (p. 84)

Health Psychology: Defining Psychology's Role in the Biopsychosocial Matrix

The Yale definition, rather than adhering to the belief that behavioral medicine represents a merging of the "paths of medicine and behavioral psychology" (McNamara, 1979), acknowledged the valuable contributions of other behavioral science disciplines (e.g., anthropology, epidemiology, sociology) and of psychologists who are not characterized as "behaviorists" in the usual sense of the term (Gentry, 1982). In line with the biopsychosocial view, the recent emergence of *health psychology* as a subspecialty of psychology similarly represents a broader application of psychology's disciplinary knowledge to the study of health and illness—one well beyond the confines of behavior modification and behavior therapy technologies. Matarazzo (1982) has defined health psychology as follows:

> Health psychology is the aggregate of the specific educational, scientific, and professional contributions of the discipline of psychology to the promotion and maintenance of health, the prevention and treatment of illness, the identification of etiologic and diagnostic correlates of health, illness, and related dysfunctions, and the analysis and improvement of the health care system and health policy formation. (p. 4)

Distinguishing features of this definition are its emphasis upon health maintenance through preventive measures and its acknowledgement of the socio-political dimensions of the broader health care system which impact upon the individual.

Stone (1982), in the inaugural issue of *Health Psychology*, has also conveyed the importance of a multicontextual perspective and open communication among disciplines in the effort to promote health and prevent disease. According to Stone, health psychologists should

> . . . define the system broadly and direct . . . attention not only to the individual whose health is at issue, but to the whole complex of institutions and forces within which the pursuit of health takes place. (p. 2)

Echoing Stone's recommendations, Thoresen and Eagleston (1985) have recently proposed an expanded cognitive social learning model of health care which recognizes the reciprocal interplay among cognitive, behavioral, environmental, and physiological factors.

In view of these developments, psychology's emerging role in the "psycho" part of the biopsychosocial perspective appears to be one which seeks to embrace the unique contributions that psychology can make *as a whole* toward understanding the complex interrelationships among the reciprocal influences of physiology, behaviors, cognitive processes, and environmental/ecological contexts as they relate to health and disease. This view stands in sharp contrast to formulations of behavioral medicine which define psychology's most salient contribution to the field in terms of the experimental analysis of behavior and the development of "rational, more effective therapies based on research on biobehavioral adaptations to the environment" (Pomerleau, 1982, p. 1037).

Two Metatheoretical Views: The Mechanical and the Systemic

While numerous historians and philosophers of science have emphasized the central role of metatheory in the development and construction of scientific knowledge (Feyerabend, 1970; Habermas, 1971; Hanson, 1961; Humphreys, 1969; Kuhn, 1962; Polanyi, 1958; Radnitzky, 1970), relatively little theoretical and empirical attention has been given to the metatheoretical assumptions associated with various approaches to health and disease processes. Perhaps one reason for this state of affairs lies in the definition of "metatheory." Weimer (1977) explains

> Metatheories are like perspectives or vantage points from which a domain may be scrutinized. In providing such conceptual underpinning to a domain or inquiry a metatheory is in itself all but invisible: one "sees" the domain through the conceptual glasses that constitute the metatheory, but does not see the metatheory itself. (p. 269)

The general implication of Weimer's comments is that any specific theory or concept may be viewed as presupposing a more general theoretical model within which the specific theory or concept is embedded. The most general (or metatheoretical) models which constitute the basic presuppositional ground

of theory construction have been variously termed as "paradigms," "ways of seeing the world," "world views," (Kuhn, 1962); "research programmes" (Lakatos, 1974); "root metaphors," "world hypotheses," (Pepper, 1942); and "epistemic styles" (Royce and Powell, 1983). According to these formulations, specific theories within any particular metatheoretical would view differ in the level of generality, but at the most general level a world view is capable of encompassing every phenomenon and event. In other words, the world view provides a general way of organizing experience. The following analysis suggests that behavioral and biopsychosocial formulations may be contrasted along metatheoretical lines (i.e., mechanistic and systemic world views, respectively) and that each holds contrasting conceptualizations of symptoms, definitions of health and disease, and views of the person.

Biomedical and Behavioral Models: Shared Shortcomings

Although the application of behavior therapy and behavior modification research and treatment strategies to medically-related problems has provided psychology with a certain level of visibility and respect as a "health profession," the ability of the behavioral approach to serve as a viable model for the future development and articulation of a comprehensive theory of health and disease is dubious (Kaplan, 1984; Karoly, 1982, 1985; Lazarus, 1984; Leventhal and Cleary, 1979; Miller, 1979; Schwartz, 1982). Although a discussion of the conceptual and practical limitations of the general behaviorist paradigm is beyond the scope of this paper, the principle limitations of the behavioral approach to *behavioral medicine* closely parallel several major current criticisms of the biomedical model. Four of the most salient of these mutual shortcomings are outlined below.

(1) *Mechanistic metatheoretical orientation.* As Schwartz (1982) has pointed out, behavioral models essentially embrace a *mechanistic* "world hypothesis" (see Pepper, 1942) of single-cause, single-effect particulars. Applied to the domain of medical phenomena this metatheoretical strategy is clearly Rationalist in character, for not unlike that of its biomedical counterpart, it assumes the causes of disease to be *both singular and specifiable in functional analytic terms.* Schwartz (1984) has described the conceptual consequences of this thinking style.

> In terms of health and illness, mechanistic thinking would lead to the belief that specific germs cause specific diseases or that specific chemicals such as vitamin C produce health. The causes may be biological or behavioral. Hence, to a mechanistic thinker, lung cancer could be explained as being caused by a particular pollutant, or tension headaches could be explained as being caused by a particular psychosocial stressor. (p. 153)

At least three salient limitations are associated with this approach. First, through the "conceptual glasses" of a mechanistic world view, multiple and

synergistic influences upon health and disease may be overlooked. Once the criteria for single cause-effect relationships are met, it is unlikely that a search for additional interactive influences and transactional relationships will be undertaken. Second, the isolation and designation of simple sequences of independent (antecedent) and dependent (consequent) variables fails to account for the complex temporal nature of the disease process. As Coyne and Holroyd (1982, p. 114) point out, such an approach merely serves as a "provisional punctuation of the ongoing stream of social, psychological, and physiological processes—one that can be revised as needed." Lastly, within a mechanistic framework, the *qualitative* criteria for causes and effects are typically rooted in materialism (i.e., the physical and chemical world) and thus other sources of influence (e.g., psychological, social, and cultural) are considered less viable.

(2) *Symptoms as disregulatory phenomena.* In addition to a linear, unicausal view of disease, biomedical and behavioral approaches both conceptualize symptoms as *manifestations of disorder to be controlled or eliminated.* While this "disregulatory" view of disease has permeated allopathic approaches and has led to the practice of treating symptoms with strong counteractive agents, the procedural logic of the behavioral approach similarly emulates the "contrary practice" of Rationalist interventionalism. In fact, the hallmark of the behavioral approach to behavioral medicine has been associated with the development and deployment of potent interventions designed to *counter, neutralize, or eliminate the presumed proximate causes of specific disease-related symptomatology.* While mainstream behaviorists have tended to intervene at a behavioral/environmental level (e.g., the use of counterconditioning, reinforcement of competing responses, response cost, etc.), recent cognitively-oriented approaches have assumed that a positive and rational attitude toward disease can be injected as easily as an antibiotic and thus such approaches have focused on changing the *content* of various health-related beliefs and thoughts (e.g., cognitive restructuring, self-instructional training, etc.). As Schwartz (1984) has argued, viewing symptoms exclusively as problems to be controlled fails to acknowledge their basic adaptive and functional value in many contexts (e.g., signaling and feedback functions necessary for making self-regulatory adjustments). Such a view also restricts intervention to a purely individual/ symptomatic level which may have unanticipated disregulatory side effects at other levels of analysis.

(3) *Subtractive definitions of health.* Because the relative efficacy of Rationalist interventions primarily rests on their ability to produce *symptomatic* control or removal, it naturally follows that a symptom-centered focus also is fundamental to biomedical/behavioral definitions of health. Both approaches tend to define health in *narrow, subtractive terms as the absence of disease and its concomitant symptomatology.* Health, according to these views, appears to be the *order* that spontaneously emerges when the *disorder* of disease is ab-

sent or removed. One drawback to this view is that it fails to acknowledge the fundamental self-organizing and ordering functions that diseases exhibit within complex living systems (Schwartz, 1984). Furthermore, conceptualizing health as the absence of disease clearly de-emphasizes the importance of prevention and the ongoing ordering processes of health maintenance and promotion. Definitions of health and health care based solely upon the elimination of physical and behavioral symptoms also denies the influence of broader psychological, educational, social, economic, political and cultural factors upon individual health and the health care system.

(4) *Passive view of the person.* Rather than viewing individuals as active participants in the disease process and principally responsible for their own health maintenance, the image of the person that emerges from biomedical and behavioral views is that of a *passive recipient of biobehavioral disease agents.* Because the power to cure is assumed to primarily reside in the potency of the intervention, a passive role of the individual during the treatment process is also indicative of these approaches. Such an overreliance on technological interventions serves to shift the locus of responsibility for health care away from the individual to the institutionalized, authoritative domain of medical experts and behavioral technicians and further contributes to the dehumanization of health care services. As Lazarus (1984) has indicated, the "mechanization of intervention" distinctly trivializes the human factor in the disease process.

> What is missing in the more mechanical approaches to intervention, with their major emphasis on the illness and its management, is an appreciation of the whole person in the context of his or her environment, including goals, obligations, and commitments, wishes and fears, social ties, and sense of future—in short, all the factors in living that carry heavy emotional loadings when a person is harmed or threatened by illness. By addressing only superficially focal issues or symptoms by means of mechanical treatments, those providing treatment ignore distress and its function as an indicator of how patients think they are faring in their lives. (p. 134)

The Behavioral Approach: A Simple View of Complex Phenomena

An increasing appreciation of the complexities associated with the study of psychological and social phenomena has been accompanied by an epistemological view that suggests that there are inherent constraints upon the nature of our knowledge and ultimately upon formal rationality itself (Hayek, 1952, 1964, 1982; Weimer, 1982). Weimer (1982), in his overview of the theoretical and philosophical essays of Friedrich von Hayek (Hayek, 1952, 1967, 1978), draws the distinction between *simple* and *complex phenomena* and suggests that each is associated with different degrees of explanatory power. As he points out, classical physics has been the paragon of science which other specialties in their quest to be "scientific" have sought to emulate both

in theory and in practice. Weimer contends that although the physical sciences have been quite successful at explaining and predicting the *particulars* of their respective domains through deductive cause-and-effect laws, such progress has predominantly been due to the inherent simple nature of the phenomena under study and their apparent conformity to such precise mechanistic quantification. According to Weimer, this *explanation of the particular*, while appropriate to the study of *simple phenomena*, is not applicable to the realm of *complex phenomena* whose understanding is ultimately confined to a more general and abstract level of explanation—*explanation of the principle*. This distinction not only provides a context of constraint which delimits the understanding and explanatory power one may expect to attain in a given domain of complex phenomena (e.g., the nervous system; psychological, social, and cultural phenomena; economic systems), but also questions the viability of attempting to impose any form of rational planning and centralized control upon a dynamic, complex system. This latter conclusion is based upon the argument that because it is not possible to ever accumulate and utilize all the relevant particulars available in a complex system, such a system is not subject to rational forms of centralized planning and intervention. Furthermore, because complex systems are embedded within a "constant flux of unanticipated events," rational interventions based upon a preconceived specification of precise goals and outcomes are doomed to limited success.

The behavioral approach to medicine, being an exemplar of psychology's prototypical mechanistic paradigm, represents a valiant but inappropriate attempt to understand the complex phenomena associated with health and disease in precise, explanatory and predictive terms. In light of Weimer's analysis of simple and complex phenomena, one obvious logical shortcoming of this goal is the fact that an explanatory system must be more complexly organized than the thing it models. Weimer (1982) states

> . . . for phenomena of high complexity . . . the least complex model of a complex phenomena would possess a degree of complexity equal to the thing itself. Thus, a model capable of behaving exactly like a complex phenomenon would, for all practical (and indeed theoretical) purposes be another instance of that phenomenon. (p. 243)

In other words, an explanation of the particulars of a phenomenon with N levels of complexity would require an explanatory model of N+1 levels of complexity. Behavioral models, as models of simple phenomena, are incapable of articulating an explanatory model elaborate enough to account for the level of complexity associated with the particulars of the phenomena encompassed by health and disease systems.

The constraints imposed upon our knowledge by complex phenomena and explanation of the principle also hold clear implications for the practice of treating disease through the behavioral modification of particulars. Therapeutic interventions with an algorithm to modify an individual's

behavior and/or thinking to preconceived ends are inherently limited (Weimer, 1982). An inability to gather all the relevant particulars and/or predict unanticipated future events makes any precise specification of goals untenable. Although reappraisals of the theoretical promise of such interventions to the traditional behavioral domains of obesity and smoking have begun to appear (Dubbert and Wilson, 1983; Foreyt, Mitchell, Garner, Gee, Scott, and Gotto, 1982; Hagen, 1981; Leventhal and Cleary, 1979; Raw, 1977), representatives of the behavioral camp continue to define the field in strong interventionist terms. For example, Pomerleau (1982) identifies the four principle lines of development in behavioral medicine as

> (a) *intervention* to modify an overt behavior or physiological response that in itself constitutes a health problem, (b) *intervention* to modify the behavior of health-care providers to improve the delivery of services, (c) *intervention* to modify adherence to prescribed treatment, and (d) *intervention* to modify behaviors or responses that constitute risk factors for disease. (p. 1032, emphasis added)

Kaplan's (1984) recent critical overview of the empirical literature supporting the basic assumptions of the behavioral interventionist approach to behavioral medicine may serve to temper such strong interventionist prescriptions for the field. Kaplan concludes:

> . . . the literature demonstrates that behavioral interventions may have modest rather than strong effects. Further, the long term success rates for most interventions tend to be disappointing. (p. 76)

Behavioral failures in the maintenance and generalization of effects clearly reflect the limits of rational forms of control and their inherent inability to predict unanticipated occurrences in complex systems (Marlatt and Gordon, 1985).

The Biopsychosocial Approach: A Systems View of Complex Phenomena

The biopsychosocial view of health and illness represents a dramatic shift from reductionistic, single-cause, single-effect biomedical and behavioral models and seems to parallel many of the essential features associated with the Empirical tradition of medical thought. What follows is an attempt to elucidate the fundamental contrasts between biomedical/behavioral models and the emergent biopsychosocial paradigm (see Table 1).

(1) *Systemic metatheoretical orientation.* In contrast to the mechanistic thinking style of biomedical and behavioral models, the biopsychosocial perspective embraces a *systemic metatheoretical world view* (Battista, 1977; Bertalanffy, 1968; Engel, 1982; Miller, 1978; Schwartz, 1979, 1982, 1984). Systems thinking is both relational and interactive in nature and closely resembles Pepper's (1942) "synthetic" dimension of world hypotheses which represented an integration of *contextualism* and *organicism*. In his words,

> Contextualism and organicism are so nearly allied that they may almost be called the same theory, the one with a dispersive, the other with an integrative plan. (Pepper, 1942, pp. 146–147)

According to Pepper, contextual thinking is essentially relational. In this world hypothesis there are no stable, universal or exhaustive categories—that is, no single way of explaining particular phenomena or events. Rather, there are always at least two ways of explaining every phenomenon. This is because according to the contextual world hypothesis, phenomena depend upon the context in which they occur as well as the context of the observer. Contextual thinking is currently predominant in physics, in which Einstein's relativity theory and Heisenberg's uncertainty principle have dramatically changed the way physicists view the world (Capra, 1977; Zukav, 1979).

Pepper's (1942) organismic hypothesis (organicism) is based on the root metaphor of the complex, integrated *organic process* that is presumed to underlie the structural development and transformation of a phenomenon. Within this world view, phenomena are perceived as dynamic and developing "organic wholes." In their development they are confronted by "oppositions" that may appear to impede development, but which in fact lead to "integrations" and higher-level organic wholes. Schwartz (1984) has suggested that organismic thinking is essentially interactive in nature and corresponds to what is currently termed "systems thinking."

> Unique events are presumed to emerge out of unique interactions among multiple causes. Combinations of causes are believed to lead to the emergence of new phenomena, and

Table 1

Salient Contrasts Between Behavioral/Biomedical and Biopsychosocial Approaches

	Approach	
Issue	*Behavioral/Biomedial*	*Biopsychosocial*
Metatheoretical world view	Thinking style is mechanistic. Causes of disease are singular and specifiable.	Thinking style is systemic. Health and disease reflect a continuous interplay of multivariable and multilevel influences.
Conceptualization of symptoms	Symptoms are viewed as disregulatory phenomena to be eliminated or controlled.	Symptoms are viewed as self-regulatory and potentially adaptive phenomena.
Definitions of health and disease	Health and disease are defined in categorical and subtractive terms.	Health and disease are defined in wholistic and synchronous terms.
View of the person.	Individuals are viewed as passive recipients of disease.	Individuals are viewed active participants in the disease/health process.

> hence, new whole entities. Systems thinking is therefore wholistic (organismic) thinking. The principle of systems thinking is that the functioning of a system as a whole emerges out of the dynamic interaction over time of its parts and out of the system's dynamic interaction over time with its environment (the suprasystem of which the system is a part). (p. 154)

Systems thinking and an emphasis upon general change processes pervade the overall study of complex phenomena (Cook, 1980; Hayek, 1964, 1978; Laszlo, 1983; Pattee, 1973; Weimer, 1982, in press). Applied to medicine, systemic thinking is clearly Empirical in that it conceptualizes both health and disease as *dynamic processes which reflect a continuous interplay of multivariable and multilevel influences.* Within this framework, specific diseases emerge as constellations or patterns of symptoms that represent complex interactions of biological, psychological, and environmental stressors with the individual.

(2) *Symptoms as regulatory phenomena.* According to systems theory, systems are organized in a hierarchical fashion in relation to their level of complexity. This means that at any given level, each system is both a *part* (subsystem) of a more encompassing and comprehensive system (suprasystem) and the *synthesis* of other component subsystems. This "interconnectedness among systems of systems" leads to a much broader conceptualization of systems than that of biomedical and behavioral models. Rather than categorically assuming that symptoms represent morbid manifestations of disorder, biopsychosocial approaches acknowledge that *symptoms may be good (healthy and adaptive) or bad (unhealthy and maladaptive)* depending upon the level of analysis, how they are interpreted by the system, and their survival value for the system as a whole (i.e., the individual). An adaptive view of symptoms recognizes their central role in systemic self-regulation. The informational feedback they provide to the individual (e.g., pain) enables him or her to make appropriate self-regulatory adjustments (e.g., reduce or cease exertion). Thus, disease symptoms may be conceptualized as *healthy responses* by the organism in its attempt to regulate itself. While at a physiological level of analysis negative feedback processes are intrinsic to the view of the brain as a health care system (Schwartz, 1977, 1979), on a much larger scale it has been suggested that disease symptomatology, rather than reflecting *random disorders,* may actually serve some *ordering function* for the evolution of the human species and nature in general. Obviously, symptoms may also be maladaptive—especially when normal restorative processes have failed and the survival of the organism is threatened. Disattention to symptoms (defensive coping, denial, etc.) is also most often unhealthy and over the long run will produce disregulation (e.g., chronic pain) in those responses that are actively ignored (Schwartz, 1984).

A multisystems perspective also holds far-reaching implications for the symptomatic treatment of disease. Schwartz (1984) has suggested that interven-

tions designed to reduce symptoms at one level of analysis may have unpredicted disregulatory side effects at another level.

> A disturbing implication of a systems approach to health and illness is the hypothesis that modern society, in its quest to develop effective biomedical and behavioral procedures for directly repairing the body and reducing the symptoms of distress, is inadvertently disconnecting human beings from the larger biological and environmental systems they belong to, and therefore are disregulating the larger systems. If certain physical symptoms represent lower level strain and feedback caused by higher level, social stress, treating the symptom at the organ level rather than treating the causes at the group, organizational, or societal levels will lead the larger system to become further disregulated and to go out of control. (pp. 176–177)

A multilevel view of symptoms implies that there may be a certain "wisdom to disease" whereby symptoms function as self-regulatory phenomena and represent the human system's attempt to maintain the integrity of the system and/or re-establish a synchronous relationship with other subsystems and suprasystems in which it is embedded.

This self-healing or self-regulatory perspective tends to dovetail rather nicely with recent ideas about the self-organizing properties of natural phenomena (Jantsch, 1980, 1981; Prigogine and Stengers, 1984), the autopoietic or self-maintenance characteristics of living systems (Zeleny, 1981), and an open systems model of humans as active, self-construing, developing systems (Guidano, in press; Mahoney, in press; Mahoney and Lyddon, in press). The theoretical scaffolding for these emerging conceptualizations is built upon the pioneering contributions of Ilya Prigogine and his formulation of dissipative structure theory. Prigogine was awarded the 1977 Nobel prize in chemistry for his study of "dissipative structures" in chemical reaction systems and the principle that "order occurs through fluctuations" (Glandsdorff and Prigogine, 1971; Prigogine, 1980; Prigogine, Nicolis, and Babloyantz, 1972). What Prigogine and his colleagues have advanced is that order may occur through randomness in all forms of physical and biological systems. The notion that order arises *because* of disorder not *despite* it furthermore suggests that Newton's Second Law of Thermodynamics and the venerated concept of entropy (the notion that the universe—like some vast machine—is moving irreversibly toward increasing decay and disorder) are limited in the range of phenomena they can explain. Prigogine showed that the tendency of mass and energy to seek a static state of equilibrium applies only to *closed systems* (systems which are totally self-contained, with no flow of matter or energy between the system and its environment), but does not apply in *open, developing systems* (systems capable of exchanging both matter and energy with their environment). The essence of this theory is that open systems are defined (ordered) by fluctuations and a commitment of energy to the system. Under these conditions, deleterious levels of entropy will not accrue and the basic structure of the

system will be preserved. If the system, however, is confronted with sufficient stress and fluctuations surpass a critical level, a break in symmetry will occur leading to additional fluctuations and an eventual *qualitative* change in the system in the direction of greater complexity and a higher level of organization. Dissipative structure theory holds dramatic implications for the fields of psychology and medicine by suggesting that disorder, disequilibrium, and "dis-ease" may be conceptualized as "natural" phenomena that play a crucial role in a system's transformation toward a more viable, higher-order organization (Jantsch, 1980, 1981; Maturna, 1975; Zeleny, 1980, 1981).

(3) *Wholistic definition of health.* Emulating the ancient Greek Empirical view of health as set forth by the earliest writings of the Hippocratic Corpus, the biopsychosocial approach defines health in broad, multilevel, and systemic terms. Health, according to a systems perspective, represents a *relative balance within which all systems are simultaneously in harmony with one another* (Tapp and Warner, 1985). This "synchronous" view of health has been recently described by Jasnoski and Schwartz (1985).

> In synchronous regulation, the system becomes ordered (rhythmic), and functions with a certain ease (acts automatically) because the parts are connected. In negative feedback regulation of this connectedness, the system will be balanced and will show homeostasis and stability. When the parts are disconnected in dysynchronous disregulation, the system will become disordered (nonrhythmic), and the system will function in a state of simple disease (the absence of ease). Disregulation and regulation work together in dysynchronous and synchronous fashion in the human ecosystem to preserve the functional integrity of the system as environmental and internal conditions change. This is the state of health. (p. 477)

While stabilized synchrony or *transynchrony* represents an optimization of health potential, *malsynchrony* refers to a state of stabilized dysynchrony, or disease (Jasnoski and Schwartz, 1985). According to this view, health (the potential for regulation) and disease (the potential for disregulation) represent continuous *interactive processes* which reflect the patterns of synchrony and dysynchrony within an individual's life and body. This process-oriented conceptualization signifies a distinct departure from the categorical and symptom-centered formulations of biomedical and behavioral approaches.

(4) *Active view of the person.* An essential feature of all systems is *activity*—that property which emphasizes the processes of transformation that constitute the continual interaction among the parts of a system. Because feedback loops insure activity as a constant condition both within and between systemic hierarchies, systems are neither static nor reactive (Tapp and Warner, 1985). Thus, the image of the person that emerges in systemic approaches to health is one imbued with activity. The biopsychosocial model distinctly emphasizes the *active, participatory role of the person in both the disease process and in the processes of health maintenance and self-care.* Schwartz (1984) states that

> . . . people are not simply observers of their bodies. According to systems theory, they are instead participant-observers of their bodies, influencing all processes that involve relative increases or decreases in feedback loop connections to varying degrees. This principle implies that mind always affects body to some degree and vice versa. (p. 165)

Recognition of the active, *constructive* nature of the human cognitive system (cf. Guidano, 1985; Guidano and Liotti, 1983; Hayek, 1952; Kelly, 1955; Mahoney, in press; Mahoney and Lyddon, in press; Weimer, 1977) has led some health researchers to examine the *personal meaning structure* of physical symptoms and illness episodes (Fabrega, 1977; Jones, Wiese, Moore, and Haley, 1981) and to study the relationship between patients' representational models of illness cognition and symptom self-regulation processes (Leventhal, Meyer, and Nerenz, 1980; Leventhal and Nerenz, 1985).

It follows from the foregoing discussion that the biopsychosocial approach symbolizes a significant departure from the mechanistic paradigm and its search for specific and singular causes of disease at the lowest and simplest levels of explanation. Representing a dynamic, multilevel, multicausal approach to viewing health and illness, the biopsychosocial model seeks to address the whole person in the broadest possible context of his or her life. As a consequence, systems thinking and systems theory has become an essential feature of this perspective. Further, the level of explanatory power associated with a systemic approach seems to invoke Weimer's (1982) *explanation of the principle* constraint. Through its reliance on general structural rules and abstract systemic properties, systems theory may well be a viable metatheoretical framework for delineating the *general principles* associated with the *complex phenomena* of human health and disease processes.

Concluding Remarks

This paper has intended to provide both an historical and metatheoretical framework for evaluating current views of health and disease encompassed by the field of behavioral medicine. Within this context, it is suggested that the recent differentiation between behavioral and biopsychosocial approaches to behavioral medicine exemplify yet another expression of the age-old Rationalist-Empirical dichotomy. According to the present analysis, the behavioral approach reflects a mechanistic, symptom-focused Rationalist view of health and disease which is overly simplistic in theory and inherently limited in scope. A number of the principal shortcomings of the behavioral approach closely parallel those of the allopathic biomedical model. Both embrace a mechanistic metatheoretical world view, conceptualize symptoms as predominantly disregulatory phenomena to be controlled or eliminated by "contrary" modes of intervention, define health in subtractive terms, and ascribe to a passive view of the person. In contrast, the biopsychosocial ap-

proach encompasses a systemic metatheoretical world view, recognizes the potential adaptive and self-regulatory functions of symptoms, defines health in wholistic terms, and adheres to an active, participatory view of the person. The emergent biopsychosocial perspective appears to represent a clear trend toward an holistic, Empirical view that holds significant promise toward articulating a comprehensive understanding of the complex phenomena of health and disease processes.

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