If the historical examples noted in this report teach us anything it is to approach any issue of postcombat symptoms or illness syndromes with great care. Assumptions grounded in present knowledge and belief may well prove to be false or at best partially true and therefore deceptive. There have been no villains in this report—intelligent human beings have attempted to explain difficult phenomena to the best of their ability. Their ability, as ours, is limited by what we know and what we do not know. As has been indicated, one person’s traumatic event may be pleasurable or neutral to another just as one culture’s analysis or explanation may appear nonsensical to another. To our sensibilities, the precipitants to the behavioral problems of Ajax or Achilles should have been combat events. But the Greek men of the period saw fit to bring them down with insults to their honor in the form of denied gifts and kudos. The lessons of the past are that we must attend to assumptions about how the world is put together and what is responsible for our behavior.

In equal measure, as we begin to comprehend the open system relationship between body/brain-mind and the events of the world, we are undoubtedly constrained to move away from the simpler view of psychological events driving psychological consequences and symbolic psychosomatic ailments. Thus, we stand at the threshold of the powerful intersection of neurobiology, psychology, society, and culture. It is not surprising that this should be so. The late David McK. Rioch, founder of the Division of Neuropsychiatry at the Walter Reed Army Institute of Research, consistently pointed out to his scientific staff that the biological hierarchy extends from the molecular to the cultural, with constant interaction among all levels. Obviously, in terms of my background, training, and life work with the U.S. Army, I have concentrated on the psychosocial and cultural. But I have tried to point out that they are only two strands in a highly complex picture of the human consideration of health and illness after combat.

The medical sociologist David Mechanic (1997, p. 92) asserted that “health, as people view it, is truly a social concept, reflecting well-being and performance
in age-appropriate roles” (see Tessler and Mechanic, 1978; Wells et al., 1989; and Mechanic and Hansell, 1987). He went on to point out, citing research in this area that “these subjective health assessments are more than an academic curiosity, as reflected in their powerful predictive capacity.” Citing the work of Ware (1986) and Idler (1992), Mechanic (1997, p. 92) continued:

They [subjective health assessments] are the best general predictors of mortality, morbidity, and use of medical services, and are significantly related to objective indicators such as physician assessment and medical record data. . . . Although much about the predictive power of these self-appraisal measures remains unclear, it is apparent that the well-being dimension is an important aspect of the picture. Social and psychological well-being, of course, is substantially linked to psycho-social stressors, coping responses, the quality of social networks and intimacy, and one’s sense of mastery.

The complex matrix of this unclear domain, involving multiple interacting factors, interface relationships that, I would assert, combine in varying forms to produce the constellation of illnesses and erosive symptoms that have been termed “Gulf War Illnesses.” For many victims and others, it is extremely difficult to accept the existence of a complex multifactorial basis for Gulf War Illnesses. In part, I would postulate, because we are participants in a culture that believes that the universe is founded upon a pattern of “distributive justice.” People who have done “good” should be rewarded by not having their health undermined and their lives disrupted by loss of well-being. Therefore, people conclude that such an outcome must be the result of some kind of malignant agent independent of their behavior. Another “silent assumption” involves the widespread reality that psychological components of illness still bear a stigma in our society—a stigma of moral and mental weakness. As the historian of medicine Charles Rosenberg (1997, p. 46) notes:

“[F]unctional” ills still bear a burden of moral failure, of psychic weakness or even conscious malingering. As a consequence men and women often seek the ironic comfort of a diagnosis based on “objective”—in practice often immunological—criteria.

One might even hypothecate that stigmatization has been increased by public misperception of many of the concepts of biological psychiatry. Such misperceptions may lead to the even more threatening conclusion that to admit the existence of a psychological component in a physical illness means to admit that something “is wrong” with the physical and chemical structure of one’s brain.

These “moral” perceptions are strongly supported by general beliefs in our culture about the level of technological expertise that medicine can bring to bear—particularly, the belief that almost anything can be diagnosed and treated once the causal agent is found. This belief, which comes from the infec-
tious disease model of medicine, is strongly key to the concept of a single and singular pathogen or toxin that must be found and dealt with. While it is a model that has legitimacy in some medical domains, it does not in others.

For at least a part of our population, these moral perceptions must also be seen in the context of fear of conspiracy and belief that the "government" (and governmental institutions, such as the Department of Defense) deliberately and maliciously experiment upon our service personnel—that the authorities lie when they consider it necessary, have the worst interests of the population at heart, and are, at best, only self-serving and self-protective. In support of this view, it is easy to anachronistically evaluate failed and sometimes destructive medical experiments of the past as if they were conducted with present knowledge rather than with the limited knowledge that informed them years ago. Such views may be strongly reinforced by myths about experiments upon the domestic population with "germ" warfare and unproved vaccines.

The continuing image of the government as enemy and of governmental medicine as an agent of that enemy obviously does little to enhance the trust that can be of such great importance in treatment and in therapeutic success. As we have seen in past wars, belief and trust that military physicians had the best interests of the soldier at heart were considered key contributors to positive outcomes. These beliefs were undoubtedly affected by media reports of these issues. Discussing "alternative medicine," Sampson (1997, p. 195) makes the cogent point that:

> The press amplifies and exacerbates the problem with its attempts at balance. Its ethic is ostensibly to present objective and balanced articles. But in reality, the technique for reporting medical pseudo-science is to find a proponent or satisfied patient, quote that source for two columns and then "balance" that encomium by quoting a skeptical physician or scientist for one or two paragraphs. Of course, the piece concludes with a rebuttal of the skeptics by the original proponent.

Any review of the news stories written following the National Institutes of Health Persian Gulf Workshop in 1994, or testimony given before any governmental or scientific body, shows a dismissive media response to scientific statements about Persian Gulf illnesses. Continually many segments of the media invoked a climate of fear and threat. Given the reality of human suggestibility, it is not surprising that for some, psychological symptoms become more and more erosive and contributed to intensified physiological ones.

Such beliefs and concerns are part of the context through which we should approach the patterns of illness presented by a number of Gulf War veterans. But it is the outer shell only. It defines terms of reference underlining and legitimating a threat to life and happiness from dark and arcane sources. These kinds of
definitions can alter an individual’s perception of the symptoms he or she might suffer. Unfortunately, we know too little about this cohort’s definition of health and whether it includes as normal phenomena the usual array of symptoms that many others experience almost daily.

The presentation of somatic symptoms is not a rare event, it is a common one. Noted originally in the work of Hollingshead and Redlich (1958) and still true today, wide segments of our society tend to present psychological pain and psychopathology in the form of physical symptoms. More recent data show that both physical and psychological symptoms are reported in a significant relationship with each other.1

The phenomenon is much more widespread than some might think. As Kellner (1985, p. 821) noted in his review article, functional somatic symptoms are extremely common; “these symptoms occur in normal persons, are common in psychiatric patients and are not limited to patients with somatoform disorders.” He goes on to note that:

Somatic symptoms are extremely common. About 60% to 80% of a normal population will experience at least one somatic symptom in any given week. A large proportion of patients presenting to physicians and surgeons do not suffer from physical illnesses but from somatic complaint for which no organic cause can be found on routine investigations, the figures ranging from 20% to 84% (Kellner, 1985, p. 822).

The major psychological correlates are depression and/or anxiety. Describing the “somatic attributional style,” Robbins and Kirmayer (1991, p. 1041) assert that:

A somatic attributional style, for example, may contribute to the translation of personal and social problems into physical symptoms consistent with the somatic illness schema. Somatic attributions may focus attention on bodily manifestations of distress and lead to the perception of physical symptoms that, in the absence of such attributions, would have been perceived as emotional in nature or would not have been perceived at all.

A recent World Health Organization study showed a frequency of somatization of psychological symptoms of about 20 percent in 15 centers across the world, indicating the extraordinary commonality of somatization as a presentation in primary-care clinics across a wide variety of cultures. Somatization’s seriousness and concern to us, particularly as it may apply to Gulf War veterans, are demonstrated in the following paragraph:

The subjective views of somatizing patients either in respect to chronic physical disease or to overall health were negative in every culture. Even though these views were often not in consonance with the views of the treating physicians, they nevertheless indicate that somatization may be associated with excess mortality among its sufferers in most cultures. This inference derives from the evidence that independent of objective medical health status, physical disability, and social-demographic characteristics, negative self perceptions of health predict mortality and quality of life (Gureje et al., 1997, p. 994).

Further understanding of this issue may come from several studies by Barsky. He points out that those who live in fear of illness believed that good health was essentially "symptom free" and saw "normal" symptoms as indicative of disease (Barsky et al., 1993, p. 1085). In another study, Barsky and Klerman (1983, p. 273) note that "hypochondriasis is an issue about which there is a great lack of clarity" because of the emphasis on disease in contemporary medicine rather than illness (regarding the patient’s perception of, response to, and presentation of his or her pathology). They suggest that the term hypochondriasis be dropped in favor of a more operational descriptor—"amplifying somatic style," i.e., the process of amplifying the meaning, significance, subjective, and perhaps actual physical intensity of symptoms based upon beliefs about them (see Barsky and Klerman, 1983). In a later study of the process of symptom "amplification" in patients with upper-respiratory infections, Barsky and his collaborators conclude that depression, anxiety, and hostility were all related to this process (Barsky, Goodson, et al., 1988).

These kinds of cognitive processes with probable somato-sensory results are another thread worthy of further investigation. This is particularly so if one considers that, like many illnesses, those pertaining to service in the Gulf have been culturally shaped. Arcane causes, symptoms, effects, and posited outcomes may define a scenario for the worried veteran. Kleinman has studied this aspect of illness extensively and has coined the term "illness narrative" to describe this aspect of behavior. The illness narrative describes the causes of the illness as perceived by the patient. It is most often constructed out of the assertions, metaphors, folklore, causal attributions, and adduced causes common in the patient’s culture. Other agents of the narrative’s construction may be the media, friends, a variety of presumed authorities, the Internet, and support and self-help groups. The illness narratives that Kleinman and others have analyzed show that it can become an important factor in shaping both the nature and interpretation of symptoms by the patient (See Kleinman, 1988; Kleinman, 1981; and Kleinman and Good, 1985).

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2That is, a group of subjects who met DSM III revised criteria—which embodies the diagnostic criteria used in American psychiatry criteria—for hypochondriasis.
A cogent, widespread, and widely shared illness narrative is certainly a characteristic development of those who report themselves as victims of Gulf War illnesses. Common sense tells us that this image of illness may not represent a purely inductive set of conclusions about the nature of symptoms and consequences reached as an individual act by each veteran. We do not know how much of symptom experience, organization, and presentation has been shaped by the widely available “narrative” omnipresent in the culture at large and in the subculture of “Gulf War Syndrome.” The rapidity with which an illness narrative may spread, be shared, and be responsible for shared symptoms has been demonstrated in a number of studies of so-called hysterical epidemics in schools and office buildings. This concept has been powerfully developed by Hacking in his analyses of socioculturally defined “niches” of transient mental illnesses (i.e., illness types and behaviors that are found for at most a few decades) and is undoubtedly applicable to psychophysiologically expressed symptoms of stress (see Hacking, 1995 and 1998).

These cultural and psychosocial threads probably represent only one set of the strands woven into the fabric of Gulf War illnesses. At present, no single toxin, pathogen, or combination of such appears responsible for the series of physiological processes that so far remain medically undetectable. We must look at the individual enmeshed in the systems and processes of belief, ideas, anxieties, and fears outlined above.

As Damasio has demonstrated in *Descartes’ Error*, the boundary between the external world (its events, pressures, concerns, and stress) and the brain and body has been broken by research in the neurosciences. The concept of anything being “all in the mind” is scientifically and intellectually dead (Damasio, 1994). The effects of external events on the body’s systems are pervasive, continual, and apparently capable of generating a wide array of physical changes and complaints. The brain translates events into messages transmitted by peptides and electrical impulses that alter the functions of endocrine, cardiovascular, immune, and organ systems. These discoveries, which have evolved rapidly over the last two decades, have given rise to a series of new disciplines in the neurosciences (see, for example Kandel, Schwartz, and Jessell, 1991), including psychoimmunology and psychoneuroimmunology. They have revised and improved our view of the concept of stress and its short-term and long-term effects on the individual. While some data remain ambiguous and direct causal effect cannot be given to “stress” *per se*, the overall patterns of research findings demonstrate that stress is a contributing factor to

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3Such studies are staples of most introductory readers in social psychology and need not be reviewed here. Showalter has written about some of the more wide-scale “hysterical” epidemics in her book (Showalter, 1997; see also, Shorter, 1992).
many illnesses and to the maintenance of both somatic and psychological symptoms. I have not reviewed all the extensive literature in these fields, but Martin (1997) represents a reasonable guide to the present state of knowledge. It certainly appears that there are very real consequences for individuals experiencing prolonged subacute chronic stress, which characterized both the Gulf deployment and return home. It is feasible, for example, that the effects of these stresses made some of our soldiers more vulnerable to environmental pathogens, both in the theater and at home, than they would otherwise have been. The symptoms of such insults, nested in the kind of sociocultural setting of beliefs evolving about illness and the Gulf, might well have been subject to amplification, with deleterious somatic consequences. The threads of combat and deployment stress and the wide spectrum of possible responses, as demonstrated throughout history, weaves into the matrix of possible illness causation. Finally, we must revisit the issue that a subset of our population (as well as of the population that was deployed to the Gulf) is (in some ways, not yet understood) vulnerable and predisposed to ultimately injurious responses to the multiple stressors experienced in deployment and combat.

At the present state of our knowledge, I believe that Gulf War illnesses present a complex intertwining of the above factors and, undoubtedly, a number of others that might be adduced. A proportion of these illnesses shares the same roots as those that have affected soldiers throughout history. To be most helpful to veterans, we must deal with this issue of complexity and not simply focus on a hypothecated or “hoped for” singular cause. Occam’s razor is often misinterpreted. Occam did not demand the simplistic, singular solution, but rather said that the simplest solution that accounts for the phenomenon is the most acceptable. In the case of combat-related stress, the simplest solution may be multifactorial and complex. Finally we must recognize that the concept of stress itself is plastic and fuzzy. It has a variety of meanings and interpretations and is held responsible for an array of sometimes contradictory consequences. It may well be that, like other diagnostic and causal categories that existed in the past, it will be discarded in the future in favor of a rigorously defined set of contributors to various outcomes. Its very fuzziness and breadth as a concept, however, mean that we must pursue more and more rigorous research to determine “what it is” in measurable, operational terms and what the consequences of those effects are.