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CONTENTS

ARTICLES

Post-Traumatic Stress Disorder (PTSD) and Experienced Anomalous Trauma (EAT)	
Similarities in Reported UFO Abductions and Exposure to	
Invisible Toxic Contaminants	John P. Wilson 1
Australian Ufology A Review	
Keith Basterfield, Vladimir Godic, Pony Godic & Mark Rodeghier	19
Personality Characteristics of Persons Who Claim	
UFO Experiences	June O. Parnell & R. Leo Sprinkle 45
The Omega Project A Psychological Survey of Persons Reporting	
Abductions and Other UFO Encounters	Kenneth Ring & Christopher J. Rosing 59

ISSUES FORUM: TECTONIC STRESS THEORY

Introduction	Michael D. Swords 99
Round One	
The "Earth Lights" Approach to the UFO Problem	Paul Devereux 100
The Tectonic Strain Theory As an Explanation for UFO Phenomena	
A Non-Technical Review of the Research, 1970-1990	Michael A. Persinger 105
Physical Factors in Anomalous Experience	
The Need for a Multidimensional Approach	Michael Grosso 138
The Rock and Roll Theory of UFOs	David M. Jacobs 141
Critical Comments about Earth Lights and the TST	Chris A. Rutkowski 144
Forum on the Tectonic Stress Theory (TST)	Michael D. Swords 147
Round Two	
Response to My Critics	Paul Devereux 151
Response to Paul Devereux	Michael Grosso 160
Response to Paul Devereux	David M. Jacobs 164
The TST Down for the Count	Chris A. Rutkowski 166
Round Two on the Tectonic Stress Theory (TST)	Michael D. Swords 169
An Objective Response to the Commentators of the TST	Michael A. Persinger 171
Issues Forum Summary	Michael D. Swords 176

COMMENTS AND RESPONSES

Henry H. Bauer, Michael D. Swords, Henry H. McKay, Thomas E. Bullard, Ernest R. Hilgard, Richard F. Haines, Robert E. Bartholomew, Keith Basterfield, Kenneth Ring	177
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BOOK REVIEWS

<i>UFOs in the 1980s</i> , by Jerome Clark	Michael D. Swords 189
<i>Earth Lights Revelation</i> , by Paul Devereux	Marcel Ouellet 191

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POST-TRAUMATIC STRESS DISORDER (PTSD) AND EXPERIENCED ANOMALOUS TRAUMA (EAT): SIMILARITIES IN REPORTED UFO ABDUCTIONS AND EXPOSURE TO INVISIBLE TOXIC CONTAMINANTS

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ABSTRACT The etiology and nature of post-traumatic stress disorder is compared to the reported characteristics of experienced anomalous trauma, UFO abduction experiences in particular. The problems faced by those with abduction memories are considered, including non-availability of the precursor event(s), disbelief and denial of the experience, and uncertainties in diagnosis and recommended treatment. Similarities between the experiences of those exposed to toxic invisible environmental contaminants and abductees are discussed, and a model is developed to explain adaptive and coping behavior of those with experienced anomalous trauma. Finally, some therapeutic implications are highlighted.

INTRODUCTION

During the last 20 years the study and treatment of post-traumatic stress reactions following extremely stressful life-events has assumed an increasingly important place in the fields of psychobiology, psychiatry, psychology, neurophysiology and the social sciences (Wilson 1989, Wilson, Harel, and Kahana 1988; Wilson and Raphael, in press). The scientific study of human responsiveness to a wide range of traumatic events, experiences which are well beyond the hassles and demands of daily living, have identified the core psychobiological and psychodynamic (intrapsychic) processes that constitute post-traumatic stress disorder (PTSD), a complex syndrome of adaptation to unusually stressful life-experiences. The empirical and epidemiological study of the consequences of such stressor events as combat in warfare, disasters of human and natural origin, rape, torture, childhood sexual and physical abuse, severe industrial accidents, assault and life-threatening toxic exposure to visible and invisible pollutants, has found evidence that post-traumatic stress reactions from these experiences are severe enough to meet the diagnostic criteria for PTSD listed in the diagnostic and statistical manual (DSM-III and DSM-III-R) of the American Psychiatric Association (1980, 1987).

Table 1. Diagnostic Criteria for 309.89 Post-Traumatic Stress Disorder

- A The person has experienced an event that is outside the range of usual human experience and that would be markedly distressing to almost anyone, e.g., serious threat to one's life or physical integrity, serious threat of harm to one's children, spouse, or other close relatives and friends, sudden destruction of one's home or community, or seeing another person who has recently been, or is being, seriously injured or killed as the result of an accident or physical violence
- B The traumatic event is persistently reexperienced in at least one of the following ways
 - 1) recurrent and intrusive distressing recollections of the event (in young children, repetitive play in which themes or aspects of the trauma are expressed)
 - 2) recurrent distressing dreams of the event
 - 3) sudden acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative [flashback] episodes, even those that occur upon awakening or when intoxicated)
 - 4) intense psychological distress at exposure to events that symbolize or resemble an aspect of the traumatic event, including anniversaries of the trauma
- C Persistent avoidance of stimuli associated with the trauma or numbing of general responsiveness (not present before the trauma), as indicated by at least three of the following
 - 1) efforts to avoid thoughts or feelings associated with the trauma
 - 2) efforts to avoid activities or situations that arouse recollections of the trauma
 - 3) inability to recall an important aspect of the trauma (psychogenic amnesia)
 - 4) markedly diminished interest in significant activities (in young children, loss of recently acquired developmental skills such as toilet training or language skills)
 - 5) feeling of detachment or estrangement from others
 - 6) restricted range of affect, e.g., unable to have loving feelings
 - 7) sense of a foreshortened future, e.g., does not expect to have a career, marriage, or children, or a long life
- D Persistent symptoms of increased arousal (not present before the trauma), as indicated by at least two of the following
 - 1) difficulty falling or staying asleep
 - 2) irritability or outbursts of anger
 - 3) difficulty concentrating
 - 4) hypervigilance
 - 5) exaggerated startle response
 - 6) physiologic reactivity upon exposure to events that symbolize or resemble an aspect of the traumatic event (e.g., a woman who was raped in an elevator breaks out in a sweat when entering any elevator)

SOURCE American Psychiatric Association, *Diagnostic and Statistical Manual III-R*, 1987, Washington, D C

ENVIRONMENTAL STRESSOR EVENTS AND TRAUMATIC REACTIONS

Table 1 lists the diagnostic criteria in DSM-III-R and indicates the central (but not necessarily a complete) set of symptoms that comprise PTSD. Thus, included in the disorder are states of *re-experiencing* elements of the trauma in memory (DSM-III-R-“B” criteria visual images, imprints and distressing recollections of the event), *distressing emotional states* (DSM-III-R-“C” criteria affective flooding, emotional lability, psychic numbing, irrational mood states), and *states of physiological hyper-reactivity* (DSM-III-R-“D” criteria: excessive autonomic nervous system arousal, changes in neurotransmitter functioning in the hypothalamic-pituitary-adrenal axis, behavioral manifestations of changes in equilibrium and stasis) Other symptoms include depression, anxiety states, impulsive behavior, low self-esteem, manic overactivity or frenetic behavior, self-medication with alcohol or drugs, suicidal ideation, impaired concentration and forgetfulness, anger, rage, and explosiveness and a sense of the inner self as damaged or fundamentally altered by the experience.

EXPERIENCED ANOMALOUS TRAUMA (EAT)

Generally, it is possible to identify the antecedent stressor events which are associated with the onset of PTSD: the causal events are discernible, objective and documentable. However, in some traumatic events, the detection or ability to accurately document or discern what happened to a victim or survivor is less transparent (Laibow and Laue, in press). The difficulty in discerning the stressor event can be seen in the examples of exposure to invisible toxic chemicals in the biosphere (Vyner 1987), childhood sexual abuse (Pynoos, in press); psychological and sexual torture (Agger and Jensen, in press). Although such events have a reality-basis and produce traumatic consequences to the victims, they all share the quality of being “hidden events” (Laibow and Laue, in press) since they are difficult to detect, are often carefully concealed, or difficult to measure with precision and sensitivity by existing psychological and physical measures and procedures. Thus, for these reasons it is possible to define them as Experienced Anomalous Trauma (EAT). Clearly, the phenomena of reported UFO abductions by extraterrestrial aliens also falls into this paradigm since investigators and mental health professionals working with such persons cannot, with certainty, demonstrate the reality-basis to the claims of abduction which are nearly uniformly reported as traumatically stressful events (Laibow and Laue, in press).

EXPERIENCED ANOMALOUS TRAUMA, PTSD AND REPORTED UFO ABDUCTIONS

It is the purpose of this paper to present a theoretical and clinical paradigm to illustrate the similarities in psychological adaptation to exposure to invisible stressor

events (EAT) that are often traumatic in their consequences. Thus, a comparative analysis will be made in the psychological sequela of reported UFO abductions and exposure to toxic contaminants that are aversive and potentially threatening to well-being. As a caveat, no position is being taken on the reality-basis for the stressor event in UFO abductions. Rather, it will be argued by logical analysis that the parallels in *adaptational dilemmas* for persons reporting UFO abductions and those exposed to invisible toxic contaminants are nearly identical in their dimensions. However, the traumatic effects are probably more extreme in reported UFO abductions since current scientific knowledge is limited in terms of physical evidence as to the existence of UFOs (Swords 1989). Thus, those who report abductions face the additional dilemma of not being able to document the reality of the stressor experience whereas those exposed to invisible toxic contaminants (e.g., toulene, hydrogen sulfide) can potentially demonstrate their existence in the biosphere. The implications of this fact will be discussed later, but it should be noted here that victims of childhood sexual molestation faced a similar dilemma in Western cultures about 50-70 years ago (Laibow and Laue, in press). In the early part of this century, it was simply not believed that parents, adults or relatives would engage in active and exploitative sexual relations with young children. Further, it was commonplace for the victim's reports not to be believed or investigated. It was usually assumed that such reports were fantasies associated with psychosexual development since mature adults would not engage in such unnatural and abusive practices (Goodwin 1985). Today, of course, the reality of childhood sexual abuse is well-documented with reliable estimates as to the prevalence in the United States and other countries (Herman 1988, Green, in press; Everstine and Everstine 1989). It is important to note, however, that until sexually abused children began to receive proper treatment, they often felt (even as adults who re-experienced such earlier childhood events) that they were going "crazy" upon episodes of reliving what happened. Many also experienced difficulties in establishing a coherent sense of identity and selfhood; manifested a range of self-destructive behavioral problems associated with low self-esteem and emotional distress, and were at risk for substance abuse and the transmission of psychological difficulties to their own children, including physical and sexual abuse (Herman 1988).

PROBLEMS ASSOCIATED WITH DISBELIEF AND DENIAL OF EXPERIENCED ANOMALOUS TRAUMA

In a parallel way, persons reporting UFO abduction experiences face a similar dilemma. Their EAT and PTSD symptoms are often misdiagnosed or not easily understood by health care providers since it is so difficult to discern the causal stressor event(s). For example, invisible toxic biospheric contaminants can go undetected for years and yet expose individuals and communities (e.g., Love Canal, Times Beach; Chernobyl in the U.S.S.R.) to potentially life threatening and physically injurious agents. The associated medical effects may not be known for decades (Vyner 1987, Lundin, in press). Further, in his review of the primary consequences of exposure to

invisible contaminants, Vyner (1987) concluded that "the cognitive responses to an invisible exposure strongly resembles the fixation process found in acute traumatic neuroses. Both involve the creation of and fixation to new images of world and self precipitated by a traumatic event. . . . Some evidence suggests that exposure to an invisible environmental contaminant actually causes the development of a delayed onset form of post traumatic stress disorder" (1987: 120).

Clearly, if such "hidden events" as childhood sexual abuse and exposure to invisible biospheric toxic contaminants are associated with PTSD (Pynoos, in press; Vyner 1987; Smith and North, in press), then it is theoretically probable that reported UFO abductions would likewise be associated with post-traumatic stress syndromes. However, the person reporting a UFO abduction faces at least three major psychological and physical dilemmas: 1) the cultural disbelief or denial that such an event occurred, 2) the lack of scientific data to even suggest the possibility of the event and 3) the difficulty in reporting such an anomalous experience for fear of disbelief or being diagnosed with an inaccurate psychiatric term. Yet, it is an intriguing thought that should future scientific evidence confirm the existence of the UFO phenomenon and abduction experience as valid, even if anomalous by conventional cultural standards and paradigms of understanding reality, our psychological understanding of the traumatic consequences would not be fundamentally different than for the effects produced by known stressor events that cause PTSD (e.g., torture, combat exposure, the witnessing of catastrophe and death, natural disasters and rape). As will be discussed later the EAT phenomenon contains several unique dilemmas for coping and adaptation.

POST-TRAUMATIC STRESS REACTIONS AND EXPERIENCED ANOMALOUS TRAUMA

In order to understand PTSD resulting from experienced anomalous trauma it is necessary to understand the nature of traumatic syndromes and the types of stressor events which affect the personality dynamics and cognitive-coping styles of the persons affected by them (Wilson 1989). Since the core processes of PTSD have been reviewed elsewhere (Wilson 1989, Wilson and Raphael, in press; Figley 1985; Ochberg 1988, Wilson, Harel and Kahana 1988, van der Kolk, in press; Figley 1986, Eth and Pynoos 1985) only a brief overview will be presented here. What is especially important to the understanding of PTSD resulting from experienced anomalous trauma are the complex adaptational dilemmas faced by the victims of such experiences.

In the most fundamental way it is possible to think of PTSD as a human response to stressful life-events that penetrate what Freud termed the "stimulus barrier" of the ego. The trauma rapidly disrupts the normal psychobiological equilibrium, stasis and psychic well-being of the person (Wilson 1989). Thus, PTSD is a complex psychobiological response to trauma (van der Kolk, in press). It is a normal, expectable pattern of stress reactions generated in response to abnormally stressful events that occur at

the individual and collective level. After such experiences, and with the onset of psychological reactions, which, when they persist in a chronic form become symptoms, comprise a core set of psychodynamic processes. Typically, the victim is mistrustful, anxious and secretly fearful that he or she is "going crazy." It is also common for them to believe, often with strong affective intensity, that no one could understand what the experience was like "if they were not there" during the trauma. Stated simply, the victim feels that "if you were not there, you can not possibly know what it was like." This belief, and the attendant emotional distress, points to the power of traumatic events to alter psychological functioning on four interrelated levels of organismic integration. 1) physiological, 2) psychological, 3) social-interpersonal, and 4) cultural (Wilson 1989). The DSM-III-R criteria for PTSD encompass some of these areas of disrupted psychological functioning in their "B," "C," and "D" criteria (see Table 1). However, in *experienced anomalous trauma*, the DSM-III-R "A" criterion is problematic, since anomalous stressor phenomena do not conform to *discernible "events outside the range of usual human experience that would be markedly distressing to almost anyone"* (American Psychiatric Association 1987: 250).

Table 2. Common Symptoms and Reactions Associated with Experienced Anomalous Trauma and Post-Traumatic Stress Disorder

A Affective Reactions
Anger, rage, fear, terror, horror, anxiety, depression, shame, helplessness, hopelessness, irritability, jumpiness, panic states, phobic reaction, hypersensitivity, mistrust, paranoid feeling, personality alteration
B Cognitive Style
Impaired concentration, amnesia, loss of ego mastery, cognitive "drift," obsessive rumination, fixation to the traumatic event, loss of interest in activities, denial and avoidance of situations associated with the trauma, constricted information processing, fear of disbelief, disavowal of the event, forms of re-experiencing the trauma (e.g., nightmares), dissociative processes and forms of re-enactment of the event
C Somatic Expressions
Headache, muscle tension, gastrointestinal complaints, ulcers, hypertension, diffuse (soft) neurological signs (dizziness, loss of concentration), sweating, symptoms of excess neurophysiological arousal (e.g., startle)
D Personality and Characterological Changes
Impulsiveness, changes in ego-identity and sense of coherence (e.g., self-fragmentation, identity diffusion, borderline states, narcissistic scarring), changes in personality and behavior (e.g., mistrust, suspicion, detachment, etc.), forms of disillusionment, ideological and belief system changes, powerful sense of the ineffable

Yet, objectively verifiable stressor events, or anomalous ones, can produce similar stress response syndromes, PTSD, and adaptational problems. In terms of the four levels of organismic functioning, the impact of trauma can produce various forms of psychobiological disequilibrium. Table 2 summarizes the major symptoms of PTSD and EAT by symptom clusters: affective, cognitive, physiological (somatic), and personality organization (self-structure). To summarize briefly, *physiologically* there are degrees of overdriven hyperarousability (e.g., hypervigilance). *Psychologically*, the individual may suffer from distressing intrusive imagery which is involuntary (e.g., "flashbacks"). *Interpersonally*, attempts at intimacy may be impaired resulting in isolation and detachment. *Culturally*, the person may experience alienation, anomie, and disillusionment about the meaning and purpose of life.

THE NATURE OF EXPERIENCED ANOMALOUS STRESSORS

The individual who has experienced an anomalous trauma, such as a reported UFO abduction, faces the additional dilemma of explaining what has happened to them. While most victims of trauma are reticent to talk about what happened during the event because it is so painful, distressing and emotionally overwhelming, the experienced anomalous trauma is even more complicated. To fully appreciate this form of *psychological entrapment* it is necessary to understand the nature of anomalous stressors.

The *Oxford English Dictionary* defines the word anomalous as "unequal, uncomfortable, dissimilar, incongruous, irregular, abnormal, deviating from the rule and uncomfortable to the common order." This definition is especially useful in differentiating anomalous stressors from more objectively verifiable ones. For example, experiences such as exposure to toxic *invisible* biospheric contaminants are dissimilar to visible contaminants for which a source can be traced rather easily.

Furthermore, anomalous stressors often imply a sociocultural dimension that is "uncomfortable to the common order." The idea of "hidden events," whether it is clandestine childhood sexual molestation, harmful, invisible toxic contaminants, concealed torture of persons for political reasons, or cases of reported UFO abductions, tends to make us uneasy and uncomfortable because it violates our conception of a "just moral world" and our consensually based definitions of reality.

ANOMALIES, AMBIGUITIES AND INCONGRUITIES MAY CAUSE DISAVOWAL OF STRESSOR EVENTS

Historically, it is important to note that prior to DSM-III (American Psychiatric Association 1980) when PTSD was included as a category of psychiatric disorder, persons suffering from PTSD were frequently misdiagnosed as suffering from schizophrenia, personality disorders or depression. This was so because the clinician either failed to believe what had happened to the victim in the trauma, denied the

etiological importance of the experience, or worse yet, simply failed to take an adequate history that documented the nature of the stressor experience(s) (Wilson 1988, Wilson 1989) Anomalous stressor experiences are, by definition, irregular, deviant from the common pattern of events, and incongruous with expectable and normative cultural patterns In that regard they tax our ability to explain why the anomaly occurs, not that it exists

Clearly, "nature" and hence the "natural" ecological order of our world is full of examples of anomalies in forms of biological adaptation Thus, anomalies are not unusual per se but rather variations on more commonly occurring processes By a similar logic, experienced anomalous trauma is thus only a variation on more commonly occurring traumatic events Therefore the *psychological* consequences can be expected to be similar in their effects Thus, the critical issues to understanding and treating victims of anomalous trauma is the twofold interrelated processes of recognizing the tendency of society to *disavow* the nature of the experience because of its 1) irregularity and incongruity to the range of expectable experiences and, 2) the difficulty of the victim and society to explain why the anomaly exists Further, when anomalies are observed in the biological order, we do not say "that shouldn't be there or that couldn't have happened." Rather, we look for explanatory causes of the anomaly and so environmental and genetic hypotheses are explored and studies eventually lead to explanatory rationale We seek to understand the structural and biophysiological mechanisms that are at work in the anomaly which are eventually discerned through scientific inquiry.

At the *psychological level*, we must seek similar explanations for the experienced anomalous stressor event. For example, victims of toxic invisible biospheric contamination are somewhat relieved when they learn that a diverse set of medical symptoms (e.g., skin rashes, headaches, diarrhea, forgetfulness, etc.) comprise a syndrome that can be linked to toxic contaminant exposure (Vyner 1987) Yet such knowledge does not solve the problem of the adaptational dilemma Similarly, individuals who report experiencing UFO abductions are relieved to learn of others reporting similar experiences However, knowing that others report the experience in a remarkably uniform way (Bullard 1989) does not verify the existence of the phenomenon and adds to the difficulty in the adaptational dilemma

ADAPTATIONAL DILEMMAS IN PTSD RESULTING FROM EXPERIENCED ANOMALOUS TRAUMA: THE UNCERTAINTY PRINCIPLE

Reported UFO abductions and exposure to invisible toxins both share the characteristics of high degrees of physical and psychological uncertainty Psychological uncertainty as to the predictability of events which are aversive, harmful, threatening or unusual is frequently associated with learned helplessness (Seligman and Garber 1980), a loss of goal-directed behavior and motivation; changes in cognitive expectancies as to the effect an individual can have over environmental events; and a loss

of a sense of efficacy and well-being. In terms of invisible toxic exposure in the environment, Vyner states that

the uncertainty surrounding an invisible exposure is a consequence of the environmental and medical invisibility of the contaminants, and it is a constant and perplexing feature of these exposures . . . The most immediate consequences of the uncertainty caused by an invisible exposure are fear and a very literal inability to cope with or adapt to the health threat posed by an invisible contamination. Coping with any threatening situation is both mediated by and requires the cognitive appraisal of that situation. [1987: 54,64]

It is interesting to note the similarities in reported UFO abductions and exposure to invisible contaminants which fall along a continuum of physical and psychological uncertainty. Table 3 summarizes these structural similarities which are based on Vyner's (1987) typology of 13 uncertainties commonly found in exposure to invisible environmental toxic agents. Although a complete discussion of these forms of uncertainty is beyond the scope of this prospectus, it is important and useful to briefly review these different dimensions of uncertainty because of their relevance to understanding experienced anomalous trauma.

In an overly simplified way it is possible to think of each of these types of uncertainty as asking a specific question. For example, the issue of *previous exposure uncertainty*

Table 3. Comparison of UFO Abduction Reports and Exposure to Invisible Toxic Contaminants

Types of Psychological Uncertainty	Type of Experienced Anomalous Trauma		
	Uncertainty Present? Yes/No	UFO Abduction Reports	Toxic Exposure
1 Previous Exposure Uncertainty	yes	yes	yes
2 Present Exposure Uncertainty	yes	yes	yes
3 Evacuation Uncertainty	yes		variable
4 Boundary Uncertainty	yes		variable
5 Dose Level Uncertainty	yes		yes
6 Significance of Dose Level Uncertainty	yes		yes
7 Latency Uncertainty	yes		yes
8 Etiological Uncertainty	yes		yes
9 Diagnostic Uncertainty	yes		yes
10 Prognostic Uncertainty	yes		yes
11 Treatment Uncertainty	yes		yes
12 Coping Uncertainty	yes		yes
13 Financial Uncertainty	yes		yes

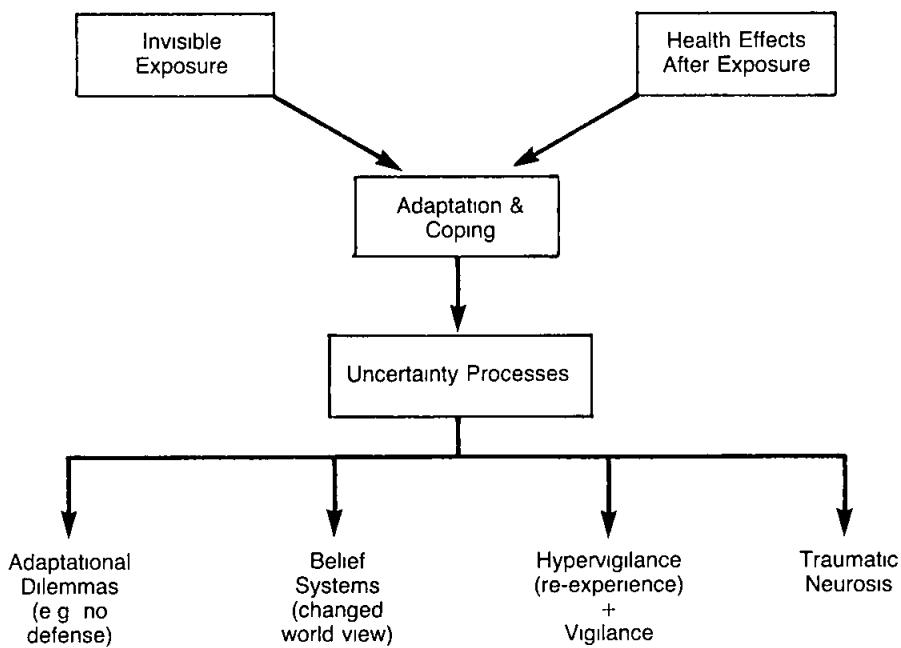


Fig 1 Psychological effects of toxic invisible environmental contaminants (from Vyner 1987)

asks the question Did this happen to me in the past and I did not know it? *Present exposure uncertainty* asks Is it happening to me now? *Evacuation uncertainty* asks: Can I escape it? *Boundary uncertainty* asks: What are the geographical limits to this agent? *Dose level uncertainty* asks: How much of this experience has happened to me in the past and what is the significance to my health and well-being? *Latency uncertainty* asks the question When will it happen again? This form of uncertainty is very much like the Sword of Damocles since the uncertainty as to predictability of the event frequently engenders states of helplessness to terminate the event itself. *Etiological, diagnostic and prognostic uncertainty* all concern various forms of distress and symptom manifestation and address questions as to whether symptoms and reactions were caused by exposure and if so, what will be the ultimate outcome. Personal rumination or concern with symptom formation or personal emotional reactions, especially those classically associated with PTSD, naturally lead the individual to wonder how they can cope with what has happened and whether or not their condition can be successfully treated by medical or psychological procedures. This issue is especially important in experienced anomalous trauma because the ability to causally determine the relationship between the stressor experiences and the

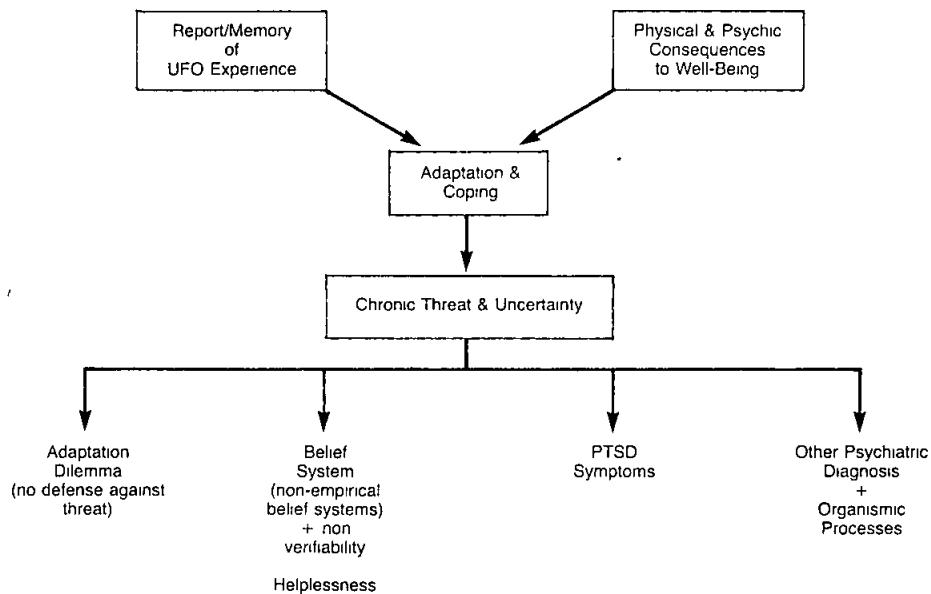


Fig. 2 Psychological effects of reported UFO abductions as Experienced Anomalous Trauma (from Wilson, in press)

constellation of current symptoms is difficult to establish with customary levels of scientific certainty. Thus, the implications for coping with the perceived uncertainty and threat poses special problems in terms of the adaptational dilemma. For example, how does one appraise the threat? Can it be cognitively restructured so as not to be viewed or understood as an uncertainty? These issues are discussed below more fully. Here, however, Fig. 1 illustrates Vyner's model of the psychological effects of exposure to invisible environmental contaminants.

In the way of a concise overview, Fig. 1 illustrates that invisible toxic exposure and concern over health effects after exposure interact to co-determine problems of adaptation and coping which, in turn, lead to the various forms of uncertainty. The *psychological permeation of uncertainty* then leads to adaptational dilemmas, changes in belief system, hypervigilance and traumatic neurosis.

Fig. 2 illustrates a modification of Vyner's model as applied to the UFO abduction scenario.

In Fig. 2 it can be seen that the memory of the UFO abduction experience interacts with the physical and psychological concern experienced *post-abduction* to affect attempts at adaptation and coping. In the UFO abduction scenario the *magnitude of psychological permeation with uncertainty* is even greater than in exposure to

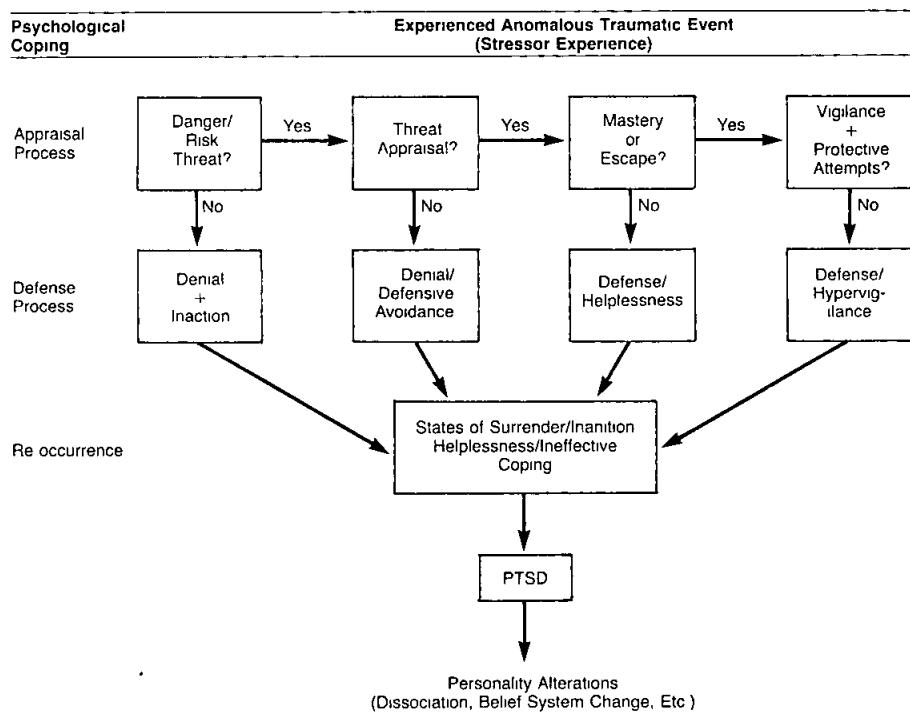


Fig 3 A conflict model of Experienced Anomalous Trauma
(adapted from Janis and Mann 1977)

invisible environmental contaminants because of the nature of the anomalous stressor. It is nonverifiable by conventional scientific means and is a hidden event. It is incongruous with most cultural belief systems, especially in Western civilization, which tends to deny the possibility of abductions by extraterrestrial beings. Moreover, there appears to be no way to readily escape or terminate the stressor event since the accounts of UFO abductions suggest that the victims are at the mercy of their captors as to when they are taken and what happens during the experience (Bullard 1989). Thus, as Fig 2 illustrates, *the result is the creation of a state of chronic threat and uncertainty which, in turn, affects the adaptational dilemma and the individual's belief system*. Further, the nature of the anomalous traumatic event is also likely to lead to the development of PTSD or other forms of psychological distress or somatic processes.

A CONFLICT PARADIGM OF EXPERIENCED ANOMALOUS TRAUMA

In the literature on stress, coping, and post-traumatic stress disorder it is well understood that cognitive appraisal mediates the effects of stressor experiences

(Wilson 1989). How an individual perceives, processes, and adapts to stressors can vary widely depending on many variables such as personality, previous life-experiences, defensive and coping mechanisms.

Experienced anomalous traumas pose special difficulties in terms of reaching a state of effectance behavior since it may not be possible for the individual to cope or defend in proactive ways that would be adequate to successfully master or escape the aversiveness or the potential threat contained in anomalous stressors

Fig. 3 presents a conflict model of anomalous trauma and is adapted from the earlier work on stress and coping of Janis and Mann (1977) In a general way, the model looks at the decision-making steps in coping and defending against forms of aversiveness inherent in traumatic events. As can be seen in Fig 3, the appraisal process mediates how a person attempts to cope with the spectre of threat, danger and aversiveness Failure to perceive the threat, or denial of it, leads to inaction or defensive avoidance by psychological denial or associated mechanisms (e g , dissociation) An inability to master or escape the stressor upon positive appraisal of its threat to well-being similarly leads to defensiveness or states of helplessness However, where the possibility of mastery or escape exists, the person will become vigilant and proactive in protective efforts against the threat However, should those measures fail or simply be ineffective, states of hypervigilance and ego-defensiveness will ensue in order to maintain some degree of psychic integration until the stressors terminate

EAT AND THE DEVELOPMENT OF NON-EMPIRICAL BELIEF SYMPTOMS

The *core adaptational dilemma* in experienced anomalous trauma is that upon reoccurrence of the event, especially those that are hidden, ephemeral or ineffable in nature, it may not be possible to enact coping responses that would lead to mastery or successful adaptation. Thus, the various defense processes shown in Fig 3 would result in states of surrender, inanition, helplessness and ineffective coping behaviors The acute, if not chronic, outcome of such states resulting from the anomalous traumatic experiences would likely be PTSD, dissociative processes, personality alterations and changes in belief systems As Vyner (1987) has noted in his studies of invisible contaminants and their psychological effects on behavior, a *non-empirical belief system* often develops “because it contains appraisal of an invisible threat based on conclusions for which empirical data were simply not available” (p 78) In the case of UFO abductee reports, non-empirical belief systems are quite likely to develop since empirical evidence for the experiences as commonly annotated (e.g., visits inside of spacecraft, medical examinations, mind scan procedures, journey to another planetary environment, mental telepathy with humanoid persons, etc.) cannot be empirically substantiated—and hence increases the adaptational dilemma

It is precisely for this reason that persons subjected to anomalous traumas secretly fear that they are “going crazy” since it is difficult to prove that the event occurred unless there are physical signs of the experience, such as scars, rashes, changes in physiological and organ-system functioning, etc. Even with such evidence it is

difficult to prove causality since there could be alternative explanations for the physical phenomena. It is at this point in time (and especially without post-traumatic therapy, Ochberg 1988), that the person begins to feel "trapped in the trauma" (Wilson 1989) or *psychologically ensnared* in the reliving of the event in dreams and intrusive imagery characteristic of PTSD. Other PTSD symptoms may appear as well, such as psychic numbing, avoidance, detachment from others, physiological hyper-reactivity and intensified efforts to seek out information about the anomalous phenomena. Finally, while all traumatic events are distressing and associated with states of fear, anxiety, terror, rage, shame, guilt, and other powerful feelings, experienced anomalous traumatic events have the added dimension of being ineffable by virtue of their nature as incongruous, deviant, and unconventional events.

The paradox of the empirical and clinical study of anomalous trauma and its effect on adaptive behavior is that such analysis does begin to reveal the nature, structure, order and mechanisms which define the phenomena itself. By studying and understanding experienced anomalous trauma, the apparent anomaly begins to dissipate as illusory when the structure of information about the phenomena serves to make it only a variant process of a class of stress response processes determined by our psychobiology as a species. Finally, we must also consider that all of our current models of human adaptation to EAT may be inadequate. Further studies may uncover the deeper psychic dimensions embedded in those experiences whose meaning is yet to be understood.

THERAPEUTIC IMPLICATIONS FOR WORKING WITH VICTIMS OF EAT

Since victims of experienced anomalous trauma are likely to suffer from PTSD or other forms of distress, proper counseling and treatment can do a great deal to alleviate the stress response syndrome and its maladaptive features. Elsewhere, there are reviews of therapeutic procedures which are specific to PTSD (Ochberg 1988, Wilson 1989; Ochberg, in press). These general principles will not be discussed in this paper. However, there are several issues that do merit highlighting in terms of experienced anomalous traumas and the onset of PTSD.

1. The victim of experienced anomalous trauma needs to be educated about the dynamics and symptoms of PTSD and the peculiarities intrinsic to anomalous traumatic events.

2. Personal contact or support group involvement with other individuals reporting the same or similar anomalous trauma is often therapeutic since it leads to consensual validation of the events and verification of common (shared) emotional responses. Open self-disclosure with others reporting the anomalous event also serves to make it less anomalous since greater degrees of information are extracted through the process of disclosure. This knowledge reduces fears of mental illness and breaks down alienation and personal detachment.

3. A variety of techniques can be employed to change states of hypervigilance to

vigilance and proactive coping. These include the development of a rational-empirical belief system about anomalous trauma and its peculiar nature

4 A variety of therapeutic techniques are available to decondition hyperaroused neurophysiological states (Everly 1989, Everly, in press) These include relaxation response, hypnosis, cognitive-behavioral therapy and the Native American Sweat Lodge Ceremony (Wilson 1989)

5. The psychohistorical technique called the *testimony method* (commonly used with victims of torture) can be used to carefully document through a written personal account the individual's recall of the anomalous experiences (Agger and Jensen, in press). This technique not only stimulates recall but helps to restore a sense of proactive mastery and coping.

6 Paradoxical control over the trauma can be learned by "surrender" as a form of threat appraisal Similar to one of the principles in the treatment of alcoholism, the person learns "if I cannot control it, then I'll surrender—it's more powerful than I am to control it." Surrender often leads to a sense of paradoxical control and reduces maladaptive hypervigilance.

7 There is a need to maintain an ongoing support system with fellow victims of anomalous trauma in order to contravene against detachment tendencies and to help understand any future episodes of the stressors and their impact on psychological well-being

An additional consideration to be evaluated clinically concerns the treatment of individuals who have not, in fact, experienced an abduction episode but have instead created a fantasy projection out of unconscious inner conflicts In such a case, the major treatment principles listed above may not be appropriate, or worse, counterproductive since they could reinforce a delusional or defensive process that is the fantasy projection or symbolization of other life experiences that remain unresolved, emotionally troublesome, and therefore highly defended Further, individuals with factitious abduction experiences may be potentially destructive to others in a support group since their fantasy projections may be at significant variance from the commonly described set of abduction scenarios. Therapists working with individuals reporting anomalous traumatic experience from reported UFO encounters should carefully screen for more traditional forms of psychopathology in order to differentially diagnose EAT, PTSD, and allied conditions.

In conclusion, the study of experienced anomalous trauma in reported UFO abductions is both interesting and informative in terms of broadening our knowledge of traumatic stress syndromes. The effects of experienced anomalous trauma are similar to those for objectively verifiable stressor events However the adaptational dilemmas of victims of anomalous stressors create unique psychological difficulties in being able to work through the post-traumatic stress effects without chronic or delayed effects to psychic integration and a sense of well-being

REFERENCES

- Agger, I., and S. J. Jensen
 n d The Psycho-Sexual Trauma of Torture In John P. Wilson and B. Raphael (eds.), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- American Psychiatric Association
 1980 *Diagnostic and Statistical Manual of Mental Disorders DSM-III* Washington APA
 1987 *Diagnostic and Statistical Manual of Mental Disorders DSM-III-R* Washington APA
- Bullard, Thomas E
 1989 Hypnosis and UFO Abductions A Troubled Relationship *Journal of UFO Studies*, new ser., Vol 1 3-41
- Everly, George S
 1989 *The Clinical Treatment of the Human Stress Response Syndrome* N Y Plenum
 n d Neurophysiological Considerations in the Treatment of PTSD Neurocognitive Perspectives In John P. Wilson and Beverley Raphael (eds.), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- Eth, Spencer, and Robert S. Pynoos (eds.)
 1985 *Post-Traumatic Stress Disorder in Children* Washington American Psychiatric Association
- Everstine, Diana S., and Louis Everstine
 1989 *Sexual Trauma in Children and Adolescents* N Y Brunner/Mazel
- Figley, Charles (ed.)
 1985 *Trauma and Its Wake The Study and Treatment of Post-Traumatic Stress Disorder* Vol 1 N Y Brunner/Mazel
 1986 *Trauma and Its Wake The Study and Treatment of Post-Traumatic Stress Disorder* Vol 2 N Y Brunner/Mazel
- Goodwin, Jean
 1985 Post-Traumatic Symptoms in Incest Victims In Spencer Eth and Robert S. Pynoos (eds.), *Post-Traumatic Stress Disorder in Children* Washington American Psychiatric Association pp 155-69
- Green, Arthur
 n d Childhood Sexual and Physical Abuse In John P. Wilson and Beverley Raphael (eds.), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- Herman, Judith
 1988 Father-Daughter Incest In Frank Ochberg (ed.), *Post-Traumatic Therapy and Victims of Violence* N Y Brunner/Mazel pp 175-96
- Janis, Irving, and Leon Mann
 1977 *Decision Making* N Y Free Press
- Laibow, Rima, and Shafia Lauc
 n d Post-Traumatic Stress Disorder in Experienced Anomalous Trauma In John P. Wilson and Beverley Raphael (eds.), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- Lundin, Tom
 n d Chernobyl Nuclear Threat As Disaster In John P. Wilson and Beverley Raphael (eds.), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)

- Ochberg, Frank (ed)
1988 *Post-Traumatic Therapy and Victims of Violence* N Y Brunner/Mazel
n d Post-Traumatic Therapy In John P Wilson and Beverley Raphael (eds), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- Pynoos, Robert S
n d Issues in the Treatment of Post-Traumatic Stress in Children and Adolescents
In John P Wilson and Beverley Raphael (eds), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- Seligman, Martin, and Judy Garber
1980 *Human Helplessness Theory and Applications* N Y Academic Press
- Smith, Elizabeth, and Carol S North
n d Post-Traumatic Stress Disorder in Natural Disasters and Technological Accidents
In John P Wilson (ed), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- Swords, Michael D
1989 Science and the Extraterrestrial Hypothesis in Ufology *Journal of UFO Studies*, new ser., Vol 1 67-103
- van der Kolk, Bessel
n d The Biological Response to Psychic PTSD and Anomalous Trauma In John P Wilson and Beverley Raphael (eds), *The International Handbook of Traumatic Stress Syndromes* N Y Plenum (in press)
- Vyner, Henry
1987 *Invisible Trauma The Psychosocial Effects of the Invisible Environmental Contaminants* Lexington, Ky D C Heath
- Wilson, John P
1988 Understanding the Vietnam Veteran In Frank Ochberg (ed), *Post-Traumatic Therapy and Victims of Violence* N Y Brunner/Mazel pp 225-54
1989 *Trauma, Transformation and Healing An Integrative Approach to Theory, Research and Post-Traumatic Therapy* N Y Brunner/Mazel
- Wilson, John P , Zev Harel, and Boaz Kahana (eds)
1988 *Human Adaptation to Extreme Stress From the Holocaust to Vietnam* N Y Plenum
- Wilson, John P , and Beverley Raphael (eds)
n d *The International Handbook of Traumatic Stress Syndromes* N Y Plenum
(in press)

AUSTRALIAN UFOLOGY: A REVIEW

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ABSTRACT The history of Australian investigations and study of the UFO phenomenon is discussed from the early 1950s until 1990. Various representative UFO reports from Australia are included, beginning in the 19th century. The development of Australian ufology is contrasted with comparable efforts in other countries, although many parallels exist; several distinctive features are noted, such as open access to government records, a lack of professional involvement in research, and the difficulties of coordinating group activities in a large, sparsely populated country. Despite such handicaps, Australians have made significant contributions to our knowledge of the UFO phenomenon.

HISTORICAL REVIEW: PREHISTORY UNTIL WORLD WAR II

Aboriginal occupation of Australia predates non-Aboriginal settlement by between 40,000 and 50,000 years. During their long and geographically isolated history, some of the Aboriginal people, especially the Southeastern tribes, developed a lore in which sky-beings, residing in clouds, interacted with humans. Aboriginal tribal accounts tell of select ritualistically "dead" individuals being taken into the clouds by the sky people, where they were "restored to life," then returned to become shamans of the tribe. Interestingly, the modern-day concept of a physical trace, evidencing a "landing site," also occurs in Aboriginal mythology, as shown by this account from Chalker's (1983a: 24) overview of historical Australian reports:

The Bad aboriginal tribe of the West Kimberleys have a fascinating "sky being" lore. They revere a supreme being called Djamar. In aboriginal lore the sound of a "bullroarer"—a roaring wind noise—symbolises the approach of the god. The original accounts indicate that Djamar's bullroar or "galuguru" are representations of the "being" itself. Thus, when the tribal elders led the young initiates to a stony bed of a creek and showed the holes where Djamar had implanted his "galuguru," we have the

suggestion that, whatever appearance or manifestation the sky-being took, it left behind a physical trace of its presence. Eliade quotes E.A. Worms when he indicates "Earnestly the old men impress on the youths the terrible force of the original 'tjurunga' (the original manifestation of Djamar), by pointing out the baldness of the surrounding hills and the damaged bark of the trees struck by Djamar when he whirled the bullroar. It smashed the rocks of the foreshore." After the manifestation of Djamar which left behind all this damage, the supreme being, Djamar, ascended once again into the sky with his "tjurunga."

Aboriginal rock paintings have been another source of awe and mystery since they have come to the attention of the outside world. Particularly striking are small human-like figures with thin necks, huge dark eyes, and absent or very small mouths (Fig. 1). The art is awesome and mysterious to the Aborigines themselves, who regard much of it as the product of beings of a different age.

While the Wandjina paintings of the Kimberleys have received all manner of interpretations, it is fascinating to see that the indigenous tribes viewed the Wandjina as "the spirit in the cloud." [Chalker 1983a]

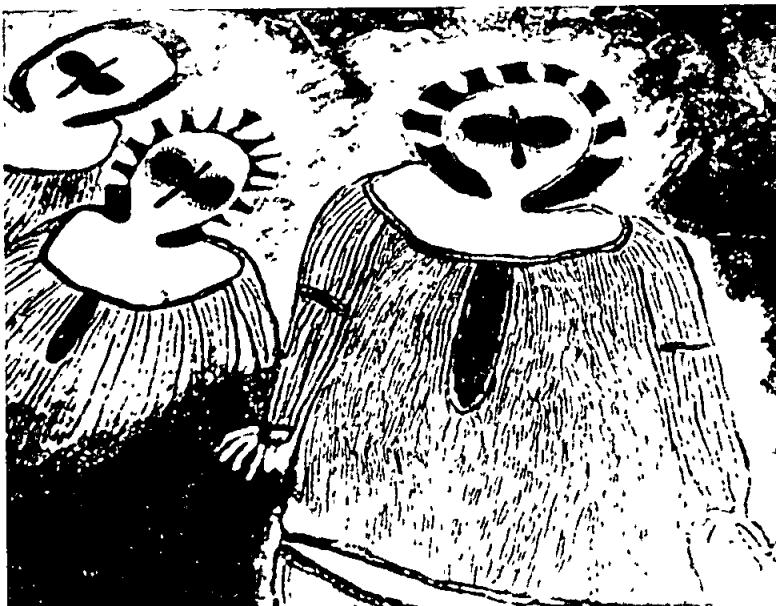


Fig. 1 Aboriginal rock paintings

Two hundred years ago, the settlement of Australia by non-Aboriginal peoples commenced. During this period of what was, at first, almost entirely British settlement, stories of Min-Min lights occurred and have persisted into the multi-cultural and multi-racial environment of present-day Australia.

The Min-Min lights of Boulia in Western Queensland are the most famous of Australia's "ghost lights." These phenomena are luminous globes or "footballs" which have a variety of colors and float barely a foot or more off the ground. Most accounts of the lights describe them as being unapproachable, always remaining at some distance from the observers, although sometimes the tales are told as closer encounters as in the "classic" Min-Min case of Henry Lamond. It was in the winter (June or July) of 1912 that:

Whilst on horseback, Henry Lamond observed a glary, green ball of light which moved at about 10 mph at an estimated height of 5-10 feet above the ground. The horse momentarily stopped trotting, lifted her head and pricked her ears. The light and rider passed each other, going in opposite directions. When the light was about 200 yards off, it suddenly faded and died away. There have been many other reports of "Min Min Lights" in the same locale. [Moravec 1981]

Although it is especially difficult to have any confidence in anecdotal tales that stretch back many years, it may still be of interest to note a few very early accounts that relate in varying ways to modern ufology. For instance, the abductee experience, although occurring more frequently in the last ten years, has a history in Australia that can be traced back as far as 1868, when surveyor Fred W. Birmingham recorded his experiences of a "machine to go through the air," which he likened to an "ark." The vehicle's occupant, who "appeared like a neutral tint shade and the shape of a man in his usual frock dress," asked: "Have you a desire or do you wish to enter upon it [the ark]?" Agreeing, Birmingham was transported gently through the air to the landed craft in Parramatta Park. (As Birmingham voluntarily entered the object, it could be argued that his account should be labeled "contactee" and not "abductee.") The object's "colour seemed to blend with faint, flitting shades of steel blue below and appearing tremulous and like one might term magnified scales of a large fish." The occupant led Birmingham into a room on the craft, which the percipient described as a "pilot house." The being gave Birmingham some papers, saying "It is absolutely necessary that you should know these things, but you can study them as you go on." After examining the equation on what turned out to be a single sheet of paper, Birmingham realized he was alone. "So I fell, I suppose, into my usual sleeping state and, waking next morning, deeply impressed with that vision of the night" (Chalker 1982a)

A poorly documented, but nonetheless intriguing, older Australian report may be a precursor of UFO physiological effects cases:

An anecdote, handed down within a farming family, told of an extraordinary UFO story, alleged to have occurred in 1893 in central New South Wales. A farmer claimed that a saucer-shaped aerial object landed in a paddock on his property. As he approached the object, a man in strange clothing emerged from it. The farmer walked towards the being—perhaps making some sort of threatening gesture—and the stranger shone some kind of torch at him. The farmer was thrown to the ground and was stunned. When he regained consciousness, the man and the object had gone. His hand, where the “torch” beam had hit him, was allegedly paralysed for life. Bizarre as the story seems, similar encounters with UFOs would be reported in the years following World War Two . . . [Chalker 1983a: 26]

As with the United States and portions of Europe, Australia (and New Zealand) experienced a wave of “airship” sightings in the early years of this century. The sightings in Australia occurred predominantly in July and August of 1909, often involving several witnesses, such as this incident from North Goulburn, New South Wales, described by Chalker (1983a: 27):

On August 7, at about 10 30 p m , four young men, at the brick kilns near the . . railway station, saw the light. The papers of the day described the event: “It was pale blue in colour. The brightness of the light attracted the youths’ attention. Only the light was seen, there being nothing to show the presence of a supporting body. The light was extremely brilliant. It came from behind the eastern ranges and, after ascending a considerable height, circled round in the direction from which it had come.”

An early physical trace case has also been recorded, much like events of the post-World War II era

During 1925, a young English migrant, Thomas Green, was working on a farm, north of Perth, Western Australia, in the vicinity of Moora. One day, Green claims he was out riding with the son of the owner of the farm. They came upon an object resting in a paddock. It was like two saucers placed edge on edge. Around the outside were oval shaped windows. The object was resting on four legs splayed outwards. It was not of “any colour of the spectrum” and appeared to be shimmering as if seen through a heat haze. There was no sound in evidence and the object appeared to be deserted. The farmer’s son declared that they should make a hasty retreat and not tell anyone of their find. Several days later, the two returned to the site to find the object gone. Where it had rested, the earth had been scuffed about [Chalker 1983a: 28]

A well-documented tale of an early encounter comes from the famous Sir Francis Chichester on a solo flight between New Zealand and Australia. His 1931 experience reminds one of certain pilot reports in the modern era: the now-here, now-gone disk or glowing ball-like form.

Round the storm we flew into calm air under a weak lazy sun. I took out the sextant and got two shots. It took me thirty minutes to work them out, for the engine kept back firing, and my attention wandered every time it did . . . Suddenly, ahead and thirty degrees to the left, there were bright flashes in several places, like the dazzle of a heliograph. I saw a dull grey-white airship coming towards me. It seemed impossible, but I could have sworn that it was an airship, nosing towards me like an oblong pearl. Except for a cloud or two, there was nothing else in the sky. I looked around, sometimes catching a flash or a glint, and turning again to look at the airship I found that it had disappeared. I screwed up my eyes, unable to believe them, and twisted the seaplane this way and that, thinking that the airship must be hidden by a blind spot. Dazzling flashes continued in four or five different places, but I still could not pick out any planes. Then, out of some clouds to my right front, I saw another, or the same, airship advancing. I watched it intently, determined not to look away for a fraction of a second. I'd see what happened to this one, if I had to chase it. It drew steadily closer, until perhaps a mile away, when suddenly it vanished. Then it reappeared, close to where it had vanished. It drew closer, and I could see the dull gleam of light on its nose and back. It came on, but instead of increasing in size, it diminished as it approached. When quite near, it suddenly became its own ghost—one second I could see through it, and the next it had vanished. I decided that it could only be a diminutive cloud, perfectly shaped like an airship and then dissolving, but it was uncanny that it should exactly resume the same shape after it once vanished. I turned towards the flashes, but those too had vanished. All this was many years before anyone spoke of flying saucers. Whatever it was I saw, it seems to have been very much like what people have since claimed to be flying saucers. [Chichester 1964: 165]

The accounts above present the flavor of “pre-modern” Australian UFO experiences. The post-World War II period saw the beginnings of the formal study of such phenomena with the founding of civilian, state-based UFO groups.

POST-WORLD WAR II TO 1973

(a) Australian Investigative Groups Begin

The following history, drawn from interviews with a number of Australian researchers, summarizes the organizational structure of Australian research and investigative activities from 1952 to the present. Research in this country has been very much a group activity, with very few individuals operating outside of a group structure. While recognizing that many small groups have come and gone since the first formal organization came into being in 1952, only the major groups will be described.

In 1952 Edgar Jarrold of Sydney formed the Australian Flying Saucer Bureau (AFSB), following his personal observation of two fast-moving yellow lights in the sky over Fairfield, New South Wales. Later, in 1954, a representative of the Royal Australian Air Force actually met with Jarrold to discuss UFOs.

In 1953 in South Australia, Fred Stone started the Australian Flying Saucer Club (AFSC). This group later joined with Jarrold's AFSB. Meanwhile in Victoria, the Australian Flying Saucer Investigation Committee (AFSIC) actively investigated the 1954 flap in that state, but the group had faded away by 1955. In this same year, Jarrold resigned as director of the AFSB and the Bureau was reorganized by Andrew Thomas, David Moore, and Fred Stone. By this time, Stone had changed the name of his group to the Australian Flying Saucer Research Society (AFSRS), and, for a while, the AFSB became a New South Wales branch of the AFSRS. However, in 1955, as a result of differences in approaches to the topic, the NSW branch of AFSRS retitled itself the UFO Investigation Centre (UFOIC).

Following the demise of the AFSIC in Victoria, a Victorian branch of the AFSRS came into being. However, again following a dispute, in 1957 the branch became a separate organization called the Victorian UFO Research Society (VUFORS). In other states, the Perth UFO Research Group (PUFORG), and the Queensland Flying Saucer Research Bureau (QFSRB), both initiated by Gordon Dellar, were formed and commenced investigating local reports.

In 1959 the first Australian UFO convention was held in Adelaide, South Australia. The main guest speaker was the Reverend William B. Gill, main witness of the famous Boianai CE-3 case. Some 200 people attended the conference. By this time there were major flying saucer investigation groups in each state. They operated as public organizations, with as much social as research activity. It was not possible to screen members and thus viewpoints, reflected in newsletters, ranged over a wide spectrum. These organizations existed on a state level and very much respected state boundaries. Nationally, they had no major achievements, although various magazines, which attempted to link these groups, came and went. Between 1965 and 1967 there was a short-lived, unsuccessful attempt made to form a nationwide body that could undertake research and public relations for the whole of Australia. The concept was called the Commonwealth Aerial Phenomena Investigation Organisations (CAPIO), the idea coming from a conference held at Ballarat in Victoria. Unfortunately CAPIO suffered from internal conflicts and folded almost immediately.

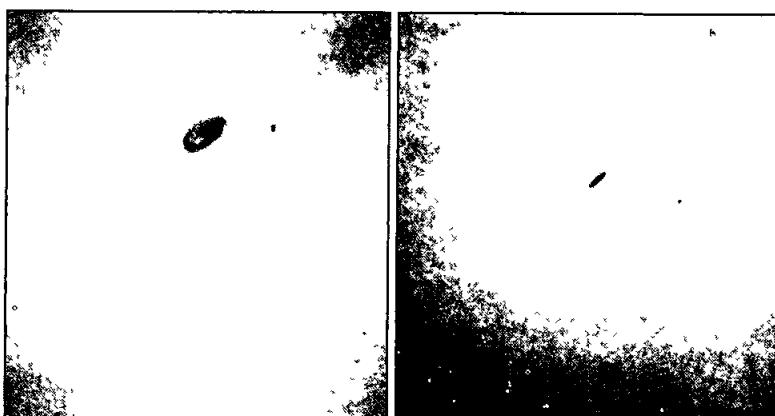


Fig. 2 Two of the sequence of photos taken at Hallam, Victoria, in 1967

In that same year, the first book about the Australian UFO experience was published by Holledge (1965). It did not receive wide distribution outside of Australia. Four years later, Hervey (1969) published a superficial overview of UFO reports in the southern hemisphere.

In 1965 one of the most successful local groups in Australia was formed, the Tasmanian UFO Investigation Centre (TUFOIC). It was and still is based in Hobart.

A new style of organization appeared in 1968, when UFO Research South Australia was founded by Vladimir Godic and Crystal Walsh. They had a commitment to utilize scientific methodology in investigation and research, and they ran the group along the lines of a small business, rather than as a large public body. This organization was later joined by a number of individuals from other South Australian groups who were members of the Combined Investigation Team. UFO Research (South Australia) was the first pure research group with little to no social activity. Its success, coupled with the desire to change the words "flying saucer" to "UFO," led a number of other groups to also change their name, e.g., the QFSRB became UFO Research (Queensland). UFO Research (South Australia) is still in existence today.

During this early modern era, Australia experienced many cases of interest to ufologists everywhere. There were pilot sightings, physical trace cases, vehicle interference cases, and entity cases, all of which were later documented in catalogs and review articles by various researchers. A few brief descriptions of intriguing reports are presented below to illustrate the Australian UFO phenomenon of this period.

(b) Photographic Cases

A series of six photographs was taken by John Coyle, accompanied by his sister Miriam, on March 5, 1967, at Hallam, Victoria (Fig. 2). The object they saw was "silver—like aluminum or polished aluminum. It had a slight rise in the top and was very black underneath. It was shaped like a disc and was approximately the size of a



Fig 3 Two of the sequence of photos taken at Alberton, S A , in 1967

five cent piece held at arm's length " The object circled over the pair very slowly, which gave Coyle time to snap his photos Investigators (including Dr James McDonald from the United States) were impressed with the sincerity of the witnesses and were unable to explain what the Coyles had captured on film (*Australian Flying Saucer Review* 1967)

A second photo case occurred sometime during May or June 1967, when a couple (Mrs and Mrs. M) captured on movie film an unusual phenomenon at Alberton, South Australia Only 2 5 seconds of film were shot with an 8mm camera—a Paillard Bolex model P1—because the witnesses thought they were viewing an unusual atmospheric or astronomical phenomenon The UFO appeared slightly larger in apparent size than the full moon and it was enveloped in a striking blue light, which "gave the impression to Mrs M of having a concentric 'ring' around its circumference " When the film was developed, it appeared to show a craft with portholes and a sweeping "searchlight" (Fig. 3) Only ten frames of the total number of 50 were usable for analysis, and because facilities and expertise were limited in Australia at that time, the film was sent to the United States for analysis Unfortunately, it suffered irreparable damage while there, and only fragmentary evidence of the original film remains Nevertheless, Reneke (1981b 15) has concluded that the case is "one of the most genuine photographic sequences on record."

(c) Physical Trace Cases

Physical trace cases have always been of particular interest A series of sightings near the town of Tully, Queensland, received wide publicity in the mid-1960s Some of the traces are reminiscent of the "crop circles" that have been found in England during the past five to ten years (Randles and Fuller 1989)

The best-known event occurred on January 19, 1966, and was witnessed by George Pedley, a farm hand who was out working the fields. The official Australian government description of the case follows (Chalker 1982b 18):



Fig. 4 "Flying saucer nest" found near Tully, Queensland, in 1965

At about 9 00 a.m. on 19th January 1966, Mr. G. A. Pedley, a banana grower of Tully, Qld, observed a light grey non-reflecting dull object, reported to be about 25 feet long and 8 feet deep, rise vertically then climb on an angle of 45° from a height of about 30 feet above marshland which was situated about 25 yards away from his position. There was an associated hissing noise which decreased as the "object" rose. The apparent shape was described as "two saucers, face to face," but no structural detail was observed.

A clearly defined near circular depression remained in evidence in swamp grass at the point from which the object was seen rising, and measured about 32 feet long by 25 feet wide. The grass was flattened in clockwise curves to water level within the circle and the reeds had been uprooted from the mud. There was no scorching of grass or surrounding trees . . .

No satisfactory mundane answer has ever been accepted as explanation for the circle (Fig. 4). Other traces were later discovered near the original circle, and these marks came to be called "saucer nests" (see also *Australian Flying Saucer Review* 1966)

(d) Vehicle Interference Cases

A well-known and interesting report from 1967 that occurred on October 31 near Boyup Brook, Western Australia, is described by Basterfield and Jackson in their catalog (1982)

A man travelling at 95–100 km/hr along a quiet stretch of road became aware of a lighted object approaching him from the air. Almost immediately the car stopped dead and all the electrical systems, lights, motor and radio went dead. There was no feeling of deceleration at all. The car came to an instant stop. When the car stopped he noticed that he was immersed in a beam of light which seemed to come from a tube, which in turn issued from the object. . . . The object itself was some 10m in diameter and about 30m in the air. The colour [of the tube] was reported as iridescent blue. After the tube of light went off the object left at high speed in a westerly direction. It vanished from view within seconds. The reporter then stated that the vehicle was then doing the same speed as before it all began, i.e., 95–100 km/hr. However there was no feeling of acceleration from stop to speed.

1973–1982: A PERIOD OF MAJOR PROJECTS AND PUBLICATIONS

The year 1973 was a high point for UFO research in Australia, as Allen Hynek visited the country and toured, speaking to many leading researchers (Robertson and Stocks 1973). In New South Wales, Hynek talked to, among others, Harry Griesberg and David Seargent. These two went on to form a unifying body at the national level. This organization was first known as the Australian Co-Ordination Section for the Center for UFO Studies (ACOS). It was later reorganized in 1980 as the Australian Centre for UFO Studies (ACUFOS).

ACUFOS had as its prime role the promotion of research and group cooperation. Most state organizations, retaining their independence, became members of ACUFOS, and, for a while, there was a new spirit of cooperation in the field. ACUFOS published the *ACOS Bulletin* (now the *ACUFOS Bulletin*) and until recently, a research journal, the *Journal of ACUFOS*.

The group has organized ten conferences since 1975, the latest in 1990. Mostly annual, these were held in various Australian states and became the focal point for the exchange of research data by those serious researchers able to attend. Under the ACUFOS banner, a number of research documents were published and disseminated worldwide.

Table 1. UFO reports by Year, ACUFOS

Year	Unexplained Reports
1978	44
1979	15
1980	26
1981	21
1982	15

Between 1978 and 1982 ACUFOS (in the person of David Sargent, Harry Griesberg and Keith Basterfield) produced an Australian-wide yearly review of interesting case reports submitted by its member organizations. These catalogs provide an estimate of the number of unexplained reports received by ACUFOS during this period (see Table 1).

During the mid-1970s, Andy Cole, together with Mike Smyth (1976), initiated a computerized database for Australian reports (called *UFOCOMFILE*). This project began operation in January 1977 and is still maintained in Canberra on behalf of all Australian researchers.

Despite a lengthy history of UFO research within Australia, the systematic collection and collation of reports of a similar type did not occur until the mid-1970s. To concentrate on specific aspects of the phenomenon, and following the lead from overseas researchers, Australian individuals initiated several study groups during this period of quickening research. The first of these, the Australian Entity Study Group (AESG), was formed by Basterfield in 1976 and operated until 1984, after which time very few entity reports were received. The group aimed to investigate CE-3 reports and publish both case summaries and more detailed case descriptions for wide distribution. Originally the team consisted of Griesberg, Basterfield, Jeff Maynard and Paul Jackson. Bill Chalker later joined the group which, during its eight-year life, produced *An Indepth Review of Australasian UFO-Related Entity Reports*, a study of 67 cases from Australia and New Zealand (Basterfield 1980b). Additionally, it published nine case documents, and its members published a number of articles in various overseas journals.

Originating in 1976 as well, the Australian Physical Evidence Study Group (APESG) was a loosely-knit team of individuals interested in promoting the aims of high quality scientific documentation and research into UFO reports with physical evidence. Additionally, the team was interested in building a database on natural phenomena that could cause unusual effects, such as fungus rings or ball lightning (*UFO Research Australia Newsletter* 1981). Initiated by Bill Chalker, the group was never fully supported, and although an *APESG Update Newsletter* was circulated in 1980, Chalker's commitment to physical trace studies was mostly solitary. He has continued to publish in this area (Chalker 1983b, 1984b, 1987).

Drs. Geoff Stevens and Michael Hough, of Sydney, New South Wales, were also involved in physical trace case analysis in the mid-to-late 1970s, with Stevens particularly interested in the application of the thermoluminescence technique (Stevens 1977). Both contributed, along with Matthew Dick, towards studies of traces caused by natural phenomena (Moravec and Prytz 1985). Samples from a number of cases were submitted to Stevens, including Karawinna, Victoria (September 25, 1976) and Orange, New South Wales (May 26, 1977). However, there were no definitive abnormalities detected in any case.

In 1980 David Reneke of Sydney began the Australian Photographic Evidence Analysis Group (APEAG), designed to serve as a central location "where pictorial material relating to Unidentified Flying Objects can be collated and analysed com-

pletely, in an unbiased and scientific manner" (Reneke 1981a). Reneke managed to collect substantial local material and acted as a conduit for several cases to be forwarded to Ground Saucer Watch in the United States for computer analysis. Three consultants working within the APEAG were Frank Gillespie of Adelaide, South Australia, and Drs. Geoff Stevens and Don-Herbison Evans, of Sydney, New South Wales. Reneke published some of the APEAG material in Australian publications, such as an analysis of the Alberton movie film of 1967 (discussed above), and the Kempsey UFO photo of 1975 (Reneke 1981c). Unfortunately the APEAG ceased functioning when Reneke withdrew from UFO research in the early 1980s.

In addition to these group-oriented projects, Australian researchers pursued the cataloging of apparently similar UFO cases as individuals or in pairs. At least six further case collections appeared during the seventies and early eighties.

Several years of collecting CE-3 reports culminated in the publication of a catalog of 36 such cases (Chalker and Basterfield 1976). To document the 1954 Victorian wave of sightings, two Victorian researchers undertook a thorough examination of that state's newspapers and uncovered numerous references to UFO sightings (Fischer and Bristol 1978).

An American researcher, Dr. Richard Haines, has been collecting UFO sighting reports by pilots and air crew for many years. Haines has pointed out the value of observations made by such individuals, so with this in mind, a collection of about two dozen Australian observations, most made from aircraft, was gathered by 1982 (Basterfield 1980a, 1982a).

One aspect of the UFO subject that has received infrequent mention is the possible connection between anthropoid entity reports and UFOs. Undertaking a worldwide search for cases of this type, Mark Moravec found 71 such accounts, summaries of which he published (1980a).

Stimulated by the work of the European Working Team, and a suggestion by Maurizio Verga of Italy, Australian close encounter cases of all kinds were reviewed. 560 such events were recorded by Basterfield, who produced a catalog of the 110 most interesting encounters (1981a).

Another phenomenon, examined by a number of researchers, is the interaction between UFOs and motor vehicles. The English organization BUFORA produced an excellent catalog in 1979, and Mark Rodeghier (1981) of the Center for UFO Studies reviewed and analyzed the characteristics of such events worldwide. Following these global collections, a preliminary catalog of Australian events was put together by Basterfield and Jackson (1982), listing 45 reports.

In the 1973-1982 period, the number of Australian cases was at a peak, and several interesting and important cases were documented. The level of investigation of these cases was much improved compared to the earlier years. A few brief descriptions are presented below of cases with particular evidential value or of reports that received widespread publicity.

(a) Photographic Cases

This account is taken from Reneke (1980) and an article in *UFO Newsletter* (1978) and concerns a UFO photographed at Benboyd National Park near Eden, New South Wales, by three men waiting to film a solar eclipse. At approximately 4:00 p.m. on October 23, 1976, three young men were on a large cliff face overlooking the sea at Taola Point. One of them noticed something unusual on the horizon, over the water, and all three gathered to watch two objects move towards and away from them. Both motion picture and still photos were taken, showing one bell-shaped object and another more discoid in shape. As the eclipse was about to begin, the men turned their attention to that, and when the eclipse was over, the objects were gone.

The images on the film are small as the objects never approached closely to the witnesses, but the film was examined by Ground Saucer Watch in the U.S., which concluded that the images could not be explained in conventional terms. Reneke has stated that "the Benboyd film remains as the best Australian photographic evidence we have to date for the existence of UFOs."

(b) Physical Trace Cases

On September 30, 1980, a Victorian farmer was awakened by a noise and his disturbed livestock. Getting up, he went outside and saw an 8-by-5 meter spherical-shaped object passing by, some 2-3 meters off the ground at about 150 meters distant. It stopped momentarily above a water tank, then settled to the ground. The witness rode a motorbike to the spot and stopped only 15 meters from the landed object. It was making a loud whistling noise that caused him to cover his ears with his hands. After about 3 minutes, the object emitted an even louder noise, gave off a blast of air and heat, and slowly lifted off to the east. A 9-meter doughnut-shaped ring was left where the object rested (still visible one year later), and the witness experienced several health problems during the next week, plus odd effects to his spring-wound watch. Most astonishingly, the 10,000-gallon water tank above which the object had stopped was drained of water. This case is considered to be one of the best Australian physical trace cases ever (Basterfield and Chalker 1981).

No review of Australian ufology would be complete without mention of the unsolved disappearance of Frederick Valentich on October 21, 1978, over Bass Strait, south of the Australian mainland. Although it is uncertain that Valentich's disappearance involves a real UFO sighting, the event has become inextricably linked to the UFO phenomenon (Haines 1987).

On the early evening of October 21, 1978, Valentich, a 21-year-old private pilot, departed from Moorabbin field near Melbourne. He was planning to fly to nearby King's Island and return that same evening. After an uneventful first leg of the journey, Valentich sighted a light near his Cessna 182 aircraft that he thought unusual. He called Melbourne Flight Service for confirmation of this nearby traffic, but the controller told him that Melbourne had no other aircraft near his position. Over the course of the next few minutes Valentich became increasingly excited as he described

the object and its actions to the Flight Service. He told them that he was viewing an object that he could not identify ("It's not an aircraft"), and of how the unknown object flew over his plane, at one point "orbiting" over the aircraft. Valentich's last remarks were that the object "is hovering and it's not an aircraft," followed by 17 seconds of an open mike with an odd metallic noise. After that there were no further communications from the young pilot.

Despite an extensive search by the government and civilians, no trace of Valentich and his plane has ever been found. The case attracted immediate worldwide attention and received great publicity. Investigators have disagreed about whether this event should be seen as related to the UFO phenomenon, as some have contended that Valentich may have become confused by ground lights and crashed, or that he planned an elaborate hoax to begin a new life (and succeeded). Others, who point to sightings from the ground near Bass Strait of odd lights the evening of Valentich's disappearance, believe the case should be considered a genuine UFO sighting. No resolution of this case is likely without some new, unexpected, information.

(c) UFOs and the Australian Government

During much of the post-World War II era, the Australian government was also active in the study of UFO reports. In Australia, as in many other countries, the air force has been charged with the responsibility of investigating official UFO reports. The Royal Australian Air Force (RAAF), however, prefers the term "Unidentified Aerial Sightings" (UAS) as a label for UFOs.

Unlike many other governments, Australia's has shown a praiseworthy level of cooperation with civilian study groups. Dialogue between Australian researchers and the RAAF extends back 35 years, almost to the very beginning of organized investigation in Australia. In 1954 Edgar Jarrold received a letter from the Minister for Air, William McMahon, inviting him to a meeting with the Directorate of Air Force Intelligence of the RAAF in Melbourne. Jarrold, reporting later, stated that: "It became clear during the one and a half hour interview that the RAAF kept an open mind on the possibility of approaches to Earth by extraterrestrial craft" (*Australian Flying Saucer Review* 1965). Fred Stone also had a similar meeting with the RAAF the same year.

In March 1976, Harry Griesberg, then co-ordinator of ACOS, met for discussion with the officer who coordinated UAS reports for the RAAF. Griesberg was seeking ways in which ACOS could cooperate more closely with the RAAF. At that time, some member organizations were channeling copies of their reports to RAAF Canberra (central headquarters) via their local RAAF bases. Griesberg was told that the RAAF would be happy to receive civilian investigation reports. The RAAF officer also agreed to release certain reports to ACOS, specifically those relating to physical trace cases. Indeed, Griesberg (1976) advised that the RAAF were willing to supply copies of any reports they held, minus witness names. Griesberg believed that the RAAF was being open in its dealings with ACOS and other civilian groups.

In the early 1980s, correspondence was exchanged between Bill Chalker and the RAAF, following which the RAAF agreed to allow him open access to their central UFO files. Negotiations followed, and Chalker visited Canberra to examine the files on behalf of all Australian ufology in 1982. Further file examinations were undertaken by Chalker through 1984.

Chalker's review of more than 1,000 reports in 53 RAAF files on UAS allowed him to compile a detailed summary listing covering the years from late 1950 to 1980 (1982b, 1982c, 1982d). In addition, his research uncovered a "Report on Flying Saucers," written by O. H. Turner in late 1954, which, *inter alia*, concluded: "The evidence presented by the reports held by the RAAF tends to support the . conclusion

. that certain strange aircraft have been observed to behave in a manner suggestive of extraterrestrial origin" (Chalker 1982d: 30). Chalker was subsequently able to locate and interview Turner, revealing his secret contributions to Australian UFO research during the 1950s, 1960s and 1970s (Chalker 1988). The RAAF response to Turner's work was largely to ignore it and its implications.

On the question of whether the RAAF is involved in a "cover-up" operation, similar to that claimed by U.S. researchers in accusations against the U.S. Air Force, Chalker had the following to say: "This preliminary review indicates that the RAAF are probably as confused and uncertain [as are civilian researchers] on what to do about provocative UFO sightings" (1982d: 27). Chalker concluded that the existence of some very interesting UFO cases in the RAAF files was not suggestive of a cover-up, otherwise why would the government allow access to this type of material? He also determined that civilian groups had a more valid claim to a comprehensive study of the UFO subject than the RAAF (Chalker 1988).

On May 2, 1984, the Department of Defence issued a news release which stated that the RAAF, in future, would only investigate UAS "which suggest a defence or national security implication" (Department of Defence 1984). In addition, persons reporting UFOs that fell outside this definition would be referred to civilian UFO research organizations. This policy remains in force today and groups do indeed receive referrals from the RAAF.¹

In 1989 investigators, led by Basterfield, decided to ascertain what had accumulated in RAAF UFO sighting files over the past five years, and they utilized the Australian Freedom of Information Act in order to do so. In response, approximately 100 pages of documentation were released, but little of significance was obtained. A telephone discussion with the Squadron Leader of the RAAF in Canberra, part of whose job it is to respond to UAS from the public, led to a cordial invitation for Basterfield to visit Canberra for a complete review of both RAAF sightings and policy files. This invitation may be taken up in due course, to complement the file review undertaken by Chalker between 1982 and 1984. Again, this openness is not suggestive in any way of a cover-up operation.

To the best of our knowledge, no other Federal government department, including

¹CUFOS also receives referrals from U.S. government agencies, especially the Pentagon.

the security services—the Australian Security and Intelligence Organisation (ASIO) and the Australian Secret Intelligence Service (ASIS)—have had a mandate to research UFO reports. However, there is some evidence which indicates that organizations (or individuals associated with them) such as ASIO, the Department of Civil Aviation, the Commonwealth Scientific and Industrial Research Organisation, and the Joint Intelligence Bureau, have undertaken UFO investigations at various times (Chalker 1985: 120).

1982 TO THE PRESENT: CASE DECLINE AND NETWORKING

This period has been characterized by a rapid decline in reports and decreasing public interest in the subject. As a direct consequence, a number of the larger organizations scaled down into smaller research groups based on the UFO Research (South Australia) model.

The decline in reports and interest also led the Godics and Basterfield to recognize the value of networking as opposed to the formal links between organizations that ACUFOS maintained. Wishing to avoid the pitfalls of a formal organization where divergent viewpoints can be disruptive, an informal information-exchanging network was established in 1984 and named UFO Research Australia (UFORA). UFORA has contacts throughout Australia and overseas, to which it disseminates information and from which it receives information for distribution throughout the network. UFORA publishes a monthly *Research Digest* and the *UFO Research Australia Newsletter*.

When UFORA was formed, in order to combine resources for members Basterfield and Vladimir Godic merged their personal files, thus providing a second detailed set (along with the Canberra database) of files available to interested researchers.

From 1984 ACUFOS became less active than before, but continued to contribute to Australian ufology. In 1985 ACUFOS published *UFOs over Australia*, edited by Moravec and Prytz, a collection of articles from the *ACOS Bulletin* and the *Journal of ACUFOS*. In 1988 Chalker's "The Australian UFO Experience" was likewise published by ACUFOS.

Local, state-based groups that are both members of UFORA and ACUFOS continue to publish newsletters and do serious investigation. TUFOIC, in Tasmania, has been particularly active in case investigation and has the most complete local database. The Victorian UFO Research Society, formed in 1957, publishes the *Australian UFO Bulletin*, although it is not a member of UFORA or ACUFOS. Several other local groups are active, including UFOR (Queensland).

As case reports have diminished, the number of large-scale cataloging, publishing, and study projects has dwindled to near zero. One prominent exception is the Percipient Studies Group (PSG), formed in 1982 by Mark Moravec. PSG's aim is to "examine the psychological, sociological, physiological and alleged parapsychological aspects of UFO experiences and related phenomena" (Moravec 1982: 9). Moravec wrote the important study *PSI UFO Phenomena: A Study of UFOs and the*

Paranormal in 1981 Over the next seven years, he subsequently produced a series of articles pursuing this line of investigation

In addition to the PSG, some research has continued on other types of reports Chalker has maintained his interest in physical trace events, and he recently published an in-depth review of global physical evidence (1987).

Increasingly over the years, a number of investigators have pursued possible psychological explanations for close encounter reports Of particular note is the work by Basterfield (1981b, 1988), Basterfield and Bartholomew (1988), and Moravec (1981) which has attempted to develop links between psychological processes such as hypnagogic imagery, fantasy proneness, and other altered states of consciousness, and various types of UFO reports, especially abductions.

(a) Australian Abductions

As early as 1977 (Chalker), it was recognized that up to that time Australia had few, if any, classic abduction cases with missing time, such as described by Bullard (1987) In Moravec's (1981) massive study or Basterfield's (1980b) in-depth review of Australasian entity reports, only a few possible cases are noted, all poorly documented.

However, during the early 1980s further investigation uncovered several abduction accounts, often of events that occurred several years beforehand One case, investigated by Mark Moravec in 1984, will be related in some detail below Chalker (1984a) presented the first comprehensive discussion of Australian abductions, discussing five cases from the 1970s, plus various theories and hypotheses advanced to explain the accounts

In an attempt to locate abduction cases, UFORA in November 1988 circulated a letter to the editors of 20 metropolitan daily newspapers, and in June 1989 to 51 regional newspapers These activities plus a news release and briefing paper to various media resulted in the most intense media interest in UFOs since the Valentich case Several possible abduction accounts surfaced due to this publicity and are being pursued by various investigators.

Since 1988 Bill Chalker has been working with a professional clinical psychologist who specializes in hypnotic regression. They have been carrying out a long-term study of missing-time and abduction percipients. Keith Basterfield, Ray Brooke, and the Godics have been thoroughly researching three fascinating abduction accounts that parallel cases in the United States.

In summary, it appears "that there are [abduction] cases that parallel those in other countries" (Basterfield, Godic, and Godic 1989 24), and by early 1990 some three dozen potential abduction events have been recorded by UFORA.

One of the most complete accounts so far published of an abduction event in Australia comes from an investigation by Mark Moravec (1984, 1988) At the time of his investigation in 1984, the witness was 21 years old and consciously recalled details of the abduction, which had occurred on or about September 27, 1974

The witness said that he and an older friend were out on a farm near Jindabyne, New South Wales, at about 9:00 p.m., when they observed a bright white light for about a half hour. About nine years afterward, the witness began to have "vivid memories" of that evening, and realized that he and the friend had experienced a period of almost two hours of missing time. As he was able to piece his memories together, he recalled approaching the light, then floating through a doorway into a cramped room full of equipment. Tall thin beings, which he described as hairless, with no ears, slit-like mouths and grey skin, engaged in some type of examination of him and his friend using the equipment in the room. After many tests were completed, they both were put back where they had first seen the UFO, and they regained consciousness "after walking across a ridge and spotting a horse."

The witness was quite troubled by his memories of the experience as his recall improved, and he had "powerful emotions of *real* fear and the feeling like I had been 'raped'—used like some *specimen* and dumped." Moravec suggests that the sighting of the nocturnal light may have occurred as described, but that there is no evidence to confirm any physical abduction event. Instead he posits the unconscious creation of an abduction fantasy because of the witness' involvement in meditation and interest in the occult and psychic experiences. In any event, as Moravec concludes, "The Jindabyne case appears to be a typical example of the UFO abduction claims that have been reported from many countries over the last two decades."

(b) A Recent Physical Trace Event

The most recent Australian report to receive widespread publicity was the Mundrabilla, South Australia, incident that occurred on January 20, 1988. The case is quite complex, involving damage to the vehicle in which the witnesses were riding, possible physical evidence, and an independent witness. Several investigators were involved in studying the incident, and this account is a compilation of their work (Basterfield and Brooke 1988, 1989).

The incident occurred to the Knowles family, mother Faye and her three sons Patrick, Sean, and Wayne, who were driving across the deserted Nullarbor Plain on their way to Melbourne. At about 4:00 a.m. the family was west of Mundrabilla when Sean, who was driving, saw a bright light ahead (they were driving east). The light gradually approached the car until it was visible as an egg-shaped body within an egg-shaped cup. It blocked their view of the road at times, and the only size estimate they made puts its width at about one meter.

After the family passed another car, the UFO left the Knowles' vehicle and seemingly followed that other car. The Knowles were curious and did a U-turn so as to continue to observe the UFO, but lost sight of it. Then suddenly, after they had again turned east, they heard a clunking noise and became convinced that the UFO had landed on the roof of their Ford sedan. The UFO reportedly raised the car some distance off the ground while the car was moving, according to the Knowles. During this time, they said their dogs in the car were severely frightened, a black powder blew into the car, and they thought their voices had become slow and deep.

After some indeterminate time, they felt that the car was dropped to the ground, and the right-hand rear tire burst as they landed. Sean stopped the car and the terrified family fled into the bushes. After about 15 long minutes, the UFO left, so they quickly changed the tire and drove away.

Partial confirmation of the Knowles' story comes from Graham Henley, a truck driver traveling ahead of the Knowles. He saw a light that looked like "a big egg, like a fried egg hung upside down" at about 4:00 a.m. for about five minutes. Henley later was at a truck stop in Mundrabilla when the Knowles pulled in about 4:30 a.m., quite disoriented and excited, and his account of what they told him then matches fairly well their later testimony to UFO investigators.

The media circus that surrounded the report of this sighting made investigation difficult. Detailed analysis of the dust from the car interior by Richard Haines in the United States and others has found nothing particularly abnormal in its composition (Basterfield 1990). Thus as with many UFO reports, the Mundrabilla event is an intriguing account of extraordinary events by sincere witnesses, but one for which we lack any definitive physical confirmation.

TRENDS IN UFO REPORTS IN AUSTRALIA

The number of UFO reports varies greatly from one year—or month—to the next. This is as true for Australia as for other countries. Reports in Australia were few until the mid-1960s, but local flaps did occur in 1954 and 1957, the same year flaps occurred in Europe and the United States, respectively.

Several social factors influence any measure of UFO reporting activity, including the number and competence of investigators, the willingness of the public to report a sighting, and the creation of a written report that is later added to an accessible database. It is impossible to standardize extant databases to control for variation in these factors, but another strategy is available.

As an alternative, the level of sightings recorded by a continuously operating group or organization that has remained relatively homogeneous can be utilized to estimate the variation in reports over time. There are two such databases in Australia. One was maintained by the RAAF from 1960 to the early 1980s; the other comes from TUFOIC in Tasmania, compiled since the group was founded in 1965.

Table 2 displays the number of reports and the number and percentage of unexplained reports after investigation ("unknowns") for both databases. The two series overlap for the period from 1965 to 1980. The Tasmanian database is still in existence, but the RAAF have ceased recording UFO reports, as explained above. The differences between these two series are more apparent than any similarities (Fig. 5). Peak years of UFO reports to the RAAF were 1967–1969, 1973, and 1978. Peaks years of UFO reports to TUFOIC were 1971 and the whole period from 1973 to 1979. The percent of raw UFO reports by year that became unknowns varies from 0% to 33.3%. In the RAAF data, for the TUFOIC series the variation is from 8.6% to 52.2%. It is

Table 2. UFOs by Year, RAAF and TUFOIC

Year	Reports	RAAF		Reports	TUFOIC	
		Unexplained	% Unexplained		Unexplained	% Unexplained
1965	52	2	3 8%	23	12	52 2%
1966	74	1	1 4	34	15	44 1
1967	95	-	0 0	16	4	25 0
1968	101	-	0 0	29	6	20 7
1969	94	2	2 1	61	14	23 0
1970	37	4	10 8	45	8	17 8
1971	52	6	11 5	97	25	25 8
1972	87	11	12 6	68	14	20 6
1973	193	4	2 1	136	26	19 1
1974	67	2	3 0	159	54	34 0
1975	39	4	10 2	182	51	28 0
1976	39	4	10 2	192	43	22 4
1977	25	6	24 0	154	37	24 0
1978	118	30	25 4	178	32	18 0
1979	45	15	33 3	151	18	11 9
1980	47	10	21 3	60	8	13 3
1981				86	9	10 5
1982				59	15	25 4
1983				63	8	12 7
1984				43	6	14 0
1985				84	9	10 7
1986				81	7	8 6
TOTAL	1165	101	8 7%	2001	421	21 0%

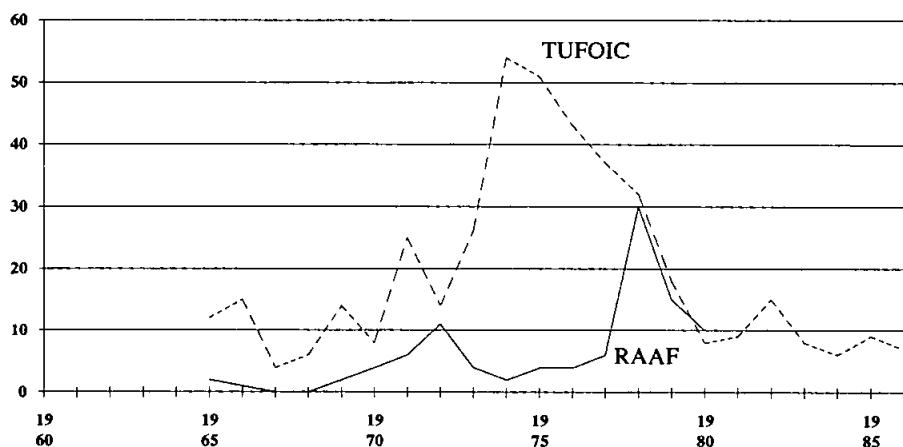


Fig. 5 Number of unexplained reports, TUFOIC and the RAAF, 1965-1985

interesting to note that the percent of unexplained reports decreased over time in Tasmania but *increased* in the RAAF files.

That trend in the Tasmanian data might be explainable by gradual improvement in investigative techniques and a reduced level of actual UFO activity. It is more difficult to suggest plausible explanations for the pattern in the RAAF data, although possible factors are changes in government policy and resources devoted to investigations, plus an increased willingness by the public to report strange and more provocative reports to the authorities. The percentage of unknowns in the complete Tasmanian data—21.9%—is much higher than that from similar databases in other countries. Reasons for this difference are not immediately apparent. TUFOIC has recorded almost double the number of reports and four times the number of unknowns as the RAAF, and this disparity parallels that in the United States, where the Air Force received far less than half of all civilian UFO reports.

One final point is worth noting. The TUFOIC data show a decline in the number of reports, beginning in 1979, and a precipitous drop in the number of unknowns, also beginning that same year (see also Table 1 for the ACUFOS reports). This pattern is similar to that observed worldwide in all Western countries with active, local investigative groups. From this it is evident that the forces affecting the level of UFO reports worldwide are also operative in Australia, despite differences in geographic location and the social environment.

THE AUSTRALIAN SOCIAL ENVIRONMENT

(a) *The Media*

Although most UFO reports from the general public are made directly to UFO groups, some receive their first exposure in the media. Generally, whether the media outlet is print or electronic, serious researchers find it difficult to conduct an investigation while in the “media spotlight.”

(b) *Print Media*

Most daily newspapers mention UFOs from time to time. In the capital cities, certain less conservative dailies see them as having a high news value. However, there is rarely any depth to the stories that do appear. Journalists are often unable to distinguish between IFOs and UFOs, for often what is obviously a meteor or a satellite reentry is not reported as such. There are two types of media reports: one is a straightforward presentation of the known facts, but with no investigation; the other has a sensational headline and is a mostly speculative article, again with no investigation attempted. The latter category of stories is more common.

Weekend papers do occasionally carry feature articles on UFOs. However, many of these turn out to be overseas book extracts, overseas dispatches with little real content, or hasty compilations by local reporters from newspaper archives. Papers almost never contact UFO organizations to seek the benefit of their experience and advice.

If they do, they are invariably seeking comments on a breaking story and want an immediate response from an investigator who has not had the time, or been in a position, to become fully acquainted with the facts As with newspapers, weekly magazines carry only very superficial and sensational articles, again with very little or no investigation, and often with lurid titles.

(c) Electronic

The five Australian television networks, but particularly Channels 7 and 9, frequently report on UFOs. Channel 7 airs overseas UFO specials whenever available and appears to target UFOs as items worthy of airplay However, as with the print media, little independent investigation is conducted in most cases and reports are aired at face value The 1978 Kaikoura, New Zealand, radar-visual/photographic case is an excellent example Certain commercial radio stations do take an interest in the topic, and the Australian Broadcasting Corporation's network generally takes a direct and impartial approach This was especially evident when, in mid-1989, UFORA undertook a campaign to locate previously unreported abduction cases

In summary, the media: a) can alert researchers to some cases; b) generally fails to utilize the researchers' expertise; c) sensationalizes much of the material it does cover; d) fails to conduct independent investigations; and e) looks for easy and immediate answers/comments

THE PUBLIC

Despite a decline in the number of interesting cases in Australia since the late 1970s, the general public continues to report what they believe to be UFOs to research organizations People today are no more aware than previously of the natural and man-made stimuli capable of triggering UFO reports They continue to report stars, planets, satellites, etc , at the same rate as they did in, say, 1972 Out of all reports received, the eventual UFOR (South Australia) IFO rate has been constant for many years at about 90%-95%. Interestingly, hoaxes are few and far between Generally speaking, the public of today seems to accept UFOs as a part of everyday life

AUSTRALIAN UFOLOGY IN PERSPECTIVE

In many respects the history of ufology in Australia mirrors that in other Western countries Civilian organizations were first formed in the 1950s but didn't begin to do a professional and thorough job of case investigation until the 1970s The number of active investigators and researchers has always been quite small, and very few have been academics or other professionals with advanced degrees There has been no official funding available for UFO research, save from the public and the investigators' pockets Like other countries, Australia has experienced periods of high levels

of sighting reports and times of almost no activity whatsoever (and a concomitant lack of public interest)

These similarities mask some interesting features unique to Australian ufology or shared with only a few other countries. One of the most important for the development of ufology in Australia has been the indifference of most professionals to the UFO subject. In contrast to the United States, where persons of some significant professional stature have contributed greatly to UFO research, such as James McDonald, J Allen Hynek, David Saunders, and Richard Haines, Australian professionals have not been nearly so willing to lend their expertise. Curiously, this situation finds a parallel to ufology in the United Kingdom, where despite the many persons active for the past forty years, professionals comparable in status and accomplishment to those in the United States have been far less visible. Although England and Australia hardly have a *common* culture, both would seem to share scientific communities marked by an inherent conservatism.

Few new persons have entered the field of ufology in the 1980s in Australia. Although the same trend has been evident worldwide (it is certainly true at CUFOS), the difficulties in recruitment seem more troublesome in Australia. Two factors may have worked in tandem to discourage involvement. First, Australia has experienced few sensational UFO reports in the 1980s and, until recently, essentially no accounts of abductions. In the United States and, to a lesser extent, England, Italy, and France, reports of abductions have received widespread publicity in mainstream media, leading to increased public interest in UFOs.

A second factor is the openness of the Australian government concerning its own involvement in UFO investigation. Not only is there no solid evidence for a cover-up by Australian authorities, but ufologists (in the person of Bill Chalker) have been allowed open access to the RAAF's UFO files. Thus no mystery exists in Australia about the government's role and interest in UFO investigation, unlike the United States, where sensational tales of a continuing cover-up have been tied to accounts of retrievals of crashed extraterrestrial UFOs.

Australian ufology's difficulty in recruiting new personnel has been further exacerbated by the drop in UFO reports in Australia. As in the rest of the world, reports dropped in the 1980s to levels not experienced since the early 1960s. Recruiting (and training) new colleagues is difficult when new data is not available for study.

Australian ufology flourished in the period from 1973 (after Allen Hynek's visit) to about 1982. On a per capita basis, Australian researchers made as many important contributions to the literature during that period as any other group. The focus of their work was the study and compilation of Australian cases, in retrospect a wise and productive strategy. Their work has demonstrated that UFO reports in Australia are similar in content to those recorded worldwide.

Given the population of Australia, the number of cases recorded of various types has, understandably, been fewer than for most other Western countries. One interesting exception is vehicle interference reports, where far more than 10% of the world's total comes from Australia, especially from Tasmania where TUFOIC has been

active. Whether this difference can be attributed to the low population density of Australia and the need to spend long hours driving from place to place is unclear.

The decline of Australian ufology after about 1982 has not been without exceptions. Important contributions continue to be made in several areas, notably the work of Basterfield and colleagues on psychological factors that may be the stimuli for many UFO reports. This period has been one of retrenchment and a reconsideration of the direction and organization of ufology that best suits the Australian social and physical environment. One consequence has been the decline of ACUFOS and the growing informal links among investigators.

The growing availability and reduced cost of computing resources has led to a renewed emphasis on computerization of files. Catalogs have been constructed by Phillip Frola in Brisbane, Mora McGhee in Sydney, Basterfield in Adelaide, and Paul Jackson in Hobart (TASCAT). It is hoped that increased global data sharing may be one outcome of this work.

REFERENCES

- Australian Flying Saucer Review (UFOIC)*
- 1965 Vol 8 30
 - 1966 Tully Vol 9 16-21
- Australian Flying Saucer Review (VFSRS)*
- 1967 U F O Photographed over Hallam Vol 7 [15]
- Basterfield, Keith
- 1980a *A Report on Observations of UFOs from Aircraft Crew Members in Australia* ACUFOS Report D-2 Gosford, N S W Australian Centre for UFO Studies
 - 1980b *An Indepth Review of Australasian UFO-Related Entity Reports* ACUFOS Report D-3 Gosford, N S W Australian Centre for UFO Studies
 - 1981a *A Catalogue of the More Interesting Australian Close Encounters* ACUFOS Report D-11 Gosford, N S W Australian Centre for UFO Studies
 - 1981b *Close Encounters of an Australian Kind UFOs, the Image Hypothesis* Sydney, N S W Reed
 - 1982a Airline Crew Observations *UFO Research Australia Newsletter*, Vol 3 (3) 10-11
 - 1982b The UFO Phenomena and Its Investigation by UFO Groups within Australia *UFO Research Australia Newsletter*, Vol 3 (2) 20-30
 - 1988 Can Imagery Explain Certain UFO Close Encounters? In Mimi Hynek (ed.), *The Spectrum of UFO Research* Chicago J Allen Hynek Center for UFO Studies pp 183-87
 - 1990 Samples from the Mundrabilla CE2 *International UFO Reporter*, Vol 15 (January-February) 12-13
- Basterfield, Keith, and Robert E Bartholomew
- 1988 Abductions The Fantasy-Prone Hypothesis *International UFO Reporter*, Vol 13 (May-June) 9-11
- Basterfield, Keith, and Ray Brooke
- 1988 The Mundrabilla Incident *UFO Research Australia Newsletter*, Vol 6 (1) 3-20
 - 1989 The Mundrabilla Incident An Update *UFO Research Australia Newsletter*, Vol 7 (1) 3-9

- Basterfield, Keith, and Bill C Chalker
- 1981 Rosedale, Victoria A Close Encounter *UFO Research Australia Newsletter*, Vol 2 (1) 17-22
- Basterfield, Keith, Vladimir Godic, and Pony Godic
- 1989 The Abduction Phenomenon in Australia *International UFO Reporter*, Vol 14 (January-February) 11-13, 24
- Basterfield, Keith, and Paul Jackson
- 1982 *A Preliminary Catalogue of Australian Vehicle Interference Cases* ACUFOS Report D-12 Gosford, N S W Australian Centre for UFO Studies
- Bullard, Thomas E
- 1987 *UFO Abductions The Measure of a Mystery* 2 vols Mount Rainier, Md Fund for UFO Research
- Chalker, Bill C
- 1977 *Beyond the CE3 Down Under Notes on the Apparent Absence of Contact, Time Lapse and Abduction Cases in Australia* Paper read at UFOCON 3, Surfers Paradise, Queensland, November 12-14, 1977 Unpublished
- 1979 The Missing Cessna and the UFO *Flying Saucer Review*, Vol 24 (5) 3-5
- 1982a A UFO Vision? The Mystery of "A Machine to Go through the Air"—1873, Parramatta, New South Wales, Australia *UFO Research Australia Newsletter*, Vol 3 (1) 14-29
- 1982b UFOs and the Royal Australian Air Force The Inside Story (Part One) *UFO Research Australia Newsletter*, Vol 3 (2) 14-19
- 1982c UFOs and the Royal Australian Air Force The Inside Story (Part Two) *UFO Research Australia Newsletter*, Vol 3 (3) 19-23
- 1982d UFOs and the Royal Australian Air Force The Inside Story (Part Three) *UFO Research Australia Newsletter*, Vol 3 (4) 23-31
- 1983a Historical Australian UFO Reports *UFO Research Australia Newsletter*, Vol 4 (3) 23-32
- 1983b *Physical Evidence for UFOs in Australia A Study of Physical Trace Events.* Lane Cove, N S W
- 1984a Australian "Interrupted Journeys" *UFO Research Australia Newsletter*, Vol 5 (2) 14-23
- 1984b The Bent Headlight Beam Case Revisited *UFO Research Australia Newsletter*, Vol 5 (3) 17-29
- 1985 *Omega Science Digest* (March) .
- 1987 Physical Traces In Hilary Evans and John Spencer (eds), *UFOs, 1947-1987 The 40-Year Search for an Explanation* London Fortean Tomes pp 182-96
- 1988 Working with the Government In John Spencer and Hilary Evans (eds), *Phenomenon Forty Years of Flying Saucers* London Futura pp 248-59
- Chalker, Bill C , and Keith Basterfield
- 1976 *An Australian Catalogue of Close Encounter Type Three Reports* Prospect, S A UFO Research (S A)
- Chichester, Sir Francis
- 1964 *The Lonely Sea and the Sky* London Hodder and Stoughton
- DeLillo, R , and R H Marx
- 1979 The Tourist Theory *Flying Saucer Review*, Vol 25 (2) 11-17
- Department of Defence, Australia
- 1984 *Unusual Aerial Sightings RAAF Change of Policy* News release No 80/84
- Fischer, Ray, and Les Bristol
- 1978 *The Victorian UFO Report, 1954 A Compilation of Reports from the Victorian Press* Moorabbin, Vict Victorian UFO Research Society

- Griesberg, Harry
- 1976 Discussion between Harry Griesberg and the Department of Defence (in Canberra) *ACOS Bulletin*, No 5 (March) [4-5]
- Haines, Richard F
- 1987 *Melbourne Episode Case Study of a Missing Pilot*. Los Altos, Calif L D A Press
- Hervey, Michael
- 1969 *UFOs over the Southern Hemisphere*. Sydney, N S W Horwitz
- Holledge, James
- 1965 *Flying Saucers over Australia* Sydney, N S W Horwitz
- Moravec, Mark
- 1980a *The UFO-Anthropoid Catalogue* ACUFOS Report D-5 Gosford, N S W Australian Centre for UFO Studies
 - 1980b Psiufological Phenomena UFOs and the Paranormal *MUFON UFO Journal*, No 150 (August) 13-15
 - 1981 *PSI UFO Phenomena A Study of UFOs and the Paranormal* ACUFOS Report D-14 Gosford, N S W Australian Centre for UFO Studies
 - 1982 Percipient Study Group *Journal of the Australian Centre for UFO Studies*, Vol 3 (2) 9-10
 - 1984 The Jindabyne Abduction *UFO Research Australia Newsletter*, Vol 5 (5) 6-10
 - 1988 Jindabyne "Abduction" *MUFON UFO Journal*, No 238 (February) 13-16
- Moravec, Mark, and John Prytz (eds)
- 1985 *UFOs over Australia A Selection of ACUFOS Research Findings and Debate* Sydney, N S W Australian Centre for UFO Studies
- Randles, Jenny, and Paul Fuller
- 1989 *Controversy of the Circles* London British UFO Research Association
- Reneke, David
- 1980 The Benboyd UFO Movie History and Evaluation *UFO Research Australia Newsletter*, Vol 1 (2) 19-23
 - 1981a Australian Photographic Evidence Analysis Centre *UFO Research Australia Newsletter*, Vol 2 (4) 9
 - 1981b The Australian UFO Photo File *UFO Research Australia Newsletter*, Vol 2 (4) 10-15
 - 1981c The Australian UFO Photo File Part Two *UFO Research Australia Newsletter*, Vol 2 (5) 10-12
- Robertson, Del, and Dennis Stocks (eds)
- 1973 *Dr J Allen Hynek B S , Ph D* Brisbane, Queensl Queensland UFO Research Bureau Souvenir booklet
- Rodeghier, Mark
- 1981 *UFO Reports Involving Vehicle Interference* Evanston, Ill Center for UFO Studies
- Smyth, Michael
- 1976 The Australian Computer File *ACOS Bulletin*, No 8 2-3
- Stevens, Geoff T
- 1977 Collection of Samples in Trace Cases *ACOS Bulletin*, No 11 2-4
 - UFO Newsletter* (UFO Research N S W)
 - 1978 No 53
- UFO Research Australia Newsletter*
- 1981 The Australian Physical Evidence Study Group Vol 2 (3) 19-20

PERSONALITY CHARACTERISTICS OF PERSONS WHO CLAIM UFO EXPERIENCES¹

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ABSTRACT How do 142 females and 83 males who reported Unidentified Flying Object (UFO) experiences score on the Minnesota Multiphasic Personality Inventory (MMPI) and Sixteen Personality Factors Test (16 PF)? Mean scores (with 95% confidence limits) were calculated for each factor on the two tests. Participants exhibited a high level of psychic energy, a tendency to question authority or experience situational pressures or conflicts, and to be self-sufficient and resourceful. Other characteristics were above average intelligence, assertiveness, a tendency to be experimenting thinkers, a tendency toward a reserved attitude, and a tendency toward defensiveness. No overt psychopathology was indicated. Participants in the study who claimed communication with extraterrestrials had a significantly greater tendency to endorse unusual feelings, thoughts, and attitudes, to be suspicious or distrustful, and to be creative, imaginative, or possibly have schizoid tendencies.

Since the 1940s, thousands of persons have reported various types of anomalous experiences ranging from distant visual sightings to close encounters with spacecraft and communication with space beings. Reports of UFOs (Unidentified Flying Objects) have been submitted to police, government officials, researchers, and UFO organizations. The reporters are often described as "kooks or weirdos" and ridiculed because of the bizarre nature of their claims (Strentz 1970). Zusne and Jones (1982) regard the investigation of UFO experiences as pseudoscience and suggest that there are natural explanations for the observations or that these reports are the result of observer misperception, hallucination, or delusion. However, the evidence for UFO encounters and abductions is impressive (Hopkins 1987; Kinder 1987), especially to the individuals who experience these encounters (Lorenzen and Lorenzen 1976, Strieber 1987).

The purpose of this study was to investigate the personality characteristics of persons who report UFO experiences. In most investigations of UFO reports, the psychological status of the individual claimant is inferred from observation and social

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status Westrum (1979) cites close encounter studies by Carrouges (1963), Vallee (1969), Vallee and Ballester Olmos (1972), and Pereira (1974); these writers reported that sighters usually held white collar or professional occupations, that sightings occurred in rural settings, and the witnesses seemed neither pathological nor unusual. Schwarz (1983) and Sprinkle (1976) found no obvious psychological difficulties among the UFO percipients they studied. Swift (1980) found belief in UFOs to be associated with personal "well-being" as judged by years of education and affluence.

Gordon (1971), Grinspoon and Persky (1973), Keul (1980), and Meerloo (1968) hypothesized that mental illness of claimants is a factor to be considered in UFO reports Warren (1970) found status inconsistency to be a factor characterizing UFO percipients. However, Bloecher, Clamar, and Hopkins (1985) found no obvious psychopathology in the nine claimed UFO abductees who were studied by another psychologist who was unaware of their UFO claims. A more recent study by Keul and Phillips (1987) indicated that a group of 55 UFO witnesses (from England and Austria) were "normal" in their responses to psychological assessment instruments.

THE PROBLEM

What are the psychological characteristics of a large sample of UFO claimants? This study provides a description of the personality characteristics of 225 participants obtained from analyses of scores on two personality inventories: the Minnesota Multiphasic Personality Inventory (MMPI) and the Sixteen Personality Factors Test (16 PF Test). The MMPI contains 566 statements designed to provide assessment of psychopathology. It was developed originally to serve as a diagnostic screening device and now is used also as a personality inventory (Hathaway and McKinley 1967). The 16 PF Test covers the whole range of normal personality utilizing 16 personality factors to assess healthy personality functioning (Cattell, Eber, Tatsuoka 1970).

Differences in psychological characteristics between participants in various UFO report categories also were examined to determine whether persons claiming more unusual UFO experiences also were responding to more aberrant profile responses. The rationale was as follows: if UFO percipients are irresponsible and unreliable, as indicated by their responses on standard personality tests, then their UFO claims may not be an accurate report of their experience. If they are normal in their personality functioning, then their claims are more likely to be accurate, and so deserve the attention of investigators. If they are neurotic or psychotic, then their claims may reflect emotional dysfunction, and they might be referred to mental health consultants for therapeutic assistance.

Moreover, if UFO witnesses are normal in psychological functioning but wrong about the phenomena which they claim to have experienced, then behavioral scientists and mental health practitioners should be alerted to learn more about the psychological phenomena that caused UFO claimants to believe that they have encountered spacecraft and/or space beings.

In establishing our hypotheses, we worked on the assumption that UFO claims are a form of fantasy. It therefore was hypothesized that persons reporting unusual experiences, such as encounters with space beings and their craft, would exhibit personality characteristics associated with elevations on Scales *F* (Validity Scale or frequency of unusual items), 8 (*Sc*—Schizophrenia Scale), and 9 (*Ma*—Hypomania Scale) of the MMPI. And, because UFO encounters are unconventional claims, the researchers expected that UFO percipients would respond like those persons who score higher in such characteristics as unconventionality, greater involvement in fantasy life, and potential for creativity as measured by Factor *M* on the 16 PF Test.

The principal goal of this study was to provide a psychological description of the participants. This was done by generating group and sub-group profiles, by category of experience, on all scales of the two instruments, the MMPI and the 16 PF. The reported UFO experiences were categorized as follows in two independent classification schemes:

I. Type of visual UFO experience claimed by participant

1. No claim of UFO, spacecraft, space being, or occupant sighting or encounter
(This is not a control group. These persons decided to claim no UFO experience after having completed the questionnaire and inventories.)
2. Claim of UFO observed as a light or object in the sky
3. Claim of a UFO observed as a spacecraft.
4. Claim to have seen a space being or UFO occupant.
5. Claim to have been taken on board a spacecraft.

II Experience of communication with UFO being

- A. No claim of communication with a space being or UFO occupant
- B. Claim to have communicated with a space being or UFO occupant

Communication is defined as an interaction with a humanoid or animate space creature, commonly referred to as an extraterrestrial, by means of spoken language or telepathy (non-verbal, or mental, communication). These claimed communications varied from "greetings" to messages about humankind's evolutionary development, including views on science, space-time travel, personal and transpersonal experiences, etc. (Sprinkle 1980)

The secondary goal was to test four specific hypotheses, which were as follows:

H₁. Those respondents who claim more unusual visual sightings (higher numbered types of experiences) or who claim communication with UFO beings will exhibit significantly greater responses to questions about unusual attitudes, feelings, ideas, and thoughts. (Higher scores on MMPI scale *F*.)

H₂. Those respondents who claim more unusual visual sightings (higher numbered types of experiences) or communication with UFO beings will exhibit a significantly greater tendency toward divergent thinking, creativity, alienation, and remoteness from their general environment. (Higher scores on MMPI scale 8.)

H₃ Those respondents who claim more unusual visual sightings (higher numbered types of experiences) or communication with UFO beings will exhibit a significantly greater tendency toward elevated but unstable mood, psychomotor excitement, and flight of ideas (Higher scores on MMPI scale 9)

H₄ Those respondents who claim more unusual visual sightings (higher numbered types of experiences) or communication with UFO beings will exhibit a significantly greater tendency toward imaginative, absent-minded, or bohemian behavior. (Higher scores on 16 PF Factor M.)

To investigate the above hypotheses, specific scales were selected, based on the descriptions of Graham (1977), Duckworth (1979), and Karson and O'Dell (1976)

(a) Method

The senior author (JOP) analyzed data from materials that had been gathered over an 18-year period by the junior author (RLS). These materials were obtained by surveying persons who had written to RLS or other UFO investigators and who expressed puzzlement about their UFO experiences. They were invited to participate in a survey to measure personality characteristics and to compare their UFO experiences with other participants

Research participants and the independent variables of visual and communication experience came already assigned. The levels of the visual sighting (1-5) were abstracted, after the fact, from the questionnaire. Random assignment was not possible, which limits the generalizability of the outcome. However, this research was initiated to investigate the personality characteristics of those who report UFO experiences. Mook (1983) argues the distinction between "generality of findings and generality of theoretical conclusions," stating that the point of interest in this type of research is not generalization from sample to population but rather what happened in the sample

Group and sub-group profiles were generated from respondents' scores on each of the two psychological instruments, MMPI and 16 PF

Because *t* tests on differences of gender means for the entire group on the selected scales of the instruments were not significant, data for males and females were combined in the profiles. This was tested with the limitation that possibly significant *t* values would not be meaningful as an indicator of significant gender differences if mean scores for both genders fell within the normal range.

The profiles were calculated in terms of standard score means, standard T scores for the MMPI, standard ten scores (sten) for the 16 PF. Ninety-five percent confidence intervals were calculated for these means. Any profile score is meaningful for interpretive purposes only when a) the calculated interval does not include the norm group scale mean on which the MMPI was standardized, and b) the profile score falls outside the normal range.

The subjects were 225 persons, 83 (37%) males and 142 (63%) females, who

contacted a psychologist (RLS) concerning their UFO experiences and who subsequently were invited to participate in the study. In many cases, participation in the study was encouraged by other investigators from various UFO organizations who gather, analyze, and publish UFO reports. Participants' claimed mean age was 37 years of age ($SD = 12$); mean education was 14 years ($SD = 3$). Participants resided in various regions of the United States: 142 (63%) in the West, 34 (15%) in the Northwest, 25 (11%) in the South, and 11 (5%) in the Northeast. Thirteen (6%) were from other countries.

(b) Materials

Materials for the study consisted of two psychological inventories, the MMPI and the 16 PF Test, and the UFO Report Form (Unusual UFO Observations and Impressions) of the Aerial Phenomena Research Organization, Tucson, Arizona. The UFO Report Form provided demographic information and descriptions of participants' UFO experiences. The inventories (as interpreted from Cattell, Eber, and Tatsuoka 1970, Duckworth 1979, Greene 1980) provided personality profiles of participants.

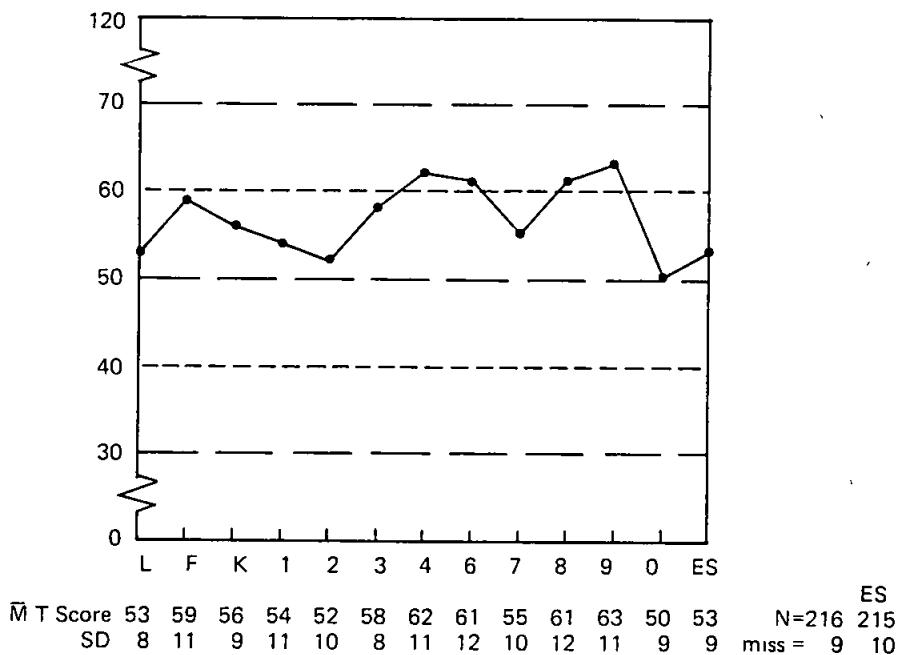
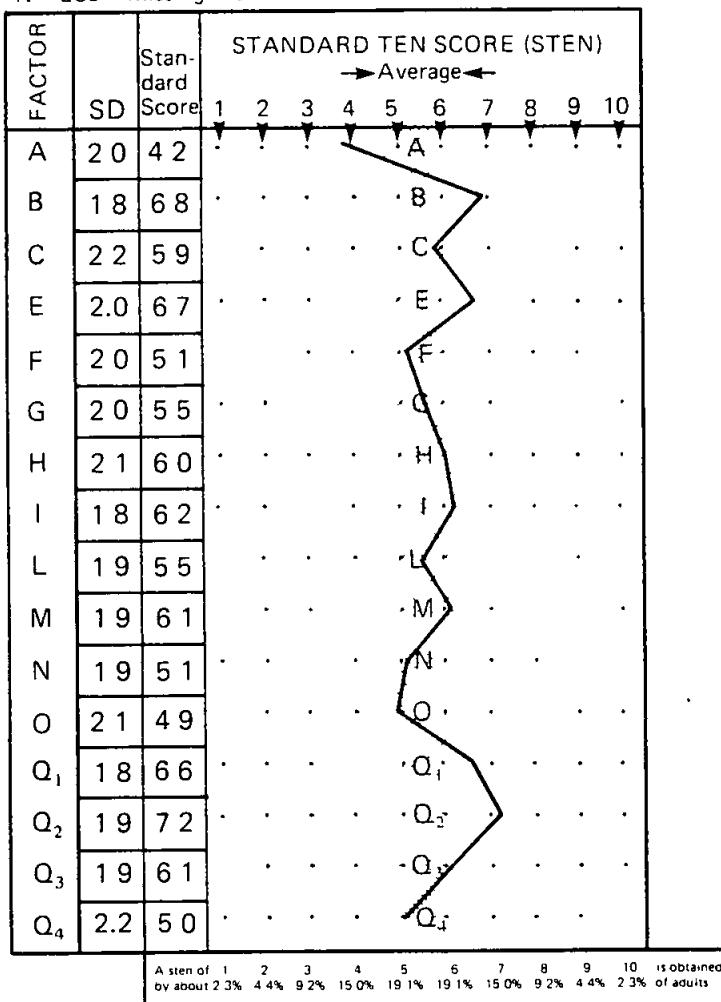


Fig. 1 MMPI profile All participants

N = 205 missing = 20



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Fig 2 16 PF test profile

RESULTS

(a) MMPI Mean Scores

Mean scores obtained on MMPI validity scales *L*, *F*, and *K* indicate that persons in this study can be seen as striking a balance between admitting faults and possibly

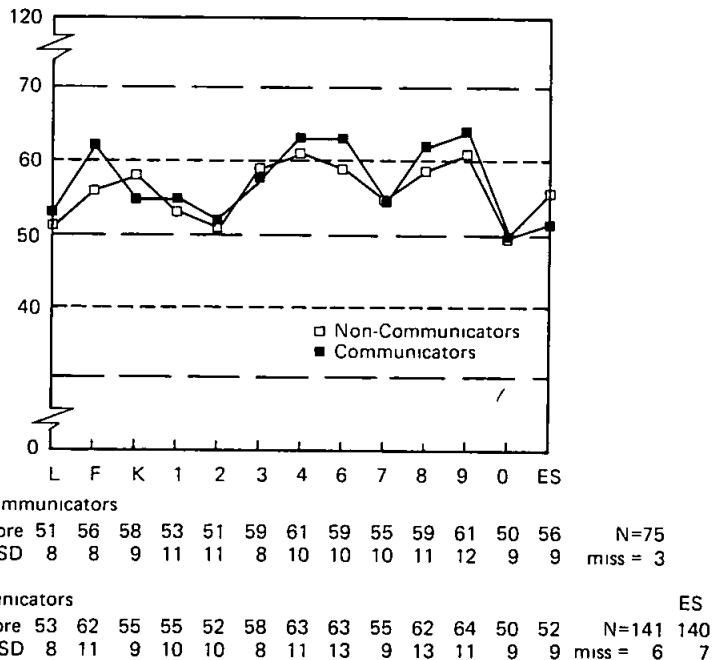


Fig 3 MMPI profile Groups indicating communication or noncommunication with UFO beings

wishing to present a favorable self-image, admitting to the typical number of unusual experiences; defensive, guarded or independent; and able to deal with everyday problems (see Fig. 1).

The group mean scores on the clinical scales 1 (*HS*), 2 (*D*), 3 (*Hv*), 7 (*Pt*), 0 (*Si*), and *ES* (Ego Strength) fall within the average range of responses for normal adults, indicating endorsement of a typical number of physical complaints; a normal degree of pessimism; normal tendencies toward worry and anxiety, a balance between extroverted and introverted behaviors; and a normal ability to rebound from problems and to deal with stresses and setbacks of everyday living.

Group mean scores on scales 4 (*Pd*), 6 (*Pa*), 8 (*Sc*), and 9 (*Ma*) are moderately elevated, falling within a range of scores from 60–63. These scores describe persons who can be seen as reacting to situational pressures and acting out against their own or others' standards, or as genuinely concerned about social issues and problems; interpersonally sensitive, overly sensitive to criticism, tending toward personalizing the actions of others toward themselves; thinking differently from others, reflecting creativity, avant garde attitudes, or schizoid processes, having greater than usual psychic energy; engaging in a diversity and multiplicity of thoughts, and engaging in many projects which they usually complete.

Of the selected scales, 8 (*Sc*) and 9 (*Ma*) were moderately elevated, while *F* was just within the normal range

(b) 16 PF Mean Scores

Fig 2 indicates that these persons who reported UFO experiences can be described as tending toward being reserved, more intelligent, assertive, experimenting, liberal, free-thinking, self-sufficient, resourceful, and preferring their own decisions. Factor M, practical versus imaginative, which was selected by the researcher for special focus, fell within the average score range (6.1), indicating a balance between imaginative, bohemian, or absent-minded tendencies and practical, "down-to-earth" concerns (see Fig. 2)

(c) Type of Experience and Personality Test Scores

There was little variation on the MMPI and the 16 PF scale scores across the various levels of UFO experience. The five profiles (Parnell 1987) for each type of experience are more similar than not

Fig. 3 presents the MMPI profile scores for participants who claimed no communication and for those who claimed communication with UFO beings (A-B). The mean scores for most scales are in the normal range and show little variation between those who did not report a communication experience and those who did. However, a few exceptions should be noted (see Fig. 3).

The mean F scale score of 62 for those experiencing communication is moderately elevated, indicating that these persons are endorsing more than the typical number of unusual experiences. Some persons reporting communication experiences had markedly elevated scores and endorsed a far greater number of unusual experiences, thinking, and attitudes.

Scales 6 (*Pa*) and 8 (*Sc*) also are moderately elevated ($M = 63$ and 62) for those reporting a communication experience. These persons as a group are moderately elevated on the following characteristics: interpersonal sensitivity, moral self-righteousness, suspiciousness, and creativity or schizoid processes. Some individuals in the group are markedly elevated in these characteristics.

The 16 PF Test profiles of non-communicators and communicators were largely congruent, differing by no more than 1.0 mean sten score on any factor.

**Table 1. Two-Way ANOVA: Levels of Sighting and Communication
MMPI, Scale F**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance of F
Sighting	482 186	4	120 546	1 146	.336
Communication	952 406	1	952 406	9 057	.003
Sighting X Communication	128 763	4	32 191	306	.874
Residual	21,662 604	206	105 158	—	—

**Table 2. Two-Way ANOVA: Levels of Sighting and Communication
MMPI, Scale 8 (Sc)**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance of F
Sighting	1,073 651	4	268 413	1 899	.112
Communication	641 599	1	641 599	4 539	.034
Sighting X Communication	678 422	4	169 606	1 200	.312
Residual	2,251 720	205	141 354	—	—

(d) Specific Hypotheses

The tests of hypotheses regarding levels of sighting and communication claims yielded the following results.

Hypothesis 1—regarding responses by participants to questions about unusual attitudes, feelings, ideas, and thoughts—was not upheld on the sighting variable (significance of $F = .336$). However, this hypothesis received strong statistical support in relation to the communication variable (significance of $F = .003$) (see Table 1).

Hypothesis 2—regarding responses by participants to questions concerning a greater tendency toward divergent thinking, creativity, alienation, and remoteness from the general environment—received weak statistical support on the sighting variable (significance of $F = .112$) and cannot be considered to have been upheld. However, the hypothesis of such greater tendencies among those who reported communication with space beings or UFO occupants did receive statistical support (significance of $F = .034$) (see Table 2).

Hypothesis 3—regarding greater tendency toward elevated but unstable mood, psychomotor excitement, and flight of ideas—was not upheld in relation to either experience (significance of $F = .447$) or communication (significance of $F = .146$) (see Table 3).

**Table 3. Two-Way ANOVA: Levels of Sighting and Communication
MMPI, Scale 9 (Ma)**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance of F
Sighting	433 920	4	108 480	931	.447
Communication	189 885	1	189 885	1 629	.203
Sighting X Communication	804 510	4	201 128	1 726	.146
Residual	23,892 506	205	116 549	—	—

**Table 4. Two-Way ANOVA: Levels of Sighting and Communication
16PF Test, Factor M**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance of F
Sighting	22 655	4	5 664	1 638	.166
Communication	2 009	1	2 009	581	.447
Sighting X					
Communication	21 593	4	5 398	1 561	.186
Residual	674 391	195	3 458	—	—

Hypothesis 4—regarding a significantly greater tendency toward imaginative, absent-minded, or bohemian behavior—was not upheld (Sighting: significance of $F = .166$, Communication: significance of $F = .447$ (see Table 4).

No significant interactions between the independent variables were found for any of the selected scales relating to the four hypotheses discussed above.

ANOVA data on other scales of the instruments also were examined to see if significant F ratios for either the sighting or communications variable could be found, with the limitation that possibly significant F ratios would not be meaningful for interpretation purposes if mean scores for all levels of the variable fell within the normal range.

Within the limitations of these criteria, there was one finding of interest in addition to the results on the hypotheses discussed above. Respondents reporting communication with UFO beings exhibited a significantly greater tendency toward interpersonal sensitivity and concern about what others thought of them, and tended to be oversensitive to criticism, and to personalize actions of others toward themselves, as these characteristics are measured on Scale 6 (*Pa*) of the MMPI (significance of $F = .010$) (see Table 5).

In summary, those in the study who reported a communication experience not only endorsed a significantly greater number of unusual items and experiences (MMPI,

**Table 5. Two-Way ANOVA: Levels of Sighting and Communication
MMPI, Scale 6 (Pa)**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance of F
Sighting	950 149	4	237 537	1 712	.149
Communication	928 822	1	928 822	6 693	.010
Sighting X					
Communication	177 321	4	44 330	319	.865
Residual	28,586 522	206	138 770	—	—

Scale *F*), but also were significantly more likely to exhibit heightened sensitivity or hyperawareness and creative or schizoid tendencies; these tendencies were not exhibited by those in the study who reported UFOs but did not claim a communication experience (MMPI, Scales 6 and 8)

DISCUSSION AND CONCLUSIONS

Like the Bloecher, Clamar, and Hopkins (1985) study, the results of this study show that claims of UFO experiences are not associated with pathological personality self-reports

There is no way of knowing if the participants' elevation on Scale 9 (*Ma*) of the MMPI was a prior characteristic or if it was a consequence of the reported UFO experiences. One might assume that persons who have high psychic energy are likely to seek to act upon such an experience and do something about it, such as report it to someone else.

On the other hand, participants' elevation on Scale 4 (*Pd*) of the MMPI might be viewed as caused by the claimed UFO visual sighting or communication experiences. The experiences themselves, and the difficulty of relating them to a skeptical society and skeptical authorities, could have led to an attitude of questioning authority, and could be said to represent situational pressure and conflict.

The tendency to self-sufficiency, resourcefulness, and preferring their own decisions, as measured by the 16 PF Test, could be described as characteristic of persons who have confidence in the validity of their own experiences, even in the face of adversity. However, a reserved attitude could be expected as reasonable self-protection under the circumstances. Persons of above-average intelligence and assertiveness need a rationale or explanation for their experiences, and are more likely to report them. And persons who are experimenting thinkers might be more likely to describe their experiences as being extraordinary.

Participants claiming communication experiences were significantly more elevated on Scales *F*, 6 (*Pa*) and 8 (*Sc*) of the MMPI, when controlling for sighting experience than those who did not claim communication. Reporting a UFO experience involving communication with UFO occupants, as compared to reports not involving communication, can be regarded as endorsement of a more bizarre experience, and consistent with the Scale *F* results. The tendency toward suspiciousness and mistrust of others, as indicated by the Scale 6 (*Pa*) results, might be expected in view of the ridicule that individuals sometimes have encountered when reporting these more bizarre experiences.

The greater elevation on Scale 8 (*Sc*) can be viewed positively as indicating creativity, or negatively as indicating possible schizoid tendencies. It could be either a predisposing or a consequential characteristic relating to having and reporting such experiences. Hearing voices is commonly thought to be symptomatic of schizophrenia (Strauss and Carpenter 1981). However, Posey and Losch (1983), using interviews

and MMPI results, found that hearing voices is a common phenomenon in a normal (college) population

RECOMMENDATIONS FOR FURTHER RESEARCH

In calculating the ANOVA data, it was found that the two independent variables (type of experience and presence of communication) accounted for only a small percentage of the total variance in mean scores on scales of the psychological instruments.

The persons in the study who claimed communication experiences had unique characteristics A study including in-depth histories of communicators might help in better explaining the relationship of these characteristics to the claimed experiences

Research that would clarify whether personality characteristics of UFO witnesses should be considered prior and/or predisposing vs consequent and/or resultant would be most useful in interpreting the findings of this study. However, this would require psychological measurement of individual personality characteristics before and after a claimed experience. This does not seem feasible, given the unpredictability of individual reports of UFO experiences Of course, if conclusive physical evidence (Kinder 1987; Randles 1983; Rutledge 1981) for claims of UFO encounters and/or communications can be obtained, this evidence could explain the social and behavioral data (Haines 1979) Meanwhile, the psychological data that are available may be relevant for mental health professionals in assisting UFO claimants. A useful approach might be to study the family members, including children, of UFO claimants Many UFO claimants (Hopkins 1987; Strieber 1987) describe ongoing contacts between family members and extraterrestrials, including paranormal experiences as well as face-to-face encounters Such a study might lead to better understanding of the origin of their personal and social problems, and their claimed UFO experiences

REFERENCES

- Bloecher, Ted, Aphrodite Clamar, and Budd Hopkins
1985 Summary Report on the Psychological Testing of Nine Individuals Reporting
 UFO Abduction Experiences In *Final Report on the Psychological Testing of*
 UFO "Abductees " Mt Rainier, Md Fund for UFO Research
- Carrouges, Michel
1963 *Les apparitions des martiens* Paris Arthème Fayard
- Cattell, Raymond B , Herbert W Eber, and Maurice M Tatsuoka
1970 *Handbook for the Sixteen Personality Factor Questionnaire (16 PF)* Cham-
 paign, Ill Institute for Personality and Ability Testing
- Duckworth, Jane C
1979 *MMPI Interpretations Manual for Counselors and Clinicians* (2nd ed)
 Muncie, Ind Accelerated Development
- Gordon, Robert A
1971 People Who See Flying Saucers [letter] *Science*, Vol 171 (March 12) 957

- Graham, John R
 1977 *The MMPI A Practical Guide* N Y Oxford University Press
- Greene, Roger L
 1980 *The MMPI An Interpretive Manual* N Y Grune & Stratton
- Grinspoon, Lester, and Alan D Persky
 1972 Psychiatry and UFO Reports In Carl Sagan and Thornton Page (eds), *UFO's A Scientific Debate* Ithaca, N Y Cornell University Press pp 233-46
- Haines, Richard F (ed)
 1979 *UFO Phenomena and the Behavioral Scientist* Metuchen, N J Scarecrow Press
- Hathaway, Starke R , and John C McKinley
 1967 *Minnesota Multiphasic Personality Inventory Manual* N Y Psychological Corporation
- Hopkins, Budd
 1987 *Intruders The Incredible Visitations at Copley Woods* N Y Random House
- Jacobs, David M
 1975 *The UFO Controversy in America* Bloomington, Ind Indiana University Press
- Karson, Samuel, and Jerry W O'Dell
 1976 *A Guide to the Clinical Use of the 16 PF* Champaign, Ill Institute for Personality and Ability Testing
- Keul, Alexander G
 1980 *Personlichkeitsvariable und Realitätsprüfung von ungewöhnlichen Zeugenaussagen* Unpublished manuscript Available from Dr Alexander Keul, Meidle, Hauptstrasse 82, 1120 Wien, Austria
- Keul, Alexander G , and Ken Phillips
 1987 Assessing the Witness Psychology and the UFO Reporter In Hilary Evans and John Spencer (eds), *UFOs, 1947-1987 The 40-Year Search for an Explanation* London Fortean Tomes pp 230-37
- Kinder, Gary
 1987 *Light Years An Investigation into the Extraterrestrial Experiences of Eduard Meier* N Y Atlantic Monthly
- Lorenzen, Coral E , and Jim Lorenzen
 1976 *Encounters with UFO Occupants* N Y Berkley
- Meerloo, Joost A M
 1968 The Flying Saucer Syndrome and the Need for Miracles [letter] *Journal of the American Medical Association*, Vol 203 (March 18) 70
- Mook, D G
 1983 In Defense of External Invalidity *American Psychologist*, Vol 38 379-87
- Parnell, June O
 1987 *Personality Characteristics on the MMPI, 16PF, and ACL of Persons Who Claim UFO Experiences* Ph D diss , University of Wyoming (University Microfilms International, order no DA 8623104)
- Pereira, Jader U
 1974 *Les "Extra-terrestres "* Paris Editions GEPA
- Posey, T B , and M E Losch
 1983 Auditory Hallucinations of Hearing Voices in 375 Normal Subjects *Imagination, Cognition and Personality*, Vol 3 99-113
- Randles, Jenny
 1983 *UFO Reality A Critical Look at the Physical Evidence* London Robert Hale

- Rutledge, Harley D
1981 *Project Identification The First Scientific Field Study of UFO Phenomena.* Englewood Cliffs, N J Prentice-Hall
- Schwarz, Berthold Eric
1983 *UFO Dynamics. Psychiatric and Psychic Aspects of the UFO Syndrome* 2 vols Moore Haven, Fla Rainbow Books
- Sprinkle, R Leo
1976 Hypnotic and Psychic Implications in the Investigation of UFO Reports In Coral Lorenzen and Jim Lorenzen (eds), *Encounters with UFO Occupants* N Y Berkley pp 256-329
1980 Messages from Space In Curtis Fuller, et al (eds), *Proceedings of the First International UFO Congress* N Y Warner pp 295-304
- Strauss, John S , and William T Carpenter, Jr
1981 *Schizophrenia* N Y Plenum
- Strentz, Herbert J
1970 *A Survey of Press Coverage of Unidentified Flying Objects, 1947-1966* Ph D diss , Northwestern University (University Microfilms International, order no 71-1979)
- Strieber, Whitley
1987 *Communion A True Story* N Y William Morrow
- Swift, David W
1980 Who Believes in UFOs? *Journal of UFO Studies*, old ser , Vol 2 7-12
- Vallee, Jacques
1969 The Pattern behind the UFO Landings In Charles Bowen (ed), *The Humanoids* London Neville Spearman pp 27-76
- Vallee, Jacques, and Vicente-Juan Ballester Olmos
1972 Sociology of the Iberian Landings *Flying Saucer Review*, Vol 18 (4) 10-12
- Warren, Donald I
1970 Status Inconsistency Theory and Flying Saucer Sightings *Science*, Vol 170 (November 6) 599-603
- Westrum, Ronald M
1979 Witnesses of UFOs and Other Anomalies In Richard F Haines (ed), *UFO Phenomena and the Behavioral Scientist* Metuchen, N J Scarecrow Press pp 89-112
- Zusne, Leonard, and Warren H Jones
1982 *Anomalistic Psychology A Study of Extraordinary Phenomena of Behavior and Experience* Hillsdale, N J Laurence Erlbaum Associates

THE OMEGA PROJECT: A PSYCHOLOGICAL SURVEY OF PERSONS REPORTING ABDUCTIONS AND OTHER UFO ENCOUNTERS¹

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ABSTRACT Two hundred sixty-four persons participated in a mail questionnaire survey the purpose of which was to assess the role of psychological factors in influencing susceptibility to UFO encounters, especially of the abduction type, as well as to evaluate a range of aftereffects stemming from such encounters. Responses of persons in the UFO encounter group ($n = 97$) were compared to groups made up of 1) persons interested in UFOs, but having no significant UFO-related experience ($n = 39$), 2) persons who had undergone another distinctive anomalous encounter, *viz.*, a near-death experience ($n = 74$), and 3) persons interested in near-death experiences ($n = 54$). Results showed that persons reporting abductions were psychologically indistinguishable from those who had other types of UFO encounters. However, UFO experiencers in general, while not more fantasy-prone than their controls, reported more sensitivity to non-ordinary realities as children, as well as a higher incidence of child abuse and trauma than controls. They also reported far more psychophysical changes following their encounters than did controls. An especially intriguing finding of this study was that UFO experiencers and near-death experiencers are highly comparable psychologically and are affected similarly by their separate encounters, suggesting that these two categories of experiences may in many ways be functionally equivalent.

INTRODUCTION

Considering the mushrooming interest in UFO studies in abduction narratives over the last few years, there has been a surprising lack of attention paid to the psychological characteristics of persons reporting such experiences. Even the preeminent student of these narratives, Eddie Bullard, lamented as recently as February 1990 that we still know too little of the psychological makeup of those who have undergone these puzzling encounters (Bullard 1990). Of course, there have been some efforts to probe clinically into the psyches of abductees, notably the investigation undertaken by Bloecher, Clamar, and Hopkins (1985) in which a psychologist, Elizabeth Slater, administered a battery of psychological tests to nine selected abductees who had worked with Hopkins (for a brief account of this study, see also Hopkins 1987: 23-25).

¹This study was supported by grants from the University of Connecticut Research Foundation and the Bernstein Brothers Foundation.

Although Slater found no "major mental disorders" in the nine persons whose test batteries she evaluated, she did find evidence of some disturbances in these abductees' sense of personal identity and in their interpersonal relations, in addition to tendencies toward mild paranoia. The small size and self-selected nature of the sample, the limitations of a clinical study resting on the interpretations of a single psychologist, and the fundamentally inconclusive findings reported, mean that this investigation is only of suggestive value. In the light of these shortcomings, it is not surprising that others who have read this report (Kottmeyer 1988) are very far from agreeing with Hopkins's blanket assertion that there is "absolutely no psychological explanation for [these] abduction accounts" (Hopkins 1987: 25). On the contrary, the ambiguity of the study obviously permits alternative perspectives concerning the implications of Slater's report.

Even when we broaden the focus to include psychological studies concerned with people who have reported a variety of UFO encounters (including abduction episodes but not restricted to them), the picture isn't much clearer. The early work of Leo Sprinkle (1976), recently continued by Parnell (1986, 1987), which involved the administration of a variety of personality tests, led these authors to conclude that UFO experiencers were on the whole mentally healthy individuals with no obvious neurotic or psychotic symptoms, but a close inspection of their findings does also support a less sanguine interpretation.

For example, UFO experiencers do appear to have stronger tendencies toward moral self-righteousness, suspiciousness, alienation, and even schizoid ideation (Parnell 1987). Although some investigators (Schwarz 1983) concur with the views of Sprinkle and Parnell, several commentators with a psychiatric orientation (Meerloo 1968; Gordon 1971, and Grinspoon and Persky 1973) take a far less charitable position and suggest that some form of mental illness may be present in persons claiming UFO contact.

The lack of resolution on this matter, characteristic as it is of UFO studies in general, may only mean, however, that by phrasing the issue in terms of the presence or absence of underlying general forms of psychopathology, more specific psychological characteristics that might really predispose persons to report UFO encounters have simply been overlooked. If this is so, what then might such factors be?

One possibility, which has recently been the topic of much heated debate in the UFO literature, is the propensity toward *fantasy proneness*, the tendency to lose oneself in a world of fantasy and imaginative involvement. In exemplifying the exasperating lack of empirical research on psychological aspects of abduction reports, the controversy over fantasy proneness is indeed instructive—when it isn't dismaying. Without exception commentators are long on *opinion*, but present little or only selected anecdotal evidence to illustrate their position.

For instance, Hopkins, because of his commitment to the interpretation that abductions are literally real, is constrained to argue against the fantasy-proneness hypothesis, which states in effect that abductees tend to be fantasy-prone individuals. And this he has certainly done most strenuously (Hopkins 1988a, 1988b). While

allowing that Whitley Strieber² may be so characterized, he categorically denies that the vast majority of abductees are fantasy prone. Although he may be right, his argument suffers from one flaw: passionate conviction is not evidence, and Hopkins has none to offer. On the other side of the fence in this controversy stand Basterfield and Bartholomew (Basterfield and Bartholomew 1988; Bartholomew and Basterfield 1988), who have strongly advocated the fantasy-prone hypothesis and have made a plausible case for its cogency. The only problem is, once again, aside from their psychological analysis of Strieber, they really have no data to present in its defense. A number of other commentators (Baker 1987, 1989; Kottmeyer 1988; Stenshoel 1988; Rogo 1988; Randles 1988a; Goldsmith 1988; Laibow 1990) have raised the decibel level of the discussion, but they don't have any evidence on the matter, either.

Fortunately, the late Scott Rogo, standing in the midst of this fusillade of charges and counterattacks, made a useful suggestion to end this futile Aristotelian polemic. "It should be easy," he wrote, "to test several UFO percipients with personality inventories which specifically gauge fantasy proneness" (Rogo 1988: 20). Quite true, and that leads us directly to the Omega Project.

THE OMEGA PROJECT

The study to be reported in this article represents an attempt to assess through empirical investigation the possible relevance of a number of psychological factors, such as fantasy proneness, that may affect the likelihood or the form of abduction narratives. As implied, fantasy proneness isn't the only possible predisposing variable to be examined in this study. Let us now review some other candidates.

Some investigators (Sprinkle 1976; Schwarz 1983; Vallee 1988) have long held that the *psychic sensitivities* of individuals reporting UFO contact must be acknowledged. Recently, Randles (1988b) has renewed interest in this issue by asserting that many abductees have a personal history of paranormal experiences that may provide an important interpretative context for their abduction episode. What is the role, then, of psychic sensitivities in predisposing individuals to report abduction narratives, and how do such experiences in turn *affect* psychic development? These are two more of the questions the Omega Project was designed to explore empirically.

Similarly, some commentators (Evans 1989; Ring 1989b) have postulated that individuals who report UFO encounters are especially likely, not merely to be fantasy prone, but also to be susceptible to experiences that might be said to have their origin in what have been called *alternate realities*. Accordingly, this study assesses the extent to which abductees are in fact sensitive to realms of experience that lie beyond the limits of normal perception.

One factor that might theoretically account for such sensitivity, if indeed it proves characteristic of abductees, is *dissociation*, a form of psychological fragmentation in

²It should be noted that Strieber has been subjected to the most searching psychological analysis of any abductee (Conroy 1989).

which one portion of the individual splits off, like an autonomous entity, from the conscious self. Since some theorists (Evans 1989) hold that dissociation is the key that in effect unlocks the door into alternate realities (in which, according to this view, UFO encounters—whatever their ontological status—take place), it is important to determine whether abductees are themselves prone to dissociative behavior. There is a second line of reasoning that also leads to the hypothesis that dissociation may play a central role in enabling abduction experiences. Increasingly, clinicians interested in abduction cases (Laibow 1990; Sachs 1990, Wilson 1990) have been contending that there are important similarities between the nature and effects of abduction episodes and certain *dissociative* disorders, of which the most pathologically extreme is multiple personality (Kluft 1985). Therefore, for this reason, too, the Omega Project will provide a measure of the tendency toward dissociation in abductees.

Why, however, should one think in the first place that dissociation may be a part of the psychological profile of abductees?

The answer lies in the fact that one of the most common antecedents to dissociation, which is widely held to be a defensive reaction to stress, is *childhood abuse and trauma*. In this connection, there has been a persistent but tantalizing suggestion on the part of some abduction researchers and therapists (Nyman 1988, Laibow 1989a) that perhaps various forms of childhood abuse and trauma may also play a significant role in abduction episodes where, for example, the symbolic sexual overtones are already obvious. Like all of the other factors previously mentioned, this one, too, has never been systematically examined to see whether it may possibly be implicated in the childhood histories of abductees. That assessment will be still another objective of this investigation.

These, then, are some of the psychological characteristics that are of focal concern to us here. But they constitute only *one* aspect of the attempt to delineate a psychological profile of abductees.

Quite apart from factors that may predispose persons to report abduction narratives or be characteristic of their psychological processes, we are also concerned in this study with another neglected but important aspect of abductions—their *aftereffects*.

In fact, it may be more accurate to suggest that this domain has not been so much neglected as it has been the province of mere anecdote—and, as with the study of psychological factors in abductions, it too is riddled with wildly conflicting claims. For example, if one reads Sprinkle's (1982) compilation of testimonials collected at one of his annual UFO conferences (and I have confirmed this for myself by attending his 1987 and 1988 gatherings), one comes away with the impression that many of those reporting UFO encounters (but not just abductions) regard them as having initiated a very positive transformation in their lives, despite the trauma that such episodes may induce.

Similarly, Davis's (1985) study of psychological aftereffects of UFO encounters showed that they were associated with claimed increases in psychic development, altruism and spirituality similar to, though not quite so pronounced as, the changes that persons who have survived near-death experiences consistently describe (Ring 1984;

Grey 1985; Flynn 1986; Atwater 1988). Decker (1987), too, has characterized the long-term effects of UFO encounters as "remarkably positive" in the majority of the cases she studied. On the other hand, reading Hopkins's (1981, 1987) accounts, which of course focus primarily on abduction cases, one meets mostly with tales of continuing trauma, pervasive anxiety and feelings of vulnerability, among other persisting negative psychological effects.

Therapists, such as Laibow (1989a, 1990), who have worked clinically with abductees, likewise emphasize that the aftermath of many abductions shows many similarities to post-traumatic stress disorders. A recent conference which brought together many therapists and clinicians experienced, like Laibow, in working with such individuals in therapeutic or support group contexts demonstrated that many agree with her perspective and assessment of the damage these experiences cause (Laibow 1989b). Bullard (1987), who often seems to occupy a middle ground between polar factions on the abduction issue, perhaps not surprisingly reports a mixture of both positive and negative aftereffects from his extensive survey of the abduction literature. Then, moving from Bullard's massive compilation of such cases to the single one that has received the most attention and stimulated the most controversy, that of Whitley Strieber (1987), his continuing experiences (Strieber 1988) suggest a pattern of *both* extremely traumatic aftereffects and self-perceived psychological growth.

The point of this brief sampling of studies of psychological aftereffects is of course to buttress our contention that the lack of consistency here may well be traced to the fact that almost all of the foregoing reports—which we think are representative of the field—are based largely on unsystematic anecdotal observation, clinical impressions, incomplete and very possibly non-representative archival data or highly self-selected personal testimony. From no source do we have the results of a systematic empirical inquiry into the matter.

As a preliminary effort toward providing a reliable basis for generalizing about aftereffects of abductions, then, the Omega Project includes several measures of different dimensions of these effects, ranging from *psychophysical changes* to *personal values* and finally *beliefs and worldviews*.

Although we have listed quite a few objectives in this overview of the purposes of our study, they reduce to two:

1) to assess some possible developmental and psychological characteristics that may be associated with individuals reporting abductions;

2) to assess some of the aftereffects of abductions

These two principal objectives, however, are supplemented by some *secondary* ones, which have to do with the comparison and control groups of the Omega Project, not yet mentioned. These secondary objectives and the additional groups that make them possible will be considered next.

COMPARISON AND CONTROL GROUPS

Needless to say, psychological measurements of persons reporting abductions must have some frame of reference before they can be meaningfully interpreted. In this study that frame of reference is provided by our comparison and control groups. There are two of each. We will describe our comparison groups first.

Since we are interested to know whether persons reporting abductions constitute a unique group among those alleging some kind of UFO encounter, it will be necessary to have a comparison group comprised of those who have had a UFO-related experience, *but not one involving an abduction episode*. That group, whose membership criteria will be further specified in the next section, is our *UFO comparison group*.

To provide a further basis for determining how distinctive the psychological profile of abductees may be, a second comparison group was formed of persons who have likewise undergone another singular anomalous event, namely a *near-death experience* (NDE). There were various theoretical reasons for selecting this category of persons (Ring 1989a, Ring and Rosing, *in press*), but its availability because of the work of the first author in the field of near-death studies also made it a convenient choice. This group, then, is our *NDE comparison group*.

Both of our comparison groups as well as our group of abductees may collectively be considered as composed of *experiential respondents*. That is, all of them claim to have had some kind of distinctive experience, which for the purposes of this study defines them. In order to evaluate the effects of these experiences, however, it is obviously necessary to have some sort of control group as well. For our purposes, it seemed appropriate to provide *both* our UFO and NDE experiential groups with a control group made up of persons who were *interested* either in UFOs or NDEs, but *who had had no significant experience along these lines*. Thus, our design is completed by the addition of two distinct control groups that are, in effect, composed of interest-only respondents. For short, these will simply be called the *UFO control group* and the *NDE control group*.

To summarize our initial design then, we have the following categories of respondents:

UFO	NDE
<i>Experiencers</i>	<i>Experiencers</i>
1. Abductees	
2. Others	
<i>Controls</i>	<i>Controls</i>

With the purposes and initial design of the Omega Project now effectively delineated, we are ready to consider the procedural aspects of the study.

METHOD

(a) Sample

Two hundred and sixty-four persons participated in the Omega Project, 136 (81 women, 55 men) in the UFO category, the remainder, 128 (72 women, 56 men), in the NDE category. Demographically, the sample was overwhelmingly Caucasian, well-educated (over 80% had at least attended college), with an average age in the mid-to-late forties.

UFO respondents were obtained from four separate sources:

- 1) abduction researchers Budd Hopkins and Joseph Nyman (n = 41);
- 2) the Communion Network organized by Anne and Whitley Strieber (n = 28);
- 3) rosters of attendees of Leo Sprinkle's 1987 and 1988 summer UFO conferences at the University of Wyoming (n = 27); and
- 4) rosters of attendees of John White's 1987 and 1988 autumn UFO conferences in North Haven, Connecticut (n = 40).³

The NDE sample was obtained from letters in the archives of the first author and from letters in the archives of the International Association for Near-Death studies, formerly located at the University of Connecticut.

(b) Design

The sample was ultimately divided into four main groups abbreviated and comprised as follows:

- NDE: Persons who reported an NDE (n = 74. 43 women, 31 men; age range, 30-81)
- NDC: Persons who were interested in NDEs but never had one themselves (n = 54: 29 women, 25 men; age range, 20-82)
- UFOE: Persons who reported some kind of UFO encounter⁴ (n = 97: 65 women, 32 men; age range, 22-75)
- UFOC: Persons who were interested in UFOs but had no significant UFO-related experience (n = 39. 16 women, 23 men; age range, 26-72)

Thus the final design of this study can, for statistical purposes, be regarded as a 2 × 2 factorial with an unequal cell size.

³We would like to express our thanks to each of the persons who helped to provide us with lists of potential UFO respondents

⁴For reasons that will be indicated in the results section the abduction group (n = 38) was merged with the UFO encounter group (n = 59)

(c) Instruments

The data from this study derive from seven specially designed or adapted questionnaires which, together with two background information forms, comprise the Omega Project Battery. All nine instruments were contained in a single booklet for ease of administration. A brief description of each instrument listed in the order in which it appeared in the battery, follows:

1. **Background Information Sheet.** Requests basic demographic information.
2. **Experience and Interest Inventory** Determines experiential and interest history for respondents in both our NDE and UFO categories. Used for final assignment to appropriate experiential or control group.
- 3 **Childhood Experience Inventory.** Assesses the incidence of unusual psychological and paranormal experiences in childhood, including fantasy proneness, psychic sensitivity and susceptibility to alternate realities (29 items).
4. **Home Environment Inventory.** Solicits information on factors related to child abuse and other childhood traumas. This inventory consists of separate scales that are designed to measure physical abuse and punishment, sexual abuse, psychological abuse, neglect, and negative home atmosphere (38 items).
5. **Psychological Inventory** Provides a measure of tendencies toward psychological dissociation. Sample items seek to determine respondents' propensity to "blank out" unaccountably, be unresponsive to the physical environment, lose themselves in a state of inward absorption, spontaneously self-hypnotize, daydream frequently, and so on (40 items).
6. **Psychophysical Changes Inventory**⁵ Covers a wide range of psychophysical changes, including physical sensitivities, neurological and physiological functioning, psychoenergetic functioning, emotional lability, states of expanded mental awareness, and awareness of paranormal phenomena (60 items).
- 7 **Life Changes Inventory**⁵ Assesses changes in personal values and interests. Sample domains covered by this inventory include appreciation of life, self acceptance, concern for others, concern for *impressing* others, materialism, concern for social and planetary issues, quest for meaning, spirituality and religiousness (50 items).
8. **Religious Beliefs Inventory** Provides an overall measure of the extent to which respondents shift toward a generalized universalistic *spiritual* (rather than sectarian religious) perspective (12 items).
- 9 **Opinion Inventory**⁵ Assesses respondents' understanding of their experience (or interest) and its impact on their beliefs and opinions. This inventory is particularly concerned with three opinion sectors: 1) possible evolutionary implications of NDEs and UFOs; 2) a personal sense of purpose behind these experiences; and 3) possible extraterrestrial influence in human affairs (30 items).

⁵This inventory had four slightly different forms, each one appropriate to one of the four principal groups in this study.

Of the seven principal instruments, four (3, 4, 6, and 9) were specifically constructed for use in the Omega Project while the remainder (i.e., 5, 7 and 8) have already been successfully used in previous research (Ring 1984, Davis 1988, Sanders, McRoberts, and Tollefson 1989). Of course, it goes without saying that as with any psychometric instruments employed for the first time, one must be cautious about assuming that apparent face validity necessarily implies construct validity. Therefore, although our results based on these instruments will prove to fall into coherent and meaningful patterns, one should still bear in mind that further psychometric data on the questionnaires themselves are required before we can have full confidence that they accurately measure what they are designed to

(d) Procedure

Potential respondents were sent a letter from the first author briefly describing the Omega Project and inviting them to participate in it. No remuneration was offered for this participation, instead, a summary of the major findings of the study was promised and sent at the conclusion of the study in January 1990. Accompanying the letter of invitation was a reply postcard with blanks for respondents to indicate 1) their willingness to take part in the study, and 2) their UFO encounter or NDE status (i.e., either experiencer or not).

Once their postcard was received, respondents were sent an Omega Project Battery along with a detailed letter instructing them how the battery was to be completed. An informed consent sheet was also enclosed and required to be signed to permit participation. After all the forms were completed, respondents were asked to enclose them in a self-addressed, stamped envelope and mail them back to the first author. Upon receipt of the battery, respondents received a card acknowledging its arrival, thanking them again for their participation and promising them a summary of the findings at the conclusion of the study.

Each respondent's data packet was inspected to insure its completeness and the Experience and Interest Inventory was checked to make certain the respondent was entitled to be assigned to the appropriate group. The batteries of all eligible respondents were then placed in folders and filed until the data entry and analysis phase of the study.

(e) Response Rates

Altogether a total of 591 letters of invitation were sent out to potential respondents, of which 564 were deliverable. Since 353 persons agreed to participate, the gross acceptance rate for this study was 62.6%. The response rate was somewhat higher for the ND categories (88 of 107, or 82.2%, for the NDE group, 67 of 97, or 69.1% for the NDC group) than for UFO respondents (198 of 360 across all UFO sub-groups, or 55% overall). However, it should be noted that, as would be expected, the number of questionnaire batteries actually returned was somewhat less than the number of initial acceptances. Specifically, a total of 25 persons (12.3%) in the ND categories who

returned their postcards failed to return their batteries; there was a similar failure-to-return rate for UFO respondents (49 persons, 13.6%) Thus, the effective acceptance rate for the Omega Project was just under 50% (49.5%). Of returned questionnaires, not all could be used because of various procedural errors (e.g., failure to understand instructions or to complete all the questionnaires), because of subsequent withdrawal from the study (there were 4 people who changed their minds about participating) or, especially in the UFO categories, because responses on the Experience and Interest Inventory were unclassifiable in terms of our coding scheme (see next section). In all, 15 persons, representing about 5% of all received questionnaires, had to be eliminated from our samples for these reasons. In this way, the final total of 264 participants, as mentioned previously, was obtained.

In our judgment, the response rates for our study were as high as could reasonably be expected using a mail survey methodology and were certainly high enough to allay any concern about an obvious and damaging self-selecting bias. Nevertheless, it is of course possible that to some degree self-selecting factors may have affected the overall composition of our sample, but that cannot be determined from this study alone. Future replications of this kind of research, preferably with greater control over respondent participation, are required before this issue can be properly assessed.

RESULTS AND DISCUSSION

(a) A Note on the Categorization and Analysis of UFO Encounters

Because our UFOE respondents reported such a variety of UFO encounters, it was first necessary to devise a classification scheme for coding their experiences. Our initial coding scheme comprised the following 10 principal categories:

- 1 Interest in UFOs only
- 2 A psychologically non-impactful sighting
- 3 A psychologically impactful sighting
4. A sighting and/or physical traces
5. A sighting and the perception of or encounter with humanoid beings
- 6 Perception of or encounter with humanoid beings *without* a sighting
7. Sighting and an abduction episode
- 8 Abduction episode *without* a sighting
9. Telepathic and/or dream contact
10. Multiple experiences (too many to classify by any one predominant type)

Each written narrative was coded independently by the two authors and three assistants. A given narrative was assigned to one of these ten categories whenever three or more of the raters had agreed on it, in a few cases where a majority of the raters had not arrived at a single category, consensus was reached through group discussion

For purposes of statistical analysis, the initial ten categories were then collapsed into the five given below by combining each adjacent pair (i.e., 1 and 2; 3 and 4, etc.):

1. Interest only, psychologically non-impactful sighting ($n = 39$)
2. Psychologically impactful sighting/physical trace cases ($n = 20$)
3. Perception of or encounter with humanoid beings [without abduction] ($n = 21$)
4. Abduction episode ($n = 38$)
5. Dream-like and telepathic encounters/multiple experiences ($n = 18$)

In this classification, category 1 represents the UFOC group while the remainder (categories 2-5) comprise the UFOE group.

Using a series of one-way ANOVAs on the measures derived from our inventories, we discovered the first of many surprises in this study: virtually all comparisons showed that all four *experiential* groups were not significantly different from one another (though, collectively, they did tend to differ from the control group on most measures). The importance of this finding for the purposes of our study must be stressed: *those reporting abduction episodes are not a psychologically distinctive group compared to others who have had different UFO-related experiences*. Even when we did a refined analysis using only the most clear-cut abduction episodes, the results did not change. Therefore, on statistical grounds, we collapsed our four experiential groups into a single group ($n = 97$) and contrasted it with our UFO control group ($n = 39$).

This is the reason, then, that our initial design, which had five groups because it had originally singled out abductees for special analysis, ultimately resolved itself into a 2×2 factorial, as previously indicated in the method section.

(b) Psychological and Developmental Factors

In presenting a systematic account of our findings, it will be convenient first to consider our data in relation to each of the seven principal questionnaires in the Omega Project Battery in the order listed above. Accordingly, we begin with results based on the analysis of our Childhood Experience Inventory.

A. Childhood Experience Inventory (CEI)

This questionnaire provided measures of three psychological factors that could possibly sensitize persons to the existence of anomalous phenomena, such as NDEs and UFOs, that may be said to have their locus outside of the normal range of ordinary sensory-based waking consciousness. The first of these factors is *fantasy proneness*, an influence in shaping such perceptions that was assessed by a ten-item scale embedded in the CEI. Three items from this scale will suggest its nature:

“As a child, I had a very vivid imagination”

“When I was young, I daydreamed a lot”

“As a child, my fantasy world was very rich.”

If fantasy proneness is a factor that increases the likelihood of reports of abduction

Table 1. Means for Selected Scales of the Childhood Experience Inventory

	UFOE	NDE	UFOC	NDC
Fantasy proneness	6.46	5.79	6.46	5.71
Alternate realities	2.73	1.66	1.00	0.67
Psychic sensitivities	2.90	2.01	1.52	0.91

episodes and other UFO encounters, we should find our UFOE respondents scoring higher than their controls on our measure of fantasy proneness. Similarly, the same expectation should hold for our comparison group. NDErs should also outscore *their* controls if fantasy proneness is held to conduce to reports of NDEs (as indeed it is by some researchers, e.g., Wilson and Barber 1983; Council and Greyson 1985).

The results are shown in Table 1.

Inspection of this table makes it clear that fantasy proneness is *not* a factor that differentiates our experiential from our control groups. Indeed, the mean score on this measure (which could range from 0 to 10) is actually identical for the two UFO groups and nearly so for the ND groups. (The UFO groups score somewhat higher than the corresponding ND groups, but the difference is not significant.) Accordingly, there is no evidence from our study that either UFOers or NDErs are distinctively characterized by tendencies toward fantasy proneness.⁶

Nevertheless, further analyses soon revealed that although fantasy proneness was not a feature of the psychological makeup of our experiential sample, other traits most definitely were. For example, another of our measures derived from the CEI dealt with the extent to which our respondents had as children been sensitive to what we called *alternate realities*. Again, a couple of statements from this eight-item scale (which, accordingly, could range from 0 to 8) will give its flavor and also suggest how it differed from that concerned with fantasy proneness:

“As a child, I was aware of non-physical beings while I was awake.”

“As a child, I was able to see into ‘other realities’ that others didn’t seem to be aware of.”

The second row of Table 1 shows a very different pattern here than that found for fantasy proneness—and one that will reappear in several subsequent analyses. An ANOVA on these alternate realities scores shows that there is in fact an enormous statistical effect here ($F = 24.66$, with 1 and 260 df, $p << .0001$), indicating that experiential respondents score significantly higher than controls on this scale and suggesting that the former may already as children have had some degree of sensitivity to alternate realities. There is also a lesser, but still significant ($p = .01$), type of experience effect that discloses that childhood sensitivities to alternate realities were reported to be stronger for UFO respondents in general than for ND respondents, but

⁶It should be noted, however, that females tend to outscore males on our measure of fantasy proneness ($p = .01$), particularly in the UFO sample, though the failure to obtain any significant interaction terms in the ANOVA indicates that our conclusion here is unaffected by this sex difference.

clearly the key difference here is the one first mentioned that so potently separates our experiential respondents in *both* categories from their corresponding controls.

As can also be seen from Table 1, precisely the same pattern of results is found for reported incidence of *childhood psychic experiences*, another scale, this time composed of six items (range, 0-6), derived from the CEI. Again there is a huge effect favoring our experiential respondents ($F = 28.37$, $p << .0001$) as well as an effect for type of experience ($p = .001$) where, as before, $\text{UFO} > \text{ND}$.

In summary, what the data from Table 1 suggest so unmistakably is that persons who as adults report UFOEs or NDEs are not as children especially inclined toward involvement in a world of fantasy, but *they are apparently already sensitive to non-ordinary realities*—and this is particularly true of our UFOE respondents. As we shall see, this is a finding that will prove to be of no small importance when it comes to interpreting the nature of encounters with UFO beings—as well as NDEs which of course also often involve contact with entities of various kinds.

The question that now confronts us, however, is, of course, what factors might have been operative in the childhood histories of our experiential respondents to make them so sensitive to these non-ordinary realities?

This brings us to the second questionnaire in our battery, which we labelled somewhat neutrally the Home Environment Inventory.

B. Home Environment Inventory (HEI)

The HEI was actually intended to be a measure of various components of childhood abuse and trauma since, as we have stated, in doing this study we sought to determine whether there might be any relationship between such childhood experiences and later reported encounters with UFOs or entities associated with them. Accordingly, we constructed this inventory so as to yield measures of childhood abuse and trauma of the following kinds:

1. Psychical abuse and punishment
- 2 Psychological abuse
3. Sexual abuse
4. Neglect
- 5 Negative home atmosphere

Table 2. Means for Components of Childhood Abuse and Trauma from the Home Environment Inventory

	UFOE	NDE	UFOC	NDC	p
Physical mistreatment	8.50	8.48	7.26	6.24	<.02
Psychological abuse	10.85	11.11	9.88	8.15	<.02
Sexual abuse	4.40	4.82	2.39	2.77	.005
Neglect	5.48	6.22	3.82	4.26	.0002
Negative home atmosphere	15.55	17.02	12.62	11.63	.001

Table 2 reveals a most intriguing—and disturbing—pattern here

As can easily be discerned from Table 2, there is a clear-cut and consistent tendency for experiential respondents in both categories to report a greater incidence of childhood abuse and trauma. Indeed, such differences between experiential and controls emerge on *all* five components here, and usually at highly significant statistical levels, as shown by the probability figures given in the last column of the table (In general, the average adverbial descriptor for experientials on these measures falls between "rarely" and "sometimes," but of course there is considerable variation around this average.) Furthermore, since the experiential-control differences are the *only* ones that are significant⁷ (i.e., there are no main effects for *type* of experience nor is the interaction term ever significant in any of these comparisons), we once again must note what we have observed before. UFOEs and NDEs are very *similar* to one another on this factor, and both differ markedly from the control groups, suggesting, obviously, that these two categories of experiential respondents may well have had similarly troubled childhoods. Finally, because scores on these various components tended to be highly intercorrelated, it made sense to us to devise an *overall* index of childhood abuse and trauma based on all these measures combined. When we did so, we found that this composite index of childhood abuse and trauma again demonstrated a single significant effect: experientials score much higher than controls ($p < 001$)

Beyond the evidence from the HEI that experiential respondents have more stressful childhoods than controls, there is some additional data from the CEI that points in the same direction. On that questionnaire, we had also inquired into the incidence of serious and even life-threatening illnesses when our respondents were children. In the light of our data from the HEI, our findings here are of no small interest: experiential respondents (again in both categories) are much more likely to affirm that they were seriously ill as children ($p < 0001$), suggesting that in this way, too, their childhoods were a source of greater stress to them than were those of our control respondents.

The overall results of our analyses of both the HEI and CEI, then, strongly support our earlier inference that one significant predisposing factor in the developmental history of our experiential respondents may well have been the presence of relatively high (compared to our control groups) levels of childhood abuse and trauma and possibly other forms of stress. The possible etiological role such incidents may play in the genesis of NDE and UFOE reports is a matter that can be considered properly only after a full presentation of our findings intended for this section is complete. Therefore, its discussion will be deferred until then.

⁷Here again, we must note a single exception for one of the components of child abuse and trauma, viz., sexual abuse. On this one component only, it was found that an intriguing sex difference was largely responsible for this particular experiential-control difference. In this case, female experiential respondents reported a much higher incidence of childhood sexual abuse than did all other groups (i.e., male experiential and controls and female controls). This implies that girls who later have NDEs or UFOEs are much more likely to have experienced this kind of abuse as children. It must be emphasized that this sex by experience interaction was found just for this particular component of the HEI, and for no other where only straightforward main effects were observed. Obviously, the significance of the role of sexual abuse *per se* in the lives of women reporting UFOEs or NDEs is something that warrants further investigation in future research.

However, since the factor of childhood abuse and trauma will prove to be a crucial link in the chain of our eventual interpretation, and also because it is obviously such a sensitive issue in its own right, it would be imprudent not to offer some cautionary statements concerning it here—and what the data from the Omega Project really can tell us about it.

First, it goes without saying that like all studies based on self-reported data, this one can tell us nothing for certain concerning the actual childhood histories of our respondents. For of course we know only what they *tell us*; from our data alone we can never learn what in truth occurred in the lives of our respondents.

Second, *what they tell us* is that those of them who report UFOEs or NDEs also say they experienced more abuse and trauma as children. Does that mean, even assuming these self-reports are valid, that most or all such persons have such histories? Obviously not! Indeed, exactly what *proportion* of our experiential and control respondents may be said to have a troubled childhood depends on arbitrary cut-off points for defining "significant abuse",⁸ it cannot be answered definitively from our analyses. To repeat, all we can say here is that such reports are made *more frequently* by our experiential respondents.

Finally, though obvious it still needs to be said that of course abuse and trauma in childhood aren't the only factors that may make for heightened sensitivity to non-ordinary realities. Doubtless there are others—but they were not assessed in our study. They remain to be identified in future research. Child abuse and trauma—and other stressors, such as serious illness—may *contribute* to this kind of sensitivity, but this study doesn't establish that they have a primary, much less exclusive, role in this regard.

Right now, to conclude this portion of our results section, it must be observed that if it is indeed true that experiential respondents have endured more child abuse and trauma than controls, something else should follow. Exactly what that is we attempted to measure with the third instrument in our battery, which received the somewhat misleadingly bland and general title of Psychological Inventory.

C. Psychological Inventory (PI)

This questionnaire, in fact, is far more specific in its focus than its innocuous label implies. Devised by Wogan (in press), it is designed to measure tendencies toward psychological dissociation, and toward that end it has previously been used in research by others (Sanders, McRoberts, and Tollefson 1989). We employed this questionnaire in our investigation for two reasons: 1) to provide an indirect check on our supposition that UFOers might be found to have a history of childhood abuse and trauma, and 2) to explore its possible role in mediating access to non-ordinary realities.

As to the first point, since it is known that persons with reputed histories of child abuse and trauma are more likely to score higher on measures of dissociation (Sanders,

⁸Using one such criterion, we found that approximately half of our experiential respondents reported a "significant" amount of abuse compared to slightly less than a third of our controls ($p < .005$), but we would caution against giving much weight to such arbitrarily derived figures.

McRoberts, and Tollefson 1989; Sanders and Giolas, in press) or even, with extreme abuse, to develop serious dissociative disorders such as multiple personality (Kluft 1985, Sachs 1990), logically we should expect our experiential respondents to show elevated dissociation scores, too. Regarding the second purpose, it is known that persons with strong proclivities toward dissociation tend to "space out," lose time unaccountably, and often make good hypnotic subjects. Since these are precisely the attributes that seem to be correlated with or to facilitate recall of UFO encounters, it seemed plausible to postulate that dissociative tendencies might mediate perception of such events. Both of these considerations lead, of course, to a single prediction: UFOers should score relatively high on our measure of dissociation.

Table 3. Mean Dissociation Scores

UFOE	NDE	UFOC	NDC
110.78	106.89	105.82	95.82

It was, then, to test this prediction that the Wogan dissociation scale was included in our battery. The outcome may be seen in Table 3.

An ANOVA discloses two effects: experiencers do score higher than controls ($p < .02$) with UFOE respondents scoring highest of all and UFO respondents in general tend to score higher than their counterparts in the ND categories ($p < .05$). (In general, the scores in Table 3 are in the mid-range of the scale, tending toward slight disagreement with the items, on average. However, relative to normal comparison groups, the scores of experiential respondents tend to be elevated—see below.) Although the absolute differences may seem small and the statistical effects are weaker here than before, it should be noticed that the *pattern* of means here is nevertheless exactly the same as that we have previously seen for these four groups for the alternate realities and psychic sensitivities scales, a finding that accords well with our hypothesis that dissociation may mediate access to non-ordinary realities. Furthermore, there is evidence from another study that the dissociation scores for *all* groups except the NDC, and particularly for the UFOE group, should be viewed as quite high compared to normal controls. Sanders, McRoberts, and Tollefson (1989) found that an unselected sample of 270 undergraduates at the University of Connecticut averaged only 91.90 on this same measure. That score is not significantly different from that of the NDC group, but is markedly lower than that of all other groups in our study ($p < .0001$). Thus, there seems to be good support for the assumption that tendencies toward dissociation are indeed implicated in the psychological profile of our experiential respondents and especially so for our UFOers.

(c) An Interpretative Interlude

Our findings related to possible developmental antecedents of UFOEs and NDEs and to the mode of psychological functioning characteristic of those persons reporting such experiences appear to us to hang together quite neatly from a theoretical point of view. While this of course is only a preliminary survey from which it would be quite unwarranted to draw any causal inferences, we would nevertheless like to offer a possible framework for conceptualizing the nature of the relationships our data appear to disclose. As such, this framework could then serve as the basis for a testable hypothesis in subsequent research.

We begin by postulating that a history of child abuse and trauma plays a central etiological role in promoting sensitivity to UFOEs and NDEs. Our assumption, which reflects a now increasingly widespread understanding of some of the consequences of childhood abuse and trauma, is that growing up under such conditions would tend to stimulate the development of a dissociative response style as a means of *psychological defense*. After all, a child who is exposed either to the threat or the actuality of physical violence, sexual abuse, or other severe traumata, will be strongly motivated selectively to "tune out" those aspects of his physical and social world which are likely to harm him by splitting himself off from the sources of these threats, that is, by *dissociating*. By doing so, he is more likely thereby to "tune into" other realities where, by virtue of his dissociated state, he can feel safe regardless of what is happening to his body. In this way, precisely as Hilary Evans (1989) has theorized, dissociation would be predicted to allow relatively easy access to alternate, non-ordinary realities.

When, therefore, in later life, such persons undergo the trauma of either a near-death incident or one involving a UFO, they are more likely than others, because of their prior familiarity with non-ordinary realities, to be able to "flip" into that state of consciousness, which, like a special lens, affords a glimpse of these remarkable occurrences.

What we are suggesting, then, is that such persons are what we might call *psychological sensitives* with low stress thresholds, and that it is their traumatic childhoods that have helped to make them so. From our point of view, however, these individuals—our UFOEs and NDEs—are the unwitting beneficiaries of a kind of compensatory gift in return for the wounds they have incurred in growing up. And that is through the exigencies of their difficult childhoods they also come to develop an extended range of human perception beyond normally recognized limits. Thus, they may experience directly what the rest of us with unexceptional childhoods may only wonder at.

Such an interpretation, at any rate, while necessarily speculative, does at least account for the pattern of relationships (also suggested by our correlation matrices)⁹ that appears to link child abuse and trauma, psychological dissociation, and sensitivity to non-ordinary realities in a meaningful fashion. In any case, we hope it serves as a

⁹The intercorrelations among child abuse and trauma, psychological dissociation and sensitivity to non-ordinary realities are all positive and cluster around .3

Table 4. Net Psychophysical Change Scores

UFOE	NDE	UFOC	NDC
3 14	-1 78	-28 49	-30 67

spur to others to carry out the careful and in-depth psychological studies necessary to establish whether it has validity and explanatory power.

(d) *Aftereffects*

Three of the last four questionnaires in the Omega Project Battery were designed to explore possible changes in the aftermath of either an UFOE or NDE (the remaining questionnaire was simply an opinion inventory). In all three of these instruments respondents were asked, in effect, to indicate how, if at all, they had changed since their experience or, for the control groups, since becoming *interested* in that type of experience. Here again, we shall present the findings from each of these questionnaires in turn, ending with the opinion inventory.

A. **Psychophysical Changes Inventory (PCI)**

On a statistical basis, the most striking differences, and perhaps the most thought-provoking, between our experiential and control respondents in this study appeared on our questionnaire dealing with psychophysical changes. A number of specific examples of the kind of psychophysical changes we assessed will be presented in a moment, but an overall impression of these differences can first be grasped by inspecting Table 4.

What these scores reflect is a very pronounced tendency for experiential respondents to aver that, relative to the control groups, they underwent many more psychophysical changes following their experience. Indeed, the magnitude of the statistical difference between groups here is huge ($F = 76.62$, with 1 and 260 df, $p < .0001$).

An initial impression of the nature and range of these changes can be gleaned from a perusal of Table 5.

The data displayed in Table 5 clearly indicate that, according to the self-reports of our respondents, there are wide-ranging and powerful psychophysical changes following either a UFOE or NDE. These changes, which reflect a consistent array of highly significant differences between experiential and control groups on scales representing the factors listed in Table 5, span a spectrum from apparent biologically-mediated effects through psychoenergetic and psychokinetic functioning to psychological states suggestive of expanded mental awareness.¹⁰ Moreover, it is certainly

¹⁰One interpretive caution should be raised here since the PCI does not contain any control items (i.e., items deliberately selected for their likelihood of *not discriminating* between experiential and control respondents—e.g., increased tendency to stutter afterward), the discriminative validity of the PCI remains a question to be addressed in future research with this instrument.

Table 5. Percent of Respondents Endorsing Item on Psychophysical Changes Inventory

	UFOE	NDE	UFOC	NDC
<i>Physical sensitivities</i>		1		
increase in				
light sensitivity	49.5	48.6	25.6	20.4
hearing acuity	25.8	35.1	15.4	7.4
humidity sensitivity	34.0	43.2	15.4	11.1
<i>Physiological changes</i>				
decrease in				
metabolic rate	19.6	17.6	2.6	9.3
body temperature	21.6	17.6	7.7	7.4
blood pressure	25.8	31.1	7.7	11.1
<i>Neurological changes</i>				
difference in				
nervous system	47.4	51.4	12.8	18.5
brain structure	25.1	36.5	7.4	7.7
<i>Energetic changes</i>				
increase in				
energy currents in body	44.3	50.0	20.5	13.0
decrease in				
sleep time	36.1	39.2	12.8	16.7
<i>Emotional changes</i>				
increase in				
mood swings	34.0	28.4	10.3	13.0
<i>Expanded mental awareness</i>				
increase in				
mind expansion	48.5	58.1	30.8	27.8
information flooding	56.7	48.6	17.9	20.4
<i>Changes in paranormal functioning</i>				
increase in				
psychic abilities	51.5	60.8	17.9	31.5
causing electric or electronic malfunction	37.1	24.3	10.3	7.4

NOTE This Table does not indicate where significant differences occur for a particular item. This is because the items were grouped according to the sub-scale to which they belong and statistical tests were performed on the sub-scales. Most of these comparisons mirrored the pattern of overall differences between experiential respondents and the controls. However, for purposes of tabular presentation, display of the individual items was thought to be more meaningful.

worth noting and even emphasizing that here, too, as with our developmental and psychological profile of experiencers, we find an undeniable pattern of overall *similarity* between our UFOEs and NDEs. To be sure, the interpretation of our data on reported psychophysical changes is open to many possibilities, some of which we will comment on later, but for now it is enough to note that our data here strongly imply that there are reliable, dramatic and in many cases intriguing effects that appear to emerge in the aftermath of UFOEs and NDEs.

To illustrate just one of the provocative implications of this set of data, consider for a moment the findings listed in the last row of Table 5. These results indicate that our experiential respondents claimed significantly more often than controls that after their encounters they were more likely to cause electrical or electronic equipment (e.g., electric lights, digital watches, computers, etc.) to malfunction.

Now certainly most of us are aware that these claims are not rare—such anecdotes abound, after all—but perhaps relatively few people know that persons who make these claims repeatedly have now been studied (Shallis 1988). And it turns out that many of their claims have been corroborated.

But more the people who chronically have these problems—and who are now referred to as “electrical sensitives”—tend to have certain traits in common. That is, it appears as if there is a coherent *syndrome* of electrical sensitivity. Its components are most interesting.

For one thing, electrical sensitives often have many allergies (about 70% of them have allergy problems, compared to about 15% in the population at large, according to Shallis). They also report a very high incidence of psychic phenomena (again about 70%) and often claim to have “healing gifts.” They seem abnormally sensitive to light and sound. Finally, they appear to be emotionally intense or labile individuals.

Just why are these features of the electrical sensitivity syndrome so interesting?

For an entirely different set of reasons (for we knew nothing of Shallis’ work when we designed our study), we happened to assess all of the above factors in our Psychophysical Changes Inventory. Table 6 reveals our unexpected findings.

As can be seen, our experiential respondents are anywhere from twice to four times as likely to claim that they are now characterized by these qualities. There appears to

Table 6. Percent Endorsement of Items Pertinent to the Electrical Sensitivity Syndrome

	UFOE	NDE	UFOC	NDC
More allergic	21.6	24.3	10.3	7.4
More psychic	51.5	60.8	17.9	31.5
Healing gifts	52.6	41.9	23.1	11.1
Sensitivity to light	49.5	48.6	25.6	20.4
Hearing acuity	25.8	35.1	15.4	7.4
Mood fluctuation	34.0	28.4	10.3	13.0

be something about these experiences that tends to move our respondents in the direction of becoming an electrical sensitive.

One immediately thinks of the powerful experiences "in the light" reported by NDErs. And light, after all, is an electromagnetic phenomenon. Likewise, the UFO literature is replete with instances of apparent electromagnetic effects (e.g., automobile engines stopping in the presence of a UFO, but inexplicably starting up again). One begins to wonder to what extent the pattern of psychophysical changes we have reported may be mediated by electromagnetic effects, possibly causing a direct change in the respondent's (measurable) electrical field. If these psychophysical changes reported in connection with UFOEs and NDEs reflect some sort of psychobiological transformation, as our data certainly strongly hint, might it be rooted in something as simple (and mysterious) as an "electrical" transmission of some kind?

These are admittedly the most extravagant speculations, but personal electrical fields *can* be measured in the laboratory (Hunt 1990). Wouldn't it be interesting if such measurements showed that the electrical fields of UFOers and NDErs were distinctively different from those of normal controls but similar to one another's? What would we think then?

Descending from the thin air of these speculative—though testable—musings to the hard ground of our data on psychophysical changes, there is one further set of findings that needs to be presented here since it bears directly on one possible interpretation of these effects.

Some readers will be aware that some of the changes delineated in Table 5 appear to fit into a syndrome that western psychology has come increasingly to recognize as being implicated in certain forms of mystical experience and is often associated with deep psychophysical perturbations. We are speaking of course of *kundalini*, which for our purposes here can simply, if inadequately, be described as a subtle form of bioenergy (or *prana*, to use the word given to it in Yoga) which is said to be activated by the process of psychospiritual transformation (Krishna 1971; White 1979) and, these days, is more frequently mentioned in connection with what have come to be called "spiritual emergencies" (Bradgion 1989; Grof and Grof 1989).

Since there has already been speculation about the possible role of kundalini activation in NDEs (Ring 1984), we embedded a nine-item scale to assess this factor in our Psychophysical Changes Inventory. Table 7 shows clearly that kundalini may be regarded as part of, and possibly underlying, the pattern of psychophysical changes we have already reported.

Again here, as with Table 5, it is the *relative* difference between the experiential and control groups that holds the key to the interpretation of these findings. That shows that

Table 7. Net Kundalini Scores

UROE	NDE	UROC	NDC
-0.60	-1.04	-5.03	-6.22

Table 8. Percent Endorsement of Items on the Kundalini Scale

	UFOE	NDE	UFOC	NDC
I felt energy in my hand more often than before	37.1	47.3	15.4	14.8
I would sometimes feel a deep ecstatic sensation, something like an orgasm for no reason	32.0	35.1	15.4	14.8
I experienced severe or migraine type headaches more often than before	34.0	17.6	10.3	9.3
I became aware of energy discharges or currents flowing through my body	44.3	50.0	20.5	13.0
I would occasionally experience sensations of tickling, itching or tingling on or underneath my skin	54.6	39.2	30.8	3.7
I became aware of internal lights or colors	32.0	43.2	17.9	9.3
My hands often felt hot	24.7	33.8	15.4	11.1
I would have sensations of extreme heat or cold move through my body more often than before	35.1	37.8	10.3	20.4

Table 8 (cont'd)

My body would occasionally shake, vibrate or tremble for no apparent reason	30 9	25 7	10 3	3 7
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NOTE: This Table does not indicate where significant differences occur for a particular item. This is because the items were grouped according to the sub-scale to which they belong and statistical tests *were* performed on the sub-scales. Most of these comparisons mirrored the pattern of overall differences between experiential respondents and the controls. However, for purposes of tabular presentation, display of the individual items was thought to be more meaningful.

kundalini activation is much more likely ($F = 60.68$, $p << .0001$) to be reported afterward by experiential respondents than controls, and, as before, this is equally true for NDErs and UFOers alike.

To appreciate the individual components of the kundalini syndrome, as measured by this scale of the PCI, consider the items listed in Table 8 along with their corresponding endorsement levels for our four groups.

Table 8 makes it clear that the kundalini effect is highly consistent across items and between (experiential and control) groups. Whatever it may signify, it, too, is a definite part of the pattern of psychophysical changes reported by our experiential respondents and, as such, needs to be reckoned with.

B. Life Changes Inventory (LCI) and Religious Beliefs Inventory (RBI)

In addition to our inquiry into psychophysical changes, we were also interested to determine whether UFOEs and NDEs are associated with distinctive changes in *personal values* afterward. To evaluate such changes we used two separate instruments. The LCI was constructed so as to provide pre-post indices for a number of personal value domains. The RBI, on the other hand, was a twelve-item inventory that affords only a single score indicative of a shift toward universalistic spiritual values.¹¹

Table 9 presents a summary of the principal personal value domains that the LCI measures. There are altogether nine such scales that can be derived from the LCI, all but one being composed of at least three items. The shift scores reported for each of the groups are based on a five-point Likert scale format ranging from -2 (strongly decrease) to +2 (strongly increase). Therefore, even apparently small net shifts can represent a sizable change in terms of *possible* change given the response range available.

Several statements are required to sum up the main trends to be discerned in Table 9: 1) In general, there is a reported shift in the direction of increased altruism, social

¹¹For further information on this scale and its component items, see Ring 1984.

Table 9. Net Value Shifts on the LCI

Value Domain	UFOE	NDE	UFOC	NDC
Appreciation for life	1.19	1.33	0.98	1.02
Self-acceptance	0.92	1.13	0.81	0.80
Concern for others	0.92	1.21	0.65	0.92
Concern for <i>impressing</i> others	0.02	-0.66	-0.06	-0.47
Materialism	-0.37	-0.58	-0.17	-0.39
Concern with social/planetary issues	0.76	0.51	0.65	0.36
Quest for meaning	1.35	1.27	1.04	1.09
Spirituality	1.21	1.22	0.86	1.09
Religiousness	0.05	-0.17	-0.16	0.33

concern and spirituality for *all* groups; 2) in general, these changes are somewhat more pronounced for our experiential respondents and are *significantly* ($p < .05$) greater for the following scales—appreciation for life, self-acceptance, concern for others, materialism (decrease), quest for meaning and spirituality, 3) in general, the ND sample shifted more than the UFO sample on altruistic (increase) and materialistic (decrease) values, the changes being significant ($p < .05$) on concern for others, impressing others, and materialism

Certainly, the overall trend of these data on value shifts—and this, we think, is the main point to be grasped here—is that individuals who have become involved in the world of NDEs or UFOs, whether through personal experience or simply personal interest, tend to state that on the whole it has made a positive difference in their lives, if one is willing to grant that having a greater appreciation for life, oneself, others and the world at large, and so on are positive changes. That this is so despite the traumatic nature of the circumstances often associated with the onset of NDEs and UFO encounters appears to be persuasive testimony to the transformative power of these experiences. However these changes are to be interpreted—a matter we will be considering shortly—they must be acknowledged as important aftereffects of both UFOEs and NDEs whose similar repercussions here will again be evident.

Of course, perhaps not everyone would be so swift to assert that *all* the changes on the LCI are positive. For example, the last row of values in Table 9 shows that UFOEs and NDEs have a negligible effect on religiousness, something that might come as a surprise, even a disappointment, to some readers. On the other hand, the row just above

Table 10. Universalistic Spiritual Shift Scores on the RBI

UFOE	NDE	UFOC	NDC
6.46	5.45	5.12	5.19

Table 11. Percent of Agree and Disagree Responses to "Evolutionary Items" of the Opinion Inventory

Item	UFOE		NDE		UFOC		NDC	
	A	D	A	D	A	D	A	D
I believe that the changes I've undergone since my UFO experience ¹² are part of an evolutionary unfolding of humanity	62 9	8 2	54 1	16 2	56 4	20 5	55 6	14 8
In my opinion, the wide-spread occurrence of UFO experiences is part of a larger plan to promote the evolution of consciousness on a species-wide scale	60 8	9 3	52 7	14 9	56 4	7 7	50 0	13 0
We are already in or at least on the verge of a New Age	71 1	7 2	67 6	10 8	71 8	10 3	53 7	9 3
Evolutionary forces are already at work which will transform humanity at large into a more self-aware, spiritually sensitive species	62 9	11 3	59 5	8 1	66 7	15 4	38 9	13 0

¹²As implied in footnote 5, some items were worded slightly differently in alternate forms of the OI so as to be appropriate to each of the four groups. Those given in this and the next two tables are taken from the UFOE battery.

that shows that both experiences are associated with strong perceived increases in spirituality, which again may please some while disconcerting others.

However that may be, precisely this same pattern of a net movement toward spirituality, but not religiousness, was revealed through an analysis of our second measure of personal values, the RBI. To repeat, this instrument provides one overall score that signifies the extent to which an individual moves toward universalistic spiritual values as opposed to sectarian religious ones. To the extent that is so, the RBI gives a positive value (no shift would show a zero; a shift in the opposite direction, a negative value).¹³ The RBI scores will be found in Table 10.

What these values show is that a highly significant shift again occurs for *all* groups. Although there is a suggestion that the experiential groups shift more than the controls, this difference is not significant. As will be apparent, these findings dovetail nicely with the general pattern revealed by the analysis of the LCI.

C. Opinion Inventory (OI)

The OI, the last questionnaire in our battery, was designed to provide information on the beliefs and worldviews of our respondents. In this case, however, our respondents were merely asked to express their agreement or disagreement with a set of thirty statements (or register no opinion); thus they were not required as such to indicate whether their opinions had changed in light of their experiences or interests regarding UFOs or NDEs. Nevertheless, since this questionnaire was filled out only after such experiences had occurred or such interests had developed, the OI may safely be regarded as a kind of post-test without the pre-test.

In any case, the OI assessed three principal domains of beliefs and worldviews: 1) the possible evolutionary significance of these experiences; 2) their possible purposive nature; and 3) possible extraterrestrial influence in human affairs. Here we shall present selected but representative items from each of these three categories.

Table 11 provides some sample items concerning the possible evolutionary implications either of NDEs or UFOEs.

As can easily be seen, there is widespread agreement across *all* groups with statements implying that we are in the midst of an evolutionary spurt toward greater spiritual awareness and higher consciousness—and that the occurrence of UFOEs and NDEs is an integral part of that progression. Although there is a hint in Table 11 that such statements are endorsed somewhat more often by UFO respondents, the overall difference between them and ND groups on this category of item is not significant.

As to the question of a larger purpose behind the emergence of NDEs and UFOs in our time, Table 12 provides a sampling of our respondents' opinions on this matter.

Here we see a different pattern begin to emerge. First, it is clear that our respondents are inclined to agree that there are "higher forces" orchestrating these experiences and that they are meant to awaken individuals to the existence of a larger cosmic plan for life on earth. Not surprisingly, those who actually have had these experiences are

¹³The scoring procedure and rationale for the RBI, as well as some normative data based on previous NDE research, will be found in Ring (1984), pp. 312-14.

Table 12. Percent of Agree and Disagree Responses to "Purposiveness Items" of the Opinion Inventory

Item	UFOE		NDE		UFOC		NDC	
	A	D	A	D	A	D	A	D
I believe that my UFO experience was "arranged" or "designed" by a higher agency or by my higher self	59 8	11 3	63 5	18 9	43 6	20 5	44 4	25 9
I believe that my UFO experience occurred so as to awaken me to the existence of larger cosmic forces which are affecting our lives	56 7	16 5	50 0	20 3	51 3	17 9	44 4	22 2
I feel I have a mission to use what I have learned from my UFO experience to spread God's love to all	27 8	29 9	58 1	27 0	28 2	30 8	50 0	31 5

somewhat more likely to endorse these statements than persons who have only an interest in them, but the overall trend of support for items of this kind is strong even for the control groups. Second, it is equally clear that though purpose is ascribed to the occurrence of these experiences, what *kind* of purpose is discerned differs radically for our two categories of experiences. Those who have had or become interested in NDEs are inclined to see a religious meaning to NDEs, specifically, to "spread God's love." Our UFO sample, on the other hand, is much less likely to endorse this opinion, and this is true for experiencers and controls alike who split 50-50 on this interpretation. Here, for one of the few times in this study, we finally have a *difference* to note between our UFO and ND sample. And that difference seems to grow even stronger when we consider our last opinion domain, that of possible extraterrestrial influence in earthly activities.

Inspection of Table 13 highlights the differences here.

In Table 13 we see the clearest evidence in the entire study of a divergence between our UFO and ND samples and, in the end, it is not a divergence either in developmental history or, strictly speaking, in aftereffects. Instead, it is literally a *difference of opinion* over the possible role of extraterrestrial influence in human life. In broad terms, it's easy to state this difference. our UFO respondents tend to be more

Table 13. Percent of Agree and Disagree Responses to "Extraterrestrial Influence Items" of the Opinion Inventory

Item	UFOE		NDE		UFOC		NDC	
	A	D	A	D	A	D	A	D
I believe that humanity may be the object of biological experimentation by extraterrestrial life forms	68 0	7 2	18 9	41 9	56 4	12 8	9 3	50 0
I believe alien beings are likely to exert increasing control over human life in years to come	38 1	28 9	16 2	36 5	41 0	23 1	11 1	55 6
There are higher order intelligences that are bent on exploiting our planet in some way	17 5	40 2	13 5	41 9	28 2	23 1	3 7	61 1
There are higher order intelligences that have a concern with the welfare of our planet	76 3	2 1	48 6	9 5	71 8	0 0	44 4	9 3

convinced that extraterrestrial forces are at work on earth than our ND respondents, who consistently reject such claims. But this general statement obscures some important variations among our UFO sample, and these need to be brought out here. If, for example, one looks at the first two items in Table 13, it's obvious that UFO respondents, on the whole, are quite open to the possibility that aliens are engaged in biological experimentation with humans and to a lesser but still significant degree that they may continue to increase their control over human life in the future. A seemingly ominous prospect. But looking at the last two items in Table 13 gives a more hopeful hue to this picture. Here our UFO respondents on the whole tend *not* to endorse the statement that higher intelligences are bent on exploiting the planet, in fact, they overwhelmingly concur with the assertion that higher intelligences are concerned with the earth's *welfare*. Thus, it appears that whereas there is plainly a difference between our UFO and ND samples concerning the *existence* of alien influence *per se*, both groups seem to agree that, however these "higher forces" are conceived, they represent essentially beneficent influences. Indeed, only by making some such assumption is it

possible to reconcile the common avowal of both the UFO and ND groups that these experiences are serving a positive evolutionary purpose for humanity (see Table 11) with their superficially discrepant opinions regarding the role of extraterrestrial influence. What we are saying, then, is that in *this* final analysis, the differences in beliefs shown in Table 13 tend to dissolve when seen in the context of a larger evolutionary worldview that both groups share.

In summary, in the sphere of belief systems and worldviews, all groups tend to agree that these experiences reflect a purposive intelligence and that they are part of an accelerating evolutionary current that is propelling the human race toward higher consciousness and heightened spirituality. When we reflect on the pattern of psychophysical and value changes associated with these experiences, it is of course easy to see how these conclusions must inevitably be fostered by the aftereffects of these experiences themselves. In that framework, the opinions of our respondents are perfectly consistent with the general trend of the other data presented in this section on aftereffects. Without wishing to deny that there are differences between our UFO and ND sample (for example, on *how* they see the purpose of their experiences), even their answers to our opinion inventory point once again to their essential kinship.

(e) Another Interpretative Interlude

As our concluding comments on the OI implied, we find that in the realm of aftereffects, just as it was with our constellation of psychological and developmental factors, our results conform to a highly coherent pattern. Whether we examine the nature of the psychophysical changes our respondents report, their personal value shifts or their opinions and worldviews, there is an impressive consistency in their assertions that their experiences of or concern with NDEs or UFOs have changed them, often apparently quite radically, and largely in positive ways. Certainly, their answers to our questionnaires suggest that through their involvement with the world of UFOs and NDEs, they have been expanded—in their psychophysiological functioning, cognitive processes, and social values—and made *more hopeful* concerning the outcome of humanity's spiritual evolution.

On the PCI, of course, the chief finding concerned the *differences* between experiential and control respondents, which were, statistically at any rate, enormous. Overall, our PCI data indicate that subjectively at least experiencers believe that they have been profoundly affected—physiologically, psychologically and presumably spiritually—by the encounters they have undergone. The interpretative question we face here, however, is to try to understand what could be responsible for this undeniably provocative pattern of self-report data.

One could argue, of course, that it is something in the nature of these experiences themselves—and we do seem to have to discuss UFOEs and NDEs together here since the reported aftereffects are so similar for each—that induces these changes directly. We have already speculated about the possible role of electromagnetism in triggering some of these effects. But of course it is equally reasonable and perhaps more plausible

to surmise that these changes are more likely to be traceable to differences in life style afterward, changes in diet, meditation practices, or, perhaps more indirectly, the kind of groups people join or the reading they do. Without controlling for such factors, it is obviously impossible to draw any inferences concerning *what* may mediate these changes—assuming they are real and not merely subjective.

That last phrase brings up an cogent objection to these findings and points to an important limitation of this research Obviously our self-report data, being subjective, are no substitute for the kind of objective measurements that could be made using instrumented equipment in the laboratory. Our data as well as our previous interpretative comments do, of course, strongly suggest that the step from survey research to laboratory investigation of persons who have had NDEs or UFO encounters would be well warranted. Indeed, it is our hope that our findings on possible psychophysical changes here will have provided enough *prima facie* data to encourage qualified researchers to continue the search for these effects in the laboratory. Without such research, our findings must remain intriguing but inconclusive, with it, we may be more certain whether these extraordinary claims made by experiencers are based in fact or are merely fancy.

When we consider the data from the LCI, however, we must remember that here it is the overall *similarity* between our experiential and control respondents that was most striking. In its own way, this finding is quite remarkable because our control group was made up of people who, it will be recalled, have a very different kind of developmental history than our experiential respondents, have no particular affinity for states of consciousness disclosing alternate realities or propensities for dissociative thinking, and certainly don't report anything like the profound psychophysical changes that characterize our experiential. Yet, when it comes to the expression of personal values, these people seem to view the world in much the same way as do our experiential respondents, as though they are seeing it essentially through the same eyes. This of course suggests that whereas having UFOEs or NDEs may in themselves promote the kind of value shifts the LCI reveals, merely becoming *interested* in these phenomena may also accomplish the same end. To sort out the relative influence here of personal experience versus social contagion is not possible from our data alone, but our data do suggest that this would be a most worthwhile task for the social psychologist and the sociologist interested in social movements.

Although the overall similarity between our experiential and control groups was perhaps the most important finding deriving from the LCI, there were of course some differences, too. As previously noted, though both experiential and controls tend to move toward more prosocial values, this trend was on the whole somewhat stronger for our experiential respondents, suggesting that the personal experience factor may give an added impetus to such changes. Also, our finding that on certain values NDErs shifted more than UFOers replicates Davis's (1988) earlier findings comparing these two groups.

One question that can be raised concerning all the aftereffects so far discussed is how durable these changes are. Do they, for example, persist for some time and then

revert to previous levels or do they tend to endure? To explore this matter in a preliminary way, we performed some analyses in which we divided our experiential sample into four groups according to how much time had elapsed since their encounter. To permit meaningful statistical comparisons, we formed four such groups. The first had had their experience within the past five years; the second, between six and fifteen years ago; the third, sixteen to thirty years, and the fourth, more than thirty years ago. Using this classification, we examined psychophysical changes (using our total score index) and two value domain scales, concern for others and spirituality.

Our findings for all three analyses were identical: there were no differences among groups, indicating that at least for the aftereffects we assessed they tend to be maximal within five years and stable over time. Thus, our data here are consistent with the inference that the aftereffects in our study are not transient changes but represent enduring traits.

Finally, to return once more to the OI, here again it was similarity between all of our groups of respondents that was noteworthy. Our sample as a whole appears to regard UFOs and NDEs positively and believe that they hold out potential benefits for humanity that we can hardly conceive of today. In interpreting these findings, we face the same problem we have encountered before: it is impossible to know how much these opinions are shaped by direct personal experience, how much through social influence processes within the UFO and NDE communities, and how much through the operation of the *Zeitgeist* with its apocalyptic imagery and expectations. All we can say here is that the general belief system represented by the body of our findings on the OI is entirely in keeping with our pattern of aftereffects and therefore may simply be their cognitive aspect. At any rate, only further research that directly focuses on sources of beliefs in the UFO and NDE communities can hope to clarify how these opinions come to be formed and how they are maintained. Here we must rest content merely with our preliminary assessment of the *nature* of these beliefs.

One last point here: the positive views expressed by the majority of our experiential respondents may seem paradoxical in light of the obvious trauma their experiences may and often do occasion and the sometimes difficult aftermath that accompanies them. Recently, there has been much discussion of these experiences, especially UFO encounters, among clinicians that has attempted to subsume them under the rubric of post-traumatic stress disorders (Laibow 1990; Wilson 1990).

Without question, there is a case that can be made for this argument. However, the data from the Omega Project, and especially those on beliefs and values, strongly suggest that these experiences also contain a powerful impetus for a variety of healthy and positive changes. Psychiatric categories shouldn't obscure the transformative potential of these experiences and, in our opinion, the positive evaluation that respondents tend to place on their experiences may show that their sometimes traumatic impact is less important than their long-term transformative promise.

(f) Special Analyses of UFO Sample

Although we have now completed our presentation of the principal findings of the Omega Project, there are some issues of particular relevance to the UFO sample that remain to be addressed. First, there is the question of whether the *source* of our UFO respondents is a factor that influences their response profile. In this connection it will be recalled that we obtained our UFO respondents from four primary sources: 1) abduction researchers Budd Hopkins and Joseph Nyman; 2) Whitley and Anne Strieber's Communion Network; 3) Leo Sprinkle's UFO conference attendees; and 4) John White's UFO conference attendees. Since it is well known that there are strong "ideological" differences among these individuals, it wouldn't be surprising that people drawn to them or their activities might also differ in similar ways. Therefore, just as Bullard (1989) made an effort to see whether different investigators employing hypnosis in their abduction research obtained characteristically different narratives, so we in this study endeavored to assess the comparability of our respondents by taking into account the source who provided them to us. Second, there is the question whether those respondents who were drawn to use hypnosis to explore their encounters have a different kind of psychological or developmental profile than those who did not, and also whether the use of hypnosis might be associated with a different pattern of aftereffects. Accordingly, a comparison of our experiential respondents with respect to their use of hypnosis is called for. Finally, since we have already had some indications of sex differences in our study, we will need to inquire into the possible role that factor may have played in our UFO sample.

A. Source Effects

In conducting this analysis, we performed a series of one-way ANOVAs on all our questionnaires, including the separate scales derivable from those questionnaires affording multiple measures (e.g., the CEI, HEI, PCI, etc.), according to the source of our respondents. Our findings may be summed up as follows: 1) On our psychological and developmental questionnaires (i.e., CEI, HEI, and PI), as well as on the PCI and RBI, there were essentially *no* differences according to source;¹⁴ 2) on the LCI, three of the nine scales showed the same kind of difference between two groups, viz., Sprinkle's group exceeded Hopkins and Nyman's on concern for others ($p = .064$), quest for meaning ($p = .01$), and spirituality ($p = .02$), there were no other differences on the LCI, and 3) on the OI only there were strong and highly significant differences which, in general, tended to show that Sprinkle's respondents were much more

¹⁴In fact, among all the multiple comparisons involved, there were only two that proved to be statistically significant. One showed that the respondents who came from Hopkins or Nyman scored significantly lower ($p < .05$) than Strieber's group on fantasy proneness. The other showed that Sprinkle's respondents scored higher than the Hopkins-Nyman group on our scale of expanded mental awareness ($p < .02$). However, when one takes into account the number of individual comparisons that are involved in analyses of this kind, one would expect of course that some of them would be significant by chance, that is, represent an alpha error. Given this consideration and that the overall pattern of results for these questionnaires showed no differences according to source, we feel our stated conclusion of "essentially *no* differences" is well warranted.

favorably disposed ($p < .0001$) to the evolutionary and positively purposive implications of UFO encounters than were Hopkins and Nyman's respondents; Sprinkle's group also exceeded the Striebers' in this respect.

How can we encapsulate the implications of these source effects? We think it is fair to say here that *source differentiates respondents ideologically, but not psychologically*. That is, on psychological (including psychophysical) and developmental variables, there are virtually no source differences at all, and certainly no systematic ones. This means that the persons who are drawn to contact different investigators or attend their functions are essentially the same kind of people with respect to their psychological profile and history. Where one begins to see source differences are on some value domains where Sprinkle's "New Age" orientation is associated with apparently more "spiritual" value changes than are expressed by the respondents of Hopkins and Nyman. The really substantial differences, however, only emerge on the most "ideological" measure of all, the OI, where Sprinkle's group again contrasts strikingly mainly with Hopkins and Nyman's in expressing much more positive views about the meaning and possible evolutionary significance of UFOEs. Clearly, in these respects—that is, in the *interpretation* given to UFO phenomena—either different kinds of people are drawn to Sprinkle on the one hand and Hopkins or Nyman on the other *or* they are influenced quite differently by their contact with these investigators—or (most probably) both. Nevertheless, it bears repeating that *psychologically* the respondents from all groups appear very comparable in their histories and mode of functioning.

Since what differences there are here mainly involve Hopkins and Nyman's respondents and those of Sprinkle's, one is led to wonder whether those differences might not after all be so much attributable to "ideological" or temperamental factors as to the *type* of UFOE these investigators tend to work with. Specifically, Hopkins and Nyman have specialized in recent years in cases of the abduction type, whereas Sprinkle, a veteran UFO researcher, has tended to cover a much wider ambit in his explorations and apparently has a greater sympathy than Hopkins and Nyman for "contactee" type cases. In fact, an inspection of our source data does show that more than half (20 of 38) of our abduction cases come from Hopkins and Nyman whereas less than a fourth (8 of 38) were available from Sprinkle's group. *However*, as we previously noted, when we carefully examined our group of abductees in relation to the remainder of our UFOE sample, no systematic differences were apparent. Therefore, we are inclined to conclude that, whatever the origin of the source differences noted here, it is not a simple function of the kind of cases associated with these investigators.

B. Hypnosis Effects

On our Experience and Interest Inventory, we asked respondents who indicated that they had had some kind of UFOE if they had ever been hypnotically regressed afterward in connection with it. Our findings showed that almost exactly half (49 of 97) had been, and of these about two-thirds (33 of 49) had had one or more hypnotic regressions with either Hopkins or Nyman. Again, we did a series of comparisons

(using t-tests) on all our measures between those respondents who had been hypnotized and those who had not been. The results in this instance were very straightforward: being hypnotized did *not* make a difference—at least insofar as affecting responses to our questionnaires was concerned. In the welter of so many comparisons, there were of course a few significant differences that were obtained, but even these were mostly at very marginal levels. Overall, the data are unambiguous: people who come to be hypnotized in connection with their UFOEs are indistinguishable from those who have not been with respect to their developmental histories, mode of psychological functioning and reported aftereffects. Though our concerns here were different from Bullard's (1989) in his investigation of the comparability of hypnotically-induced and spontaneous recall of abduction episodes, our findings are certainly compatible with his conclusion that hypnosis is not a contaminating artifact in UFO abduction research.

C. Sex Differences

Another variable whose possible effect on our response measures we assessed in this study was sex of respondent. In our ND sample, where we had 56 males and 72 females, this factor made no difference whatever on our measures—males and females had similar profiles. Therefore, it was something of a surprise for us to discover that sex of respondent *did* make a difference on some of our measures for our UFO sample (55 males, 81 females) although its effects were almost completely limited to our aftereffects questionnaires. A summary of exactly what we found here follows.

As with source effects, so for sex of respondent there were virtually no important differences on our psychological questionnaires (i.e., the CEI, HEI and PI); men and women in our UFO sample describe similar developmental histories and psychological processes. The single notable exception here is that women score significantly higher ($p = .005$) on our measure of fantasy proneness than men, as we observed earlier (see footnote 6, page 70).

The sex differences first show up on the PCI, however, where women tend to outscore men on most of our scales, including physical sensitivities ($p = .03$), kundalini ($p = .01$), psychic sensitivities ($p < .0001$), expanded mental awareness ($p < .002$) and on our overall measure of psychophysical changes ($p = .006$). Since all of these individual scales load high (from .74 to .88) on a psychophysical changes factor, as shown by a factor analysis of our last four questionnaires, we may summarize all these findings, in effect, by reference to our last comparison—women in our UFO sample, *regardless of experiential status*, report significantly more psychophysical changes than do men.

Similarly, women in our UFO sample evince stronger shifts on most of the LCI scales, especially those that comprise another one of our factors, which we labelled “humanistic spirituality.” This factor includes the following five LCI scales all of which load high (from .70 to .85) on this factor alone: appreciation for life ($p = .007$), self-acceptance ($p = .002$), concern for others ($p = .03$), quest for meaning ($p = .008$) and spirituality ($p < .05$). Not surprisingly in view of these findings, women in our

UFO sample also outscore men on the RBI ($p = .008$), another measure, it will be recalled, of the shift toward a universal form of spirituality.

No differences were found for the OI.

Thus, what we observe here is a tendency for women in the UFO sample to report that both psychophysically and spiritually they are more affected by their involvement in the UFO world than are men, regardless of whether they have had a UFO encounter as such. Since we already know that experiential women differ from controls on the psychological measures of our battery, these aftereffects seem to be largely independent of both UFOE and personal history. Interest in UFOs alone then seems to be responsible for helping to bring about these changes, at least in the sense that they are more pronounced than for the men in our UFO sample. Another way of looking at these findings, of course, is to focus on the men in this sample: what is it that restrains *these* men, but *not* men in the ND sample, from either experiencing or acknowledging these changes? Could it be that a "macho" factor is stronger in men drawn to the world of UFOs than it is in men who become interested in NDEs? About this, we can only wonder of course, but an enterprising social psychologist could easily conduct a study to determine whether empirical support might be found for this speculation.

In evaluating the importance of the sex differences described here, it's well to remember that, statistically speaking, they are rather weak in comparison to the overall experiential/control group differences which account for much more of the variance in our data. All the same, they do present still another useful angle from which to view the multi-faceted psychology of persons who are in some way involved with UFOs. Since this study had as one of its primary objectives the delineation of the psychological profile of such persons, it may be that future research along these lines will have to pay more explicit attention to whether men and women have different gender-related "filters" for UFO encounters.

CONCLUSIONS AND IMPLICATIONS

Stepping back from the mass of specific findings of the Omega Project and attempting now to grasp the broad outlines and implications of our study, we are led to make three concluding observations.

First, in reviewing all of the data collected during this investigation, what repeatedly struck us most forcibly was the undeniable overall *similarity* between our two experiential groups, UFOers and NDErs. Our findings demonstrate that *both* groups share a similar developmental history, similar modes of psychological functioning and a similar range of aftereffects, both psychophysical and attitudinal. Perhaps some UFOers and NDErs will not appreciate being "lumped" in this way, but, if so, we cannot help it. Here, after all, we are merely following our computer printouts and not our own personal preferences or prejudices.

What this implies to us is that in our search for explanations for UFOEs and NDEs, we should now consider that despite the differences in the nature of these experiences, they may have a common underlying source—whatever that source may be. This

already seems to be the position of most of the few commentators who have taken the trouble to compare these two types of experiences (Evans 1987, 1989, Grosso 1985, 1989; Persinger 1989a, 1989b), and though the handle of Occam's razor may be getting crowded, we would like to add our grip to it, too.

Second, although the kind of psychological and social psychological factors that were assessed in this study may not cause these phenomena (and we do not believe that they do—see below), they unquestionably *sensitize* people to them. What the Omega Project unequivocally demonstrates is that in fact *not* just anyone is likely to report undergoing a UFOE or NDE; those who do are distinctive in various ways, as our study makes clear. The immediate implication here is that such factors must now absolutely be taken into account by any interpretation that attempts to explain these mysteries.

And, as our comments in this section have been portending, of course the overriding implication here is necessarily concerned with what the data from the Omega Project have to tell us concerning the always ultimate UFO question, viz., what indeed is the source of these UFOEs? Should our findings be taken to imply that, at bottom, UFOEs in general and abduction accounts in particular are traceable to the vicissitudes of individual psychological factors, as for example, Evans (1987, 1989) has argued? Or, following a Jungian approach (Grosso 1985, Stillings 1989), should we understand these experiences to stem ultimately from the Collective Unconscious or from some other supermundane agency, such as Mind at Large, as Grosso (1985) has postulated? (According to this view, the sensitive individuals of a culture, whose psychology fits them to be the primary receiving agents for "transmissions" from this source, are essentially the weavers of a cosmic message for humanity which only *appears* to come in the form of a literal encounter with alien life.) Or, finally, should we take our data to mean that we would do best to follow the UFO crowd (at least in the United States) that is convinced that these encounters do *in fact* represent the intrusion of alien life forms into human spheres of activity?

In our opinion, the answer here is obvious

Our findings do precisely *nothing* to help us settle on which is the "correct" answer to this "ultimate question." If, for example, you believe in the existence of extraterrestrials, you can certainly use the data from this study to make a case that they are somehow *selecting* especially vulnerable, psychically sensitive people for these experiences. Similar arguments can easily be constructed for the other alternatives we offered, and no doubt can be fashioned for still other variations we have neglected to mention. As far as we are concerned, then, you can impose just about any of the standard interpretative templates on our data, and make them fit whatever your favored schema might happen to be.

On the other hand, it would be a mistake to suppose that simply because our data do not help to resolve the ontological status of UFOEs, they lead to a dead end. On the contrary, our main point here which needs to be repeated and stressed is that what we have found forces us to acknowledge the role of psychological and social psychological factors in UFOEs (and NDEs, too, for that matter). What we are suggesting, in short, is that whatever the ultimate resolution of the UFO question may turn out to be

(assuming it can ever be answered definitively), UFO researchers would do well to focus some of their attention on these factors, for we believe we have shown that important clues to this mystery may lie buried in this ground. More specifically, as we implied at the outset, we think it will prove to be relatively fruitless to continue to debate the question of the psychology of UFOers on such gross levels as overall psychopathology. More rewarding, in our opinion, would be further specific explorations of the role of child abuse or such factors as *imaginability* (Ring 1989b) in fostering these experiences or in more detailed studies of the relationship between dissociation and reports of UFO encounters. While our own interpretive preference here remains an *imaginal one* (Ring 1989a, 1989b, Stillings 1989), we of course acknowledge that many different psychological perspectives may prove useful, and that, in the end, psychological perspectives in themselves may not be *sufficient* to encompass the full range of UFO phenomena. Nevertheless, since we have found them so plainly to be an important part of the picture, they deserve further study by ufologists and others.

Finally, we must, needless to say, recognize the many limitations of this study, especially its total reliance on self-report measures and in some cases previously untested measures. If there is to be any hope of providing definitive answers to the many questions the Omega Project has raised, we must now move beyond this kind of research. We need in-depth psychological studies of experiencers, something that has not yet been attempted either in ufology or near-death studies. And we also need careful laboratory studies of experiencers and controls to assess the reality of the psychophysical changes reported here. As we have presented and discussed our findings, we have, of course, made a number of specific suggestions concerning what kinds of research projects might prove useful, and if our study has any virtue, it is perhaps in helping us to see the types of questions we must now ask and in what settings to ask them. In any event, our report is submitted in the hope that others will soon begin to penetrate the psychological and psychophysical terrain whose edges we have scarcely crossed here.

REFERENCES

- Atwater, Phyllis M H
1988 *Coming Back to Life* N Y Dodd, Mead
- Baker, Robert A
1987 The Aliens Among Us Hypnotic Regression Revisited *Skeptical Inquirer*, Vol 11 (January-February) 13-17
1989 Q Are UFO Abduction Experiences for Real? A No, No, a Thousand Times No! *Journal of UFO Studies*, new ser., Vol 1 104-10
- Bartholomew, Robert E , and Keith Basterfield
1988 Abduction States of Consciousness *International UFO Reporter*, Vol 13 (March-April) 7-9, 15
- Basterfield, Keith, and Robert E Bartholomew
1988 Abductions The Fantasy-Prone-Personality Hypothesis *International UFO Reporter*, Vol 13 (May-June) 9-11

- Bloecher, Ted, Aphrodite Clamar, and Budd Hopkins
 1985 Summary Report on the Psychological Testing of Nine Individuals Reporting
 UFO Abduction Experiences In *Final Report on the Psychological Testing of
 UFO "Abductees."* Mount Rainier, Md . Fund for UFO Research
- Bragdon, Emma
 1989 *A Sourcebook for Helping People in Spiritual Emergency* Aptos, Calif
 Lightening Up Press
- Bullard, Thomas E
 1987 *UFO Abductions The Measure of a Mystery.* 2 vols Mount Rainier, Md.:
 Fund for UFO Research
- 1989 Hypnosis and UFO Abductions A Troubled Relationship *Journal of UFO
 Studies*, new ser , Vol. 1 3-40
- 1990 *Hypnosis and UFO Abductions.* Paper presented at the Second Conference on
 Treatment and Research on Experienced Anomalous Trauma, Blacksburg,
 Va , February
- Conroy, Ed
 1989 *Report on Communion* N Y William Morrow
- Council, James, and Bruce Greyson
 1985 *Near-Death Experiences and the "Fantasy-Prone" Personality* Paper pre-
 sented to the American Psychological Association, Los Angeles, Calif ,
 August
- Davis, Lorraine
 1988 A Comparison of UFO and Near-Death Experiences as Vehicles for the
 Evolution of Consciousness *Journal of Near-Death Studies*, Vol 6 (4) 240-
 257
- Decker, Rosemary M
 1987 Long-Term Effects of Close Encounters *MUFON UFO Journal*, No 229
 (May) 8-11
- Evans, Hilary
 1987 *Gods, Spirits, Cosmic Guardians* Wellingborough, Eng Aquarian Press.
 1989 *Alternate States of Consciousness* Wellingborough, Eng Aquarian Press
- Flynn, Charles P
 1986 *After the Beyond* Englewood-Cliffs, N J Prentice-Hall
- Goldsmith, Steven
 1988 [Letter] *International UFO Reporter*, Vol 13 (July-August) 23-24
- Gordon, Robert A.
 1971 People Who See Flying Saucers [letter] *Science*, Vol 171 (March 12) 957
- Grey, Margot
 1985 *Return from Death* London Arkana
- Grinspoon, Lester, and A D Persky
 1972 Psychiatry and UFO Reports In Carl Sagan and Thornton Page (eds) *UFO's
 A Scientific Debate* Ithaca, N Y Cornell University Press pp 223-246
- Grof, Stanislav, and Christina Grof
 1989 *Spiritual Emergency* Los Angeles J P Tarcher
- Grosso, Michael
 1985 *The Final Choice* Walpole, N H Stillpoint
 1989 The Near-Death Experience Is It a Clue to the UFO Mystery and the Message
 of the Contactees? *UFO Universe*, Fall 48-50
- Hopkins, Budd
 1981 *Missing Time A Documented Study of UFO Abductions* N Y Richard
 Marek
- 1987 *Intruders The Incredible Visitations at Copley Woods* N Y Random House

- 1988a [Letter] *International UFO Reporter*, Vol 13 (May-June) 22-23
 1988b [Letter] *International UFO Reporter*, Vol 13 (July-August) 20-21
- Hunt, Valerie
 1990 Personal Communication, February
- Kluft, Richard P (ed)
 1985 *Childhood Antecedents of Multiple Personality* Washington, D C . American Psychological Association
- Kottmeyer, Martin
 1988 Abduction The Boundary Deficit Hypothesis *Magonia*, No 32 3-7
- Krishna, Gopi
 1971 *Kundalini*. Berkeley, Calif Shambhala
- Laibow, Rima E
 1989a Dual Victims the Abused and the Abducted *International UFO Reporter*, Vol 14 (May-June) 4-9
 1989b *Conference on Treatment and Research on Experienced Anomalous Trauma* Fairfield, Conn , May.
 1990 *Psychophysiological and Psychodynamic Manifestations of Experienced Anomalous Trauma*. Paper presented at the Second Conference on Treatment and Research on Experienced Anomalous Trauma, Blacksburg, Va , February
- Meerloo, Joost A M
 1968 The Flying Saucer Syndrome and the Need for Miracles [letter] *Journal of the American Medical Association*, Vol 203 (March 18) 70
- Nyman, Joseph
 1988 Personal Communication, February
- Parnell, June O
 1986 *Personality Characteristics on the MMPI, 16PF, and ACL of Persons Who Claim UFO Experiences*. Ph D diss , University of Wyoming
 1987 *Measured Personality Characteristics of Persons Who Claim UFO Experiences*. Paper presented at a symposium of the American Psychological Association on "The UFO Experience What Psychotherapy Tells Us," New York, August 30
- Persinger, Michael A
 1989a Modern Neuroscience and Near-Death Experiences Expectancies and Implications *Journal of Near-Death Studies*, Vol 7 (4) 233-239
 1989b The "Visitor" Experience and the Personality. The Temporal Lobe Factor In Dennis Stillings (ed), *Cyberbiological Studies of the Imaginal Component in the UFO Contact Experience*, Vol 5 St Paul, Minn Archaeus pp 157-171
- Randles, Jenny
 1988a *Abduction Over 200 Documented UFO Kidnapping Investigated* London Robert Hale
 1988b [Letter] *International UFO Reporter*, Vol 13 (July-August) 21-23
- Ring, Kenneth
 1984 *Heading Toward Omega* N Y William Morrow
 1989a Near-Death and UFO Encounters as Shamanic Initiations *Revision*, Vol 11 (2) 14-22
 1989b Toward an Imaginal Interpretation of "UFO Abductions " *Revision*, Vol 11 (3) 17-24
- Ring, Kenneth, and Christopher J Rosing
 n d The Omega Project A Comparative Study of Some Antecedents and Aftereffects of Near-Death Experiences and UFO Encounters In Rima E Laibow

- (ed), *Proceedings of the Second Conference on Treatment and Research on Experienced Anomalous Trauma* In press
- Rogo, D Scott
1988 [Letter] *International UFO Reporter*, Vol 13 (July-August) 20
- Sachs, Roberta
1990 *A Comparison of Experienced Anomalous Trauma and Satanic Cult Experiences* Paper presented at the Second Conference on Treatment and Research on Experienced Anomalous Trauma, Blacksburg, Va , February
- Sanders, Barbara, and Marina Giolas
n d Dissociation and Child Abuse in Disturbed Adolescents *American Journal of Psychiatry* In press
- Sanders, Barbara, Jerry McRoberts, and Christie Tollefson
1989 Correlates of Dissociation in a College Population *Journal of Dissociation*, Vol 2 (1). 17-23
- Schwarz, Berthold Eric
1983 *UFO Dynamics Psychiatric and Psychic Aspects of the UFO Syndrome* 2 vols Moore Haven, Fla Rainbow Books
- Shallis, Michael
1988 *The Electric Connection* N Y New Amsterdam
- Sprinkle, R Leo
1976 Hypnotic and Psychic Implications in the Investigation of UFO Reports In Coral Lorenzen and Jim Lorenzen, *Encounters with UFO Occupants* N Y Berkley pp 256-329
1982 *Proceedings, Rocky Mountain Conference on UFO Investigation* Laramie, Wyo
- Stenshoel, Peter
1988 [Letter] *International UFO Reporter*, Vol 13 (May-June) 23-24
- Stillings, Dennis (ed)
1989 *Cyberbiological Studies of the Imaginal Component in the UFO Contact Experience*, Vol 5. St Paul, Minn Archaeus
- Strieber, Whitley
1987 *Communion A True Story* N Y William Morrow
1988 *Transformation The Breakthrough* N.Y William Morrow
- Vallee, Jacques
1988 *Dimensions A Casebook of Alien Contact* Chicago Contemporary Books
- White, John (ed)
1979 *Kundalini, Evolution and Enlightenment* New York Anchor
- Wilson, John
1990 *Post Traumatic Stress Disorder and Experienced Anomalous Trauma*. Paper presented at the Second Conference on Treatment and Research on Experienced Anomalous Trauma, Blacksburg, Va , February
- Wilson, Sheryl C , and Theodore X Barber
1983 The Fantasy-Prone Personality Implications for Understanding Imagery, Hypnosis and Parapsychological Phenomena In Anees A Sheikh (ed), *Imagery Current Theory, Research, and Application* N Y John Wiley pp 340-387
- Wogan, Michael
n d A New Test for Dissociation *Journal of Experimental and Clinical Hypnosis* In press

Issues Forum: Tectonic Stress Theory

To the Readers:

The *Journal of UFO Studies* is happy to present to the readership its second discussion forum on a subject of prime interest and debate in the field. We are privileged to provide a major review article by a leading TST theoretician and researcher (Dr. Michael Persinger), as well as commentary by the primary British investigator (Mr. Paul Devereux). The sequence of the forum will be as follows:

- a) Paul Devereux will introduce the readership to the general concepts and significance of the array of TST facts and possibilities
- b) Michael Persinger will explain in depth the crucial theoretical constructs, explorations, and data defending the theory.
- c) Then, four commentators of varying viewpoints (Mr Chris Rutkowski, Dr Michael Grosso, Dr. David Jacobs, and Dr Michael Swords) will react and respond to the Devereux and Persinger pieces.
- d) Paul Devereux will then clarify and defend the TST concept having read the responses of the commentators
- e) Lastly, the commentators will have a final opportunity to reflect upon the strengths, weaknesses, and significance of the TST and the issues raised.

Although a difficult format to "engineer" from an editor's point of view, these discussion forums have been lively and informative for myself and the participants, and it is hoped that you find them interesting. The forums are the major means whereby *JUFOS* attempts to be both academic *and* "human," and to allow a professional means whereby differences of opinion may be aired in a respectful manner aimed at the advance of the research field.—MDS.

Round One

THE "EARTH LIGHTS" APPROACH TO THE UFO PROBLEM

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In many ways, a brief paper here on the subject of terrain-related light phenomena (earth lights, BOLS, light phenomena, LITS, UFOs) is of little use, and may even be damaging. For too long the matter has been discussed, if at all, in brief terms, on an inadequate platform of information, disfigured by prejudices, while the true evidence for such phenomena—the homogeneous nature of descriptions of them worldwide, the identifiable features that can be built up from the reports, the geological and other evidence that becomes apparent from the evidence, the vagaries of their behavior—only becomes clear when the matter is studied at length and in depth. Thus I have attempted to do in *Earth Lights Revelation* (London, Blandford Press, 1989), henceforth referred to as *ELR*. The initial reviews of *ELR* in Britain show that as a consequence of such depth, those who were previously skeptical or even hostile regarding the earth lights approach are now being much more thoughtful about the matter. Therefore, I feel that my real contribution to the present forum is to urge forum participants and readers to read the book (not for commercial reasons, but to update your knowledge). Any debate in ignorance of the case put forward in *ELR* will of necessity be out of date and inadequately informed, and misunderstandings and misrepresentations will be all too easy—hence perpetuating the delay in grasping the importance of this approach to the UFO problem.

With this essential qualification, I will summarize a few aspects of the earth lights theory here, as I deal with it. The comments relate to my own work or that of colleagues with whom I am in communication or with whom I work. Detailed references and justifications for the outline below will be found in *ELR*.

Research shows that terrain-related light phenomena have been observed in localized geographical regions in many countries around the world for generations. Such phenomena are *habitual* in certain zones, and generations of folk in particular valleys—for example, in the English hill range known as the Pennines, or the Elan Valley in central Wales—have known of local light phenomena. These phenomena have ingrained themselves in local folklore, superstitions, and even place names. Terrain-related lights are as much a part of the landscape in some areas as the trees

It has now become clear that throughout the world indigenous peoples know of terrain-related lights and have incorporated them into their mythologies.

In the course of my work, I have uncovered 18th-century accounts describing the traditional belief of tin and copper miners in Britain (and probably throughout Europe) that balls of light emerging from the ground were sure signs of the presence of good mineral veins. We know of the identity of certain mines that were founded by such means. This tradition probably relates to a further one, that of "treasure lights," particularly relevant in Germany and Denmark, but with variations elsewhere. Here lights, usually blue in color and seen haunting certain locales, were thought to guard hidden treasure. Interestingly, during my research for *ELR*, I found a small town in western Wales where inhabitants had seen blue lights popping out of surrounding hillsides. The lore associated with these ongoing phenomena asserts that they are fairies or that they mark the location of mineral veins in the hills, this last seemingly a relic of earlier beliefs. (Fairies were also a frequent designation by rural people in certain countries to explain lights.) We have found modern sightings of lights to be frequently associated with old mines—usually lead mines, but sometimes tin and copper. Investigations have revealed that observations of lights emerging from old mine shafts in rural areas and sometimes flying off across country is not an uncommon sight in certain regions. Little of this rural activity has come to the attention of researchers previously. This is primarily due to locals not wishing to tell outsiders about such matters, or viewing the phenomena with fear or superstition. This situation is compounded by the fact that one class of researchers (ufologists) have themselves been looking elsewhere for answers to the UFO problem—extraterrestrial sources or, conversely, psychosocial explanations—while orthodox scientists find it prudent, in the main, to deny the existence of such phenomena at all. This desperate state of affairs has allowed a very important aspect of the terrestrial environment to pass by not merely unstudied, but virtually unnoticed.

The association of a number of terrain-related light phenomena with mines indicates an aspect of the phenomenon that has come in for some discussion over the last two decades—namely, that the appearance of the lights might be associated with geological and tectonic factors. Computerized statistical studies by Michael Persinger, and more recently by John Derr, have indicated such associations. Detailed temporal and spatial correlations related to small geographical zones by myself and colleagues have further supported this apparent connection, and is demonstrated in *ELR*. The geological approach seems a sensible one, in the light of current evidence, by which to study terrain-related lights. Key features seem to be: faulting, bodies of water, mineral deposits, certain kinds of rock, mine and quarry workings, sharp projections (rock outcrops, isolated buildings, radio towers, etc.). The energy base for such lights might be tectonic stress, and Persinger has developed this into the Tectonic Strain Theory (TST). There is no doubt that outbreaks of lights and seismic activity can be correlated in enough cases to render accidental coincidence improbable. Subterranean rumbling is also a common feature in areas of lights outbreaks.

From my own point of view, I feel the evidence does support the probability that

tectonic stress is involved in many (though not necessarily all) occurrences of terrain-related light phenomena, a view supported in *ELR*. However, I suspect that it is by no means the only factor involved and that many other variables of geology and meteorology, and certain concatenations of these, will ultimately have to be taken into account. Furthermore, while many features of these terrain-related lights suggest an electromagnetic nature, there are other aspects which suggest we shall have to either extend our understanding of geophysics, as John Derr has predicted, or that we will find ourselves having to enter into a completely unknown area of energy effects.

Some people seem to argue that unless the TST can be proven, terrain-related light phenomena are not a valid subject of inquiry. This is of course the reverse of the true scientific approach. To accept such a position, we would have to say that we had to dismiss gravity just because we cannot measure it directly, or that lightning did not exist until we understood about electricity, and atmospheric electricity at that. In reality, and we are dealing with a reality, the lights can now be shown to have a geography, and it is time they were studied like other aspects of our environment. Only by direct observation and study will their nature and behavior be properly revealed.

The morphology and behavior of terrain-related lights can be summarized briefly. They can be small (fist-sized) or quite large, a meter or even several meters across. But large-scale lights are very rare. The usual size is about half a meter (the common descriptions are "basketball-sized" or "like a Chinese lantern"). The usual color is white or orange, but other colors are reported with less frequency. In the case of the white lights, close observation reveals a reddish core. Close witnesses to the lights in general frequently report an inner teeming activity within the lights, often taking the form of wriggling "worms" or "strings" of light. Records exist throughout this century (at least) of lights being seen to emerge from the ground. In some cases, earlier reports like this have been subsequently shown to relate precisely to fault locations unknown at the time of the report. The lights usually emerge from the ground and either quickly go out or hover locally at their point of appearance. In less frequent cases, they have been observed flying around over fairly considerable areas, and sometimes reaching heights of thousands of feet, sometimes touching down on the ground and "taking off" again. Usually, however, the lights will disappear on re-contacting the ground, or will "sit" on the ground before going out.

The lights frequently emit a buzzing or hissing sound, though this is sometimes felt in a witness's eardrums rather than actually heard.

An exotic element in some reports is that light from a light form seems to be *traveling in one direction only*, the form being visible in one direction, invisible from an opposite vantage point.

Lights are usually spherical, but can assume rectangular and strip-like shapes, as well as amorphous forms. They can divide and change their forms. In a few rare cases, areas of the landscape can light up with no discrete light form being involved. Instances of this have been noted in the 1970s in the Longdendale Valley in the English Pennines, where a whole hillside has been seen by multiple witness to "light up" on at least two occasions. This phenomenon was accompanied by a pronounced drop in

local ambient temperature. The hill in question is, in fact, called Shining Clough—hardly a coincidence.

The lights like to haunt bodies of water, vertical projections, power lines, and cave entrances. There are good electromagnetic reasons for all of these. The lights often display what anthropomorphically can be interpreted as inquisitive behavior with regard to human witnesses.

In some areas where outbreaks of terrain-related lights are fairly common, there are sometimes reports of *totally black* shapes. These assume similar forms to the lights and behave in a similar fashion. They are small areas of complete light absence, even when viewed in daylight. It may be that these phenomena represent some obverse side of the process producing the photon-emitting “earth lights.”

The energy bodies forming the lights can appear metallic in daylight. It is known that plasma can take on such an appearance in such conditions, analogous to air appearing metallic in water.

Also in some areas of light phenomena outbreaks, concurrent “poltergeist” activity is sometimes reported by local people. In some cases this may be due to unusual electromagnetic conditions affecting objects, and also possibly brain function in individuals.

Terrain-related lights seem to bear a family resemblance to earthquake lights and ball lightning, but do not require the strong seismic or unusual meteorological conditions of these to manifest. (It is also to be noted that most earthquakes and most electrical storms do not produce light phenomena either—clearly very special conditions have to come together for a light form to be produced. We are dealing with the immense complexity of nature, not the simplicity of clockwork.)

Most UFO reports originate in misperception, mirage effects, complex psychosocial behavior, hoaxes, and so on. I suspect that terrain-related lights account for the remaining reports—they are the truly unexplained phenomena at the heart of authentic reports. They have been interpreted throughout history in the cultural context of the day. There seems no real reason to suppose that the present extraterrestrial-technology-based view has any claims to superiority over any of the other contexts of the last two millennia.

Exotic UFO reports (physical traces, entities, abductions) may relate to terrain-related lights in two ways.

1) Proximity to the energy fields emanating from a terrain-related light may cause damage (burning, etc.) in the immediate environment, and also burn or irradiate a human witness. In various indigenous cultures, warnings about proximity to such lights were coded in the traditions. The North Californian Amerindians, the Wintu, whose tribal lands spanned the San Andreas fault, warned about the lights by referring to them as “spirit eaters,” for example, or again, the natives of the Darjeeling area, another earth lights zone, refer to the lights as *chota-admis* (little men, the lanterns carried by). It is unwise to approach these little men and their lanterns because “illness or death” will ensue. As with ball lightning, however, proximity does not always carry such dire consequences. Some frequency element must be involved.

Persinger proposes that proximity to a terrain-related light will also cause modifications to brain function, as well as physiological changes. Everything he suggests can be clinically simulated: it is not merely theory. At certain distances, changes to memory function can occur, and hallucinatory material of a vivid nature can be interposed into waking perception. (The various conditions of consciousness that exist in both waking and sleeping life are being seen by researchers as much more complex than used to be thought. Laberge at Stanford, for instance, has conclusively shown that conscious action can be taken during lucid dreams, and a lucid dreamer, *without waking up*, can communicate by means of eye movement with the personnel in a dream lab.) In short, proximity to a terrain-related light can cause altered states. The neuron-firing patterns created in these confabulated experiences can be recalled during regression hypnosis in just the same manner as the patterns created by actual experience can be recalled. Moreover, memory function can be disturbed *prior to the stimulus that caused the disturbance*. It is ignorance of these areas of actual clinical and laboratory research that render so many ufologists naive and incapable of understanding the power of the arguments being presented and the nature of the arguments being dealt with.

2) Reports worldwide and throughout time record witness interpretation of "intelligence" on the part of the lights (e.g., the "inquisitive" behavior mentioned above). *ELR* has a three-line index entry on this topic. While this impression must in part be due to meaning being imposed by an observer on random behavior of the lights, a sufficiently homogeneous impression is created by independent reports to suggest that the lights *may* indeed show either some form of intelligent behavior or are in some way responding to the consciousness of observers. This may mean the lights are some form of incomprehensible technology, or that they are some kind of life form, or that they are an exotic energy responding to consciousness. At the present time, I suspect the latter to be the true position. The matter may be settled when we improve our understanding of how our consciousness relates to the environment. Such an improved understanding may lead to greater insight into so-called "abductions" and other altered states that seem to be environmentally triggered in some instances. As bizarre and unlikely as this aspect of the matter may seem to some people, it is not so extreme to those researchers experimenting in consciousness and brain function. It is literally the case that the behavior and even the form of the lights may be modified by the presence of human observers. I understand that research is underway that might result in an experimental method to simulate this effect.

So from the perspective of environmental studies such as geophysics, and from the point of view of consciousness studies, terrain-related lights may have much to teach us. Debating as to whether the lights exist or not, and whether such-and-such a theory is right or wrong, has now become a fatuous exercise, an intellectual procrastination. The evidence for the actuality of the lights is sufficiently strong, and enough is known about them, for field work to commence. It is long overdue. Further evidence, theorizing and understanding will then be a matter of course. The future relevance of ufology depends upon its ability to move into these areas of inquiry.

**THE TECTONIC STRAIN THEORY
AS AN EXPLANATION FOR UFO PHENOMENA:
A NON-TECHNICAL REVIEW OF
THE RESEARCH, 1970-1990**

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Unidentified flying objects (UFOs) is a contemporary term that has been applied primarily to anomalous luminous phenomena (ALP). They display odd movements, emit unusual colors or sounds and occasionally deposit physical residues. When these phenomena closely approach a human observer, exotic forces and perceptions are frequently reported. Most ALPs display lifetimes in the order of minutes and appear to show spatial dimensions in the order of meters. Despite their remarkably similar descriptions over time and across cultures, the transience and localized occurrence of these phenomena have limited their systematic investigation.

Explanations for these phenomena have ranged from social misperceptions and delusions to some variant of mystical or extraterrestrial intelligence. However, the only testable concept that has been formulated to date is the Tectonic Strain Theory or TST. It states that *most UFO phenomena* (not due to frank misobservation) are *natural events, generated by stresses and strains within the earth's crust*. The phrase "most UFO phenomena" is emphasized because the primary measurement is still human observation and classification. Due to their limitations, overinclusion of events or experiences that are not coupled to tectonic stress or strain are expected. Highly unlikely but nonetheless possible episodes of extraterrestrial sources could be contained within that residual.

The TST was originated from inductive rather than deductive processes; the data themselves revealed the principle that allowed the development of the theory. Between 1969 and 1972 the several thousands of events referenced by Charles Fort were designated to several dozens of categories (Persinger 1976, Persinger and Lafrenière 1977). Because we assumed that transient, anomalous, and dynamic phenomena required substantial sources of energy, measures of intense displays such as tornadoes, earthquakes, and weather extremes were included in the analyses. The most consistent and strongest correlations in time and space occurred between what Fort had labelled "luminous phenomena" and the numbers of earthquakes. At about the same time we were completing these analyses, Paul Devereux had begun his field research and John Derr had focused upon the intriguing problem of earthquake lights.

A basic scientific motive, the understanding of nature and of the hidden mechanisms within it, has stimulated the development of the TST, it was never intended to serve a debunking function. The pursuit also has been encouraged by the prospect of practical application. If ALP are indices of tectonic strain and it generates earthquakes, then the possibility existed that some form of ALP, such as UFO reports, could be used to help forecast the locality or occurrence of earthquakes. A necessary consideration of the TST, although not directly related to its verification, is the consequence of both ALP and the belief concerning their origins upon human behavior and attitudes. They are often as important to scientific discovery as the physical principles themselves.

LARGE-SCALE APPLICATION OF THE TST

The TST predicts that most ALP and their contemporary equivalent, UFOs, are generated by natural geophysical forces. The major source is tectonic stress; it is primarily a consequence of the slow cooling of the earth. The stress occurs continually as a field within the earth's crust. However, the direction and magnitude of stresses change over space and time. These changes induce strain within the local crust. In general the stresses are focused and the strain is induced within areas that contain the optimal geological architecture or that have traditionally undergone strain release. They include faults, rifts, many river systems and localities of enhanced compressional deformation.

As stresses accumulate over time, UFO phenomena are generated. Generally there is a critical magnitude of stress that precipitates a sudden, substantial release in the strain energy, this is called an earthquake or a seismic event. According to the TST, *detectable earthquakes do not cause most UFOs. Instead, both UFOs or ALP and earthquakes are generated by the same process: earth stress.* Because earth stresses generally escalate over several months to years before earthquakes, most UFO reports should precede earthquakes. However, variations in local stresses frequently follow strong seismic events, consequently a small proportion in the numbers of UFOs should occur during these adjustment periods.

There should also be a temporal distribution of UFO reports within the 24-hour period preceding and following significant releases of seismic energy. These ALP occur and have been called earthquake lights. If these ALP are generated by the same process that produces UFOs, then their properties should be similar. Even within classification systems (Galli 1910; Terada 1931) that were developed before the classic UFO period, the remarkable similarities between earthquake lights and UFO phenomena are evident. Major classes of earthquake light include luminous masses (some of which appear to rotate on axes), football- or lantern-shaped fireballs; metallic-looking forms; luminous columnar, funnel, or trumpet shapes; and sprinkles. Comparable ALP are still reported today. The most recent earthquake-related ALP were documented by Marcel Ouellet (1990). They occurred around the Saguenay region of Quebec and were associated with the intense earthquake of November 25, 1988.

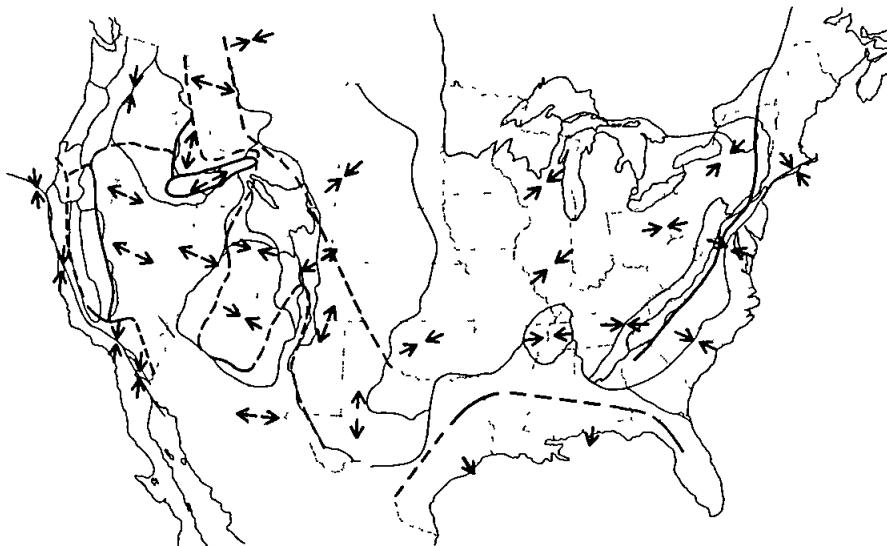


Fig 1 Distribution of tectonic stress directions within the crust in the United States according to the hydrofracture technique (modified by Zoback and Zoback 1981)

At this level of analysis, the TST's major limitation is similar to that encountered by any process that cannot be measured simultaneously in one place at a particular time. Although general patterns in tectonic stress can be interpolated using a variety of methods (Zoback and Zoback 1981), the simplest measure for analysis is the occurrence of discrete events that can be counted earthquakes. Because the occurrence of earthquakes and, more specifically, the energy released by seismic events is assumed to generally reflect the amount of stress within the region, these measures are used to infer tectonic stress. Effectively the amount of energy release has been used as an index of strain. An analogous difficulty occurred in meteorology before the dense spatial grid of weather stations was established. Without the optimal instruments (barographs) and continuous measurements over multiple locations, the concept of a low pressure air mass could not have been envisioned or documented.

Despite the limit of direct strain measurement, there are precise extrapolations that can be generated and tested:

1) Because tectonic stress is never zero, UFO reports can occur anywhere but should occur more frequently in geological regions undergoing increases in stress accumulation (Fig. 1).

2) Because stress accumulation occurs gradually over time and then is associated with a sudden release, most UFO reports should precede increases in earthquake activity; in those areas in which strain continues to occur after a quake, UFO reports could also occur but their numbers should be diminished unless another major release of energy is imminent.

3) Historical equivalents of UFO reports should have occurred frequently, especially in regions that have maintained earth stresses over decades or centuries ("window areas")

4) Because UFO phenomena are generated by geophysical processes, the understanding and perception of UFO reports as a phenomenon is only evident within the spatial and temporal time frames required to understand seismic process, i.e., hundreds to thousands of square kilometers and months to years.

5) Any process or event that affects seismicity should affect the numbers of UFO reports; because some forms of seismicity are coupled to the solar cycle, UFO reports should reflect this periodicity or a subset of it, such as a single intense flare. Local factors, including large-scale fluid injection into the crust or stress shifts (changes in major river, lake or reservoir volumes), could trigger episodes of ALP and UFO reports.

(a) Data and Procedures of Analyses

Since 1979, approximately 20 technical articles have been published that support the validity of the TST as an explanation for most reports within UFO or ALP databases from a number of different places. There have been two major approaches to the problem. The first involves "local" episodes of reports within a diameter of 50–100 km, they include the Salisbury Uinta Basin episode during 1967 (Persinger and Derr 1985a), the Long-Vogel-Akers Toppenish Ridge Sightings between 1973 and 1977 (Derr and Persinger 1986), the Rutkowski Carman, Manitoba, occurrences between 1974 and 1977 (Persinger and Derr 1985b), the Rutledge New Madrid field study of 1973 (Persinger, 1988a) and the Zeitoun, Egypt, phenomena that were reported during the years 1968 and 1969 (Derr and Persinger 1989a).

The second approach involves larger areas of space. These analyses have included the central-eastern U.S.A. record between 1945 and 1966 (Persinger 1980, 1981a, 1983a), the Washington-Oregon analyses (Persinger and Derr 1984), the Charles Fort United Kingdom period between 1850 and 1920 (Persinger 1983c), the New Madrid Region 1945–1977 analyses (Persinger 1981b, 1983b), the 1965 to 1977 Swedish series (Mattsson and Persinger, 1986), the central U.S.A. 1947 to 1966 period (Derr and Persinger 1990a) and the Rio Grande Rift (New Mexico-Colorado) area (Derr and Persinger 1989b, Persinger and Derr 1990). With the exception of the United Kingdom, New Madrid Region, and Mattsson sources, the data for these analyses were obtained from the Center for UFO Studies (CUFOS).

Initially the analyses involved numbers of UFO reports and numbers of different intensity (Mercalli) earthquakes per unit time. In response to suggestions by John Derr and Chris Rutkowski, two major shifts in conceptualization have been employed. First, measures of seismic energy release replaced the use of numbers of earthquakes. The reasoning was simple. Release of seismic energy is more theoretically related to strain release than the numbers of earthquakes. If UFO reports are related to strain, then changes in their occurrence must be related to the amount of seismic energy.

release. Secondly, discriminative validity was pursued. Although most UFO reports are likely to be natural, geophysical phenomena, databases are probably heterogeneous collections of human experiences. By differentiating between likely sources of ambiguous observations from more robust descriptions, in a manner similar to the strangeness scale employed by David Saunders for the CUFOS data, classic UFOs and ALP should be most correlated with indices of seismicity.

For the local studies, three major questions were asked:

- 1) is there a significant correlation between earthquake numbers (or energy release) and the numbers of UFO reports?
- 2) what is the distance of earthquakes that are most correlated with UFO reports?
- 3) what is the temporal relationship between the occurrence of the UFO reports and the occurrence of the seismic energy release?

To minimize the problems that occur by including the extremes of temporal distributions of data, most analyses were completed for the intervals in which the cumulative numbers of UFO reports were relatively linear. Usually, approximately 90% of the reports within a collection occurred within this period.

Increments of one month have been used primarily because the duration of the databases were relatively brief, i.e., in the order of years. The numbers of earthquakes (or the amount of energy release) per month was compared with the numbers of UFO reports or ALP per month. To determine the optimal distance of earthquake inclusion, correlational analyses were completed that incorporated earthquake measures from successively increasing distances from the focus of UFO reports until the magnitude of the correlation coefficient peaked and then deteriorated. Determination of the optimal temporal relationship between numbers of UFO reports and earthquakes was completed by the lag-lead procedure. Multiple regressions were completed between the seismic measures per month and the numbers of UFO reports or ALPs the same month or each of the three months before or afterwards.

The second approach utilized much larger areas. Numbers of UFO reports or ALP per six-month increment (usually January-June, July-December) were correlated with the numbers of earthquakes or the amount of energy released during the same increment and for each of three increments before and afterwards. For control analyses, seismicity of the surrounding area was often included. Contrary to the critique of Rutkowski (1984) and Rutkowski and Del Bigio (1989), all of these procedures include routine analyses and are neither complicated nor contrived; they do require a rudimentary understanding of problem solving. Over the last 10 years the following major patterns have been found.

(b) Spatial and Temporal Relationship Between UFO Reports and Seismicity Are Most Evident Within Geophysical Units

Except for some peak periods in UFO reports, a simple relationship in time between their numbers per day and the numbers of earthquakes are rarely statistically significant or obvious. Retrospective studies strongly suggest that a rapid onset of

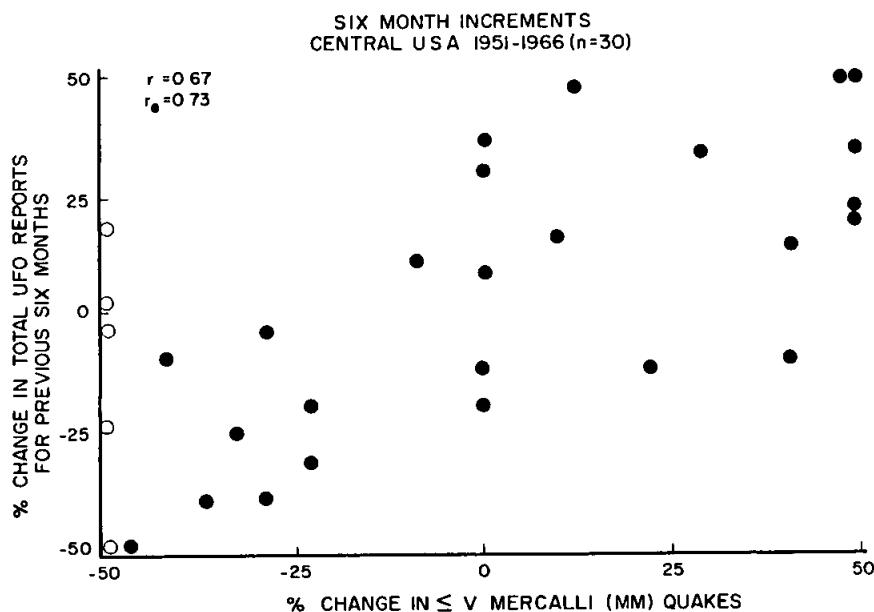
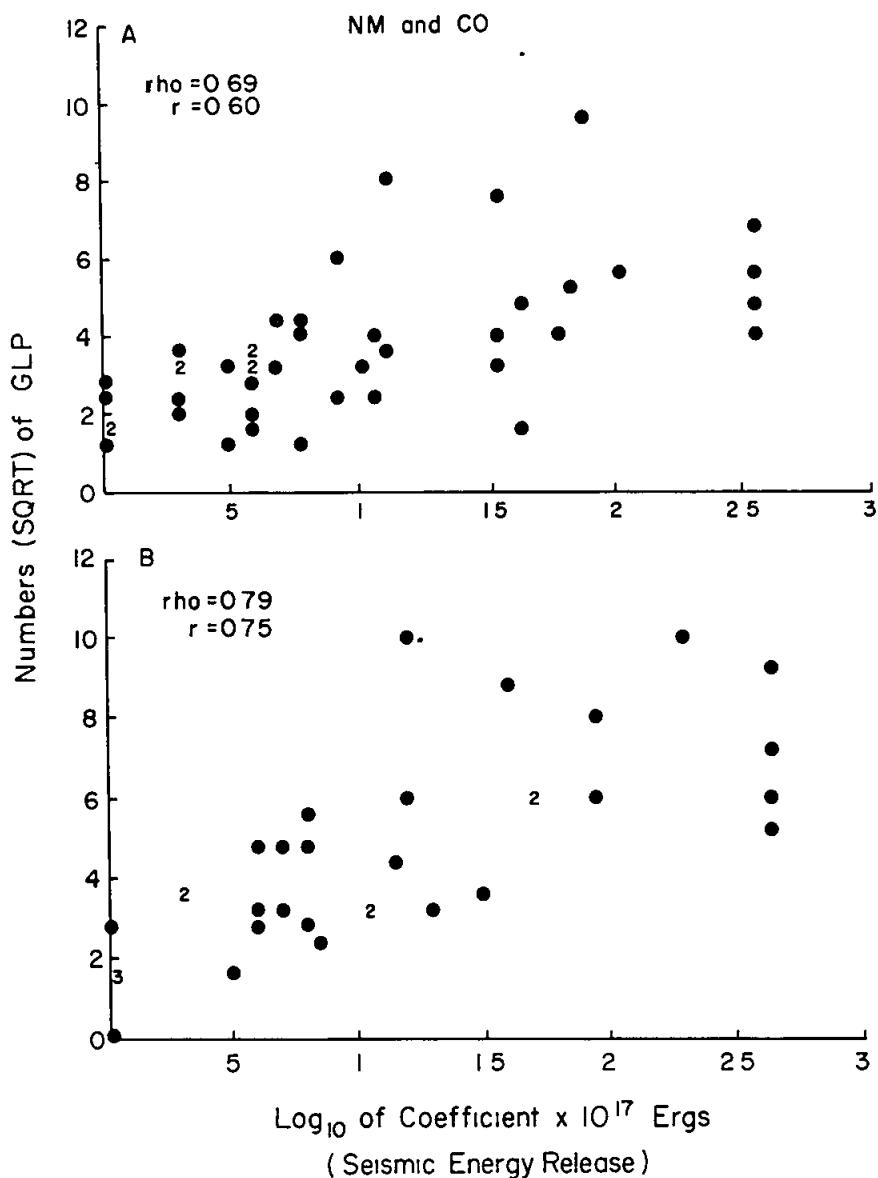


Fig 2 Bivariate correlation between the percent change in the total numbers of weak (less than intensity VI) earthquakes within the central U.S.A. and the percent change in total numbers of UFO reports (from the previous increment) for the six-month periods before the change in earthquake activity. The two r values refer to inclusion or not inclusion (closed circles) of values that were truncated at -50%. The effect is analogous to a derivative or rate of change in seismic activity, one discrete index of tectonic stress.

ALP and UFO reports have occurred during the approximately 10 days before some unexpected (no obvious seismological precursor) strong earthquakes in a region. Within 1) large areas at the level of states or regions in the U.S. and smaller countries in Europe, and 2) six-month increments of analyses, the correlations are almost always statistically significant. When temporal increments that exceed 1 to 2 years are employed, the strength of the correlation weakens. When the area of inclusion exceeds regional geological boundaries of seismic patterns, the coefficients are diluted.

For six-month increments, the magnitudes of the coefficients between numbers of seismic events and numbers of UFO reports have ranged between 0.50 and 0.70 and usually involved 15 to 20 years (30 to 40 cases) of successive intervals. For fixed six-month analyses the strongest coefficients have been between the numbers of earthquakes and the numbers of UFO reports during *the previous six-month interval*. These results support the hypothesis that both UFO reports and earthquakes are caused by stress and that UFO reports are generated by the temporally evolving processes that precede and create earthquakes (Fig. 2).

More recent analyses of the Rio Grande Rift System (Fig. 3) and the central United States indicate that the numbers of UFO reports were significantly correlated (0.60 to



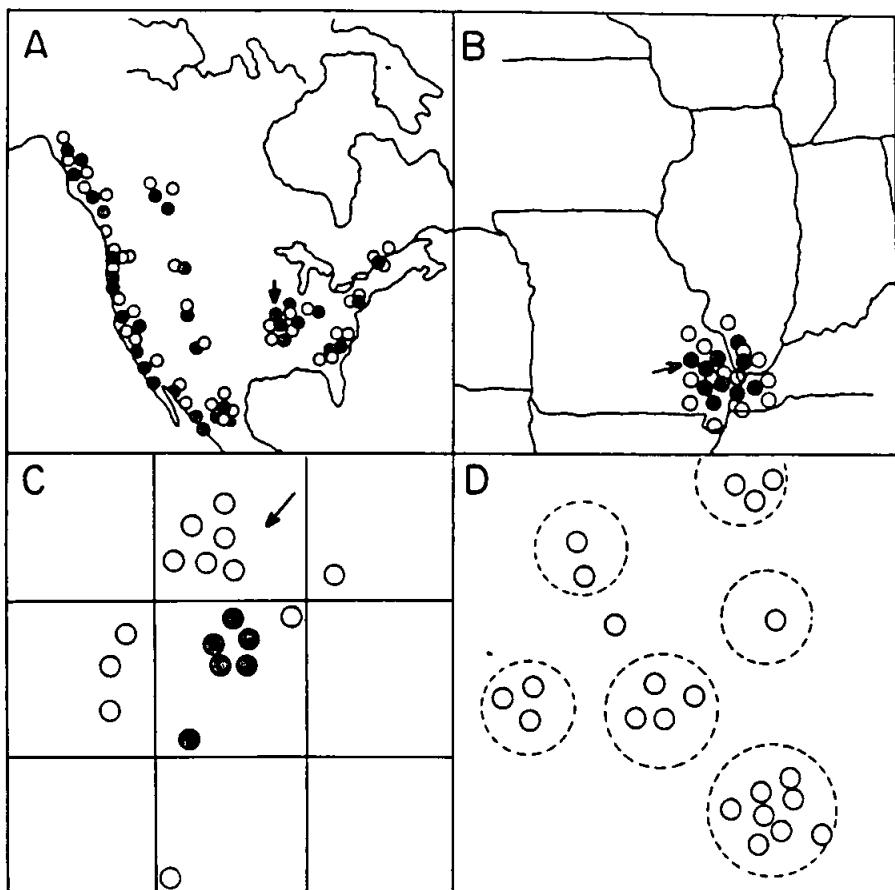


Fig. 4 Graphic demonstration of the importance of the optimal spatial increment of analysis in order to perceive the relationship between UFO (open circles) and earthquake activity (closed circles). Overinclusion of different geological regions (A) would obscure regional variations. Temporal analyses at perspective B would reveal the maximum relationship between the two phenomena. At finer spatial resolutions (C), the UFO reports and ALP may actually be spatially displaced from epicentral activity and hence the association may not be conspicuous. Level D would reflect still finer resolutions, typical of an investigation area by a single field researcher, of the open circles of C. Within these areas, indicated by the dotted circles in D, different discrete UFO events would occur. Because their spatial occurrence will be determined by local factors, the pattern may appear random.

0.75) with the *amount of seismic energy release* within the region but *not within surrounding regions* that served as control areas. For these studies and for the Denver (Derby) episode between 1962 and 1967 (Derr and Persinger 1989b), substantial increases in UFO reports occurred when the imminent energy release exceeded 1×10^{17}

**CENTRAL NEW MEXICO 1°Lat./Long.
(1947-1984)**

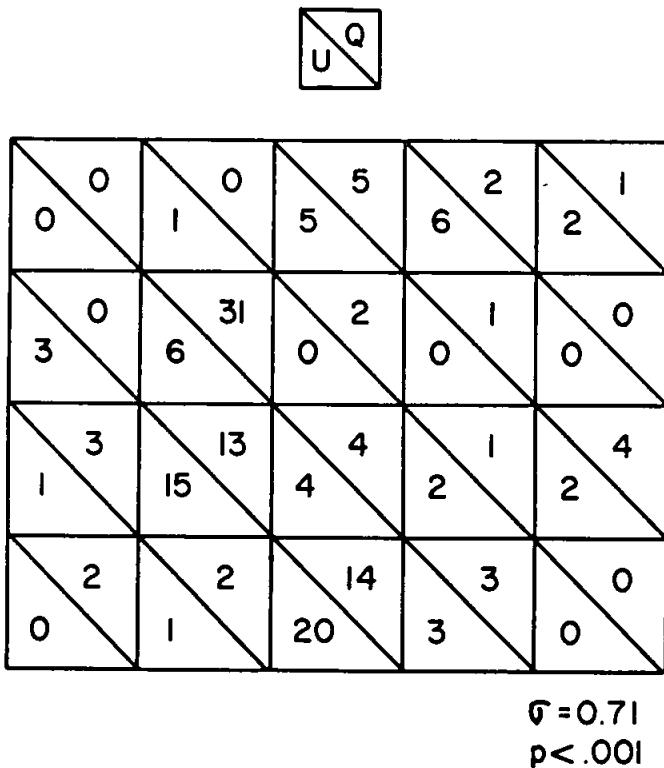


Fig 5 One example of the spatial correlation between numbers of earthquakes within New Mexico between the years 1947 and 1984 and major UFO episodes as defined by the CRUX database. At the optimal spatial increment of analyses, 1 degree latitude and longitude, the correlation in space over this time interval was moderately strong (0.71). As the spatial increments become larger or smaller, the strength of the relationship decreases.

ergs within a six-month period or some variant of it. Because natural forces do not conform to arbitrary temporal increments (6 months) of analyses, the UFO-energy relationship is likely to be higher; in fact, with variable interval analyses that optimally partition continuous intervals into increments of shared variance, the correlations between numbers of ALP and the amount of seismic energy release were marginally higher (0.70 to 0.80).

Even when the "local" episodes of UFO reports are analyzed, the optimal increments of analyses still involve months and the distances include hundreds of square kilometers. In all six of the these analyses, the UFO flap that generated the recordkeep-

ing was associated with the most energetic seismic release in the region. Although the number of localities are too small to be conclusive, it is interesting that the optimal distances of earthquake inclusion that were required to obtain the strongest correlations between UFO reports and seismicity involved between 100 and 200 km within the Western U.S. and between 500 and 700 km for the central U.S.

These patterns support the hypothesis that the organization of the crust may in large part determine the effective "region" for analysis. In areas such as the western U.S. (Uinta Basin, Toppenish Ridge) the crust is a collection of small accretions, whereas in the central U.S. the crust involves a much larger plate that may be affected by extreme load variations on major river systems. This variability in the earth's crust must be accommodated in order to test the TST appropriately.

Determination of the optimal increment of space and time in order to perceive a phenomenon is a routine procedure in science. In order to perceive the gestalt of a mountain, one must not be too close or too distant. In order to perceive the action potential of a neuron, the increments of time must be neither too brief (or the event is displayed as a horizontal line) nor too expanded (or the event transmutes into a vertical line). If UFO phenomena are coupled to geophysical processes, then the causality would be most apparent when the dimensions and temporal properties of the local stress fields are identified.

What does such a temporal and spatial perspective imply for UFO research? Fig. 4 suggests the consequences. At too large a level of analyses, several strain fields are included and the maximum relationship may be obscured. At the optimal level, the relationship becomes clear (Fig. 5). However, as the spatial frame is reduced to the level of the local researcher and the time frame approaches the duration of human interest and activity, the relationship between UFO reports and earthquake activity is totally dissociated. Without fixed and reliable stations of data collection, in a manner similar to those required for weather forecasting, the picture will continue to be fragmented.

(c) Equivalents of UFO Phenomena Have Occurred During Historical Periods of Tectonic Stress Release

Although the term flying saucer and UFO emerged around 1947, UFO phenomena existed long before this period. Because human reports of anomalous phenomena are affected by the beliefs and expectations of the period, these phenomena have been obscured. For example, before the earthquake of 1663 in Quebec, people saw "fires, torches, and flaming globes, which sometimes fell to the earth and sometimes dissolved in the air . . . they saw fires of this sort five or six times at night." "Terrible specters" were also seen. Not surprisingly, there were the more strange antecedent psi-like experiences such as, "wakening in her cabin while all other slept, she heard a distinct and articulated voice that said to her, 'In two days, marvelous and astonishing things will come to pass . . .'"

Comparisons of the numbers of UFO reports after 1947 with Fortean accounts of "odd luminosities" before 1920 for three regions: western Europe (Persinger 1983d, 1984a), the United Kingdom (Persinger 1983c) and the central U.S. (Persinger 1983e) have shown that both UFO reports and ALP were correlated with increased seismicity and energy release. Empirical equations generated from LP and seismicity within Western Europe between 1850 and 1920 predicted peaks in these events between the years 1930 and 1970; these peaks corresponded with the "foo fighter" and UFO flaps. For the central U.S., the opposite procedure was employed. Multiple regression equations were determined empirically between the numbers of UFO reports and seismic events for the years 1950 through 1975; standardized measures were then applied to periods (1860 to 1945) before that time. Predicted peak periods of UFO reports were associated with Fortean reports of LP as well as the infamous mysterious airship episodes.

Although the 1896–1897 airship episode is certainly anecdotal and has been considered a hoax by some researchers, the geophysical conditions that were associated with the airship episode are commensurate with both the hypotheses and corollaries of the TST. Approximately 80 to 900 of these reports of odd lights and "airships" occurred at night. One of the greatest floods to have affected the Midwest occurred during the spring of 1897, stressing regional river systems. Between January and May 1897, reports occurred within dozens of central and eastern states. The events were associated with the interval in which unusually intense earthquakes had been occurring (in inference of major stress) within the region and were terminated during the last of April; on May 31, the intense Giles County, Virginia, earthquake struck

(d) Solar-Geomagnetic Factors Modulate Seismic Activity and Hence Affect the Occurrence of UFO reports in Strained Areas

The presence of a moderately strong temporal relationship between the approximately 11-year cycle in solar activity and terrestrial earthquakes is apparent in some seismic databases (Mazzarella and Palumbo 1988). Deep earthquakes appear to be significantly affected by solar acceleration, while more shallow ones are not (Jakubcová and Pick 1986). More precise analyses indicate that only specific types of earthquakes, depending upon the type of fault system and the level of stress accumulations, may be maximally affected by some factor associated with solar activity. As Louis Winkler has shown with several unpublished analyses, the role of solar activity in the occurrence of both earthquake lights and UFO reports may be more important than now predicted.

The most likely "factor" is geomagnetic activity. The majority of the variance in short-term (minutes to days) variation in the geomagnetic field are changes in either speed or density of the solar wind; these parameters are a function of solar activity. Geomagnetic activity is measured by referenced scales such as the Ap or aa indices. Within 6-month timeframes, the variability in global geomagnetic activity is associated with the numbers of UFO reports and they are associated with earthquake activity.

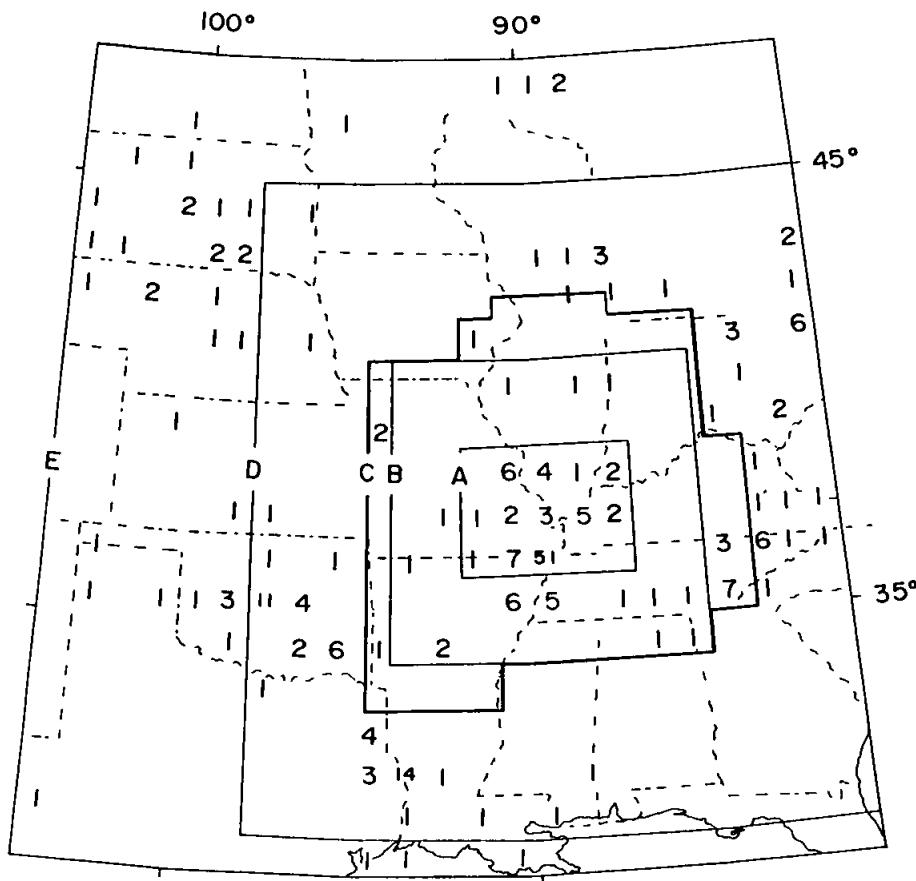


Fig 6 Numbers of earthquakes recorded (Nuttlı database) within various regions indicated by the letters A through E within the central and surrounding U S during the years 1947 through 1966

during the following six months. However, the geomagnetic correlation with UFO reports is not significant if the variance they share with imminent earthquake activity is removed (Persinger 1985). This result suggests that *extreme variability in geomagnetic activity facilitates the numbers of UFO phenomena within a region but only if strain is present*, as defined by the later occurrence of earthquakes. During the Toppenish phenomena, ALP were significantly more likely to occur within months when single daily Ap indices exceeded 100 (extreme intensity), but only if nearby seismicity was increasing.

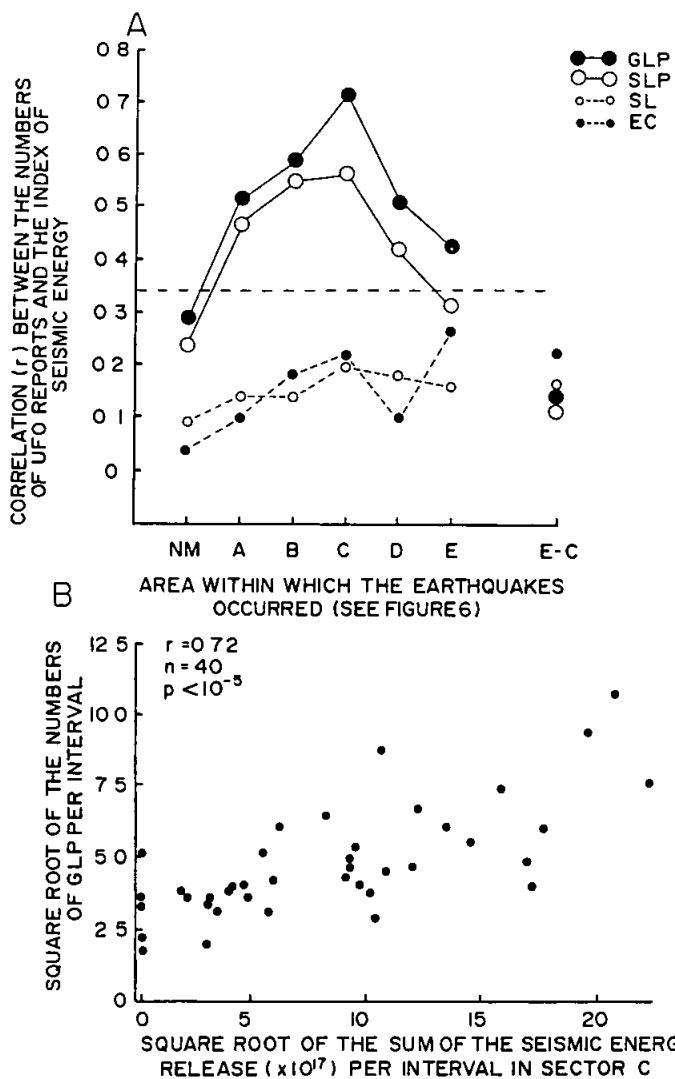


Fig. 7 (A) Correlations between different classes of UFO reports GLP (general UFO reports, unclassified and types III through VI), SLP (specific luminous phenomena, types III through VI), SL (sky lights, types I and II) and EC (exotic cases, types VII through the most strange) within the central US as defined by area C and the amount of seismic energy release per interval (about 6 months) within areas A through E, NM refers to the New Madrid (indicated here by the $n=51$ seismic events) Locus E-C indicates the correlation between the various UFO reports and the energy release in the area surrounding (the "control" area) the region from which the UFO reports were recorded Note that only GLP and SLP, which constitute more than 90% of the numbers of UFO reports, are significantly correlated with energy release The effect is greatest for energy released within the same region within which the UFOs were reported

(e) Sites of Major Fluid Injection May Serve as Quasiexperimental Demonstrations of the TST

Most of the empirical support of the TST has been correlational analyses. Although techniques of discriminative or convergent validity (Anastasi 1976) can be applied to insure the specificity of the relationship between ALP and earthquakes (Figs. 6 and 7), most scientists prefer experimental designs that allow control of the key variables. Man-made induction of earthquake activity by flooding, fluid injection, or irrigation can serve as potential quasi-experimental verifications. There are many anecdotal candidates that suggest the feasibility of this approach. An example is the temporal relationship between the massive irrigation causing the slow depletion of the Aral Sea (in the Soviet Union) and the nearby Tashkent seismicity and earthquake lightning.

Some of the most well-known events in the U.S. were the Derby quakes; approximately 1,000 of these quakes were evoked during the years 1962 through 1967 near Denver, Colorado, due to injection of several tens of millions of gallons of toxic fluid into the bedrock. Once the quakes were initiated, they appear to have continued, despite curtailment of injection, resulting in the most energetic seismic events of the region. These events were studied extensively. Correlative with this energy release were an unprecedented number of UFO reports within the Denver area.

Last year John Derr and I analyzed the monthly occurrence of ALP within 100 km, between 101 and 250 km and more than 450 km (used as the control region) from Derby. Within the Derby region ALP were positively correlated with the volume of fluid injection of the same month; however, for the adjacent region, the strongest relationships occurred 2 months after the injections. There was no significant correlation between ALP beyond 450 km and fluid injection. These results suggest that the same stimulus (fluid injection) that evoked earthquakes also evoked ALP. Our most recent analyses (Derr and Persinger 1990b) have demonstrated that some process, coupled to the production of ALP, was diffusing away from the injection site at speeds between 50 and 100 km/month to distances as far as 300 km.

(f) Visualization of the Moving Strain Field

Fields are difficult to perceive and must be both inferred and revealed by discrete effects upon matter. For example, the presence of the field between the poles of a magnet is not obvious until its effects on the orientation of iron filings are observed. The passage of a low pressure air mass is not apparent until one constructs the daily isobars (lines that connect stations with similar barometric pressure). If strain fields exist, they would be apparent by viewing the weekly or monthly changes in the numbers of ALP in space as the field moves through the crust.

In both the Uinta and Toppenish episodes, where earthquakes occurred in a quasicircular distribution around the concentration of ALP, they occurred primarily in the period between a seismic event on one side of the circle and a subsequent earthquake on the opposite side. This effect might be explained by the movement of a strain field; while moving between stress-release (epicenter) points, it traversed

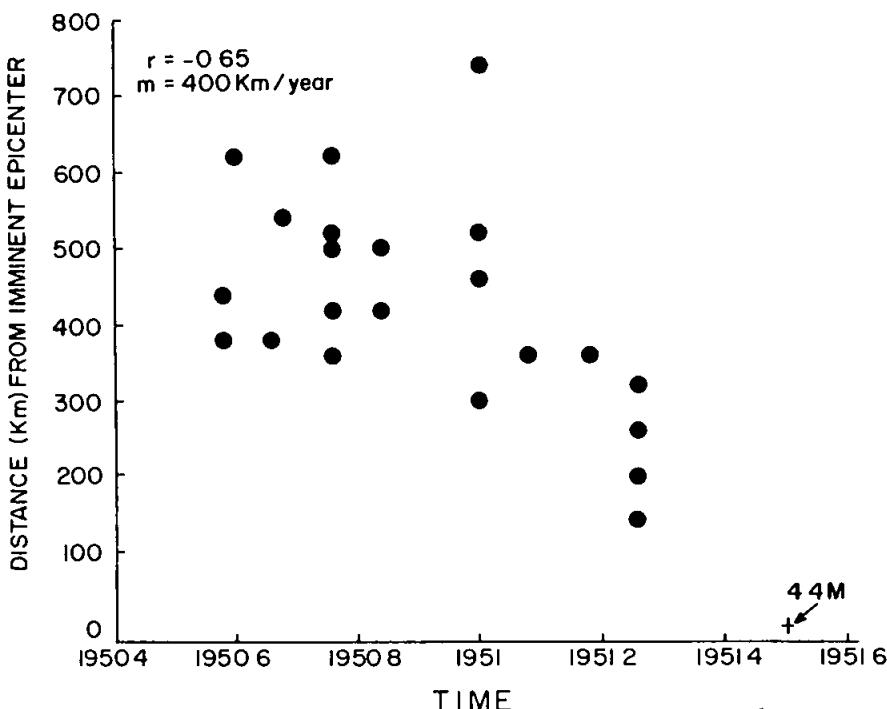


Figure 8 Distance of anomalous luminous phenomena from the imminent epicenter of a larger earthquake within New Mexico during the year preceding the release of seismic energy

through the focal area and generated the ALP. Once the field passed through the area, the ALP were no longer produced and consequently UFOs were no longer reported.

The concept of a strain field existing around an epicenter is supported for *some* larger earthquakes. Earthquake lights are known to occur at distances of approximately 500 km from the epicenter of more intense seismic events. However, a moving strain field that converges upon an imminent epicenter would be more convincing. This pattern has been shown for some larger magnitude events. As can be seen in Fig. 8, the distance between all ALP in the region and the imminent epicenter (near Tucumcari, New Mexico) gradually decreased over several months. For another intense seismic event within that region (Los Alamos) there were no ALP within 100 km of the imminent epicenter 15 to 21 months before the quake. Ten ALP were observed during the period 7 months to 14 months before quake. However, about 50 ALP were reported during the six-month period that preceded the quake. After the quake, there were significantly fewer ALP and their distribution was totally random.

Of course the movement of a field-like pattern could have an alternative, geophysical explanation. One, as suggested by John Derr, involves the movement of ground water. Lateral movement and percolation of the massive fluid reservoir through the

earth's crust can certainly affect the distribution of forces along fault lines. Alterations in the distributions or levels of ground water, especially along river systems in response to load extremes (floods), could affect these forces in a manner that would be very similar to that proposed for moving strain fields. Maintained injection of fluids, such as within the Derby site and many major oil fields, might also be expected to influence hydrodynamic factors. It is important to emphasize that at least in the Derby case, both the numbers of ALP and the numbers of earthquakes within the same month were most strongly correlated with the volume (in millions of gallons per month) of fluid injection.

(g) Limitations of the TST

There are reliable relationships of moderate strength that exist in time and space between numbers of UFO reports and the amount of seismic energy release within a geological region. Because both types of discrete events are produced by tectonic stress and strain and they are not directly measured but only inferred, the TST has not been demonstrated conclusively. The situation is analogous to the relationship between a fever and the later development of influenza. Although both the fever and the flu are produced by a virus, the association between the two is limited unless both can be related to the virus. The pattern may display strong reliability, i.e., there is a systematic positive lagged correlation between the fever and then the flu. However, the pairing does not necessarily demonstrate the validity of the hypothesized relationship: the virus causes both. The limit of the TST is analogous.

Most of the evidence that supports the TST is based upon correlational analyses and procedures that require a moderate level of appreciation for multivariate methodology. This feature is shared by many other areas of science, including epidemiology, meteorology, astronomy, and, of course, seismology. The temporal and spatial correlations between UFO reports and earthquakes are comparable to the association between:

- 1) radon levels and lung cancer,
- 2) alterations in stratospheric constituents and global warming, and
- 3) foreshock patterns and seismic events.

Sometimes phenomena that involve statistical processes are difficult to perceive and, for some researchers, frustrating to understand.

The role of cognitive style in problem solving and the frequent incompatibility between discrete and probabilistic thinking are important variables in this area of research. For example, one experienced exploration geologist felt that for the TST to be totally supported, *each* ALP should be shown to be associated with a particular earthquake. Such an approach is comparable to attempting to equate each cough with a particular spot during an episode of measles. Like any field phenomenon, some measure of the field's property rather than its individual constituents is essential.

The third major limit of the TST is the subject matter. UFO reports are based upon human observation. Consequently, issues such as sampling, estimates of how many

true UFO *events* are represented by a single UFO report, and the general problem of consistent recording of odd events (even an anomalous event becomes routine if displayed frequently enough) are potential sources of variance that affect the magnitude of the relationship between UFO reports and earthquakes. It is likely that if these errors were minimal, the relationship between ALP and earthquakes would be so conspicuous that statistical treatment would not be required. Sampling errors generally dilute, not enhance, the strength of replicable relationships.

An important difficulty with UFO reports is that they probably represent heterogeneous phenomena. Whether or not 1) unidentified lights moving in a straight line, 2) rotating red balls of light with multiple smaller balls along their periphery, and 3) metallic-looking shapes originate from different sources of variance or are different manifestations of the same source (tectonic strain) must still be established. The presence of this heterogeneity suggests that single UFO cases cannot be used to refute either the phenomena (in the tradition of Philip Klass) or the TST (in the tradition of Stanton Friedman).

Whether or not UFO reports in one part of the world are comparable to those reported in another must still be addressed. Indirect evidence suggests similarity because historical episodes of increased global seismicity have been associated with "world-wide epidemics of luminosities." In North America there has been consistency in the proportion of different types of UFO reports within the Uinta, Rutledge, Yakima (Toppenish) and CUFOS collections. Most classified UFO reports are odd luminosities, comparable to CUFOS' classification Type III through Type VI; the stranger observations constitute less than about 5% of the population of reports. The strongest correlations occur between classic ALP and earthquakes; the stranger the observations, the less clear is the association to imminent seismic activity.

From an extreme behaviorist perspective, the persistent correlation between UFO reports and seismicity may only suggest that anomalous human behavior (in the form of strange perceptions) may precede earthquake activity in the region. Escalations of UFO reports could be considered as a type of epidemiological phenomenon that is analogous to other forms of odd animal behavior that may precede some earthquakes. This hypothesis can only be excluded when construct validity between UFO reports and other measures, e.g., photographs, spectral analyses, has been completed.

MECHANISMS AND FEATURES OF THE SPECIFIC UFO EVENT

(a) *What is the actual UFO event?*

The logical extrapolation from the TST is that the individual UFO event, primarily an ALP, is the transformation of the energy associated with mechanical deformation within the earth's crust into electrical, light, magnetic, sonic, or even chemical forms. The transformation is in principle similar to the transduction of any energy. However, because the earth's crust is composed of heterogeneous materials with different thermoelectric, piezoelectric, and chemical compositions, the conversions are more

varied. This multivariate factor predicts that *a variety of different physical mechanisms are involved with the generation of UFO events*. If different mechanisms generate different products, then the rich variation in the physical properties of UFOs might be explained.

Despite this multiplicity of mechanisms, there should be predominant modes of transformation because the earth's crust displays larger percentages of certain types of minerals. Because quartz-containing rocks are so widely distributed, the piezoelectric form is one possible mechanism. An equally common process would involve a variant of the nucleation reaction that is hypothesized to precede earthquakes. Considering the magnitude and forces involved, one would predict that most UFOs generate substantial electromagnetic fields that include the entire spectra of light (and color), biologically hazardous ionizing radiation, and even quasistatic magnetic field components that are sufficient to affect lighting and ignition systems.

No direct extrapolation from the TST can predict what actually happens when the **quantum of strain** is translated into the phenomenon that is then perceived as a UFO. Does this quantum of stress translate into a microearthquake? Is the gradual increase in stress before its catastrophic release (e.g., an earthquake) associated with an escalation in the numbers of microearthquakes and hence the "release" of UFO phenomena? Or, is the quantum of strain transformed into the UFO event in lieu of the release of mechanical energy? What is the ratio of transformations of quanta of strain that are directly observable, i.e., are the (visible) UFOs only a *small fraction* of the actual numbers of strain quanta? Are the others released as pockets of radon gas or electromagnetic radiation? There are no contemporary answers to these questions.

The physical properties of the UFO event should reflect some fundamental feature of the local earth's crust and the mechanism through which the ALP is generated. We should find that the predominant red color of ALP should reflect a frequent chemical property that accompanies the transformation of the quanta of strain. The involvement of sulfide-based ores would be expected to generate sulfur-oxide or methylsulfonamide (the smell added to propane gas) correlative with the ALP. Involvement of outcrops of acidious quartz diorite might promote the release of the relatively common radioactive gas, radon, and evoke reports of "residual radioactivity." Enhanced gas emissions and chemiluminiscence have been postulated to generate at least some types of earthquake lights (Hedervari and Noszticzius 1985).

One would expect that measurable residues of ALP, when they touch the ground, should reflect the primary constituents of crustal material. The few metallurgical analyses that have been conducted revealed oxidized forms of the most frequent elements of common rocks: silica, manganese, and aluminum. Quantitative estimates indicate that only a few grams of metal (Persinger 1984b), dispersed along a strong electromagnetic surface, would appear as "metallic." Interestingly, the temporal association between some ALP reported during the 19th century and the deposition of "slag" or metallic fragments was frequently reported by Charles Fort. If the ALP had been labeled "spaceship," then these materials would be attributed to "spaceship fragments."

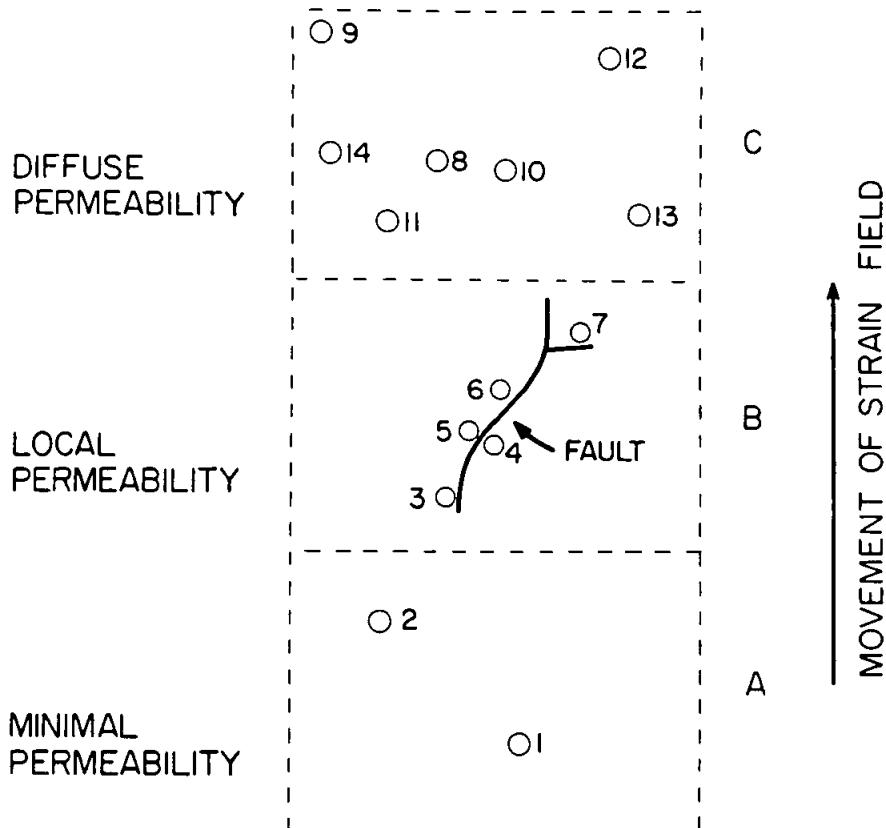


Fig. 9 Conceptual representations of the distributions of ALP and hence UFO reports as the strain field moves through different crustal architectures and compositions (A) In areas of minimal permeability to strain induction, few UFOs are evident. (B) Within an area in which a fault line is present, most of the UFOs occur along its dimensions (C) Within an area that is maximally permeable to strain induction, despite the absence of obvious fault structures, the UFOs appear statistically in a variety of specific localities Although they are actually *different* events generated by the same strain field, they may be misperceived as the same event appearing and disappearing in different locations

(b) Local Displays of ALP Should Be Distributed Around Areas of Stress Accumulation and Release But Be Attracted to Geometries that Promote Charge Collection

As shown in Fig. 9, the occurrence of specific ALP is predicted to occur in topographies that are associated with stress release. Consequently, LP should be more frequent along fault lines or their topographic equivalents such as rivers and creeks. To test this prediction, a comprehensive knowledge of the local structural geology would be required. The systematic pursuit of this hypothesis has been completed

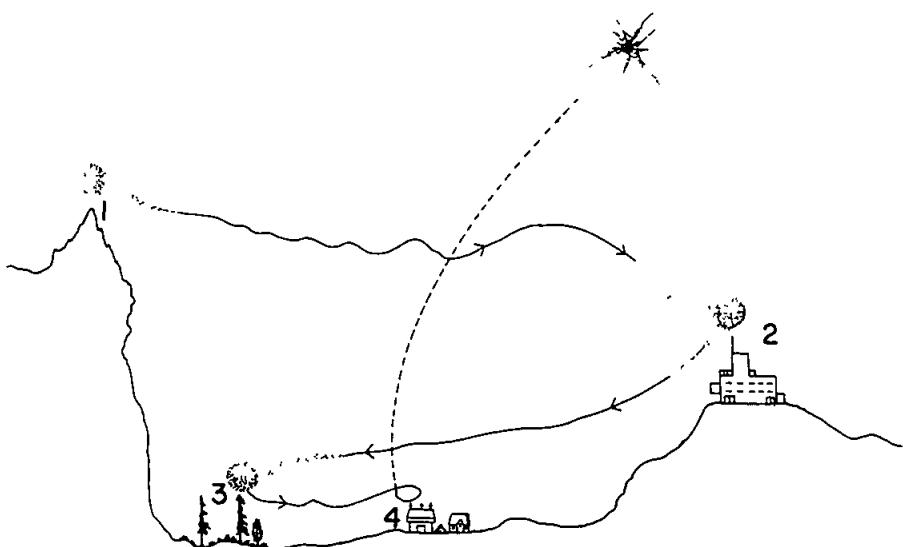


Fig. 10 Conceptual indication of the factors that affect the movement of the individual UFO event. In general, unless driven by a strain field, dynamics would be influenced by the balance of charge distribution and local conductive-dielectric topography. In this example, the event moves from the peak of a mountain to the antennae of a steel-reinforced concrete installation, over the tops of trees, and finally over a house. Either movement of the strain field or intrinsic instability within the UFO, indicated by a change in EM emission (color), results in movement away from the locality.

almost exclusively by Paul Devereux (1989) and his research group. They have shown that ALP are distributed along fault lines. In the U.S. the only comparable study involved the collections by Greg Long (1990) for the Toppenish Ridge ALP. There are likely to be hundreds of keen observers who have noticed the relationships between very local and brief displays of ALP, fault lines and seismicity. Without the implementation of Ron Westrum's (1982) concept of a social network, the presence of these observers would remain obscure.

If the individual UFO is primarily an electromagnetic phenomenon, it should follow those principles. Verification of this prediction would require classification of the natural and man-made structures of the local environment along a continuum of conductors to non-conductors (Fig. 10). Classic UFOs or ALP would be expected to occur over powerlines, near the apices of structures (towers, steeples, hills); they would also be attracted to moving semiconductors such as trains, cars and the human being. Although qualitative descriptions support the general hypothesis, well designed quantitative studies are required.

(c) Local Triggers of ALP Involve Any Stress-Relevant Stimuli

Although tectonic stress must be present to generate ALP, its acute occurrence will depend upon probabilistic processes or the occurrence of a trigger. If the former occurs, then UFO reports could be distributed in a less conspicuous manner over several days to weeks. However, there are several candidates that can affect local stresses and force the production of UFOs into narrower and more conspicuous temporal windows. Major triggers are lunar tides, the passage of air masses and geomagnetic storms. All have been found to trigger earthquakes (Latynina and Rizaeva 1976; Kilston and Knopoff 1983). A focal strain field associated with the moon rotating around the earth travels at the order of 1,000 km/hr. Passage of air masses (Persinger and Cameron 1986), especially very energetic ones, have been associated with some UFO flaps, ghost lights (such as the Hookerman phenomenon in New Jersey) and earthquake lights (Yasui 1974). The role of intense geomagnetic storms was discussed in the last section.

(d) The Strangeness of the Individual UFO Event Reflects the Perspective of Observation

Strangeness or unusual properties frequently emerge when a phenomenon's level of discourse is traversed. At the level of 10 cubic centimeters a glass of water containing lipid membranes appears clear and homogeneous. Within a 1 cubic nanometer volume of that same fluid, odd and unusual properties emerge. There may be some (hydrophobic) regions where there are no water molecules, in other regions the electric charge disparity may be equivalent to a million volts per meter and protein chains may twist and rotate continually. The phenomena are anomalous because the observer has traversed a level of observation and is perceiving an extremely minute subset of the total set.

An analogous situation is predicted to be responsible for the fundamental strangeness of many UFOs. Because the observer is viewing a minute subset of the total phenomenon (the strain field), properties are apparent that would not be discernible at a regional level. This prediction is more metaphorical than empirical. However, it opens the possibility for the discovery of unusual physical forces or their anomalous application and perhaps unexpected interactions between the electromagnetic correlates of human cognitive processes and the UFO phenomenon itself.

(e) The Observer's Beliefs Affect the Description of the UFO

Most UFO phenomena are measured by complex human processes that involve sensation, perception and memory. They are affected by the person's expectations, beliefs, and learning history. The more dependent the description is upon these processes, the more they affect the details of the original sensation. If the label spaceship is used to label an ALP, the recalled details can slowly change from a bright light in the sky to an object with windows, to a craft. Because memory is the

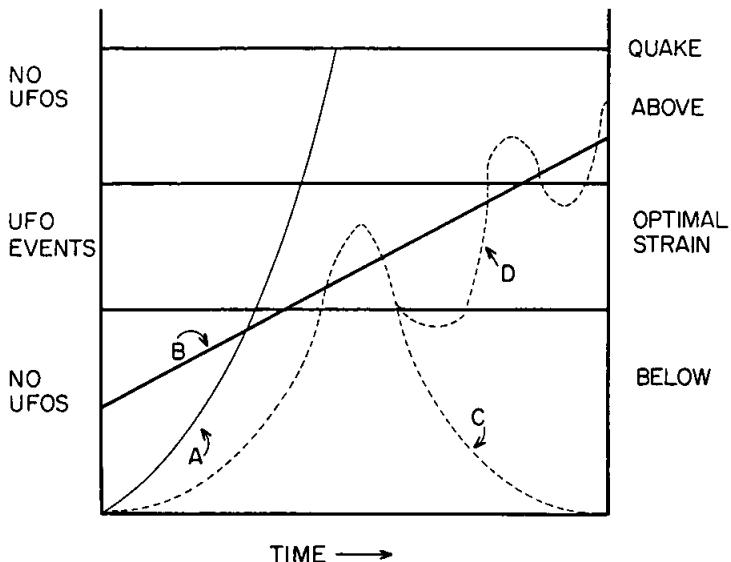


Fig. 11 Graphic representation of the hypothesis that ALP are generated when only specific parameters of tectonic strain are present. Below or above this optimal condition, no UFOs are generated although other forms of unusual events may occur. Depending upon the rate of strain accumulation, the duration and numbers of ALP and UFO reports will change. (A) Strain increases rapidly, evoking multitudes (and hence conspicuous numbers) of UFOs before an earthquake is precipitated. (B) The strain increases in a linear manner such that the ALP are distributed over several weeks before the occurrence of earthquakes. (C) The strain field increases, generates UFOs, but then decreases before it can generate an earthquake. (D) The strain field undulates such that a series of separate UFO episodes are generated.

"measurement" of experiences, the person cannot easily detect changes within the system. The fidelity of memory, especially for anomalous events, has been discussed elsewhere (Persinger 1983f, 1984b).

(f) Does the Increase in Stress Before Quakes Generate More ALP or Evoke Qualitatively Different Phenomena?

The general tendency for most UFO events to occur weeks to months before the release of seismic energy suggests that their temporal relationship is non-linear. If it were not, then more and more ALP should occur as the imminent earthquake approached. The absence of general linearity indicates that some restricted amount of stress or a particular rate of change in stress, early in the stress accumulation, is optimal for the generation of ALP (Fig. 11).

The analyses of the Washington-Oregon data (Persinger and Derr 1984) indicated that the greater the amount of energy release, the greater the temporal lag in the

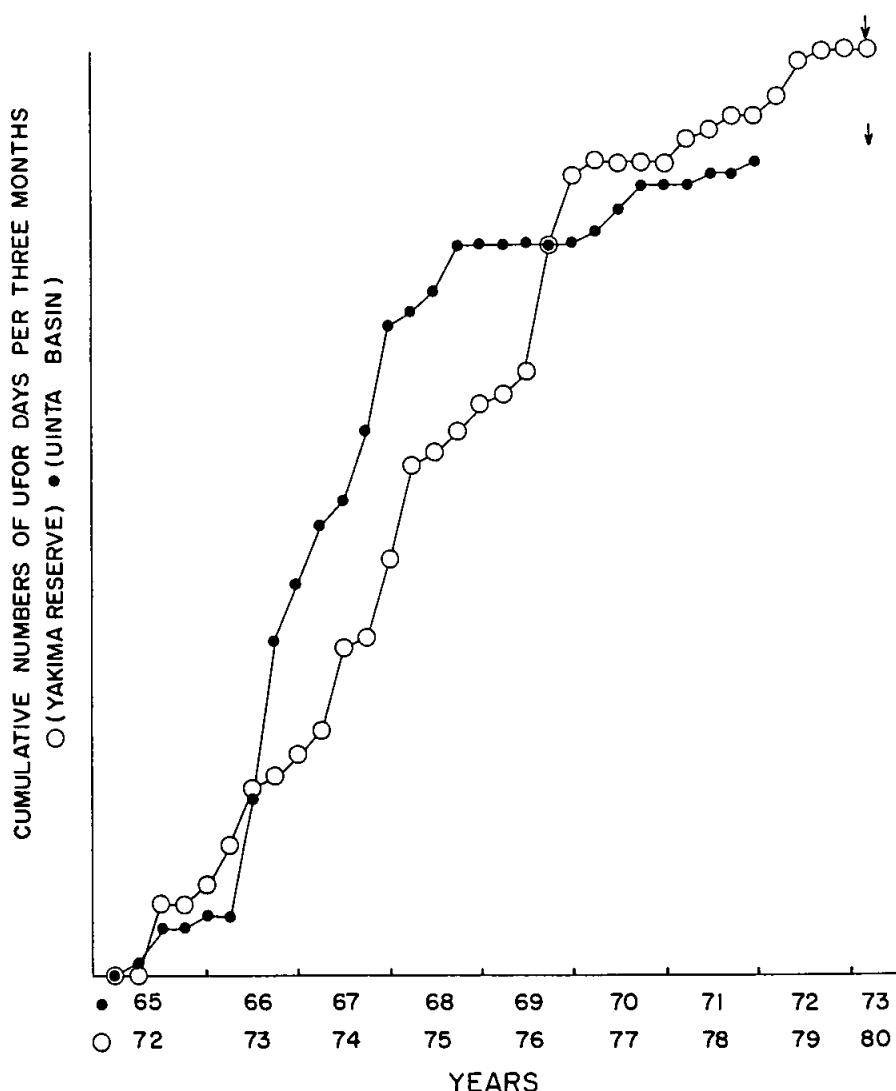


Fig. 12. Cumulative numbers of ALP or UFO reports per three-month increment within the Yakima (Toppenish) area in Washington state between the years 1972 and 1980 and within the Uinta Basin, Utah, between the years 1965 and 1973. The records were aligned according to the putative major event (indicated by arrows). The major event for the Yakima area was assumed to be the Mt St Helens eruptions. Within the Uinta Basin, the event was two earthquakes on the same day. One of the quakes was 5.4 M and was the largest event that had been recorded in the Basin (at least between the years 1960 through 1983). Whereas the collection of the Toppenish data continued with only occasional discontinuities until the major event, the Uinta data ended in 1971.

antecedent peak in numbers of UFO reports. Peaks of ALP in the Zeitoun episode (Derr and Persinger 1989a) preceded the major seismicity by almost a year. In an analogous manner, temporal clusters of anomalous seismic activity may occur several years before the occurrence of a major shock (Yoshida 1987). These results suggest a "critical zone of stress magnitude" that could generate ALP. Depending upon the duration that this zone was maintained and the movement of the stress field, ALP could be generated for several weeks (with concomitant seismicity), but then become less evident for years before a significant *major event*. An example of this pattern is shown in Fig. 12.

Whether or not other kinds of anomalous phenomena are generated by tectonic stresses before and after this critical zone is not clear. Only one analysis has shown that electrical anomalies (power failures) precede ALP that in turn precede more exotic displays, such as poltergeist-like events. The conceptual and spatial concomitance of ALP with poltergeist, haunt, and other phenomena was observed in the Toppenish, Uinta, and Gold Hills, North Carolina (unpublished reports by Wayne Laporte), displays. The interrelationship between UFO and parapsychological phenomena has yet to be explored.

(g) Limitation of the TST Application to the UFO Event

Although there are many similarities between luminous phenomena generated by compressional stresses within the laboratory and the ALP that could be generated by tectonic strain, a mechanistic connection between the two is less clear. The fundamental assumption has been that laboratory models are valid representations of large-scale equivalents. This assumption is prevalent in many scientific disciplines. Unfortunately there have been no published studies by physicists or geophysicists that have applied the discrete relationships of the laboratory to the large-scale field setting. If the essential phenomena are scale invariant, then the lifetime of the average UFO suggests that compressional energies involve hundreds of square kilometers of crustal space.

THE CLOSE ENCOUNTER PROBLEM

The issue of abductions by alien intelligence, whether manifested as the angels of the 16th century, the fairies of the 19th century, or space creatures of the present period, is not critical to the verification of the TST. These experiences involve no more than 1% of the total data set of UFO reports. However, the powerful association between the explanations of UFO phenomena and the occurrence of these unusual experiences requires objective attention.

(a) *Contactee and Abduction Experiences are Variants of Beliefs in Mystical Entities and Cosmic Experiences*

The experienced clinician is cognizant that the concept of the human self is a fragile phenomenon whose integrity is maintained by systematized beliefs and expectations. They produce the sense of personal purpose and facilitate the creation of strategies that diminish the apprehension of personal death. Belief in omnipotent forces such as God or more contemporary equivalents, such as alien intelligence, is one obvious consequence of these processes. An indication of the intimate relationship between these beliefs and the integrity of the self is the anxiety, anger, and flurry of verbal activity that are evoked when the beliefs are challenged. Such systematized beliefs are so common that by definition they are normal. Beliefs that dominate a person's life are considered delusions only when they deviate extremely from culturally acceptable concepts. Psychologically, there is no difference in the belief that God protects a person from harm and the conviction that Omnipotent Space Creatures are spiritual custodians.

Anxiety, depression and dissociation are common features of everyday life. Although the prevalence of the first two are apparent, the incidence of dissociation is less widely known. The intensity of symptoms range from the occasional "staring into space" to large periods of missing time. Approximately 10% of the population dissociates frequently and at least half of the population dissociates during intense personal events, such as divorce, death, and occupational disappointments. During these periods the person may experience missing time and report alterations in memory. Memories can be reorganized such that they are no longer accessible to consciousness. When this occurs the concept of self is sometimes changed; in more religious traditions the period coincides with conversions.

If a specific stimulus was associated with dissociation, then a later presentation of that stimulus or something similar to it can activate these alterations in memory. Because these "altered memories" are often odd or personally unacceptable, their revelation generates anxiety; consequently there are strong psychological forces that prevent their emergence. The person may remain vigilant (anxious) or display depression. During periods of personal stress, these dissociated memories, modified by beliefs and expectancies, occur as experiences that are perceived as originating "outside" of the self. These experiences are perceived as real and are frequently ascribed to religious or mystical intervention. The consequent conversion in cognitive structure, alters the perception of the self and the sense of purpose.

(b) *Anomalous Experiences that Comprise Contactee and Abduction Reports are Correlated with Enhanced Activity within the Temporal Lobes of the Human Brain*

Although all portions of the brain are involved with experience, the temporal lobes have a major contribution. These regions contain the most electrically unstable structures of the brain; they are strongly associated with meaning, memory, visual and auditory imagery and the sense of self. Extreme electrical stimulation within these

regions is associated with altered perception of normal events, the release of dream states into consciousness, feelings of personal destiny, concerns about the meaning of life, the compulsion to proselytize, and an intense widening of affect such that mundane observations, from a crescent moon to a misplaced bracelet, become components of a common theme (Persinger 1983f).

The lability of temporal lobe activity displays a continuum, people who display limbic epilepsy, defined by focal electrical seizures that may or may not generalize to motor convulsions, occupy the extreme end of this continuum. Most normal people would show intermediate forms of activity. However, this can be enhanced by physiological states, particularly those associated with elevations in the stress neuropeptides adrenocorticotropic hormone (ACTH) and the glucocorticoid, cortisol (Persinger 1989).

The personalities of normal people who display enhanced temporal lobe activity are dominated by its features. These people usually display enhanced creativity, suggestibility, memory capacity and intuitive processing (Persinger and Makarec 1987). Most of them experience a rich fantasy or subjective world that fosters their adaptability. Many of them are prone to bouts of physical and mental activity followed by mild depression during which self-questioning occurs. These people have more frequent experiences of a sense of presence during which time "an entity is felt and sometimes seen"; exotic beliefs rather than traditional religious concepts are endorsed. With the exception of panic and post-traumatic stress disorders, there is no evidence that the incidence of psychiatric disorders among people who display temporal lability is any greater than those less prone to this activity. The delayed emergence (15 years or more after the enhanced lability) of schizophreniform processes cannot be excluded.

(c) Any Event That Fosters Dissociation and Focal Temporal Lobe Activity Might Precipitate Contactee or Abductee-Type Experiences

Most human cultures have developed techniques that facilitate periods of contact with and "abduction" by mystical entities. The common factor of these techniques is the capacity to encourage temporal lobe lability: fasting, hypoxia, and psychological or physical stress are effective stimulators. Their general consequences are similar. With the details of culture removed, there is little difference operationally between an American Indian encountering his spirit guide and being taken to "the land of the spirits" and the 20th-century North American encountering an alien and being abducted. The fragmented memories, parapsychological themes, missing time, episodes of torment or inspired "messages" and sense of personal significance remain the same.

Because most UFO phenomena are assumed to be energetic natural sources, close proximity to them would preferentially evoke electrical instability within the observer's brain (Persinger 1983f). The types of symptoms and their intensity would vary as a function of the current induction within the brain. As the current density increases, the consequences would change from tingling sensations or sense of a

presence, to odd smells or sounds and then to the release of dream-like images. At very intense currents, partial amnesia might occur and severe hypertonus or convulsions would ensue. Very intense currents would be lethal; unless precise postmortems were completed, the symptoms would simulate a heart attack. If the body was associated with burns, death would probably be attributed to a lightning strike.

Even though disruptions in consciousness would occur, memory would still be consolidated. It would be affected by the label and the beliefs evoked by the person to describe the ALP just before the stimulation. Once the neuroelectrical equivalents of these experiences occurred, a process that involves only a few minutes, the memories would appear as real as those acquired under more mundane conditions. Any form of extraction, from free association to hypnosis, would simply reflect what the person believed happened rather than what necessarily occurred. Considering the predictable manner in which neurocognitive processes adjust to brain trauma, alterations in the "retrieved" experiences or "revelations" should be evident as cognitive dissonance is resolved and information acquired *after* the incident is incorporated into memory. These processes have been demonstrated experimentally in a variety of psychological contexts (Stern 1985; Rossi 1986).

There are important differences between the effects of current induction that can occur proximal to an ALP and those evoked by more mundane sources, such as electroconvulsive shock (ECS). The latter is quick, discrete and occurs within a relatively familiar context. The experimental procedure that evokes experiences most similar to the more extreme UFO encounters is the electrical stimulation associated with neurosurgery. It involves very focal current induction (about 1 cc) within the brain (Persinger and Cameron 1986). These similarities suggest that the magnetic fields associated with ALP involve highly localized, flux line-like distributions of energy. Most medical utilizations of electromagnetic energy, such as magnetic resonance imaging (MRI) techniques, are not representative of this process because they emphasize homogeneity of current distribution.

Because ALP generated by tectonic strain could affect the brain of the nearby observer, some abduction and contactee experiences might be attributable to this source. Considering the variety of psychological and physiological conditions that can affect temporal lobe lability, the majority of these experiences should not involve ALP directly. They would be the subject matter of the experts who study human cognitive processes. In light of the strong correlation between lifetime histories of dissociation during stress and early histories of sexual and physical or psychological trauma, especially between the ages of 4 and 6 years, these factors would be expected to predominate. For these cases, the TST is simply not applicable.

SOME IMPORTANT CONSIDERATIONS IF THE TST IS VALID*(a) The Role of Belief in UFO Research*

The only relationship between UFO phenomena and alien intelligence is that both concepts are strange. Although UFO phenomena are veridical and alien intelligence somewhere in the universe is probable, there never has been any evidence that the two are related. A connection between a "crashed vehicle" and the millions of UFOs displayed as ALP is even less likely. For centuries now, some form of "extraterrestrial" intelligence has been the default explanation for anomalous events that appear in the sky. ETI for UFOs is an empty hypothesis because the intelligence is functionally defined, like the existence of God, in a manner that can never be tested by traditional scientific methods.

With each added anomaly to UFO phenomena, the description of alien causality becomes more and more bizarre. One believer in the alien hypothesis commented that even if the correlation between UFOs and earthquakes was perfect, it would only show that spaceships are following faults lines in order to obtain energy to traverse the fourth dimension. No amount of analyses can compete with intense belief.

However, if it were not for such beliefs, tenaciously defended with sometimes religious fervor, the UFO data now available would never have been collected. These researchers were like the early astrologers who obsessively recorded the positions of the planets in order to find their personal future. If those data had not been collected, one wonders if Tycho Brahe and Johannes Kepler would have had the database to test their theories of the physical solar system. Without the dedicated believers in extraterrestrial surveillance, government conspiracies and ultradimensional intelligence, UFO data would not have been collected systematically. Inductive hypothesis, such as the TST, could not have developed. The history of science will probably reference them for their perseverance as the data collectors.

The emergence of the TST and other testable competitive hypothesis will no doubt begin, sooner or later, to erode this belief. The systematic collection of data will subside and the empirical pursuit of the phenomena will falter. Science will not necessarily compensate for this deficit because scientists are human beings whose behaviors are also governed by belief. At present the study of UFO phenomena is believed not to merit scientific inquiry and remains in the realm of personal belief. The mentality is reflected in the comments by an anonymous referee who reviewed a manuscript by John Derr and me. The referee wrote: "The relationship between ALP and the release of seismic energy in the central U S A is only correlational and if I had a choice I prefer to believe that they are alien spacecraft rather than caused by tectonic strain."

If the strength of association between two phenomena of such great potential importance, such as UFOs and earthquakes, were found in physics, medicine or astronomy one doubts if the potential would be ignored so conspicuously. However, until UFO phenomena are divorced from their association with concepts that are

couched within personal beliefs, pursuit of understanding will remain in the periphery of science. Only a few protagonists and antagonists will remain, often at risk to their own reputations

(b) Medical Concerns and Implications

There are two major implications of the TST that deserve ethical consideration. First, if most UFO phenomena are generated by tectonic stresses and they are associated with the release of anomalous electromagnetic fields and radioactive gases, should epidemiological studies be recommended (Persinger 1988b)? There are dozens of anecdotal cases of untoward biological effects, including premature mortality, following close proximity to intense ALP. The known population has ranged from the most frequent experiencers of the Fatima episode to the Cash-Landrum radiation case. Most UFO researchers are informed of at least one local case of a person becoming ill or dying shortly after close proximity to an anomalous light, especially when missing time is concomitant.

These cases are likely to be the extreme representations of exposure to the electromagnetic correlates of the processes that generate UFO phenomena and ALP. Experimental data clearly indicate that even weak time-varying magnetic fields can affect DNA activity and cell division (Liboff et al 1984). The weak but significant relationship between cancer, including brain tumors, and certain types of EM fields cannot be denied (Persinger 1988b). If most UFO events are associated with potentially hazardous forces, then risk assessment is a responsibility rather than an option for the cognizant scientist.

Of course, a prudent balance between concern and prevention of undue alarm is essential. Except in cases where there are multiple close encounters with ALP or in certain "flap" areas where maintained concentrations of ALP occur over time, the risk of health hazards will probably be minimal. Perhaps the question is best phrased by a specific possibility Who will be responsible for the child who is seriously affected by a close encounter to an ALP because he or she thought it was Spielberg's ET, returning?

The second consideration involves the psychological status of abductee and contactee experiencers. The majority of these individuals should be psychiatrically normal. The stress of an anomalous experience can be comparable in impact to that associated with the confrontation of the memories of sexual assault or abuse and should be treated by a mental health professional. If the TST is appropriate for most ALP, then the belief concerning abductions and contactee by alien intelligence is delusional. The encapsulated "abduction experience" is no more real or unreal than the demons and aliens that compose the "alters" (dissociated behaviors and memories) of patients who display multiple personality disorders (Ross 1989). Confrontation with delusional origin to the alien experience can be as devastating to the person's psychological state as proof that God is fantasy might be to a religious believer. Within this context, the ethical bases of researchers who embellish and encourage the abductee's beliefs are challenged.

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REFERENCES

- Anastasi, Anne
 1976 *Psychological Testing* (4th ed) N Y Macmillan
- Derr, John S
 1973 Earthquake Lights A Review of Observations and Present Theories *Bulletin of the Seismological Society of America*, Vol 63 2177-87
- Derr, John S , and Michael A Persinger
 1986 Luminous Phenomena and Earthquakes in Southern Washington *Experientia*, Vol 42 991-99
 1989a Geophysical Variables and Behavior LIV Zeitoun (Egypt) Apparitions of the Virgin Mary as Tectonic Strain-Induced Luminosities *Perceptual and Motor Skills*, Vol 68 123-28
 1989b *Denver Area Luminous Phenomena Earthquakes and Fluid Injection at the Rocky Mountain Arsenal Well* Paper presented at the Society for Scientific Exploration, June 15, 1989, Denver, Colorado Unpublished
 1990a Luminous Phenomena and Seismic Energy in the Central U S A *Journal of Scientific Exploration*
 1990b Geophysical Variables and Behavior Quasiexperimental Verification of the Tectonic Strain Theory and Indication of Possible Mechanism The Derby (Colorado) Quakes Submitted to *Perceptual and Motor Skills*
- Devereux, Paul
 1989 *Earth Lights Revelation* London Blandford
- Galli, Ignazio
 1910 Raccolta e classificazione di fenomeni luminosi osservati nei terremoti *Bollettino della Societa Sismologica Italiana*, Vol 14 (6/8) 221-448
- Hedervari, Peter, and Zoltan Noszticzius
 1985 Recent Results Concerning Earthquake Lights *Annales Geophysicae*, Vol 3 705-708
- Jakubcová, I , and M Pick
 1986 Is There Any Relation between the Sun's Motion and Global Seismic Activity? *Studia Geophysica et Geodesica*, Vol 30 148-52
- Long, Greg
 1990 *Examining the Earthlight Theory The Yakima UFO Microcosm* Chicago J Allen Hynek Center for UFO Studies
- Kilston, Steven D , and L Knopoff
 1983 Lunar-Solar Periodicities of Large Earthquakes in Southern California *Nature*, Vol 303 21-25
- Latynina, L A , and S D Rizaeva
 1976 On Tidal-Strain Variations before Earthquakes *Tectonophysics*, Vol 31 121-27

- Liboff, A R , T. Williams, D M. Strong, and R Wistar
 1984 Time-Varying Magnetic Fields Effect on DNA Synthesis *Science*, Vol 223
 818-20.
- Mattsson, D , and Michael A Persinger
 1986 Geophysical Variables and Behavior XXV Positive Correlations between
 Numbers of UFO Reports and Earthquake Activity in Sweden *Perceptual
 and Motor Skills*, Vol 63 921-22
- Mazzarella, A , and A Palumbo
 1988 Solar, Geomagnetic and Seismic Activity *Il Nuovo Cimento*, Vol 11 353-64
- Ouellet, Marcel
 1990 *Earthquake Lights and November 1988 Seismicity in the Saguenay Region,
 Quebec, Canada* Unpublished paper
- Persinger, Michael A
 1976 Transient Geophysical Bases for Ostenible UFO-Related Phenomena and
 Associated Verbal Behavior? *Perceptual and Motor Skills*, Vol 43 215-21
 1980 Earthquake Activity and Antecedent UFO Report Numbers *Perceptual and
 Motor Skills*, Vol 50 791-97
 1981a Odd Luminosities (UFOs) and Other Fortean Events before Earthquakes The
 New Madrid Test *Pursuit*, Vol 14 (2) 69-79
 1981b Geophysical Variables and Behavior III Prediction of UFO Reports by
 Geomagnetic and Seismic Activity *Perceptual and Motor Skills*, Vol 53
 115-22
 1981c Geophysical Variables and Behavior IV UFO Reports and Fortean Phenom-
 ena Temporal Correlations in the Central U S A *Perceptual and Motor
 Skills*, Vol 54 299-302
 1983a The Tectonic Strain Theory of Luminosities (UFO Reports) *Pursuit*, Vol 16
 21-35
 1983b Geophysical Variables and Human Behavior VIII Specific Prediction of
 UFO Reports within the New Madrid States by Solar-Geomagnetic and
 Seismic Measures *Perceptual and Motor Skills*, Vol 56 243-49
 1983c Predicting Contemporary UFO reports in Great Britain from Charles Fort's
 Data An Application of the Tectonic Strain Theory *Fortean Times*, No 41
 (Winter) 58-65
 1983d Geophysical Variables and Behavior VII Prediction of Recent European
 UFO Report Years by Nineteenth Century Luminosity and Solar-Seismic
 Measures *Perceptual and Motor Skills*, Vol 56 91-95
 1983e Geophysical Variables and Human Behavior XV Tectonic Strain Luminosi-
 ties (UFO Reports) As Predictable But Hidden Events within Pre-1947
 Central U S A *Perceptual and Motor Skills*, Vol 57 1227-34
 1983f Geophysical Variables and Behavior IX Expected Clinical Consequences of
 Close Proximity to UFO-Related Luminosities. *Perceptual and Motor Skills*,
 Vol 56 259-65
 1984a Prediction of Historical and Contemporary Luminosity (UFO) Reports by
 Seismic Variables within Western Europe *Experientia*, Vol 40 676-81
 1984b Geophysical Variables and Human Behavior XVIII Expected Perceptual
 Characteristics and Local Distributions of Close UFO Reports *Perceptual
 and Motor Skills*, Vol 58 951-59
 1985a Geophysical Variables and Behavior XXI Geomagnetic Variation As Pos-
 sible Enhancement Stimuli for UFO Reports Preceding Earthquakes *Percep-
 tual and Motor Skills*, Vol 60 37-38
 1985b Geophysical Variables and Behavior XXVI A Response to Rutkowski's
 Critique of the Tectonic Strain Hypothesis for UFO Phenomena *Perceptual*

- 1988a *and Motor Skills*, Vol 60 575-82
 1988a Geophysical Variables and Behavior L Indications of a Tectonic Strain Factor in the Rutledge (UFO) Observations during 1973 in Southeastern Missouri. *Perceptual and Motor Skills*, Vol 67: 571-75
- 1988b Geophysical Variables and Behavior LIII Epidemiological Considerations for Incidence of Cancer and Depression in Areas of Frequent UFO Reports *Perceptual and Motor Skills*, Vol. 67: 799-803.
- 1989 Geophysical Variables and Behavior LV Predicting the Details of Visitor Experiences and the Personality of Experiencers: The Temporal Lobe Factor *Perceptual and Motor Skills*, Vol 68: 55-65.
- Persinger, Michael A , and R A Cameron
 1986 Are Earthquakes at Fault in Some Poltergeist-like Episodes? *Journal of the American Society for Psychical Research*, Vol 80 49-73
- Persinger, Michael A., and John S Derr
 1984 Geophysical Variables and Human Behavior XIX Strong Temporal Relationships between Inclusive Seismic Measures and UFO Reports within Washington State *Perceptual and Motor Skills*, Vol 59: 551-56
- 1985a Geophysical Variables and Behavior XXIII Relations between UFO Reports within the Uinta Basin and Local Seismicity *Perceptual and Motor Skills*, Vol. 60 143-52
- 1985b Geophysical Variables and Behavior XXXII Evaluations of UFO Reports in an Area of Infrequent Seismicity The Carman, Manitoba Episode *Perceptual and Motor Skills*, Vol 61 807-13
- 1990 Geophysical Variables and Behavior Temporal Coupling of UFO Reports and Seismic Energy Release within the Rio Grande Rift System Discriminative Validity of the Tectonic Strain Theory Submitted to *Perceptual and Motor Skills*
- Persinger, Michael A , and Gyslaine F Lafrenière
 1977 *Space-Time Transients and Unusual Events* Chicago Nelson-Hall
- Persinger, Michael A , and Kate Makarec
 1987 Temporal Lobe Signs and Correlative Behaviors Displayed by Normal Populations *Journal of General Psychology*, Vol 114 179-95
- Ross, Colin A
 1989 *Multiple Personality Disorder* N Y.. John Wiley & Sons
- Rossi, Ernest L
 1986 *The Psychobiology of Mind-Body Healing*. N Y Norton
- Rutkowski, Chris A.
 1984 Geophysical Variables and Human Behavior XVI Some Criticisms *Perceptual and Motor Skills*, Vol 58 840-42
- Rutkowski, Chris A , and M R Del Bigio
 1989 UFOs and Cancer? *Canadian Medical Association Journal*, Vol 140 1258-59.
- Stern, Leonard
 1985 *The Structures and Strategies of Human Memory* Pacific Grove, Calif Brooks-Cole
- Terada, Torahiko
 1931 On Luminous Phenomena Accompanying Earthquakes *Bulletin of the Earthquake Research Institute (Tokyo Imperial University)*, Vol 9 225-55.
- Westrum, Ron
 1982 Social Intelligence about Hidden Events Its Significance for Scientific Research and Social Policy *Knowledge: Creation, Diffusion, Utilization*, Vol 3 381-400.

- Yasui, Yutaka
1974 *A Summary of Studies on Luminous Phenomena Accompanied with Earthquakes.* Tokyo. Dokkyo Medical University
- Yoshida, A
1987 Precursory Activity in Seismic Belts Containing the Focal Region of Forthcoming Large Intraplate Earthquakes *Tectonophysics*, Vol 140 131-43
- Zoback, M D , and M L Zoback
1981 State of Stress and Intraplate Earthquakes in the United States *Science*, Vol 213· 96-104

PHYSICAL FACTORS IN ANOMALOUS EXPERIENCE: THE NEED FOR A MULTIDIMENSIONAL APPROACH

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The "earth light" approach of Michael Persinger and Paul Devereux and Persinger's stress on certain brain mechanisms that may mediate the psychosocial elaboration of anomalous experiences are appealing because of their comprehensiveness. Anomalous photisms, for example, are features of UFO reports, Marian visions, near-death and mystical experiences, and so on. We may have here data and concepts that furnish steps toward a general theory of anomalies, but we have to proceed with caution.

For one thing, there are the general difficulties of the statistical approach. Persinger has stated these candidly. We know, for example, that there is a probable link between smoking and cancer; but in particular cases there are always confounding variables. We can never be sure in any particular case what role, if any, smoking has played in causing cancer. In the case of tectonic strain and anomalous lights, the problem is also with specificity, only much greater. The question is whether a broadly significant linkage (assuming the analysis of data holds up) really, and in what sense, explains a particular experience.

As a test case, I want to comment on one striking phenomenon that Derr and Persinger (1989) cite in support of their theory. On April 2, 1968, two Moslem mechanics witnessed an apparition of a "white lady" on the dome of St. Mary's Coptic Church in Zeitoun, Egypt. This apparition was taken to be the Virgin Mary; luminous Mary-related phenomena were observed by hundreds of thousands of witnesses for the next thirty months—a truly spectacular *and complex* anomaly with massive eyewitness testimony. I have interviewed many witnesses myself. Derr and Persinger's five-page paper scarcely does it justice; the *sole* concern is to show correlations with tectonic strain. The apparitions are reduced to "strain-induced luminosities." While not denying the possible correlation the authors attempt to establish or its limited importance, there are specific problems as well as problems with the overall approach.

- According to Persinger, the phenomena preceded by one year unusual seismic activity occurring 400 km southeast of Zeitoun. Devereux (1990) points out that earth lights often appear around projections, and Saint Mary's dome would be a good example. But one still wonders why, if the causal strain lay 400 km away from the church, the phenomena were localized in the same area for thirty consecutive months. Does the church stand above a fault, which might explain this focusing effect?

Persinger gives no indication that it does. Even if it does, we would have to see the total pattern of faults and projections and other lightform attractors in the area before we could make sense of the particular and long-lasting location of the admittedly anomalous epiphanies.

• About the luminosities, the report reads "When photographed, these phenomena appeared as irregular blobs of light." But this is true of only some of the photos. Others show clearly defined forms of statuesque Marylikeness. There is a good example in Scott Rogo's *Miracles* (1982), and there are good examples in the sources cited by Persinger in his paper. If the photos show meaningful form, then the idea of randomly produced luminosities falls apart, (not necessarily for Devereux's but for Persinger's version of the theory). Moreover, witnesses claimed they *saw* specific Marylike forms, making gestures, bowing, assuming an attitude of prayer, holding up an olive branch, and so forth. The crowds didn't go into ecstasy because they saw "irregular blobs of light." Persinger must have seen the photos with defined figures and read the reports but failed to mention them in his account. I can only conclude that he did so because they were inconsistent with his theory.

• Persinger ignores the content of the extraordinary Zeitoun experience; his interest is confined exclusively to the physical *mechanisms*. About the content he says that "their details usually reflected the religious background of the experiencers" (Johnston 1980). Reading this, one gets the false impression that Johnston is cited to support Persinger's view, which is that the content of the visions reflects cultural expectations, mediated by temporal lobe functions. But Johnston is a believer who calls his booklet *When Millions Saw Mary*, and takes pains to point out that Moslems, Coptic and Protestant Christians, Jews and nonbelievers saw the same Marian apparitions.

• Persinger suppresses other features of the Zeitoun phenomenon that don't square with his theory. For instance, witnesses reported seeing and smelling enormous billows of red incense pour out of the church domes. One might, of course, speculate that this was a collectively synchronized hallucination. Not inconceivable, on Persinger's theory; but recalcitrant facts must be faced, not conveniently glossed over.

• Another difficulty is that not everyone present during these mass sightings saw the "anomalous luminosities." Some people I interviewed reported that they (or people they knew), although fully wishing and expecting to see the apparitions, saw nothing at all at the very time others were witnessing them. If the Zeitoun apparitions were physical effects produced by tectonic strain, why did some witnesses not see them?

• Another problem is this. Persinger has called attention to the health risks arising from tectonic strain-induced electromagnetic anomalies. With such a vast amount of anomalous radiation reported in one area with exposure to millions of people we might expect by now a localized epidemic of radiation-linked illnesses. As far as I know, there is no evidence for this, however, it is a question that can be investigated. What has been reported is the exact opposite claims of healing.

Farouk Atwa, the Moslem mechanic who first saw the apparition, is an example. He pointed at the apparition with a bandaged, gangrene-infected finger, which was

scheduled to be amputated the following morning; when Atwa went to the hospital, physicians found no trace of gangrene in his finger. Wagih Rizk Matta, the first person to photograph the apparitions was also cured of an arm injury. A physician, Mikhail B. Tadros (1974), has collected accounts of healing reported by the Zeitoun visionaries. Persinger has nothing to say about these centrally important features of the phenomenon he is trying to explain.

In looking at this one case, it seems to me that Persinger's theory explains very little. One wonders what detailed examinations of other cases would turn up. My misgivings go deeper. Marian visions, UFO experiences, indeed the whole realm of anomalous encounters are subjects of a science of human behavior. A science of human behavior, to be worthy of its name, needs to employ a multi-dimensional methodology: it must deal with the factor of human freedom; with feelings of awe, wonder, beauty; with social and historical contexts; with values and meanings; in short, with the incredibly rich world of the internal environment of human beings.

. There is, I would like to remind Persinger, a human side to human behavior. All is not geomagnetism and temporal lobe mechanics. To neglect or ignore the internal environment in the name of "science" is to do a disservice to science and to dehumanize the human. Persinger's work is relentlessly reductionistic and one-dimensional. Reading his account of Zeitoun, for example, one is at a loss to understand why anyone would care about the experience in the first place, no less take pains to understand it, so stripped is it of any hint of human significance.

Far from dismissing possible data bearing on tectonic strain and temporal lobe mediation factors in the interpretation of these fascinating phenomena, I think they may be important pieces of a very big puzzle. However, I agree with Paul Devereux that the new findings point to subtle problems of interpretation. Devereux's idea, for instance, that earth-generated photisms may exhibit peculiar psychoid properties, a kind of ideoplasticity or responsiveness to human consciousness is quite provocative. To pursue this line of inquiry, however, we need a multidimensional methodology that brings into relief rather than obliterates the human factor.

REFERENCES

- Derr, John S., and Michael A. Persinger
1989 Geophysical Variables and Behavior LIV Zeitoun (Egypt) Apparitions of the Virgin Mary as Tectonic Strain-Induced Luminosities *Perceptual and Motor Skills*, Vol 68 123-28
- Johnston, Francis W
1980 *When Millions Saw Mary* Chulmleigh, Devon Augustine
- Rogo, D. Scott
1982 *Miracles* N Y Dial Press
- Tadros, M
1974 *Forty Miracles of the Lady Virgin* Cairo Haret El-Sakkain

THE ROCK AND ROLL THEORY OF UFOS

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Ever since the UFO phenomenon first came to public awareness in 1947, scientists have tried to explain it away. In the beginning, they assumed that UFOs were the products of the misidentification of any number of things: birds, planes, clouds, flying spider webs, moon dust, and a host of others. Academics assumed that their own particular disciplines adequately explained reports. For example, sociologists talked about "societal stress," psychiatrists found pathology, meteorologists found weather conditions, psychologists found mass hysteria, hallucination, and so forth (Jacobs 1975). Most of these explainers were sincere in their belief that the UFO phenomenon could be conventionally defined. Some of the explainers became so emotionally committed to the idea that UFOs had to be conventional that they abrogated their responsibility to have their solutions scientifically accurate. Thus, even a prestigious scientist like Donald Menzel "fudged" his data to solve UFO sightings (Maccabee 1986). Abandoning the facts became acceptable because 1) it did not matter what the method of arriving at an explanation was because the answer was always going to be the same—UFOs were not anomalous, and 2) because UFOs were conventional, there was no need to deal with the evidence—which, being largely anecdotal, was useless anyway.

Evidence or not, these explanations sometimes solved a few UFO sightings that investigators had not resolved—after all, 80% of raw reports could be identified. One of the most distressing problems, however, has been the tendency for some explainers to take a narrow explanation that might account for a few sighting reports and extrapolate it into a Grand Explanation for all reports. For example, Phil Klass's long-since discredited plasma theory was touted to be the "answer" to the entire UFO mystery (Klass 1968).

The Tectonic Stress Theory (TST) is the latest Grand Explanation for the UFO mystery. In short, the theory suggests that geological stress preceding and following earthquakes generates Anomalous Light Phenomena (ALP). These lights sometimes behave unconventionally and some TST adherents have correlated them with some lights-in-the-sky UFO reports in specific geographic areas. TSTers also claim that sometimes ALP can appear to be metallic and behave in an inquisitive manner. Although most are small, some might be large. Most last for a few seconds, but some might persist for minutes.

If TS causes ALP then it is certainly possible that some of these lights-in-the-sky

sightings might indeed be caused by ALP. It is even more reasonable to suggest that puzzling non-UFO luminous phenomena like the Marfa Lights might be related to TST. If all this were true and if this were the extent of the TS theories it would be a contribution to our knowledge welcomed by geologists and UFO researchers alike.

Unfortunately, the adherents of TST have expanded their theories to serve as a Grand Explanation for all UFO and abduction reports, and here they run into serious trouble. As all UFO researchers know, there are at least six different categories of UFO sighting reports. ALP addresses only the weakest of all sightings—the high-level lights in the sky. Modern UFO researchers pay almost no attention to these reports. While they did create much discussion through the 1950s, by the 1960s researchers understood that the probability of error was too great and the amount of data to be learned was too little to warrant full-scale investigation. Although they are still sometimes investigated, since the 1970s most serious UFO researchers have ignored them. In fact, in the past two decades only *one* lights-in-the-sky case has had any major impact upon UFO researchers' attention—the highly publicized 1978 New Zealand case.

But TST explains not only lights in the sky, but the entire range of UFO sightings as well. Observations of hard, structured objects on or near the ground are actually electromagnetically charged particles. Photographs, films, and videotapes of obviously artificially-structured objects are also the same light phenomenon. Independent witnesses describing in great detail the outside shell of a UFO sitting on the ground are in reality seeing ALP. It is the vagaries of memory and the expectation of extraterrestrial origin that transmute these ALP sightings into UFO close encounters.

TST theory also provides an explanation for the intricacies of abduction accounts. It explains their richness of detail, their lack of idiosyncratic and personal content, and the physical sequelae (anomalous scar tissue, punctured eardrums, and so forth) that emanates from them. It explains the characteristic psychological trauma that abductees suffer. It explains missing time episodes (only one of many events that might be clues to an abduction) in which the person is demonstrably missing. TST explains multiple abductions independently verified by others. It accounts for the fact that some people do not even know that they have been abducted except when the act was witnessed by a person who was not abducted, and "blind" investigation of the episode reveals the abduction. TST explains why people describe identical writing symbols seen during an abduction. It explains why people describe in the most precise detail exactly the same specific physical and mental procedures administered to them, nearly all of which have never been publicized.

How does TST explain these things? ALP give off electromagnetic energy. Electrical energy discharged through a person's brain in a laboratory can cause predictable effects on thought and behavior—often dissociative. Although it has never been scientifically demonstrated, it might be possible that if a person comes into close contact with ALP, an energy discharge might take place which might hit the witness in the head and it might effect his temporal lobes so that he might dissociate, he might feel a tingling sensation, he might feel oppressed, and he might sense a "presence."

around him. And if the person thinks that the ALP is a UFO he might think that he is being abducted into it. Thus, the abduction phenomenon has been rendered "conventional." But what of those people who claim to be the victims of abductions and who are not in proximity to ALP? They probably have histories of dissociation brought on by childhood sexual, physical, or psychological trauma, and this has brought about their abduction fantasies.

Michael Persinger states that "the only relationship between UFO phenomena and alien intelligence is that both concepts are strange . . . there never has been any evidence that the two are related." Instead, the UFO phenomenon is but a modern incarnation of the age-old human propensity to believe in mysticism—which is mainly caused by temporal lobe lability. Thus, TST supplies a neo-physiological basis to the well-known "psychosocial" theory of UFO generation.

Like all Grand Explanations, Tectonic Stress Theory as a solution to the UFO and abduction problems rests on a profound lack of knowledge of them. Developing any theory that predicts predetermined behaviors and psychological reactions presupposes that the theoreticians would be fully cognizant of the tenets of those behaviors and reactions. TST adherents cannot be faulted for having little knowledge about abductions because so few UFO researchers have adequately studied it. But not being aware that there is a complex phenomenon that requires independent study on its own terms is essential for the maintenance of the Grand Explanation. Thus, theories are casually tossed out with no factual bases. One minor example. There is absolutely no evidence whatsoever that childhood trauma of any type plays a role in creating abductions.

As long as TST advocates do not fully understand and deal with the reality of UFO and abduction evidence, they, like all Grand Theoreticians, will find it relatively easy to solve its puzzles. Once learning and the acquisition of knowledge take place, TST adherents will discover it to be a much rockier road to the truth than they ever imagined.

REFERENCES

- Jacobs, David M
1975 *The UFO Controversy in America* Bloomington Indiana University Press
- Klass, Philip J
1968 *UFOs—Identified* N Y Random House
- Maccabee, Bruce S
1986 Still in Default *MUFON 1986 UFO Symposium Proceedings* Seguin, Tex .
 Mutual UFO Network pp 161-74

CRITICAL COMMENTS ABOUT EARTH LIGHTS AND THE TST

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The papers presented by Paul Devereux and Michael Persinger clearly indicate some of the problems in the formulation of a natural and terrestrial explanation for UFOs. To some, the TST is appealing because of its attempt to explain UFO reports without resorting to the extraterrestrial hypothesis. In fact, both Persinger and Devereux suggest that it is the predisposition of most researchers in favor of the ETH that hinders the acceptance of the TST as a viable explanation for the phenomenon.

This contention is patently false. Attacking "non-believers" is hardly a rational and scientific approach to a solution. Researchers such as myself, who do not adhere to only one particular theory to encompass all UFO reports, are not convinced by the pro-TST arguments because of inherent flaws in the design of the theory itself. Both Persinger and Devereux seem to generally ignore criticisms of the TST by a host of researchers that include Greg Long, Steuart Campbell, Stanton Friedman, Claude Maugé, Thomas Bullard, Grant Cameron, and Marc Del Bigio, though Persinger at least offers lip-service to Long, Del Bigio and myself.

What are the basic flaws in the TST and Earth Lights Theory? The one that comes immediately to mind is the fact that if skeptics such as Philip Klass and Robert Sheaffer are to be believed, then all UFO sightings have prosaic explanations, without invoking any kind of new theory of "Earth energy." Persinger's reams of statistical correlations between UFOs and seismic events are therefore totally meaningless, and the issue is dead. Incredibly, Persinger hedges his bets by suggesting that such a result is still in keeping with the TST by allowing human perceptions to be affected by seismic strain energy, thus causing people to misidentify conventional objects!

This leads to another problem with the TST that is more firmly rooted in the philosophy of science. Theorists such as Kuhn and Popper have argued convincingly that astrology is not a science because it fails several criteria, among which is the test of falsifiability. Basically, the test requires that a situation be envisioned in which the TST would be either supported or not supported depending on the outcome. In the case of astrology, it is easy to see that since astrology is not a predictive practice, it fails the test. Furthermore, any criticism of an apparent failure of astrology can be qualified by an astrological practitioner as explainable, given additional elaborate modifications to astrological theory (i.e., if my horoscope is wrong today, there must be some astrological reason for its error).

As formulated, the TST fails the test of falsifiability. Both Greg Long and myself have tried to suggest a situation that would be suitable for using in such a test. If the TST could pass such a test, then valuable support for the theory would be obtained. It seems logical, for example, that if seismic energy is related to UFO reports, a seismically-inactive area would have few UFOs. The province of Manitoba, in Canada, has more than 700 UFO reports recorded in the UFOROM database, yet has never had any recorded earthquakes within its boundaries. Neighboring Saskatchewan, which has had an occasional tremor associated with mining operations, has only a handful of UFO reports on record. Nevertheless, in a TST paper by Michael Persinger, he related the Manitoba UFO reports to a few minor tremors in southern Minnesota, over 700 kilometers away from the UFOs correlated!¹ The argument for this relationship offered by Persinger and John Derr, a geophysicist and an authority on earthquake lights, is that the underlying rock strata somehow channel the seismic energy to the areas where the UFOs are eventually observed. The important thing to note here is that there is currently no understood physical mechanism that could account for such an explanation. As TST proponents correctly point out, it has been established that electrical energy is sometimes detected as precursory to an earthquake, and also that earthquake lights are an accepted but poorly-understood phenomenon also related to rock failure. However, this is a long, long way from proving that UFOs are the result of seismic energy release.

The TST leaves many unanswered questions to sheer speculation. The problem of distance and time lags between UFO sightings and seismic energy detection is very unsettling. In the case of the Manitoba UFOs, for example, why would the energy necessarily have to travel hundreds of kilometers before jumping into the air, changing phase and eventually being seen as a glowing ball of light? Would it not be geologically easier to move in some other direction and create a UFO only a few kilometers from the source of the strain?

The energy requirements have also not been adequately addressed. What would be the actual energy needed to produce a glowing ball of visible light (6000 Å) at a height of 100 feet off the ground and maintain it for one minute as it moves on a variable path through the air? We know that ball lightning *in rare cases* does exactly this, but we are talking about many more events, and a different energy source that may well originate dozens of miles underground. (And how would a shallow-focus seismic event differ from a deep-focus event, with regards to the TST?) So far, the articles produced about the TST are qualitative, rather than quantitative, with the exception of the few comments by McCartney and Brady, and in the case of Brady's experiments, the results hardly supported the TST.

The TST neatly explains all aspects of the UFO phenomenon. (This in itself should raise a red flag.) Were ground traces left by the alleged UFO? The TST explains this by EM effects upon the environment. Did the witness report seeing entities? The TST explains this by EM stimulation of the temporal lobe resulting in a form of hallucination. Were animals disturbed during the sighting? Animals, as you know, are sensitive to seismic precursors. Was an abduction experience reported and were physiological

effects noted? EM effects again. TST proponents have gone even further, by linking poltergeist reports, religious experiences and even cancer among ufologists and UFO witnesses to seismic energy. And yet critics of the TST are accused of not being objective with regard to the theory as presented to date.

The statistical studies which TST proponents use to "prove" their case are also unconvincing. In the first place, correlations do not in any way prove a cause and effect, something hammered home to students of statistics in introductory college courses. Secondly, the correlations presented for the TST are post hoc. That is, data is gathered before a test of such data is formulated. This is described in statistical literature as "optimizing on chance," a problem that often negates complex studies in many scientific fields. In general, a null hypothesis must be stated in advance of any collection of data for a correlation to be considered valid. The data itself is a problem, since unfiltered, raw UFO sightings are used as correlates. In early TST studies entries in Saunders' UFOCAT were used, despite warnings from Allan Hendry that UFO-CAT could *never* be used in statistical studies because of flaws in its design. This is obvious, since raw UFO data contains *at least* 90% misidentifications, and some researchers (even pro-UFO ones!) put this majority as high as 99%. Persinger has maintained that the correlations are still valid, though, because the misidentifications are "random noise" that do not affect the result. It is more likely that the statistical results themselves are a result of problems in design.

This is not to say that TST proponents are deliberately misrepresenting the issue. It simply shows how tenuous the support for the TST really is, despite the reams of articles published about it to date. Both Greg Long and I agree that earth lights probably do account for some small fraction of recorded UFO reports. I would further agree with both Persinger and Devereux that their theories deserve a great deal of attention from the scientific community as well as UFO researchers in general. The TST is a legitimate explanation for some UFO reports; what is at issue here is the actual percentage of the total that are explainable with the TST. I feel that the two gentlemen deserve a lot of credit for expounding the earth lights concept. Ufologists should be allowed the privilege of "agreeing to disagree" about the matter, however, without accusations one way or another about a lack of open-mindedness.

FORUM ON THE TECTONIC STRESS THEORY (TST)

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The study of UFO phenomena has produced many hypothetical constructs to explain portions or clusters within the data, and the concept of tectonic strain promises to be one of the most concrete and productive. Researchers such as Michael Persinger and Paul Devereux deserve some applause for their pursuit of this particular possibility in unraveling parts of the enigma.

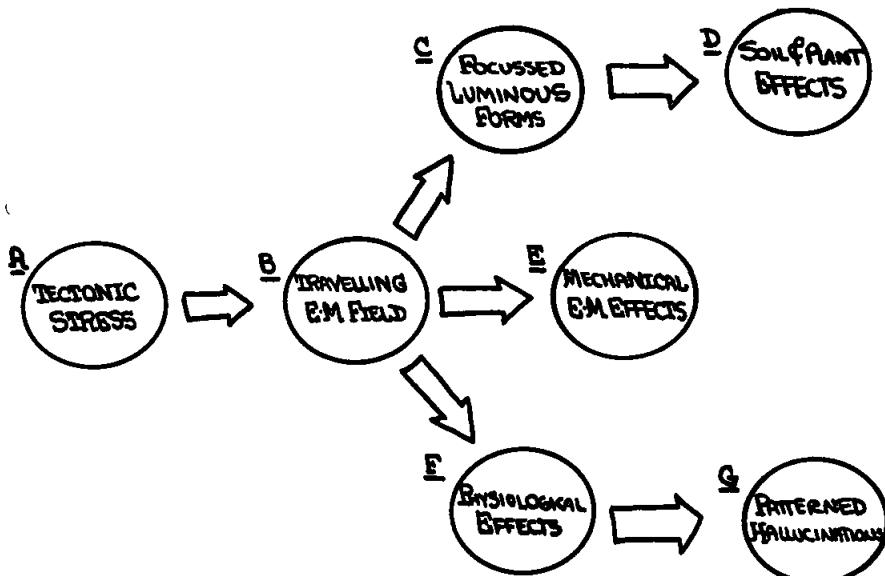
Paul Devereux's introductory forum piece contains much to be admired as a statement of a "research-in-progress." Of particular note toward a working concept is his willingness to give a common or type description of the sort of luminosity to which his theory applies, and to delimit the initial research queries to small geographical areas with a repeater aspect: areas often acquiring a folk legend concerning the lights, and which might be the foci for tectonic stress effects over many years. These sorts of "terrain lights" are obviously excellent candidates for inquiry into anomalous phenomena. To add to Paul's list of folklore tales, I'll offer the following: Philip Drucker (1965) speaks of a Pacific Northwest coast legend, thus

Giant quartz crystals possessed a life of their own they glowed with a blinking white light, vibrated with a humming sound, flew through the air, and killed ordinary men and animals with a mysterious charge.

One might almost think that the Indians invented the TST after hearing that.

As all issues have two sides, I must admit that I can't support everything in Paul Devereux's piece. Most particularly, I find little to base a theory of "the lights as living entities" upon; however, even that speculation is speakable so long as it is clearly labeled for what it is. I was not aware that everything Michael Persinger suggests about the brain (in UFO-report relevant detail) can be clinically stimulated. This needs referencing, as does the important concept that the light balls relate precisely to faults. Rare occasions of rather extreme language concerning the total explanation of all UFO authentic reports and the entire future relevance of ufology, I forgive as the product of a sociological history of somewhat improper previous exchanges between ETI and TST advocates in less professional fora than this journal.

Michael Persinger has provided a detailed and useful piece covering, somewhat heroically, a vast landscape of ideas. His conception of the TST is more sweeping than that expressed by Paul Devereux, which, in my view, is a strength and a weakness. I view the general concept as in the following diagram:



Dr Persinger's comprehensive TST seeks to employ a known high-energy phenomenon (A) to produce a second known phenomenon (EM fields) with some hypothetical characteristics (B). Then this field by an as yet unknown mechanism produces UFOs (C), landing traces (D), electrical interference with autos, (E), health effects and CNS effects (F), and classic abduction and close encounter tales (G). This is indeed an interesting concept and one well worth exploring. It is also, as I hope everyone would admit, far from being a fact of life, and due to the extreme difficulty and interdisciplinarity of the concept will be rather long in the process of gathering supporting data. It is, in my view of science, a working hypothesis, in fact several working hypotheses: nothing more, nothing less. It is a clearly respectable and worthy research project (probably a hundred research projects), and I am rooting for it to show some success. The data currently offered for the TST I view as stronger or weaker depending on the case. Materials such as those presented by Michael Persinger's colleague Dr John Derr at the 1989 meeting of the Society for Scientific Exploration, on tectonic stress and reports of luminous phenomena, were most interesting in the orderliness of their patterns and the geographical focus of their scope (Derr 1989). Paul Devereux's focal areas in Great Britain should provide another venue for these early strong-patterned cases upon which to found the hypothesis.

Also to be noted in favor of the hypothesis, in an intuitive way at least, are the known effects on life forms of electric and magnetic fields, and the extreme lability of at least some aspects of the central nervous system (e.g., MPD personality shifts, epileptic kindling phenomena, brain thresholds in general) (Kirschvink 1985; Nair 1989, Popp 1979). Having said that, however, and with respect, we must admit that everything (B-G) in the TST working hypothesis is in a very early stage, tentatively supported by

certain intriguing statistical studies, and with very little ability as yet to probe causal mechanisms.

Since it is allowed, even honored, in science to answer the "how" questions (patterns, behaviors) prior to the "why," then why is this lack of nailing down the causal agencies of any issue? It need not be. It only becomes an issue if too much becomes claimed too soon on the basis of statistical patterns. Why is this germane to the TST? Whereas some of the individual case studies (like those of John Derr previously mentioned) seem reasonably tight as to the variables of time and space involved, in other studies the time/space variables are wildly different. Because the statistical patterns are found post-hoc, and because there is as yet no causal agency that could restrict the range of the variables, these become statistical "encounters-of-the-nervous-kind," which, again in all due respect, are interesting but far from convincing.

Secondly, people who are conversant in some depth with the UFO data realize that most data collections are widely different in the materials included: quality, report type, details. Large, unsorted, statistical lumping may be a first step toward pattern finding, but it seems ultimately quite unsatisfactory to not cleanse the data input. And it seems a little unconvincing to ignore case details in a "final solution" statement (e.g., Zeitoun Apparitions).

Once again there seems to have been some unnecessary heat involved in the argument history of the TST. This is a fine working hypothesis, and we all should be delighted that Messrs Persinger, Devereux, Derr, et al., are going for it. In the Game of Science there is room for many concepts, and in large unwieldy bags of data like UFO reports, even more so. There is little need for competitive remarks between ETIers and TSTers, and I consider myself both. But perhaps we can at least nod with understanding at the intensity of the argument, for as Evelyn Fox Keller (1983) has said in her biography of Barbara McClintock:

Good science cannot proceed without deep emotional investment on the part of the scientist. It is that emotional investment that provides the motivating force for the endless hours of intense, often grueling labor.

REFERENCES

- Derr, John
1989 *Denver Area Luminous Phenomena, Earthquakes, and Fluid Injection in the Rocky Mountain Arsenal Well* Paper presented at the Eighth Annual Meeting of the Society for Scientific Exploration, Boulder, Colo., June 15-17, 1989
 Abstracted in *The Explorer*, Vol 5 (Fall) 5
- Drucker, Philip
1965 *Cultures of the North Pacific Coast* N Y Harper and Row
- Keller, Evelyn Fox
1983 *A Feeling for the Organism* San Francisco W H Freeman

- Kirschvink, J L , Douglas Jones, and B F MacFadden (eds)
1985 *Magnetite Biomineratization and Magnetoreception in Organisms.* N Y.
Plenum
- Nair, Indira, M Granger Morgan, and H Keith Florig
1989 *Biological Effects of Power Frequency Electric and Magnetic Fields* Wash-
ington, D C Office of Technology Assessment
- Popp, Fritz A , et al (eds)
1979 *Electromagnetic Bio-Information* Baltimore Urban and Schwarzenberg

Round Two

RESPONSE TO MY CRITICS

PAUL DEVEREUX

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Though I feel that none of the four response papers adequately deal with the depth and scope of the material Michael Persinger and I have presented, either here or in general, I will confine myself to brief comments on some of the points raised in them.

MICHAEL GROSSO

Overall, I very much agree with Grosso's paper. Like him, I feel more of the human side needs to be studied. I agree that Persinger can give a relentlessly reductionist impression at times, but this is largely due to his use of rather mechanistic language. He actually covers a great deal of ground that careful reading would reveal impinges directly on the areas that both Grosso and I recognize as important. Moreover, I think to make this kind of statement does a disservice to Persinger's excellent and balanced contribution to this particular forum.

I agree with Grosso that certain energetic effects need not always, or necessarily, be seen in a pathological context (see my findings on radon, for example, in Devereux 1990).

Most of Grosso's paper is taken up with his observations of the Zeitoun event. I must disagree on two points. First, people most certainly *can* go into ecstasy because they see irregular blobs of light! In at least two definitely documented cases here in Britain, one concerning the re-entry of satellite material and the other a meteoric fireball, craft and windows were reported by many witnesses from the patterns of light involved. The second, and more serious, point is Grosso's lapse of logic. He states that photographs of the Zeitoun phenomenon exist that show "clearly defined forms of statuesque Marylikeness" in addition to those showing light blobs. Further on, however, he reports that not everyone present saw the anomalous luminosities. He asks that "if the Zeitoun apparitions were physical effects produced by tectonic strain, why did some witnesses *not* see them?" I would ask Grosso "Why did the camera therefore see a clear figure if not hoaxed or massaged?" He has to lose either the statue-like imagery

(a telling description in itself) or the testimony of those who claim they saw nothing. Further, if it is being suggested that there was no environmental, objective phenomenon present, how do you account for any of the photographs? Either the photos or the phenomena have to go.

DAVID M. JACOBS

The many sources of UFO imagery that Jacobs describes which were postulated earlier in ufology are still valid and undoubtedly (a major) part of the raw data received by ufologists. Most of these earlier ideas have not been invalidated by more recent research, as Jacobs seems to imply.

The earth light approach is *not* necessarily synonymous with the TST, and personally I am *not* specifically a TSTer (though I accept it as a strong and fine hypothesis). The earth light approach is not put forward as a Grand Explanation in the dismissive sense that Jacobs claims. There is nothing referred to by me with regard to earth lights versus UFOs that the approach does not legitimately address. I do not bring in areas where I think it has no relevance. In my writings I give clearly explained reasons why I feel the earth light approach has something to offer regarding certain aspects of the UFO enigma. Readers can take or leave the ideas and evidence I present, but they are not empty suggestions. Some aspects of ufology may not relate to an external phenomenon at all.

Jacobs makes the highly prejudicial statement that light phenomena of the Marfa Lights type are "non-UFO." If he makes this extraordinary distinction, he should define what UFOs are, then. I await his clarification, when presumably we will be able to drop the U from UFO.

As with earthquake lights and ball lightning (two terms, incidentally, that merely label phenomena for which no satisfactory physics have yet been determined), the variations in longevity and appearance of earth lights are there in the literature, in witness testimony. They are not invented by TSTers. That these descriptions have such relevance to reported UFO forms really begs the question, does it not?

The overriding benefit of the work of Persinger, myself, and others that might have been more readily acknowledged by Jacobs, and all contributors to this forum, is that it has put the question of ALPs on the agenda. As Jacobs inadvertently confesses, "most serious UFO researchers have ignored them" (which, of course, raises the need to define "serious"). In other words, the earth light approach brings back into focus, more sharply than ever before, the greatest component of the reported UFO enigma—light phenomena. That this has, indeed, been so ignored is culpable, and suggests bias on the part of serious ufologists towards high strangeness events. (This bias is most noticeable overall in North American ufology, incidentally. Jacobs may be shocked to learn that most ufology goes on outside of the United States.)

The patterns of ETH and abduction evidence cited by Jacobs are open to considerable question. For example, just how many cases of abductions being witnessed by a person who was not abducted are there? And how reliable is the evidence in them?

(Budd Hopkins told me only three days prior to this writing that there had been only one such case.)

Jacobs's reference to "an energy discharge which might hit the witness on the head" shows he has no understanding of field effects.

The abduction experience itself needs to be interpreted in the light of a wide range of research, not just within an ET framework, as with, for example, the leading-edge studies on consciousness done by Grof, Hearne, LaBerge, Green, and others regarding transpersonal and "metachoric" experiences. Subjects in Hearne's studies have had experiences in "rich tactile and auditory imagery, of being examined in the dark by robots or operated on by small beings" (Blackmore 1990). These "Little Grays" are appearing in states of consciousness directly accessed from the waking state in university lab conditions in Britain. They do not come with alien spaceships.

Jacobs's obvious ignorance of this sort of highly relevant research, or his repression of it, in areas unsullied by ufological debate, is typical of the lack of breadth displayed by so many within ufology. As Grosso states, we need a "multidimensional methodology." (It already exists, in fact. In Britain it is called "earth mysteries"—for want of a less bland portmanteau term—and ranges from archaeology through anomalous phenomena to consciousness studies. At least a dozen areas of study are involved, and I give the first full, working description of the multidisciplinary and multimode area in *Ancient Wisdom, Future Science*, due out in 1991. I have been immersed in this process for nearly a quarter of a century. May I welcome at least Grosso to the fold?)

Jacobs states that there is "absolutely no evidence whatsoever that childhood trauma of any type plays a role in creating abductions." This is a sweeping statement. One thinks of the work of Kenneth Ring (1989) and others regarding the similarities between profiles of abductees and child abuse victims, and the elements of disassociation that may be involved with both groups. I am not commenting on the value of any of the work done, but I am questioning the omniscience of Jacobs's statement.

CHRIS A. RUTKOWSKI

Rutkowski accuses Persinger and me of suggesting that the dominant ETH concept in North American ufology hinders genuine appreciation of the earth lights approach. I here reiterate and reinforce that suggestion (see my concluding remarks below). In Britain, the earth light approach was properly launched (Devereux 1982) and was severely attacked by the bias in the system operative here—namely, excessive adherence to the psychosocial option (PSO). I suggest that both the PSO and the ETH frame the earth light approach in a similar manner; both are excesses of perspective that have come to be taken as standard amongst their adherents. When any excess becomes taken as normal, difficulties arise.

Rutkowski makes the serious (and false) charge that Persinger and I have ignored criticisms from a list of named persons, including himself. In fact, I have responded to Long, Rutkowski, Campbell, and Maugé in print; I have responded to Friedman in public verbal exchange and with Campbell in private verbal exchange, I have

responded to Long and Maugé in private correspondence. I have not seen any criticism from Bullard that affects my position, so I have not responded to him. I have read nothing from Cameron or Del Bigio. That I find Campbell's and Long's comments to express personal hobbyhorses with little useful content is my position, and may not appeal to Rutkowski, but that is another matter. Long can suggest subterranean noises in earth light locales as relating to underground UFO bases; these days Campbell dismisses everything as mirages; Maugé has admitted to me that a real phenomenon would disturb him (he could just about cope with a distant light, it seems). I view all of these attitudes as unscientific, inadequate and fatuous. Rutkowski may view them otherwise - we therefore disagree. But I ask him to withdraw his false accusation.

Rutkowski's comments regarding Klass and Sheaffer are, to my mind, bizarre, and are irrelevant to anything Persinger or I have said.

Rutkowski's and Long's ideas about testing the TST relate only to the TST, if anything at all, and not to the earth light approach I have been fostering. Moreover, his ideas are naive and simplistic and not universally valid. I can state specific cases associating seismicity and ALP in specific detail to counter his inadequate example (Devereux 1989: 190-93). See Fig. 1. We are dealing with complex matters, with nature not clockwork as I have already stated, and there will be exceptions to any pattern (e.g., most thunderstorms do not produce ball lightning). The test required has yet to be designed. At this stage it is more important for us all to study the phenomenon and build up a picture of it.

Rutkowski constantly makes the earth light approach synonymous with the TST, common to many North American critics. In the highly unlikely event of the TST being

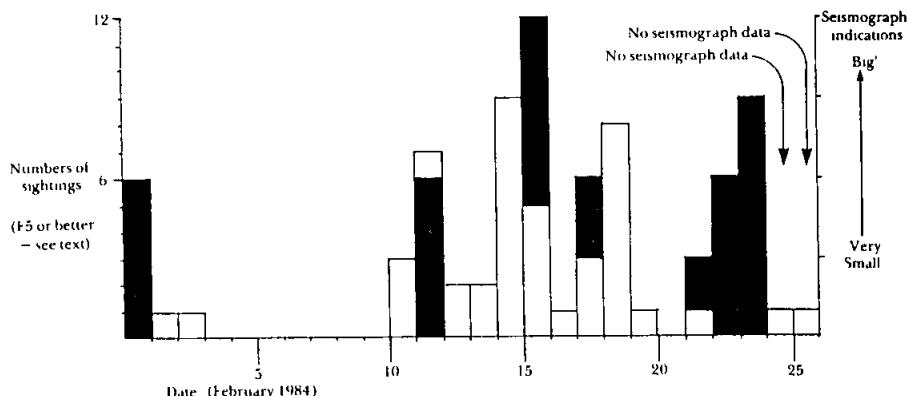


Fig. 1 Histogram showing the relationship between observed high strangeness light phenomena and recorded seismograph indications at Hessdalen, Norway, between 1-16 February 1984. Sightings of lights are represented by white columns, and seismograph indications by black columns. Columns are mixed black-white appropriately for days on which both lights and seismic events occurred. It can be seen that the biggest observed seismograph indication occurred approximately in the middle of a wave of increased light phenomena sightings around mid-February.

found inadequate, would the lights suddenly go out and no longer exist? Of course not. We have to track and study the phenomenon. In its simplest form, that is all my approach suggests. The breakthrough of the earth light approach has been to simply identify the phenomenon amongst the chaos.

Does Rutkowski deny that earthquake lights are produced (indicating the production of exotic light phenomena from seismic and geological features)? Does he deny the existence of ball lightning (indicating nature's mysterious ability to produce light forms of all kinds of shapes from centimeters to meters across)? He cannot. Therefore his attitude towards the nature and existence of earth lights ought to be more circumspect. Earth lights do not explain all ufological data, *but all ufological data may not need to be explained by them.*

I agree that statistical approaches are not always convincing. But some are.

Then we come to Rutkowski's logic lapse. He states that "both Greg Long and I agree that earth lights probably do account for some small fraction of recorded UFO reports." So what has happened here? Suddenly, after all his doubts, Rutkowski accepts the reality of earth lights? And further, he can separate those out from other ALPs? What is the small fraction? How does he distinguish earth lights from non-earth lights? I can hardly wait for what must obviously be a major research work pending from Rutkowski, quantifying the nature of ALPs around the world, and which must, by definition, confirm the earth light phenomenon.

Until I see such research from him, however, I will continue to consider Rutkowski's contribution to the earth light debate as being that of one who obtains gratification from criticizing other people's hard-won findings.

MICHAEL D. SWORDS

Of the four response papers, this is the most balanced, and I find little in it to disagree with. It is conservative, but that is in keeping with the modern scientific tradition (but one, incidentally, that has failed to recognize, let alone deal with, the earth light phenomenon). Swords has problems with ideas that the lights may respond to an observer's consciousness and/or contain rudimentary consciousness in themselves. I can understand this. Intelligent energy is a difficult concept for the world view of our culture, and the science that culture allows, to accept. But I am sure that is the very reason why the UFO enigma has remained so intractable for so long. Nevertheless, the evidence for my suggestion definitely exists, as I have clearly outlined elsewhere (Devereux 1989). How we respond to that may be more culturally determined than the skeptics might care to recognize. (Most other cultures have *not* had a problem in considering the lights as intelligent energy.) It is not a new idea, of course, and earlier researchers (e.g., Ivan Sanderson) promoted the idea of the lights as living (the Wassilko-Serecki theory). They were met by a similar dismissal from scientists and ufologists alike. I think the early researchers perceived intelligent energy in an inappropriate perspective, by thinking of the lights as "animals" of some kind and assigning their base habitat to space or the upper atmosphere, but I suspect their

essential recognition of the lights' characteristics may have been correct. We must await incontrovertible evidence that the lights can display rudimentary intelligence (not so far beyond the bounds of possibility as critics may comfortably suppose), and we must also await the development of other lines of research entirely. For instance, Stanislav Grof's work with psychedelics, spanning continents and decades, provocatively suggests that consciousness can exist outside the context of the nervous system (Grof 1989), and he is not alone in such findings. To my mind, this area of earth light study will cause the greatest revolution in all our thinking.

I cannot reference what Swords asks for regarding the effect of EM fields on human brain function, as he does not specify which areas he has problems with. But it has been in the literature for decades that electromagnetic fields applied to the brain can elicit vivid hallucinatory imagery in all sensory modes, superimpose that on waking reality, and can distort memory function both before and after the application. This being so, UFO report detail—always a fragile commodity—can take care of itself.

I have no basic opposition to Swords's TST flowchart. It is simply that I have different emphases; I start with the lights themselves and see what they tell us, rather

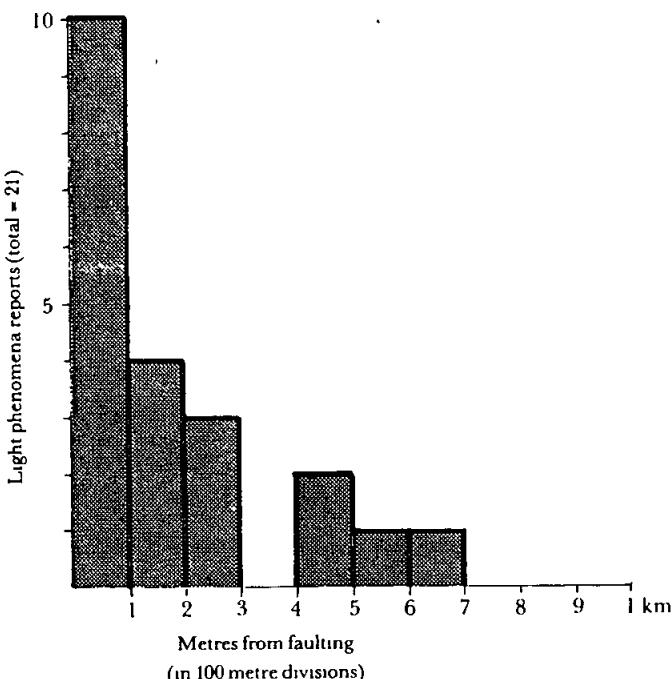


Fig. 2. Histogram showing the distance of light phenomena from surface faulting, as reported in the 1904-5 events around Barmouth. Only events that could be geographically positioned from the reports could be used for this study. The horizontal axis shows distance from faulting in 100-meter increments. It can be seen that there were dramatically more reports of lights closer to faulting.

than take a theory and see whether it applies to the phenomenon under study. Both approaches are valid, though I feel the latter is more restricted and liable to bias than any more open, phenomenon-led approach.

I do not base my ideas solely on statistical patterns. The statistics are only part of the evidence. Indeed, my work has been the antithesis of "large unsorted statistical lumping." In that respect, the work of my colleagues and I complements that of Persinger and colleagues. The range of evidence for earth lights is much broader than has been admitted to in the response papers in this forum.

Swords asks that the claim that light balls relate precisely to faults needs referencing. That such a request can be made at this stage is rather depressing. The evidence is published and accessible (Devereux, Robins and McCartney 1983; Devereux 1989). In terms of the work I have been involved with, I can say that wherever we have been able to obtain detailed faulting information related to geographically positionable reported ALPs, we have found a strong correlation. Moreover, in two zones where this has been done in the greatest detail so far (Barmouth-Harlech and St Brides Bay, both in Wales) the incidence level of ALPs has increased with proximity to faulting (Figs. 2 and 3). The characteristics that repeatedly occur in earth light locales are

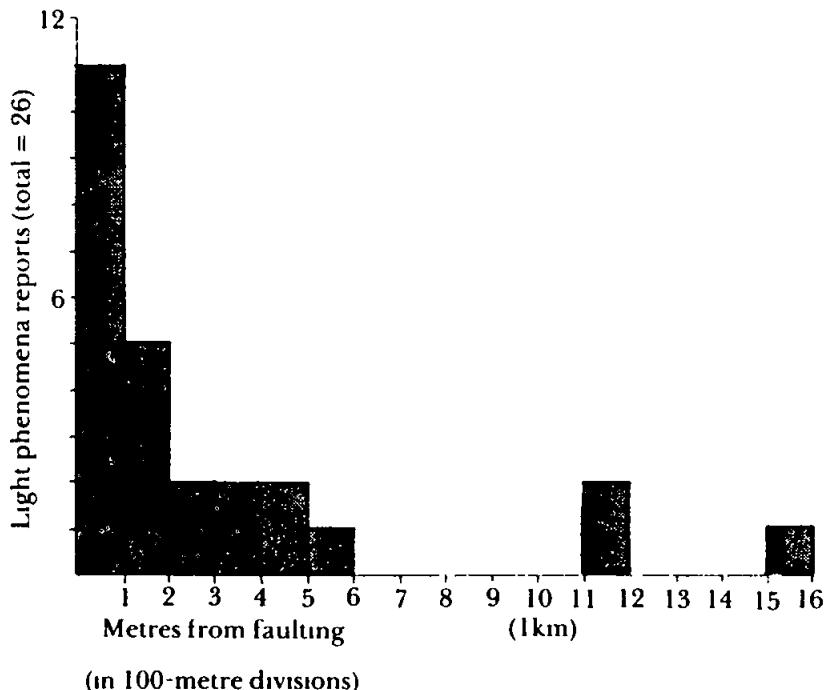


Fig. 3 Histogram showing distance from faulting of reported UFOs in the 1977 Dyfed wave. Only geographically locatable events could be used, distance from faulting is indicated in 100-meter divisions, and the increase of reported sightings with proximity to surface faulting is strongly marked.

faulting, mineralization, water bodies, charge collecting projections, and a modest level of seismic history. Not all of these factors are always present, but a mix usually is found, and they recur from case to case. Of course, many other factors are involved, probably meteorological and electromagnetic, and we are all trying to tease these out. Specific associations with seismicity and ALPs have occurred dramatically at Hessdalen, Norway, and in Britain in July 1984. But there are a host of other examples. (On a purely pragmatic note, there is a limit to the detailed field/geographical study I personally can accomplish, operating as I do without any university or institutional support, funding my own research out of an income much lower than the British national average.) But the patterns are clearly there; there is undoubtedly a geological connection with at least one strain of earth light. The exact nature of that association is one goal of research.

CONCLUDING REMARKS

It is this cart-before-the-horse attitude on the part of critics (such as Rutkowski) that is such a waste of time. The final answers to the nature and function of earth lights will be the *result* of ongoing research. We do not start with the answers—we arrive at them. It is time for cooperative research rather than time-wasting nitpicking.

The crop-circle phenomenon in Britain has brought a new angle to the matter. Now scientists have a framework in which they can take part in the study of ALPs, with physical traces being correlated. Light balls up to 40 feet across, leaving independently and authoritatively confirmed physical traces are now known (Meaden 1990). These are being studied in a meteorological context and may represent another class of light ball phenomena or may be a part of the earth light phenomenon as a whole. In Cornwall, I am investigating specific locations where light phenomena are occurring, and these are associated with old mines and interesting geology. We also have findings that suggest radon may be involved both with the production of lights and with certain transient altered states of consciousness (Devereux 1990). The history of earth lights embodied in tradition worldwide is continually being sought. The relevance of consciousness research is constantly being monitored.

All in all, the earth light approach is vigorous, ongoing, and richly instructive. This has to be contrasted with the option in core ufology in America; Long's hybrid of earth lights and underground UFO bases; Friedman's MJ-12 papers; Ed Walters's Polaroid snapshots of post-Spielbergian craft and his wife-dodging energy beams; Strieber's visitors; Hopkins's abductees, William Moore's self-confessed disinformation; Jerome Clark's and others' continuing claims of the ET significance of the Roswell incident (Clark assured me last autumn, with some emotional charge, that in 1990 the ET reality of the Roswell case would be put beyond any doubt. I am watching the calendar.) To those within the North American ufological milieu, these limited options may seem valid, exciting, and superior to the earth light approach. To many of us outside that particular mental ghetto, however, it presents a dismal vista. It could, I suppose, be labeled the "Salem syndrome." This is not to be unkind or argumentative,

it is simply to speak openly of a factor that many North American ufologists may be too close to to perceive. (In the past, I have been far more trenchant about the British core ufological bias towards the PSO.) This kind of "mental bioregion" effect powerfully affects the way the UFO enigma is studied. I feel myself to be less affected this way, as I spend each year with long periods in America, Britain, and continental Europe, mixing and studying in these and related areas. I am here drawing attention to an important factor in UFO study that is simply not being addressed. Most mainstream scientific disciplines are not so powerfully affected by this factor because they are based on more consensus international research. Ufology must become less provincial.

I hope North American ufologists can perceive the validity and the enormously exciting implications of earth light research, and not let their other prejudices stop them from participating in one of the most important areas of modern human inquiry. Earth light work does not necessarily preclude an ET option as well, but it is not valid criticism to claim that the earth light approach does not speak to that option.

REFERENCES

- Blackmore, Susan
1990 Dreams Do What They're Told *New Scientist* (January 6)
- Devereux, Paul
1982 *Earth Lights* Wellingborough, Eng Turnstone
1990 *Places of Power* London Blandford
- Devereux, Paul, David Clarke, Andy Roberts, and Paul McCartney
1989 *Earth Lights Revelation* London Blandford
- Devereux, Paul, Paul McCartney, and Don Robins
1983 Bringing UFOs down to Earth *New Scientist*, Vol 99 (September 1) 627-30
- Grof, Stanislav
1989 Beyond the Brain: New Dimensions in Psychology and Psychotherapy In Christian Ratsch (ed.), *Gateway to Inner Space*. Prism Unity
- Meaden, G. T.
1990 Nocturnal Eyewitness Observation of Circles in the Making, Part 2 North Wiltshire " *Journal of Meteorology* (January)
- Ring, Kenneth
1989 Paper delivered at "The UFO Experience" Conference, Connecticut

RESPONSE TO PAUL DEVEREUX

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Paul Devereux and I are largely in agreement and I would like to begin my response by underscoring my appreciation of his work. I particularly applaud Devereux's and Michael Persinger's bold theory building that looks for ways to account for the entire family of anomalous light phenomena. Unfortunately, some American researchers have tried to stifle this multidimensional approach by invoking abusive *ad hominem* epithets, such as "stewpot thinking" or "mixology" to characterize it, a strategy unworthy of science.

There are (at least) two ways one may go wrong. First, does the hypothesis apply to a particular case? And secondly, if it does, is it adequate? That is, does it fully or only partially account for the phenomenon? Concerning the latter, I maintain that Persinger is reductionistic in the pejorative sense that he "reduces" a phenomenon (such as the Zeitoun experience) to an anomalous earth light effect, and *nothing but* that effect.

Devereux agrees this is the impression Persinger gives, but that this is due to his "mechanistic language." But language is the only way we have to gauge one's thinking. If one talks like a mechanist, one probably *is* a mechanist. Since I regard mechanism as a false metaphysics (the *science* of mechanics is something else), I feel it's important to call attention to these impressions and the omissions they imply.

Devereux criticizes my response on two points. He points out that people *can* go into ecstasy from seeing "irregular blobs of light." I agree and would reinforce his view with the example of the great German mystic, Jacob Boehme, whose life-changing visionary experience was triggered by his glancing at sunlight reflected on a pewter dish. However, this has nothing to do about my point about Zeitoun (which Devereux doesn't actually dispute) that what percipients saw were not irregular blobs of light but distinctive Marian forms. (Whether the Marian images were constructs or projections of amorphous photic stimuli is another question.) My point was that the inaccuracy in Persinger's report ought to alert one to the possibility of similar selective omissions of difficult data.

More interesting is Devereux's second criticism of what he alleges to be my "lapse of logic." The lapse, however, lies not in my thinking but in nature!¹ This is important and deserves to be looked at more closely. At Zeitoun there were anomalous light forms, some irregular, some shaped Marylike and some shaped like fat doves flying in formation. Vast numbers of people observed these light forms. A number of people

photographed them. Some photos showed definite, recognizable forms. Others, oddly, showed barely recognizable forms, almost as if the camera had registered some plastic, semiphysical medium half-formed, or in the process of forming into a recognizable image.

So far it looks as if we have an anomalous physical effect. Now comes the "lapse in logic." The physical displays of light (regular or irregular) were in some cases *not seen at all*. The physicality of the lights seems guaranteed by their photographability, yet not everyone present saw the lights. How could they simultaneously be invisible to the naked eye yet photographic?

Devereux, reasonably enough, suggests that the photos might be fake. But what if they aren't? Persinger presumably didn't believe they were; if he did, he wouldn't have cited them. As far as I know, there is no evidence of fake photos here. (See the sources cited for more information on the photographs.) It appears, then, that the *phenomenon* is not behaving "logically." But should this be so shocking? Jacques Vallee has more than once called attention to the "metalogical" nature of the UFO phenomenon. I intend to discuss this problem in detail elsewhere; for the moment, consider the following points.

1) Parapsychology also faces not only anomalies but sheer illogicalities in such phenomena as ostensible precognition; if precognition occurs in nature, then the logic of our concepts of time and causation demands revision. In my opinion, those writers who have stressed the importance of the link between ufology and parapsychology are on the right track. For a recent publication detailing the overlap, see, for example, Manfred Cassirer (1988).

2) UFOs and UFO occupants have been reported to behave in ways that seem similar to these metalogical Zeitoun lights. They are sometimes said to be simultaneously seen and not seen by observers in the same vicinity. It would be valuable to look for more examples of such metalogical cases in the literature. It may be precisely the seemingly "impossible" traits of the phenomenon that offer clues toward a breakthrough in understanding.

3) Let us proceed—as I believe we should—with Devereux's principle that we start with the phenomena, taking our theoretical lead from them. The metalogical Zeitoun lights appear to possess properties that seem contradictory physicality (they are photographable) and mentality (they manifest according to subjective processes). We are then left with an object that is both physical and mental.

Jung spoke (unclearly) of the realm of the *psychoid*. A psychoid object—a *tertium quid*—has both physical and mental properties. Such an object might under variable circumstances exhibit its physical or mental properties or both. Human percipients might determine which property would display itself. Psychoid objects might be subject to different psychophysical variables. Here is where Persinger's attention to possible brain mechanisms may come into play. A person, let's say, with the properly sensitized temporal lobe might be more prone to sense the presence or even the sensible features of a psychoid object.

Just as not everyone saw the Zeitoun lights, the evidence indicates that not everyone

was capable of photographing them Some witnesses told me they tried but were unable to; their hands were paralyzed, the film was spoiled, and so on. The few that succeeded may have been in the right mental state that enabled them to capture the psychoid object's physicality on film. Thus, the person with the camera may, as presumably was the case with Ted Serios (see Eisenbud 1967), have had to be in the right state before the psychoid object was captured on film In like manner, some witnesses were apparently in the "wrong" state and saw nothing of what appeared to be like any other physical object, i e , an object possessing unrestricted publicity. This view of the Zeitoun phenomenon as psychoid would obviate the apparent lapse in logic. (Psychoid objects would be no more illogical than quantum phenomena that sometimes appear as waves and sometimes as particles.)

Indeed, the idea of a psychoid object is no more and no less a shock to our conceptual apparatus than is the idea that Devereux develops in his remarkable book, *Earthmind* (1989)—the idea that Earth may be a conscious and intelligent entity. In discussing earth lights, Devereux notes that they "seem to hover on the edge of a physical reality" while also having "exotic and extraordinary" properties For instance, there are reports indicating that they react to witnesses' actions *and thoughts*.

The earth light phenomenon, here understood as a manifestation of psychoid reality, would be consistent with the Zeitoun phenomena. In *Earthmind* Paul Devereux has made a case for the hypothesis of an earth-spawned consciousness or *anima mundi*. The apparitions of Mary sighted in Zeitoun and other Marian locales may thus be seen, if I understand Devereux, as expressions of or communications with Gaia consciousness I can only end here by stating my sympathy with this speculation, having argued similarly (1985, 1989) that Marian visions, near-death epiphanies, some UFO experiences, and possibly other patterns of psychic anomaly may be interpreted as signals from an unknown Mind at Large. (The latter expression I borrowed from Aldous Huxley, who developed the term from Henri Bergson's philosophy of mind, "Mind at Large" seems a peculiarly useful and descriptive term)

The nature and origin of this Mind at Large remain an open question for me. I do not rule out the possibility of the ET hypothesis, for I believe that some of the data square with that hypothesis My inclination, however, though not quite as strong as Devereux's, is toward a terrestrial model of Mind at Large.

In any case, the work of Devereux and Persinger offers to help us move forward toward a better understanding of these mysteries. I believe we should remain open to all hypotheses and, as Michael Swords has stressed, work together in the spirit of mutual respect and cooperation It is quite possible that the truth will encompass all our present hypotheses, and transcend them.

REFERENCES

- Cassirer, Manfred
1988 *Parapsychology and the UFO* London: The author, 38 Christchurch Ave , London NW6 7BE
- Devereux, Paul
1989 *Earthmind* N Y Harper & Row
- Eisenbud, Jule
1967 *The World of Ted Serios* N Y William Morrow
- Grosso, Michael
1985 *The Final Choice* Walpole, N H Stillpoint
1989 UFOs and the Myth of the New Age In Dennis Stillings (ed), *Cyberbiological Studies of the Imaginal Component in the UFO Contact Experience* St Paul, Minn Archaeus Project

RESPONSE TO PAUL DEVEREUX

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Although my original remarks were aimed at the more substantive paper by Michael Persinger, the *Journal* was unable to obtain his reply in time for Round Two of the forum, so I am addressing my comments to Paul Devereux's response.

Devereux's reply was somewhat curious. Because I state in my paper that I think that the Tectonic Stress Theory probably explains some lights-in-the-sky UFO sightings and that it more probably explains some non-UFO anomalous light phenomena like the Marfa Lights, Devereux, it seems to me, chooses to make his reply in areas either irrelevant to his argument or very much apart from his original work. Thus, he takes me (and in essence all of American UFO research) to task for not saying that the Marfa Lights are UFOs, even though the Marfa Lights are not thought of as having the attributes consistent with the UFO phenomenon as it has been known for the past 43 years.

At face value this exchange seems innocuous, but it has wider implications. Debunkers in America cynically and routinely label explainable light phenomena as "UFOs," "solve" the particular case, and then generalize that all UFO reports are therefore explainable. Either wittingly or unwittingly, Devereux indulges in this methodology. He is not satisfied with explaining some lights-in-the-sky sightings, so he inflates their importance. In Devereux's scheme of things, the lights-in-the-sky sightings, historically the weakest, least interesting, and least informative of all sightings with the least amount of strangeness and the highest probability of error of explanation, become in Devereux's universe, "the greatest component of the reported UFO enigma." If he means "greatest" in a quantitative sense (and no one will doubt that many lights-in-the-sky cases have been reported over the years), then he equates numbers with importance—a dubious equation at best. If by "greatest" he means the most meaningful, then Devereux simply does not have much knowledge of the field. Unfortunately, this is further demonstrated when he takes UFO researchers to task for having a bias toward high-strangeness cases. Presumably then, if I received a report of an alien standing next to a landed UFO and herding humans, dogs, cats, and fish into it, I would rank it of no more importance than a report of someone seeing a light dancing about in the sky! If Devereux wants to reinvent the wheel he is free to do so, but this is 1990, not 1960, and although he may not be aware of it, UFO research has moved past lights-in-the-sky.

Devereux states that he is not specifically an adherent of the Tectonic Stress Theory,

but that he finds it to be a "strong and fine hypothesis." Yet he curiously veers off defending it into material that was not the subject of this forum—the internal generation of abduction reports apart from TST. Devereux launches into an attack against the objective reality of abductions by supporting the idea that they are being called forth in laboratory situations through lucid dreaming (Alan Worsely's work), electrical stimulation, and so forth. I am not going to debate the merits of this research or whether it has any bearing on the abduction phenomenon—that is for another forum. Rather I would like to discuss why Devereux would choose to take this tack. Of course, I do not know what is going on in his mind, but perhaps some reasonable guesses might be illuminating.

As we are aware, European UFO research has taken a decidedly nonobjective-reality approach to abductions and to the UFO phenomenon in general. In order to do this, one must systematically ignore enormous amounts of evidence and rationalize it as internally generated. The process of internal generation is open to debate. Some say it is psychological, some say it is cultural, while others presume different origins. All have one thing in common—they ignore the specific evidence of UFO cases and, in particular, abduction reports. Similarities found in culture, folklore, and biologically stimulated accounts become magically transformed into absolute equality. Differences are ignored.

Adherents of these theories are not primary abduction researchers who actually investigate cases and accounts. One presumes that to do so might overburden the theoreticians with too many anomalous facts that would not suit their theories. Instead, they attack the veracity of disconfirming information. Thus, Devereux questions whether many cases of abductions witnessed by nonabductees exist (Yes.) He erroneously uses Budd Hopkins to say that he had only one such case. (Hopkins remembers his conversation with Devereux as having a different context entirely.) He uses nonabduction researcher Kenneth Ring to suggest that child abuse cases might generate dissociation that in turn might generate abduction accounts. (I am not aware of a single case of an abduction being generated by childhood abuse of any kind.)

The reason he does this is to back up an argument that is at the basis of his theories. all UFO and abduction cases have conventional explanations and are not evidence of extraterrestrial activity. Therefore, no matter what the evidence is, the solution to the mystery will be conventional (albeit rare) in the long run. Confrontation with the full range of evidence becomes a waste of time. This is very close to old-fashioned debunking in a new guise.

If Devereux wishes to become a serious UFO researcher and confront the evidence as we have it, then he will be on much firmer, if not rock-hard, ground. He will find that if he soils his hands in the honest primary abduction work that needs to be done, he will no longer have to inflate his theoretical molehill into a mountainous Grand Explanation. He might even find that his theories are not as earthshaking as he thought.

THE TST: DOWN FOR THE COUNT

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I think the most fascinating thing that has come out of this forum has been the dialogue that has forced a number of researchers to confront each other with their theories and ideas. What is strongly evident is the apparent lack of communication between the pro-TST and con-TST researchers during the last decade, and how this has affected the view across the pond.

I am amazed at the stubbornness and (usually) subtle barbs being directed at critics of the TST, as if they were the only ufologists dismissing the theory. Devereux suggests he is practically alone in his stand that BOLs are part of a much larger phenomenon of "earth mysteries," and that all of these phenomena need studying. In Canada, we too have BOLs, as well as reports of ghosts, lake monsters, wild men, eerie noises underground, and (most recently in the public attention) crop circles. There are dowsters, clairvoyants, ancient manmade petroglyphs, mystical sites, and native traditions that go back *at least* as early as any in Britain. All these kinds of strange phenomena exist here as well, and are debated and investigated with fervor.

But that does not mean that everyone has the same interpretation of the phenomena, and it is lamentable that there are those who are still insisting that their own explanation is the only viable one.

It is true, as some have pointed out, that North American ufology seems to have a definite slant towards nuts-and-bolts theories, but one must recognize the social and cultural bias that has fostered this attitude. A similar comment could be made about the "preternatural" bias of European ufologists and Fortean researchers (Dare I mention that Charles Fort was American?) But a discussion of differences in cultural methodologies is best left to Foucault and other poststructuralists.

Perhaps the reason pro-TST researchers are so defensive is the general flippant dismissal they receive from many ufologists. If this is so, then they have every right to demand a fair trial. What they may not realize though, is that the TST has been under consideration for some time and, although not totally rejected, is simply not considered as the Grand Explanation (as Jacobs aptly puts it).

Devereux's vehement attack on his critics is sometimes due to a general confusion among ufologists between the TST and earth lights. He and Michael Persinger usually seem to be lumped together, even though there are significant differences between the two in their ideas and methodology. But perhaps they fail to see the similarities. They both involve some sort of energy, either underground or in the air, that somehow either

cause Fortean phenomena or are interpreted as Fortean phenomena by the observer. This simplistic explanation will no doubt ire some people, but a spade's a spade.

Another serious problem in North America with regard to rational discussions about the TST and "earth energy" is the attitude that mainstream scientists have towards Fortean phenomena. I have repeatedly failed in my own attempts to interest statisticians, geophysicists, and scientists from other fields in a serious investigation of TST claims. The majority simply believe that the TST and earth lights concepts are a waste of time (and wouldn't look too good on their curriculum vitae). The Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) members are particularly disinterested in the TST. If Devereux and Persinger feel that they have been harshly treated and criticized now, just wait until CSICOP decides to really go at them. (In fact, I have been asked by Phil Klass to prepare such an article.) Persinger is linking the TST with poltergeists and Devereux is using pendulums around menhirs. How would debunkers view such "scientific research"?

Before my comments are completely misinterpreted, let me assure Devereux and Persinger that I do *not* necessarily share that view. I firmly believe that true, scientific methodology can be applied to Fortean research, and that the scientific method will eventually yield some useful data that the scientific community will accept and understand.

As for specific charges, Devereux claims that he and Persinger have not ignored their critics, as I state. Here, there is a fine distinction between recognizing and listening to critical statements. Persinger is a case in point. He is well aware of the flaws in his work, and responds to criticisms in print fairly quickly. But then he continues to publish article after article without even mentioning that the TST is controversial, or that critical articles have appeared earlier. Devereux is similarly brief in his recognition of critics. Campbell does not dismiss everything as mirages, and Long did not solely argue that UFOs originated in underground bases. In fact, Long's research covered a variety of phenomena and was a very thorough investigation of a specific BOL site. Although Devereux does mention his critics' charges, does he really address the issues? Are any ufologists examining the praxis of ufology?

To suggest that debunkers such as Klass and Sheaffer do not relate to the TST or earth lights is incredible. Does Devereux actually believe, as he seems to state, that debunkers make no contribution to ufology? Does he not realize that they fill the niche of peer review, and that their comments help refine ufological theories? With regard to TST and earth mysteries, one *cannot* simply ignore critics. Debunkers certainly have their specific biases and mindsets, but so do believers.

This is most significant when Devereux accuses me of having a lapse in my logic. He sarcastically suggests that I have succeeded in quantifying the nature of ALPs (or UFOs, or NLs, or BOLs), and must confirm the earth light phenomenon because I aver that the TST and earth lights *do* account for some fraction of UFO reports. Does this seem contradictory? No, but Devereux seems to think so.

The simple answer is that most UFOs are IFOs. As Willy Smith and I have offered, only about 2.5% of all UFO reports (*including* BOLs) have no simple explanation.

Debunkers lower this value to 0%, but even they admit candidly that in order to do this, they have to allow some fraction of "obscure" phenomena. It is somewhere inside this tiny fraction that TST and earth lights reside. What are the rest? Any basic text on ufology will tell you. What is my "major research work"? It's called "investigation."

Michael Swords echoes my thoughts on the TST well; statistical studies by themselves are far from convincing, and despite Persinger's insistence, the fact that UFO experiences resemble predicted temporal lobe effects does not mean that the two are equal. Remember, there are other, much simpler explanations for UFOs that do not invoke unsupported electromagnetic phenomena, whether they originate seismically or biochemically. Yes, there is some research that suggests that something is there, but it cannot be used to explain a phenomenon as complex as that of UFOs, with all of its sociological, psychological, and physical elements.

Finally, I do not wish to contribute to the history of argumentation surrounding the TST or earth light theories. I have always maintained that proponents of these theories are to be commended (something they have not said of their critics; surely something we say must be considered constructive). Michael Persinger and I have spoken amiably on a number of occasions; scientists may be thick-skinned, but they are not cold-blooded. The development of a scientific idea is always wracked by controversy, so why should ufology be any different? It is most important to remain communicative, at all costs.

That is what science should really be about.

ROUND TWO ON THE TECTONIC STRESS THEORY (TST)

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It is with pleasure that I have the opportunity to respond to Paul Devereux's interesting views on the Round One Forum reflections of myself and my colleagues. To be brief, I will list the relevant topical areas with brief remarks on each.

A. Paul considers the "lights-as-intelligent-entities" concept to be a reasonable theory that is too readily dismissed by scientists. Reasonable it may be, in the sense that in this strange universe, who can honestly know for certain? But in its current state it is surely indefensible in any *scientific* way. What many people involved in ufology either take lightly or do not understand is the rigor with which experiments must be run, data and protocol reported and properly published. This, to my knowledge, has not been done in any way to substantiate such concepts as intelligent light-forms.

B. Stanislav Grof, et al. Grof is a highly controversial parapsychological researcher who works with experiences derived from hallucinogenic chemicals, but he seems a poor strategic ally to call upon to support other controversial concepts. Better strategy for the concept of mind/body separation might be to cite work by Kenneth Ring, Michael Sabom, and our Forum colleague Michael Grosso on the near-death experience; or possibly the work by Harold Puthoff and others on so-called "mind-reach" experiences. Even then, the connection of these claims with objectively visualizable *luminous* phenomena is doubly controversial.

C. EM fields and the brain: Once again Paul seems more able than I to be satisfied with possibilities rather than things that have been experimentally determined or at least strongly supported. Of course EM fields are known to influence the brain. Under powerful fields all sorts of things go awry. The influence of low-strength and intermittent fields, however, is a research area very much in its infancy. Again, scientifically, it is not at all obvious that low-strength earth-produced fields (assuming that they exist in the way the TST refers to the concept) can influence *any* human brain to hallucinate, let alone have the specific hallucination of a close encounter with a UFO. Is it possible? Well, I guess so. Is it defensible scientifically? Not yet.

D. Statistical lumping: Paul correctly reminds us that his work does not involve this. He goes on further to remind us that he has taken precise areas and correlated the presence of earth light phenomena to local geological faults. Later he refers to areas in Cornwall that are demonstrating this to great specificity. All this is very interesting and potentially important. What scientists care about in all this, though, is that the *strong* claim of precision in the relationship be *strongly* demonstrated before one

simply says that it is. I find Paul's books quite stimulating, but they are not the sort of publications that will convince many scientists of strong statements. There needs to be some broadening of the base of researchers involved, and some refereed and critiqued publishing. I don't fault Paul for not having such a coterie of colleagues or such publications. We all know the way the academic establishment hinders such explorations. But until the research and results broaden, deepen, and attract critical professional attention, such strong words as "precise relationship" are a bit beyond what even a highly sympathetic academician like myself can accept. Perhaps the *Journal of UFO Studies* and other fora such as the Society for Scientific Exploration can help move this along, but to date we are still dealing with a protoscience rather than one filled with age and conclusions.

E. Paul brings up crop circles in his concluding remarks, and I understand his intrigue, but believe that the connection is dangerous to his cause. Many crop circles have all the earmarks of intelligent activity rather than good old Mother Earth or fancy meteorology, and we are too starry-eyed if we do not suspect that usual trickster, ourselves, to be at work. It would be great if they all turn out to be messages from Magonia, but I smell a rat, and at this stage of the "research" the hunt has been dominated by enthusiasts of varying biases. I would caution Paul not to make too many dangerous leaps when he may have a good thing going right under his feet.

F. Lastly, I would like to comment on Paul's concept of "core ufology in America." Perhaps from great distances away there may appear to be such a thing, but in all honesty I haven't been able to find it. I believe that the discrepancy in the two viewpoints comes because only the loudest elements in American ufology reach all the way to Europe. Underneath the pop-culture elements and sociological dogfights that distract attention, there exists a widely varied and sometimes professional cadre of researchers. They often go quietly about their work. And there is still an Invisible College in the United States, almost entirely composed of serious and respectful professionals who are perfectly willing to listen to the "other guy" and let the data fall where they may. Please note that there is a *Journal of UFO Studies* currently holding a Forum on the TST and earth light concepts, which counts Michael Persinger as a valued editorial board member, and a Society for Scientific Exploration that listens to Drs. Persinger and Derr with great interest and encouragement.

EDITOR'S NOTE

After completion of the Forum materials we were surprised and delighted to receive a second contribution from Dr. Michael Persinger. Dr. Persinger had read the first round of materials but felt that his schedule precluded a response within the time constraints of publication. We are happy that he found unexpected time to produce the following piece, and we include it here as a welcome appendix to our discussion — MDS.

AN OBJECTIVE RESPONSE TO THE COMMENTATORS OF THE TST

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As a primary originator and researcher of the Tectonic Strain Theory (TST) of UFO phenomena, I must address the comments of Michael Grosso, David Jacobs, Chris Rutkowski, and Michael Swords. Each of these thinkers has consistently insisted upon critiques that have clear strengths and similar weaknesses. Their arguments reflect major mentalities that have occurred in many scientific debates.

Most of their arguments could have been resolved if the original manuscript, "Prediction of UFO Events and Experiences," written in 1980, had been published. However, as one publisher stated, "If you were Carl Sagan, we'd publish it, since you are not, forget it." Consequently, most of the published work has been phrased within the technical language of scientific journals. Within that context there is little latitude for speculation. Over time some confusion among the antagonists may have occurred because of the more precise articulation of the hypothesis (as encouraged by Chris Rutkowski) and the sophistication of the tests of the TST after Dr. John Derr and I began our cooperative effort.

Before the critics are addressed individually, there are three statements that must be understood in order to prevent the proliferation of confusion. First, unlike Rutkowski's incessant interpretation, the correlations have never been interpreted as causal. The TST states that ALP (Anomalous Luminous Phenomena), most frequently reported as UFOs, and earthquakes are caused by a third factor tectonic stresses and strain. Second, abduction phenomena display the prominent features of a clinical syndrome that only marginally overlaps with TST (except in those cases where the person is adversely affected by ALP). Third, unlike Michael Grosso's suggestion, data have never been excluded from analyses because they did not fit. The progression of the TST has been based upon an empirical approach, to exclude data would have been contradictory.

Michael Grosso's approach reflects the limits of qualitative evaluations that are based primarily upon philosophical (non-quantitative) methods. There are two sources of error that emerge. First, people's reports of their experiences are considered as valid representations of what actually occurred without an objective assessment tool. The corollary of that difficulty is assuming, as Michael Grosso has, that because he interviewed the witnesses their testimonies are somehow even more valid.

The second error, which is endemic to philosophers, is the failure to understand the continuum of a phenomenon. Their dependence upon words as the primary tool of measurement predisposes them to generate conclusions in an all-or-nothing manner. Contrary to Grosso's supposition, the TST would not predict that "an outbreak of radiation illness" would occur; rather it would predict that the incidence of EM-related manifestations (including healing, which is one of the positive components of current induction) would increase. Without precise epidemiological measurements, the incidence would escape detection as did the occurrence of (thyroidal) goiter before these data were collected in the context of iodine-deficient soils.

The core of Grosso's concern is contained within his lament about the "mechanistic" feature of the TST and temporal lobe function. In the tradition of nonphysicalists, Grosso implies that knowing the neural correlates of a phenomenon is synonymous with reductionism. He is incorrect. The understanding of the UFO experience from a neurophysiological perspective does not change its personal significance any more than the electrical stimulation of the amygdala within a compatible setting derogates a mystical conversion. Knowing the neural substrate does not change the beauty of a sunset—the knowledge may even enhance the experience.

Chris Rutkowski's comments are classic forms of the generalist scientist who reiterates what he reads about science rather than what he does with science. The advantage of this approach is that it forces complex ideas to be stated in forms that are simple and consistent. The disadvantage of this approach is that it proliferates the mythology of methodology as if it were the subject matter rather than the tool.

Rutkowski, like Greg Long, reflexively elicits references to refutability of hypothesis and quotes a philosopher's or historian's view (e.g., Popper, Kuhn) about what constitutes a theory. Yet even in the highly contrived laboratory setting, ideas are rarely rejected or accepted. Successive research and replication either supports or does not support an idea. A hypothesis that is rejected in one setting may be supported in another because different conditions, variables or methods of measurement exist. This condition is particularly true for multivariate phenomena such as human behavior and the geophysical environment.

The support of ideas in contemporary science rests upon the quantitative strengths of the measurements by which the ideas are inferred and whether or not these magnitudes are consistent and realistic with respect to: 1) the reliability of the database, and 2) the importance of the variable within the theoretical model. The maximum range of correlation coefficients between the most optimal samples of UFO reports and measurements of energy release have been about 0.70; these values (that are equivalent to only about 59% of the variance), and the most discriminant temporal increments of analyses (1-month to 6-months) are totally consistent with: 1) the fact that UFO and seismic events are generated by a third variable, tectonic stress, that exists within geophysical time frames, and 2) the limitations of the sampling techniques.

Rutkowski's insistence upon determining a mechanism by which the strain field can be measured is laudable; I agree that (ultimately) direct more than inferential

measurement of a moving strain field is preferable. However, failure to understand that strain is propagated over hundreds of kilometers neglects common sense. If aseismic stresses are not propagated through the crust, then how does one explain the correlative seismic activity at opposite ends of plate boundaries? As aptly stated by Edwards and Liss (1973), their "model predicts that release of strain energy at a compression boundary will occur periodically . . . the principal interior part of the plate acts as the reservoir for strain energy." Without realizing the expansiveness of geophysical variables, one might erroneously conclude, as does Rutkowski, that the TST is not applicable to his UFO database because no earthquakes have occurred within the Manitoba border; geophysical processes are not contained by political outlines.

David Jacobs's comments reflect the third approach to any problem in which personal conviction and subject complexity have clouded clear resolution. The basic argument is that "only the elite truly understand the problem." As a clinical neurophysiologist, I totally agree with Jacobs that there is a complex phenomenon, now called "abduction," that deserves serious study. It appears very similar to the "fairy abductions" that were frequent during the last century and shares many of the characteristics of delayed post-traumatic stress and the type of dissociative reactions that have been described by Colin Ross (1989). There are many strange phenomena, including those that involve psychokinetic and other psi events that occur with these conditions. However, pursuing the strangeness rather than the mechanism is reminiscent of the 19th-century parapsychologists who became obsessed with measuring the ectoplasm rather than understanding the neuropsychiatric profile and developmental history of the medium.

Indeed, as Jacobs states, the understanding of the abduction phenomenon "is a much rockier road to the truth" than many phenomena within the physical sciences, but there is no evidence that the abduction cases are any more difficult or enigmatic than any other major form of human experience—from the derivatives of early trauma to the insistence upon belief in deities. The danger of Jacobs's approach is that it leads to exclusive statements such as "there is absolutely no evidence whatsoever that childhood trauma of any type plays a role in creating abductions." The probability increases that the abduction phenomenon could quickly be transformed into a cult movement (Persinger, Carrey, and Suess 1980).

When one leaves the area of oddly moving lights or "structured" phenomena and enters the labyrinth of "the abductee experience," even greater reliance must be placed upon the methodologies of the mental health sciences for both the determination of knowledge and the implementation of standards of conduct. The risk of Jacobs's arguments, both in his critique and in his recent research, is that the abductee will be treated less like a client and more as a tool to obtain support for the beliefs of the investigator. Good intentions, such as those expressed by Budd Hopkins or Jacobs, do not compensate for inappropriate clinical intervention.

From the perspective of the history of science (and this of course is the context by which all of our ideas will ultimately be properly evaluated), Michael Swords's

approach is both optimal and appropriate. To my knowledge there is not a single major human phenomenon that has not been multivariate in origin and hence required all of the sciences and arts to discover the solution. The presentation of the diverse approaches in a rational manner, displayed in this issue, can only facilitate the process of scientific discovery. Swords's thrust reveals to us that the separation between TSTers and ETers is an artificial and needless dichotomy. It is a residual of an earlier stage in the evolution of UFO research.

The TST, as it is presently described and empirically supported, does not explain the spectrum of UFO phenomena. In this regard I share the trepidation of Grosso, Jacobs, and especially Rutkowski, that mainstream science might dismiss the entire area with a partial explanation. This is a risk, but I think it is a small one. Most mystical phenomena from astrology to mesmerism were pursued and their realities were discovered once models capable of measurement were introduced and endorsed by the contemporary definition of science.

There is much more to the basic premise of the TST than we have acknowledged. When one realizes the multitude of geological formations and geochemical combinations through which the energy contained within tectonic stress can be manifested, the range of possibilities enters the domain of imagination—the source of the scientist's, the artist's, and the believer's drive for exploration. Metaphorically the structure of the earth would be analogous to an extraordinary number of electronic circuits through which a singular entity—an electric field—moves. Because geophysical and solar forces are powerful and universal processes, one must expect phenomena to be created whose characteristics are beyond contemporary explanations.

I would not be surprised if the myriad of different phenomena that range from the mundane (e.g., power failures, transmission anomalies) to the exotic (e.g., poltergeist-like events, psi experiences, and humanoid forms) represent the different aspects of stress within an area. Considering the extreme focal nature of each UFO-related event compared to the immense field from which it originates (Persinger 1979), one would expect properties that are as yet undefined. Our concept of the geopsyche (Persinger and Lafrenière 1975) complements the idea of Devereux that there could be an interaction between cognitive processes and earth forces. The utility of the TST is that it allows empirical methods to be employed to test unusual phenomena that exist in the gray interface between what is known to occur and the innumerable possibilities that could occur.

REFERENCES

- Edwards, and Liss
1973 "Stress Diffusion from Plate Boundaries" *Nature*, Vol 243 349-51
- Persinger, Michael A
1979 "Possible Infrequent Geophysical Sources of Close UFO Encounters Expected Physical and Behavioral-Biological Effects" In Richard F Haines (ed.), *UFO Phenomena and the Behavioral Scientist* Metuchen, N J Scare-

crow pp 396, 404-405

Persinger, Michael A , N Carrey, and L Suess

1980 *TM and Cultmania*. Boston Christopher

Persinger, Michael A , and Gyslaine F Lafrenière

1977 *Space-Time Transients and Unusual Events* Chicago Nelson-Hall

Ross, Colin

1989 *Multiple Personality Disorder*. N Y Wiley

ISSUES FORUM SUMMARY**MICHAEL D SWORDS**

Looking over the exchanges between my colleagues, I find, generally, a heartening willingness to begin a serious dialogue between individuals of widely diverging initial views. Everyone in the forum agrees that the TST and Paul Devereux's somewhat similar theories are concepts worth exploring, and we applaud the researchers' efforts. Everyone in the forum recognizes that these are working hypotheses, works in progress that are not in a concluding phase. One can only lament the unhelpful sociology of science that isolates such hypotheses and researchers, and promotes misunderstandings and excessive language between the few scientist-explorers who risk being interested in such exciting and potentially important concepts. All of us seem to agree that we need more discussion and presentation opportunities to allow proponents such as Michael Persinger and Paul Devereux to communicate freely with the serious professionals in both the anomalies research community and the larger world of establishment science. Each of us awaits further data (of whatever conclusions) relevant to the concepts we've debated. We encourage more professionals to get involved, and hope that all work reaches proper publication channels, so as to be widely available and critiquable.

Comments and Responses

This section permits readers to critique or comment on works previously published in the Journal of UFO Studies. The original authors and other readers are encouraged to respond. Readers are also encouraged to critique or comment on the works appearing in this issue.

EXTRATERRESTRIAL UFOs: A RESPECTABLE IDEA?

(Comment on Michael Swords, 1989, Science and the Extraterrestrial Hypothesis in Ufology, *Journal of UFO Studies*, Vol 1: 67-102)

The paradox that ETI is now respectable but ufology is not struck me particularly this spring, as I taught a course that included "scientific literacy" as a case study. I was amused-to-horrified at the questionnaire used in the widely reported (e.g., *Washington Post*, 2 June 1986, p 1) surveys done by Jon Miller (for a review, see *Daedalus*, Spring 1983). In particular, if you agree that ETI is likely, then you get a point for being scientifically literate; if you agree that UFOs are likely ETI, then you get a point against being scientifically literate.

I haven't read Prigogine; but from your brief precis of his work, it doesn't seem to me to adequately establish the point. For *evolution*, you need reproduction and selection, not just the responsive reaction. Somewhat in that connection, I highly recommend David Hull, "Science As a Process," which compares the development of science (evolution of ideas) with biological evolution.

Another difficulty with properly assessing the validity of the Fermi Paradox is the human penchant for self-centeredness. We find it individually difficult to accept that what happens to us is *unintentional*; and I think we also find it difficult to accept that humanity might simply be *uninteresting*—or of very little interest—for ETIs; if not for always, at least for the time being, since we've been technically capable for such a brief time only. Perhaps exploration of the earth is way down the list of priorities of the extraterrestrial National Science Foundation, or, it might even be regarded as so unlikely to yield interesting fruit that it's left to amateurs, the Extragalactic Society for Scientific Exploration, which has no funds to support fieldwork. The general point is that we tend to think of ETIs as uniformly and infallibly competent, logical, and impeccably equipped. But earthly natives who were contacted by European explorers and imperialists could not have understood those adequately if they did not think of them as humanly fallible, counter-productive, and schismatic. That ETIs are in some

ways more advanced than we are doesn't mean they have less problems to solve in regard to setting goals, achieving consensus, carrying out specific projects.

While I agree with you that UFOs are worthy of research, I don't agree they are worthy of "scientific" research, just as I am sure Nessies exist and yet I don't think it would be reasonable for mainstream science to join in the hunt for them. Science is a community effort through existing institutions with established criteria; publish or perish; write reports regularly on what has been accomplished; credit achievement, not merely ability or good ideas. UFOs and anomalies generally *have* to be studied outside the mainstream because there are no obvious lines for research that will be productive *irrespective of their actual outcome*, whereas in an established field almost every investigation can produce something publishable even if the starting hypothesis fails. Moreover, in mainstream fields there is continuous feedback between theory and data *at the level of minute detail* as well as at the level of grand overall theory. Your article makes the case splendidly that theorizing about UFOs as ETI ought to be seen as respectable. Many others have shown that there exist empirical unknowns. Lacking is the sort of interaction between theory and data that leads to progressive modification of both theory and data; again, as in anomalistics generally, there seems currently no way to gather data capable of providing *conclusive* answers to questions raised speculatively.

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ON FALLIBLE ETs

(Response to Bauer)

It is with great pleasure that I note that someone of the intellectual capabilities of Dr. Bauer has read my article so closely and thought it worthy to comment upon. The bulk of his letter is thoughtful and substantive on many points, and I will try to answer as best I can in the space available.

1 The point in the first paragraph about scoring scientific literacy, with prejudice for ETI and against UFOs as possible ETI, is horrifying on a far greater scale than mere UFO research interests. This particular prejudice is merely one in a large set of nondata-driven negative attitudes, the reasons for the existence of which have never adequately been explored. *Whatever* is producing these negativities, and whatever allows them to be propagated widely as having something to do with science, does great disservice to the entire research enterprise and to the public reception of science generally (Michael Swords, 1990, Using the Study of Anomalies in the Teaching of Critical Thought, *Journal of Scientific Exploration*, Vol. 4· in press).

2 Regarding Ilya Prigogine's basic concepts: unfortunately my original review article couldn't take time out to go into some of the fascinating underlying concepts in any depth, and this won't be possible now either. Interested parties should read Prigogine (1980, *From Being to Becoming*, San Francisco: W H Freeman). The key concept was that a system which was "perturbable" (changeable, mutable) but also self-organizing (and therefore self-reorganizing after an assault) would inevitably reorganize itself in time to deal with the type of perturbations it chronically had to face. This reorganization would maintain its useful (and neutral for the most part) characteristics, while eliminating problematical ones and adding adjustments. The reproduction phenomenon is hidden in the concept of reorganization (i.e., reproduction of a variety of possible reorganized descendants), and selection is hidden in the perturbation concept (i.e., some types will fare better, some will struggle but perhaps reorganize later and differently, some will be perturbed so badly that they disorganize entirely). Dr. Bauer is correct that the simplistic way of stating this central feature of Prigogine's thought is insufficient and could be taken to represent one individual organism within its own lifespan constantly self-maintaining and improving on the spot with Lamarckian flexibility.

3 The Fermi Paradox discussion. Dr. Bauer says that it is difficult for us to accept things that happen to us as unintentional. This is a great truth that shows itself rampantly all across ufology. A common remark of UFO witnesses and particularly close encounter experiencers is that the whole affair was staged for their benefit. When persons move beyond this simple understandable egocentrism to beliefs that they have been selected as Star Children, Transformed and Enlightened Truth-Tellers, or Saviors of Humanity, this should be a flag to all researchers (even outside ufology) that there is something emotionally powerful and odd going on here, and that the greatest care needs to be taken in assessing how much concrete external truth exists in any of these cases.

Back to the Fermi Paradox. The broader, species-wide attitude that we are very special, and others would find us so, certainly contains the same dangers as the individual ego trip because it originates from the same source. I find no trouble imagining an ET-human interaction (initially) as occurring by accident—in fact, most of the Fermi Paradox *assumes* that view (a random expansion to all stars). Any conscious *selection* process for exploration (e.g., Sun-like systems first) would only hasten and deepen the paradox. But then comes the thought that maybe they find us uninteresting. Dr. Bauer mentions this adjective significantly, and I just might be able to buy it given the modification. Uninteresting, no; but not interesting enough to steal time and resources from other more fascinating explorations, yes. And there are many other scenarios, including not significant, advanced, or dangerous enough for serious overt interference. I was amused by Henry's referral to our own Society for Scientific Exploration with our lack of funds to do the needed fieldwork. Is the occasional overt UFO be piloted by an extraterrestrial Peter Sturrock, Henry Bauer, or Jacques Vallee . . . soon to head home to convince the establishment on Tau Ceti that there really is intelligent life on earth? It would probably take quite an argument on that point.

And concerning ETIs as logical, competent, and problem-free: it is a point worth making and I surely don't assume it on both personal philosophical grounds or on the basis of UFO phenomena. The most obvious potential contradictor to the "infallible ET" viewpoint would be the 1947 Roswell, New Mexico, alleged saucer crash, a story of extreme interest due to the huge number of witnesses involved who have given coherent stories (Kevin Randle and Don Schmitt, 1991, *Roswell*, New York: Avon). As research continues on this and other cases and, if we are fortunate, better private funding speeds the data collection and analysis, the myth of Zero Defects ETI may be seriously challenged.

4. Lastly, Dr. Bauer meditates on the research qualities of ufology as the phenomenon currently allows. Generally, again what he says is perfectly true. Most of the problem here, however, is due to everyone insisting on viewing the UFO phenomenon immediately from the viewpoint of the ET hypothesis. Although I defend the reasonableness of the ET hypothesis, I find myself continually warning people that an entire spectrum of other possibilities exists. Thus, in the great grab-bag of UFO reports there may be clusters of data that are moving out of the bag of uncontrollable, unique events, and into the realm of disciplines with established research communities, protocols, and fora. Ball-of-light phenomena may be one such current example. Certain clusters of alleged abduction reports may be another. The goal of any true ufology is to make itself extinct, to keep carving up the bag of reports until all elements join the realm of mainstream research, *wherever* that process leads. The potential for certain elements to resist this (e.g., possible ETs) is, of course, large. But the prospect of fallible ETs making enough errors (or deliberate ones) so as to let researchers bring actual, concrete, retestable artifacts into the laboratory still remains, and is being actively pursued on more than one front today.

I thank Dr. Bauer for this opportunity to respond on several important issues in ufology, and I promise to keep my eye out for Nessie, if he does the same for ET

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RATING THE HILL CASE

(Comment on Thomas E. Bullard, 1989, Hypnosis and UFO Abductions: A Troubled Relationship, *Journal of UFO Studies*, Vol. 1, 3-40)

In Bullard's Table 1, page 13, the Benjamin Simon/Betty Hill case is rated 6 points. Did not Simon invite J. Allen Hynek to attend a hypnotic session and ask questions?

If this is so, then that particular case should be rated 4 points (Gary Kinder, 1987, *Light Years*, New York Atlantic Monthly Press, 256)

I suggest three books as germane to this subject. *The Control of Candy Jones*, published by Playboy Press; A. Daniel Yarmey, *The Psychology of Eyewitness Testimony* (1979), and Lewis R Wolberg, *Short-Term Psychotherapy* (1965).

I believe that a possible abductee should be invited to participate in one or two extended interviews (without interrogating, which implies authority) and if that individual feels most comfortable in a relaxing atmosphere with a loved one or close friend—if only to provide moral support—then so be it.

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UNDER THE SPELL OF HYPNOSIS

(Response to McKay)

I would like to thank Mr. McKay for calling into question the high rating I assigned to Dr. Benjamin Simon's hypnotic regressions of Barney and Betty Hill. Some qualifications are in order.

As I understand it, Dr. J. Allen Hynek sat in on sessions with the Hills at Dr. Simon's invitation, but only after completion of the initial set of regressions. These 1964 regressions provided the basis for John Fuller's book, *The Interrupted Journey*, so the testimony included therein was not compromised by any clues that might have come later from Hynek as an interested spectator. My evaluation of Simon's work drew solely on this book, and within that context he followed the precaution against participating spectators.

On rereading the transcriptions of some regressions, I became almost painfully aware of how far Dr. Simon would go on occasion to force an answer from the witnesses. Hypnotized subjects will fabricate an answer if they have none to give in order to oblige the hypnotist. His questioning may well have imposed considerable obligation on the Hills. Dr. Simon's experience as a military psychiatrist had familiarized him with shell shock and other wartime traumas. In these cases his concern was with therapy, not with recovering historical truth. For purposes of therapy a vivid fantasy may be just as good or perhaps even better than the truth, and he approached the Hills in this same spirit. What mattered to him was relief of their distress, and this goal he achieved. Whether their story was true or false made no difference to him, and he took no pains to recover an undistorted account.

Just what Dr. Simon recovered remains a mystery. He was convinced that the Hills'

story had conventional roots. The subsequent recurrence of a surprisingly stable UFO abduction story must cast doubt on this assumption and keep us mindful of how imperfectly the conventional solutions proposed so far have squared with the abduction evidence. My study of hypnosis can do no more than raise such a doubt, by showing that hypnosis appears not to have realized its potential for distortion among the body of abduction reports that I examined. Such findings do not prove that aliens are at work, only that hypnosis has failed to reveal the effects predicted for it. Hypnosis wins acquittal on a technicality. The ultimate justice of the verdict remains obscured by too many uncertainties.

One reasonable explanation for the stability of reports proposes that the stability is real enough, but it is due to most of the reports filtering through a few investigators. They know the standard abduction story, and they confabulate it anew with each witness. When I counted heads among 103 high-information, high-reliability cases, I found that six investigators contributed 46 cases to the sample, nearly half the total. If I considered only this half of the sample, I could well believe that those few investigators shaped the story according to their desires and expectations. The full picture makes this proposal much less credible. The full picture shows that investigators differ in 51 cases. This variety among investigators seems ample enough to introduce considerable variety into the sequence and content, or else 51 investigators share an almost supernatural oneness of mind. A degree of variety among the reports gathered by any one investigator further belies the hypothesis that investigators and their expectations are the main stabilizers of abduction stories.

Of course, a finer examination of the alleged stability in these reports may find it illusory. I will be the first to admit that I have no expertise in statistics, and a subtler mix of variables may be at work than my most elementary skills can detect.

Another troublesome question arises from other stories told under hypnosis. I am thinking of so-called past-life regressions, where a subject remembers in vivid detail a past incarnation. Even stranger are future-life progressions, where subjects see the future. Many past lives of the Bridey Murphy type are properly individualized and fail to share the recurrent character of abductions, but a search for patterns might prove revealing. Future-life progressions are even more curious because they sometimes take the form of apocalyptic visions similar to those of abductees, and show a transpersonal consistency in message and imagery (Chet B. Snow, 1989, *Mass Dreams of the Future*, New York: McGraw-Hill).

The circle could enlarge to include religious conversion experiences; since they involve major life transformations under the apparent guidance of otherworldly beings and follow a recurrent course. Kenneth Ring has found many points of similarity between near-death experiences and abductions in terms of imagery, life transformation, and messages. Are we bumping in the dark against powers of the unconscious mind through hypnosis and altered states of consciousness? Are we brushing against unsuspected powers of the mind? Or are we mixing apples and oranges as different stimuli, some internal and some external, all provoking similar responses because they all impinge on the same organ, the human brain? The answers

remain elusive. An examination of parallel phenomena may yet prove revealing in our efforts to understand abductions and the role of hypnosis in them.

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THE SCALE'S THE THING

(Comment on Richard F. Haines, 1989, A "Three Stage Technique" (TST) to Help Reduce Biasing Effects during Hypnotic Regression, *Journal of UFO Studies*, Vol 1. 163-67)

I very much appreciate your sending me the initial copy of the *Journal of UFO Studies*. Having served on the National Academy of Sciences Committee that reviewed the Condon report in 1969, I know the difficulties that are involved. Your task is much more difficult than mine was at the AAAS meeting.

I have long believed that the reason most psychologists do not wish to spend their time on these investigations is that the chance of definitive results is so slight they are afraid that this will not be a good use of their time. There are so many answerable questions still to be answered!

I find your initial issue to be academically entirely suitable.

I have looked over Dr. Haines's suggestions for the hypnosis protocol which seems to show experience with the problems met, with interviews regarding the UFO phenomenon. My only specific comment is that with respect to induction (page 165) I do not believe it is sufficient to say that "various depth of trance tests should be used . . ." I think that a standardized scale should be used and perhaps specimen scales recommended. Otherwise, I feel that these suggestions are in the right direction.

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LETTING THE SUBCONSCIOUS SPEAK

(Response to Hilgard)

I wish to thank Dr. Hilgard for his comments regarding my paper. As he clearly perceived, my primary interest was to suggest a technique that would help reduce biasing on the part of the investigator/hypnotist. As he knows so well, this is very hard

to do effectively and, unfortunately, the effects of unintentional leading are found throughout the UFO abduction literature. Nevertheless, it is absolutely imperative that we continue to develop and refine such techniques.

Since the article was published I have had the opportunity to perform more than a score of hypnotic time regressions using the TST along with a low-light-level television camera system and very sensitive voice microphone. Together, they have helped me identify a number of scientifically challenging and philosophically provocative responses that these persons (all claimed abductees) displayed in common. While temporal regression using hypnosis isn't the only means of probing alleged alien abduction experiences, it appears to hold great promise as long as the person's subconscious is permitted to speak *entirely* on its own. I am glad to offer the Three Stage Technique to this end.

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FANTASY-PRONE AND UFO CONTACT PERCIPIENTS: STILL AN UNTESTED HYPOTHESIS

(Comment on Kenneth Ring and Christopher J. Rosing, 1990, The Omega Project: A Psychological Survey of Persons Reporting Abductions and Other UFO Encounters, *Journal of UFO Studies*, Vol. 2, 59-98)

Kenneth Ring and Christopher Rosing are to be congratulated for their recent psychological study of abductees and other UFO close encounter percipients. A study of this nature is long overdue and their findings will contribute some factual data to what has previously been a mainly anecdotal debate. However, we would like to comment on their primary findings about the fantasy-prone personality (FPP) hypothesis.

Psychologists T. X. Barber and Sharon Wilson's original research into the phenomenon only uncovered the FPP—a personality syndrome with a cluster of characteristics—by utilizing a number of test questionnaire instruments. These were: the 103-item Creative Imagination Scale (Theodore X. Barber and Sharon C. Wilson, 1978, *The Barber Suggestibility Scale and the Creative Imagination Scale*, *American Journal of Clinical Hypnosis*, Vol. 21: 84-108); the Barber Suggestibility Scale (Barber and Wilson, 1978, above; and Theodore X. Barber, 1969, *Hypnosis: A Scientific Approach*, New York: Van Nostrand); and the Memory, Imagining and Creativity Interview Schedule (Sharon C. Wilson and Theodore X. Barber, 1983, *The Fantasy-Prone Personality: Implications for Understanding Imagery, Hypnosis, and Parapsychological Phenomena*, in A. Sheikh, ed., *Imagery: Current Theory, Research and Applications*, New York: Wiley, 340-87).

Follow-up work by psychologists S. J. Lynn and J. W. Rhue (1986, *The Fantasy-*

Prone Person: Hypnosis, Imagination and Creativity, *Journal of Personality and Social Psychology*, Vol. 51 (2): 404-408) utilized the following questionnaire instruments: the Harvard Group Scale to assess hypnotic susceptibility (R E Shor and Martin T. Orne, 1962, *Harvard Group Scale of Hypnotic Susceptibility, Form A*, Palo Alto, Calif.: Consulting Psychologists Press); the 37-item Tellegen (A. Tellegen, 1976, *Differential Personality Questionnaire*, Minneapolis: University of Minnesota); the 35-item Vividness of Imagery Scale (P. W. Sheehan, 1967, A Shortened Form of Bett's Questionnaire upon Mental Imagery, *Journal of Clinical Psychology*, Vol. 23: 386-89); the Creative Imagination Scale (Barber and Wilson, 1978, above); the 62-item Barron-Welsh Art Scale to assess creativity (F. Barron and G. Welsh, 1952, Artistic Perception As a Possible Factor in Personality Style Its Measurement by a Figure Preference Test, *Journal of Psychology*, Vol. 33: 199-203), and the 33-item Crowne Marlowe Social Desirability Scale (D. Crowne and D. Marlowe, 1960, A New Scale of Social Desirability Independent of Psychopathology, *Journal of Consulting Psychology*, Vol. 4: 349-54).

Only by employing this bank of instruments was the FPP revealed and confirmed as a cluster of personality characteristics different from any other previously known personality type. It had never been detected prior to Barber and Wilson's original work in the area. It is obviously a large undertaking to conduct similar tests with abductees or contactees. However, both Strieber and Hopkins have initiated foundations to promote research into the abduction phenomenon and they have access to both money and the required numbers of abductees.

Although we want to encourage testing of the FPP hypothesis relative to contactees and abductees, Ring and Rosing's study is simply insufficient to have tested the FPP hypothesis. A much more in-depth study of abductee percipients utilizing the *full range* of test instruments as used by Lynn and Rhue or Barber and Wilson is necessary to either confirm or deny the hypothesis. The discovery of the FPP by Barber and Wilson is comparable to the discovery of hundreds of "Stone Age tribes" in the 1990s. They would be remarkable discoveries given that with all of our explorations of earth, they were overlooked, having existed all this time right under our empirical noses—and in such large numbers. To do justice to the FPP phenomenon requires more than the utilization of the techniques and methods employed by psychologists and psychiatrists in the past.

In light of this situation, we continue to encourage interested researchers desiring to test the FPP relative to contactee and abductee percipients to continue with their research—but use a research design as close to Barber and Wilson or Lynn and Rhue's as is feasible.

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FANTASY PRONENESS AND THE KITCHEN SINK

(Response to Bartholomew and Basterfield)

I'd like to thank Robert Bartholomew and Keith Basterfield for their kind comments on our Omega Project study and for their thoughtful remarks on the fantasy proneness issue which I want to address in this rejoinder.

I would be the last person to claim that the relationship between fantasy proneness and UFO experience has been *settled* by our findings. Moreover, I certainly support their exhortation that more research on this question needs to be undertaken. However, before investigators act on this suggestion, they should be aware of just how murky and muddled this concept of fantasy proneness actually is.

If, for example, one takes a look at the most frequently employed paper-and-pencil measure of fantasy-proneness, the Inventory of Childhood Memories and Imaginings (ICMI), S. J. Lynn and J. W. Rhue's 52-item adaptation (1986, *The Fantasy-Prone Person Hypnosis, Imagination and Creativity, Journal of Personality and Social Psychology*, Vol 51 (2): 404-408) of one of S. C. Wilson and T. X. Barber's interview schedules (1983, *The Fantasy-Prone Personality. Implications for Understanding Imagery, Hypnosis, and Parapsychological Phenomena*, in A. Sheikh, ed., *Imagery: Current Theory, Research and Applications*, New York: Wiley, 340-87), one cannot help but be struck by what a heterogeneous hodgepodge it is. It not only has items pertaining to tendencies toward fantasy and imaginative activity in childhood—as well as adulthood—but it also strays into the domains of mystical and religious experience, out-of-body experiences and other paranormal phenomena, dissociation, drug use, belief in reincarnation, and so on. In a phrase, it seems to be a good measure of fantasy proneness *and the kitchen sink*.

It was, in fact, precisely the conceptually unwieldy nature of this questionnaire that compelled me to devise one of my own. I was interested *just* in tendencies toward fantasy and imaginative involvement in childhood, and that's what my fantasy proneness items are intended to measure (Anyone who wishes to get a copy of my Childhood Experience Inventory in which these items appear is welcome to write to me.) A factor analysis of this scale reveals that most of my items intercorrelate acceptably and all but three items have high loadings on a single factor that is best interpreted simply as a tendency toward childhood fantasy (the remaining three items have more modest but still positive loadings). Furthermore, a factor analysis of my three psychological inventories (the Childhood Experience Inventory, the Home Environment Inventory, the Psychological [Dissociation] Inventory) clearly shows that my measure of fantasy proneness is conceptually quite different from my measures of sensitivities to alternate and psychic realities. Specifically, this second analysis disclosed three main factors *child abuse and trauma* (only the subscales of the Home Environment Inventory loaded on it), *sensitivity to non-ordinary realities* (only my CEI subscales of sensitivities to alternate realities and psychic sensitivities had high loadings on it), and *inner-worldliness*. It was only on this last factor that my

measure of fantasy proneness showed a high loading (.73), along with lesser values for tendencies towards solitude (.60) and dissociation (.45).

My point here is that, as currently and conventionally measured and defined, fantasy proneness is too composite a psychological variable for the conceptual work it is being asked to do. As a result, when we speak about fantasy proneness in this sense, we are talking of all sorts of things—things that, as I believe our study shows, need carefully to be distinguished from one another. Thus, UFO experiencers may not really be especially fantasy prone in my more restricted operational definition of the concept, but they may indeed be more prone to psychic experiences and to experiences of alternate realities, as the findings of our study suggest. In this light, there might not after all be that much conceptual difference between the interpretative line Bartholomew and Basterfield want to take and the one implied by the results of the Omega Project.

In any event, before rushing in with all the instruments that Bartholomew and Basterfield advocate, it might be better if we first clarify our thinking about what fantasy proneness is—as distinguished from the kitchen sink.

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Book Reviews

UFOs in the 1980s. By Jerome Clark. The UFO Encyclopedia, Vol. 1. Detroit, Mich.: Apogee Books. 1990. 234 pp. \$65.00. index ISBN 1-55888-301-0.

How does one ever take it upon oneself to write an encyclopedia? Certainly it is a particular form of masochism that we bystanders can observe in awe and admiration. Encyclopedia writing is by definition a hopeless task, as no matter how one tries, one can never say, "I'm complete; I'm done." This volume (one of three to be in the "completed" set) is, like all encyclopedias, a selection of subjects editorially chosen from the vast array of possible choices. Some readers will agree with the choices, others will not. In this reviewer's mind, the choices of what went into the volume were almost uniformly sound, understandable selections. What was left out of the volume was substantial, mostly in terms of the number of specific ufologist entries (in my view there could have been many more real, live 1980s ufologists given a "personal" featured space) and in the breadth of non-U.S. geographical areas covered. Having given that apparent criticism, I will say that it is more of a desire, a greed, for knowledge on my part that drives me to wish for these missing pieces, than a criticism. As an editor myself, I realize the organizational nightmares associated with trying to cover everything in limited time frames. I appreciate the subject matter that is included. It, like all writings by Jerry Clark, is well-crafted and lively. It also bears another stamp of its maker, it shows the hand not only of a reporter of facts (the normal bent of an encyclopedia), but of an editorial commentator, which has of course been Jerry's occupation in ufology for many years. So, reader beware! If you are looking for "just the facts," you will be surprised. Whether you are *delighted* will depend on the positions you have taken on some of the controversies discussed. This may be one of the few encyclopedias ever written with regular, overt commentary.

The job of a reviewer is to comment upon strengths and weaknesses. Sadly the business of commenting tends to get one focused on the flaws more than the diamonds. Let me ameliorate that by saying that a random perusal of text, index, et al., indicated a high level of factual accuracy and control over the gremlins that sneak into any publishing enterprise. Subject matters are treated at an intellectual level much higher than most UFO writing. Referencing is clear and helpful. In short, depending on what you feel about the editorial views contained within the text, you will either thoroughly enjoy the book or not. However, since the reviewer's job is also to comment on a "wish list," here are some of the things I would have wished for if time, energy, money, help, or whatever would have been available.

1. First, concerning entries for individuals We can all make up our own lists, and so this in a sense is unfair, but I would think that a strong argument could be made for the inclusion of persons like Keith Basterfield, Michael Persinger, Jean-Jacques Velasco, V. J. Ballester Olmos, Allan Hendry, William Chalker, Alvin Lawson, John Schuessler, Barry Greenwood, Loren Gross, Ronald Westrum, Paul Devereux, Linda Howe, Walter Webb, Paul Fuller, Raymond Fowler, Ted Phillips, John Spencer, Peter Sturrock, and James Oberg. I have deliberately stopped at a round number to get me off the hook for also leaving people out My purpose in making the above list (my real list is twice as long) is simply to wish that more of these significant UFO figures (like them or not) would have had their say under specific entries Admittedly, you can find out about the work of Basterfield, Persinger, and others under other subject entries, and that was apparently part of the encyclopedia's modus operandi. Still, it would have been nice, in this one reviewer's view, to have seen specific entries.

2. Concerning subject matters of major import, the ground has been fairly well covered Most major subjects that have appeared in symposia and journals have often extensive entries. These entries are full of Jerry's erudite writing with precise views, and you will not fail to be entertained Occasionally one wishes that certain subjects would be set off by themselves under a subject entry. For example, the cattle mutilation controversy should probably receive its own treatment rather than be interwoven with the John Lear/EBE material with which it may or may not have any connection (perhaps the 1970s volume will have such an entry) Similarly, the MJ-12 controversy would be better served on its own In the early 1980s particularly, many presentations summarizing physical evidence such as physical traces and vehicle interference work were made at UFO symposia; but that sort of material is relatively absent, overwhelmed by abductions and conspiracy and coverup-related matters This is somewhat understandable given the thrust of late-1980s American ufology, but in a way it is a shame. The names Ted Phillips, Donald Johnson, and James McCampbell do not appear. One particular UFO subject of great interest in the early 1980s that seems shortchanged was the attempt of several technologists to extract engineering, power-source, or other technical details out of particular UFO reports or data clusters. As ufology turned to abductions and conspiracies in America, this sort of work faded from the later stages of the symposia, probably to the impoverishment of UFO research, and to the current volume In this sense this volume is much more "UFOs in the late 1980s" than it is in the 1980s as a whole.

Some areas of non-U S UFO studies receive interesting treatments by the four foreign authorities requested by Jerry to write them But the coverage of foreign ufology will probably not please our overseas colleagues Australia, France, Great Britain, and Canada receive notable reviews, but many other geographical areas are regrettably absent. It would have been especially nice to hear from our other European colleagues, and those of South America and Japan

A few miscellaneous topics that might have received attention, either at all or as specific entries, were several projects of the early 1980s (Projects Identification, Visit, Starlight International), the amazing Buff Ledge abduction case (Walt Webb), the

debate over the errors and dangers of hypnosis, and even two popular, possibly unrelated phenomena that dramatically affected the number of people interested in UFOs: Shirley MacLaine, and the Face on Mars. A separate intellectual piece on UFO imagery and folkloric archetypes would have been a dynamic addition. The index is very helpful regarding personal names, but requires one to be a bit of an insider to find one's way to the subject matter.

The volume lacks any illustrations, diagrammatic or pictorial, which is a great loss in a subject that can be so visual.

Overall, despite my wish list for more, more, more, this is a volume worth having on your shelves. When the next two parts appear, it will be triply valuable. The work is mostly Jerry Clark's, with some help from Bill Chalker (Australian ufology), Claude Maugé (French ufology), Jenny Randles (British ufology), Chris Rutkowski (Canadian ufology), and J. Gordon Melton. Jerry's heroic work in writing all the other entries is a bit mind-boggling. This sort of task seems too great even for an individual of his legendary energy, knowledge, and productivity, and it is my opinion that this partly explains the limitations discussed in this review. It is to be hoped that Jerry will relieve himself of some of these terrific burdens in the next two volumes (now being written) and ask some of his many friends in ufology to write additional entries. We will still have the pleasure of his insight and wit, and a fuller encyclopedia as well.

No book on UFOs can be perfect, let alone an *encyclopedia* on them. Don't ask for that. But buy the book. It's a worthy addition to your UFO library.

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Earth Lights Revelation. UFOs and Mystery Lightform Phenomena, the Earth's Secret Energy Force. By Paul Devereux, with David Clarke, Andy Roberts, and Paul McCartney. London: Blandford Press, 1989. 239 pp. ISBN 0-7137-2039-8

Paul Devereux is a well-known author in the field of anomalous luminosities. For more than twenty years, he has tried through unbiased investigations to reduce the UFO enigma to a more rational debate. Although for millennia earth lights have often been associated with various religious or mystical manifestations, it is only since the last few decades that these rare light phenomena have been linked to the contentious field of ufology. The unlimited imagination of some ufologists needs more rational opponents like Devereux and his contributors (Clarke, Roberts, and McCartney). Uncontrolled sensationalism of some non-scientists has succeeded, through the mass media, to maintain erroneous concepts about UFOs even well within our present high-tech era. It takes some courage to deal with a subject that has been relegated for ages to the edge of our scientific knowledge and even more to one that has been linked to extraterrestrial forces.

I do agree with the editor that this book will represent a turning point in our understanding of these mysterious lights. By contributing to the demystification of these luminous seismotectonic, electromagnetic emissions (EMEs)(see M B Gokhberg, et al., 1982, Experimental Measurement of Electromagnetic Emissions Possibly Related to Earthquakes in Japan, *Journal of Geophysical Research*, Vol. 87(B9): 7824-28, N.G. Khatiashvili and M.E. Perel'man, 1989, On the Mechanism of Seismo-Electromagnetic Phenomena and Their Possible Role in the Electromagnetic Radiation during Periods of Earthquakes, Foreshocks and Aftershocks, *Physics of the Earth and Planetary Interiors*, Vol. 57: 169-77; J Tate and W. Daily, 1989, Evidence of Electroseismic Phenomena, *Physics of the Earth and Planetary Interiors*, Vol 57: 1-10), new avenues of research explored by a greater number of professional scientists may lead us more rapidly to the fundamental mechanisms of these poorly known phenomena and should contribute to the enlightenment of UFO researchers.

The book is relatively short and intended for nonscientists searching for a rational explanation to these mysteries. Many students in the natural sciences and even professional geologists and geophysicists will be surprised to learn that the origin of these luminosities is more intimately related to the birth of our planet than to the imagination of the human species. Some will also foresee a new geophysical approach that might very well have some interesting potential in the prediction of impending earthquakes (see N.J. Gershenzon, et al , 1989, Modeling the Connection between Earthquake Preparation Processes and Crustal Electromagnetic Emission, *Physics of the Earth and Planetary Interiors*, Vol. 57: 129-38; and A I Grigoryev, et al , Parametric Instability of Water Drops in an Electric Field as a Possible Mechanism for Luminous Phenomena Accompanying Earthquakes, *Physics of the Earth and Planetary Interiors*, Vol 57· 139-43).

The book has eight chapters distributed within three parts. First, the author specifies the various types of lights produced by our planet. He places them into three classes: ball lightning observed during thunderstorms, flamelike forms ("will-o'-the-wisp") in marshy areas, and finally earthquake lights, which are the primary focus of the book. At the end of this first part, the author gives a lengthy but quite pertinent account of the post-World War II American sociological context in which the flying saucer hypothesis (UFOs as extraterrestrial spacecraft) was generated. With the era of McCarthyism and military propaganda, America had to be well-prepared for global war with Russian Communists who were hiding their unknown technology behind the Iron Curtain. Outer-space invaders with alien technology were other possible enemies. As Devereux presents a brief historical account of the anomalous luminous phenomena reported over the last 2,000 years, he demonstrates that the present perception of UFOs is only another manifestation of a phenomenon as old as time. On the other hand, within that introductory section, a selection of historical examples that correlate with seismic events would have been pertinent for the reader (see Ignazio Galli, 1910, Raccolta e classificazione di fenomeni luminosi osservati nei terremoti, *Bollettino della Societa Sismologica Italiana*, Vol 14(6/8)· 221-448; K Mack, 1912, *Das Süddeutsche Erbeben vom 16 November 1911. Abschnitt VII. Lichterscheinungs*

Württembergische Jahrbuch für Statistik und Landeskunde, Stuttgart, Vol 1; F. de Montessus de Ballore, 1913, The So-Called Luminous Phenomena of Earthquakes, and the Present State of the Problem, *Bulletin of the Seismological Society of America*, Vol. 3 187-90; F Montandon, 1948, Lueurs et malaises d'origine séismique. Essai sur la nature des phénomènes lumineux et des troubles physiologiques qui accompagnent les tremblements de terre, *Geographica Helvetica* (Bern), Vol. 3: 157-78)

After this literature review, the author goes on to show that the appearance of these lights occurs most commonly in the neighborhood of geological faults, and is more frequent during periods of earthquakes when great amounts of mechanical crustal strain might be transformed into electromagnetic emissions through the piezoelectric effect. Along these lines, numerous sightings of curious lights have been extensively reported for years in the Cascade Mountains of Washington. This particular region, located on the rim of tectonic plates, is well known for its great seismicity. Coincidentally, it was also there in 1947 near Mount Rainier that the modern age of UFO sightings was initiated.

In relation to the Tectonic Strain Theory, Devereux does not seem to be aware of the still excellent work of Montandon, who was as far as I know the first author to associate the origin of these lights to tectonic stresses. Montandon writes in his article (cited above) on p. 171

D'un côté, cette tension est donc la cause de la rupture et, partant, de la secousse; mais elle est en même temps, d'un autre côté, la cause des troubles électromagnétiques, producteurs des lueurs séismiques.

Moreover, contrary to the affirmation of Devereux (p. 24), the catastrophic release of gas from Lake Nyos, Cameroon, on August 21, 1986, was not related to any significant seismic activity during or before the event (G.W. King, et al., 1987, The 1986 Lake Nyos Gas Disaster in Cameroon, West Africa, *Science*, Vol. 236. 169-75, Y. Noriju, et al., 1990, Gas Discharge at Lake Nyos, *Nature*, Vol. 346. 322-23).

The second part of the book presents 100 pages of earth light sightings. From the British Isles to Australia via West Africa and the Peruvian Andes, Devereux demonstrates that these anomalous lights have been universally reported over many centuries and that their folkloric interpretation has given rise to numerous legends, often traceable to various types of significant religious or other important local events. In many civilizations, as well as in several monastic orders, the mysterious lights were often regarded as divine, in others, they were seen as a terrifying dragon coming out of a mountain cave during earthquakes. Such ancient interpretations are surprisingly analogous to those of certain contemporary ufologists.

Devereux's arguments are supported by extensive documentation that includes numerous color photographs, especially from the United Kingdom, the United States, and Scandinavia. Specifically for the British Isles, where the author is more familiar with regional geology, several geographic zones with well-known concentrations of lights over many decades appear closely associated with nearby geological faults.

In Chapter 7, part three, the author attempts to associate anomalous lights with local geological processes, such as faulting or seismicity. I believe that pages 163-196 should have been incorporated into part two, after the geographical breakdown. For readers unfamiliar with the geography and geology of specific areas, these pages should be read in parallel with the four previous chapters. This organization has resulted in a great deal of tedious repetition. I counted no less than 26 places where the reader is asked to search in the previous four chapters to be able to follow the author's argument.

The bridge between the earth lights and the seismicity of an area could have been presented more convincingly. Although this geological relation is more and more evident (see John S. Derr and Michael A. Persinger, 1990, Luminous Phenomena and Seismic Energy in the Central United States, *Journal of Scientific Exploration*, Vol 4 (1). 55-69; Marcel Ouellet, 1990, Earthquake Lights and Seismicity, *Nature*, in press), the fact that a 400-million-year folded structure is found within an area does not automatically mean that it is still active. The same analogy holds for a small reservoir only several decades old. It is well known that the induced seismicity of such reservoirs, even for a rise in water level close to 100 meters, rapidly fades a few years after the end of its filling (J.P. Rothé, 1970, Séismicité artificielle, *Tectonophysics*, Vol. 9: 215-38; G. LeBlanc and F.V. Anglin, 1978, Induced Seismicity of the Manic-3 Reservoir, Quebec, *Bulletin of the American Society of Seismology*, Vol. 68: 1469-85). The information given in the book does not clearly allow the reader to relate the variations of geological stresses of the lake basins to the annual hydrological cycle or to a reservoir's initial construction. A better integration of the data with good spatial illustrations of the geographical relations of the faulting zones, the sighting locations of the lights, the quake epicenters (magnitude, period, depth), and observers is absolutely necessary. The location of reported sightings might be more strongly related to the uneven distribution of the regional population rather than to the faulting geography. Such illustrations could have advantageously replaced the histograms of Figs. 14 and 15 as well as the simple circle of Fig. 19. In Table 1 (p. 169) and its incorrect text reference (p. 171), there is confusion between the modified Mercalli intensity scale and the Richter magnitude scale. On page 168 there is no mention as to why only the 1967-1978 and 1982-1984 earthquake epicenter records of the British Geological Survey were consulted. The very great number of data available on sightings and seismicity should have been analyzed with the help of computers. For the remaining few pages of that chapter, the rock-fracturing, piezoelectric hypothesis looks attractive, but it would also have been useful to include a discussion on the electrokinetic ground water-induced effect of such EMEs (H. Mizutani, et al., 1976, Electromagnetic Phenomena Associated with Earthquakes, *Geophysical Research Letters*, Vol. 3. 365-68; J. Zlotnicki and J.-L. Le Mouel, 1990, Possible Electrokinetic Origin of Large Magnetic Variations at La Fournaise Volcano, *Nature*, Vol. 343: 633-35).

In conclusion, the author has gathered an important assemblage of documents along with new information that begins to relate the origin of these old, mysterious lights to

the fundamental geophysical laws of our universe. Devereux will have to be credited for his significant contribution

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