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EDITORIAL

Welcome to the *Journal of UFO Studies*. This volume marks the beginning of a new enterprise under an old name. It is the hope of the Center for UFO Studies, and the editor, that this journal will constitute a significant departure from the past as regards publication of scholarship and research in the field of ufology. The journal, as conceived by Mark Rodeghier and the officers at the Center, is to be an "ordinary" academic journal in every sense. We hope to publish only articles of quality, issues forums of expert opinion and professionalism, and literature reviews of intelligence and insight. We hope to be objective, disciplined, and rigorous. We welcome all viewpoints which can meet those standards, and, in fact, will attempt to actively recruit valued scholars of disparate positions for forums and research articles. We consequently hope to offend no one, either due to our willingness to pursue all legitimate views and hypotheses, or due to our rejection of manuscripts when they do not rise to academic standards. Please forgive us our objectivity and rigor for without these two characteristics nothing "scientific" is worth the name.

Certainly, as in all things of complexity, there are bound to be errors. We will try to minimize the greatest of these by a double-blind, double-referee system of previewing articles submitted for possible publication. Our referees to date have all been noted scholars, mostly at academic institutions, and we will attempt to maintain their high quality in future reviews. Our "issues forums," such as the one on abduction research methodology and data which appears in this volume, are not refereed except for language and professionalism by the editor. This is appropriate in that the contributions to the forums are viewpoints rather than research scholarship. They are aimed at a "meeting of minds" to clarify problematical areas in some part of ufology. Our first forum proceeded well under these ground rules and I recommend it to you.

The editor has found the launching of this new journal to be a difficult task, due, I believe, to the novelty of its standards and a natural "wait-and-see" attitude of the true research scholars capable of involving themselves in such a project. Now that the launch has been completed, I will leave the estimation of its success, or at least its promise, to you. My feelings are that its success is at least respectable, and its promise is great. If you feel at all the same, please lend the editor and the Center a hand. A journal is only as good as its scholars, its reviewers, and, in our case, its forum discussants. I have met and corresponded with quite a few people in this past year who have convinced me that the number of intelligent professionals interested in ufology is far deeper than anyone would suspect upon casual observations of bookstores or popular magazines. We have needed a respectable and respectful

outlet for research writing for some time. I am hoping that in *JUFOS* it has materialized.

The schedule of publishing the journal has not yet been determined. Of course it will mainly depend upon two flows: good contributions from the scholars, and monetary "contributions" to the Center so as to create the thing itself. I am only concerned with the former. Please bear with us while we smooth out these flows, and get this enterprise into some definable time-synchronization with the real world we all live in. I have little doubt that will happen soon. But we are dependent upon you, the scholars, to be part of the project. Take kindly the letters from the editor which come in the mail. And, even if you can't do the favor asked, be flattered that you are valued...and maybe do it next time.

Michael D. Swords, editor
Professor of Natural Sciences, Western Michigan University

HYPNOSIS AND UFO ABDUCTIONS: A TROUBLED RELATIONSHIP

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ABSTRACT Researchers have relied on hypnosis to uncover apparently hidden dimensions of UFO encounters and discovered extraordinary abduction stories in the process. Yet scientific studies prove hypnosis is no foolproof truth serum, rather a procedure fraught with risks for error, distortion, and false memories. Critics using these studies have charged that abduction stories amount to nothing more than a structure of fantasy and cultural influence raised to an unusual height of vividness by hypnotic investigation itself. The resolution of these criticisms must lie with evidence rather than theory. Checks on the reliability of hypnosis are provided by comparing abduction stories obtained by hypnosis with those obtained by natural recall, comparing the findings of different investigators, and comparing accounts from hypnotized "real" abductees with accounts from hypnotized non-abductees. In each case the form and content of abduction stories seems independent of hypnosis. The same key traits appear with similar frequency among hypnotic and non-hypnotic reports, the beliefs and personalities of investigating hypnotists show little influence on these frequencies, and "real" abductees tell more coherent stories than non-abductees. These findings indicate that hypnosis makes far less difference than critics have claimed. Though hypnosis cannot be entirely exonerated as an agent shaping abduction stories, a core of experience seems necessary for their formation.

THE ISSUE

Hypnosis and UFO abductions have joined hand in hand from the beginning, for better or for worse. Whether this marriage is a happy union or a mismatch stands as the foremost methodological issue facing abduction research today, and the value of much of the evidence for this phenomenon depends on the outcome.

Barney and Betty Hill's revelations of capture and examination by alien beings, recounted in John G. Fuller's 1966 book, *The Interrupted Journey*, called attention to the spectacular possibilities of hypnosis for exploring the hidden mysteries of a UFO encounter. The Hill case made clear that some encounters were less straightforward than they seemed. In fact for some mysterious reason the witnesses forgot the bulk and best part of their story. As further cases proved the Hills' story was a type rather than one of a kind, the lapse of memory hiding an abduction scenario also assumed the dimensions of a characteristic trait. Time lapse became the telltale clue of abduction, the proof that some shadowy visitors first used the witness

and then tampered with his memory to hide their work. By good fortune hypnosis had the power to crack the amnesia barrier and spill the beings' secrets. Hypnosis became standard operating procedure, practiced regularly by active investigators such as Dr. R. Leo Sprinkle, Dr. James Harder, and Budd Hopkins. The well-known Betty Andreasson, Tujunga Canyon and Whitley Strieber cases came to light in part, and often in large part, with the help of hypnosis. Among investigators who regard abductions as real events, hypnosis is merely a versatile and successful instrument for recovering the hidden memories of a physical experience. Not the lever but the realities it pries loose deserve all the attention.

An opposite point of view is expressed by members of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP). From this skeptical position, hypnosis does not simply reveal abductions but actually causes them. The convenient way hypnosis exposes the best-laid plans of alien skullduggery is simply too good to be true. Philip J. Klass (1988: 51, 67, 82) notes that abduction investigators first looked for a close UFO encounter, then a time lapse in connection with a UFO sighting, later simply a time lapse, and lately nothing more than vague anxieties or misgivings. However faint the hint, abduction researchers still seem to find their aliens. He then proposes that abductions lie within the mind of the witness. Two sources contribute to the abduction story—one is prior expectations, the other is hypnotic interference with ordinary memory processes. The actual content derives from exposure to the Hill case and subsequent well-publicized reports, but UFO investigators misusing hypnosis are mainly responsible for the propagation of these tales. A subject comes forward with the will to believe and perhaps a psychological need for approval, then submits to hypnosis by an investigator who believes in the reality of abductions and unwittingly guides the subject to tell a regulation abduction story. Prone to suggestion because of the hypnotic state, the subject confabulates a false story and then in the aftermath of hypnosis cannot distinguish truth from fantasy. The fictitious story seems real and the subject becomes a thoroughly convinced and perhaps even eloquent "witness" (Klass 1988: 57-63). Experiments with non-abductees hypnotized and planted with suggestions to imagine abduction scenarios resulted in remarkably similar accounts, confirming their subjective origin from another direction (Klass 1988: 51-56).

Two explanations vie over the same evidence, poles apart in their assertions and each fatal to the other. Each offers a plausible account for much of the data. On one side sincere witnesses claim a strange experience and hypnosis reveals an even stranger cause; on the other side interpreters reduce the experience to a mundane if unfamiliar mental process. The outcome of this conflict hinges largely on what hypnosis really does.

THE ABDUCTION STORY

The typical UFO abduction report tells a story of strange beings who capture human witnesses, escort them aboard a UFO, and there subject them to a physical

examination before releasing them to resume their normal activities. Two parts comprise the abduction story. At its heart lies this alien encounter, while a "pericardium" of strange events surrounds the central experience. This duality reflects a fundamental division in the story, because the parts only sometimes join together in a consciously remembered narrative. The strange events usually remain open and accessible to recall. The alien encounter is more problematic. Sometimes it too comes freely to mind, but in many cases this bizarre segment remains hidden from memory before hypnosis.

A complex encounter with the unknown may begin when UFOs stalk drivers along remote roads or people afoot outside, in other cases when strange beings intrude into homes and bedrooms. Awareness of a UFO, light, being, or presence of some indefinite sort often persists in conscious memory to signal the onset of abduction phenomena. Unusual events may register at this time, like a sense of vacuum or isolation, or independent behavior by a motor vehicle. Little by little the situation grows ever more strange and unsettling. The ordinary world becomes extraordinary by degrees, but so far no consistent reasons why inform the witnesses.

Then the curtain falls. Unusual occurrences come to an abrupt halt and witnesses go on their way without further ado. To all appearances nothing has happened, only a brief confusion or a momentary lapse of alertness has overtaken the witnesses. They usually feel only a vestigial curiosity or puzzlement, if anything at all. Later they discover that the brief disturbance was more than just a nod and actually an extensive loss of memory covering an hour or two, perhaps even longer. Memory presents the illusion of a continuum, but it seems somehow rough and ragged, like something was cut out and the fabric imperfectly repaired. The size of the actual gap is alarming, more than an ordinary slip of memory can comfortably explain. Then too, that jump in memory may remain an emotional sore spot, touched with anxiety, uneasiness and involvement in bad dreams.

Many times the conscious experience ends with time lapse, but here the actual abduction only begins. Strange beings approach the witnesses and take control of their thoughts and actions through some form of mental influence. These beings pacify the witnesses, circumvent their will to resist, and suppress their natural fear so that they enter the craft and submit to a sometimes gruesome examination. At the end the beings send off their captives, whose awareness of the ordinary world gradually returns while at the same time their recall of the abduction gradually fades.

These events are the commonest, most repetitive parts of the story. They take a prominent place in the most familiar reports and very nearly define the abduction phenomenon as most ufologists speak of it. More or less common additional events during captivity include a conference, tour of the ship, journey to an otherworld, and a religious experience of some sort. Once returned to normal affairs the abductee also may experience an aftermath of short-term physical injuries and mental disturbances, followed by long-term changes in personality and further encounters with the extranormal (Bullard 1987).

This, then, is the typical abduction story taken at face value. According to a literal

reading, witnesses are innocent bystanders seized against their will by aliens and used in some experimental procedure. These beings do not actually destroy witnesses' memories of the abduction, but deliberately seal off the most incriminating parts of the experience. When successful, this mental control leaves only a jumbled disorder of peripheral events, vague anxieties and fleeting glimpses to puzzle the victims. Hypnosis comes to the rescue and breaks the seal, releasing hidden events from the time lapse period into normal recall. Then with the full story told, all the events fit together into a meaningful, amazing whole.

MODERN SCIENTIFIC EVALUATIONS OF HYPNOSIS

Much of the public and many ufologists closely identify hypnosis with the most remarkable episodes in the abduction story. This association is inaccurate because some people relate full abduction accounts without hypnotic aid, but enough of the best-known and most detailed cases have involved hypnosis that its role is necessarily at issue. The damage is done. What matters now is whether hypnosis uncovers real events or leads to remarkable fictions, and the answers depend on our understanding its capabilities and limitations in some depth.

Hypnosis presents two very different faces. A popular image, built up over the past two hundred years and sustained by literature, stage shows, motion pictures, and popular belief, links hypnotism with almost magical powers to control the subject. The idea of hypnosis as a sleeplike trance induced by a swinging pendulum or the overpowering eyes of the hypnotist includes an assumption that the subject loses all free will. As a corollary, lying becomes impossible. Recent successes by police hypnotists in recovering forgotten clues from crime victims has added to the reputation of hypnosis as an almost supernatural channel to truthful past memories (Kroger and Douce 1979: 367-68). Ufologists are most likely to subscribe to this popular view, or give little more than lip service to skeptical reservations.

A scientific understanding of hypnosis dispenses with Svengali-like hypnotists, occult overtones, and nearly all other tenets of naive popular belief, only to replace them with a less mysterious but far more complicated phenomenon. The experts disagree on even the nature of hypnosis. One explanation treats it as a thing unto itself, an altered state of awareness or a neurological condition with distinct and recurrent characteristics (Sheehan and Perry 1976: 45-49; Orne 1965: 89), or a specific trait possessed by different people in varying degrees (Sheehan and Perry 1976: 50-52, 225-27). The behaviors and sensations peculiar to hypnosis are consequences of the hypnotic state. A radically opposed interpretation rejects the assumption of an internal state and builds theories strictly from observable manifestations. Certain behaviors regularly accompany hypnosis. They result from the hypnosis situation and the relationship between subject and hypnotist (Sheehan and Perry 1976: 83-85). The subject brings expectations and motivations to the situation and there enacts a role suggested by the hypnotist (Sheehan and Perry 1976: 123-25; Coe and Sarbin 1977: 4-8), or responds to the demand characteristics of the

situation with preconceived responses (Sheehan and Perry 1976: 177-80). "Hypnosis" is simply the sum of these behaviors without any unique state of mind to draw them together, a mere terminological or conceptual bag to hold the groceries. Theorists have tried various forms of these extreme positions and many intermediate variations in an effort to explain what hypnosis really is. No consensus has followed.

(a) Effects of Hypnosis on Subjects

If controversy surrounds the nature of hypnosis, its observable phenomena are little less problematic. Two categories of impact on subjects seem constant: one thing hypnosis does, or seems to do, is reduce the volition of subjects so that they become passive and pliant, susceptible to suggestion far beyond their "waking" norm. The external influence of the hypnotist assumes dominant proportions over subjects, and whatever he suggests, whether a selectivity of attention, a calming of emotion, a sharpening of memory, or assumption of an entire role, becomes a direction they follow with literal obedience and remarkable success (Hilgard 1965: 6-10).

Along with this enhanced suggestibility goes a second notable set of characteristics. Subjects appear to gain uncommon mental and physical powers, like sharper memory for past and even long-forgotten events, an ability to act an assigned role with thoroughgoing fidelity, and extraordinary keenness or selectivity of perception in keeping with instructions from the hypnotist. The imagination may improve as well, gaining a new capacity for vivid fantasy. Then at the end of the session the subject often forgets the whole experience with a sort of automatic amnesia (Sutcliffe 1965).

Many of the mental phenomena of hypnosis may trace to its ability to weaken judgment. If less volition means that subjects edit their thoughts less rigorously, if subjects test reality less than usual and delimit their sphere of perceptions more narrowly, concentration on literal detail will improve and expressions flow more freely. Tolerance will increase for bizarre ideas and flights of fantasy. Relaxed and detached by encouragement of the hypnotist, subjects could lose some of their normal inhibitions and act with unselfconscious spontaneity (Hilgard 1965: 6-10).

Alterations in subjects' behavior under hypnosis may be striking, but laboratory results affirm that these differences do not lead inevitably toward greater truthfulness. Hypnotic control is far from absolute. A matter as fundamental as knowing whether or not subjects are really hypnotized turns out to be problematic, with even experienced practitioners liable to deceit (Orne 1979: 313). Well-motivated subjects can lie in their own self-interest even from deep hypnosis (Orne 1979: 313), a finding which demolishes the faith that hypnotized subjects exercise no will and therefore cannot deliberately deceive.

Worse dangers than these deliberate efforts are part and parcel of hypnosis itself. The suggestibility of subjects is as real in scientific fact as in popular belief, but few people realize the consequence that any hint or cue dropped by the hypnotist, even an inadvertent gesture or careless phrasing of a question, may lead subjects to

provide answers the hypnotist seems to want instead of the truth. In an effort to comply, subjects may fabricate an answer when they have none, simply to fulfill the hypnotist's request. Any prior beliefs or expectations, any ideas gleaned from such exterior sources as reading or movies, may join clues from the hypnotist as sources of content for statements made under hypnosis (Orne 1979: 317-18, 322).

Once freed from normal critical judgment, subjects can imagine and fantasize shamelessly. Fragmentary memories and inaccuracies usually censored by everyday caution can emerge with greater ease (Orne 1979: 319). Experiments requiring subjects to recall an elementary school class or recite poetry memorized long ago resulted in detailed responses of great verisimilitude. When checked against historical records and original poems, these responses proved only half-truths. The rest consisted of anachronisms, errors and fabrications of a plausible and even convincing character, the sort of thing a hearer would readily accept as true if no check had been possible (Orne 1979: 317; American Medical Association 1986: 5). Subjects in this experiment blended truth and fiction into a coherent and inseparable whole. An important lesson in caution is clear—the suggestibility and guilelessness of hypnotic subjects may cut two ways, sometimes toward a more reliable truth and other times toward a more convincing fiction.

(b) Hypnosis and Memory

Investigators have turned to hypnosis as a way to reach the supposedly inaccessible memories of abductees, so how hypnosis interacts with memory is a vital question. Experts differ sharply on the value of hypnosis for enhancing memory. Most scientific research indicates some improvement in recall under hypnosis (Kroger and Douce 1979: 371) and the increase in vividness or detail may be substantial—a phenomenon known as hypermnesia (Relinger 1984: 216-17, 222). Others allow only a modest increase (Orne 1979: 319) or even none at all unless the subject has some sort of emotional involvement with the memories or high motivation to recall them (Putnam 1979: 445). Yet some discriminating experiments indicate that hypnotically enhanced memory is no better than waking memory (Smith 1983: 388).

More is not necessarily better, since the greater wealth of detail brought out by hypnosis may be rich only in falsehoods. Memory is not a museum for preserving past events in a pristine and unchanging state. Experimental evidence shows that memory remains fluid, its processes constructive and not simply reproductive (Bartlett 1967: 205). If memory were simply a storehouse for the past and hypnosis merely a retrieval service, all memories should be equally accessible. In fact no evidence suggests that hypnosis improves recall of nonsense materials. Only when the materials are meaningful are memories enriched under hypnosis, but motivational and emotional factors complicate recall of meaningful contents. The more involved with his memories a subject becomes, the greater the risk that creative functions will change or distort those memories. Research indicates that hypnosis

increases true and false statements alike (Orne 1979: 319, American Medical Association 1986: 5-6).

A great deal of research into hypnosis has been motivated by its use as a forensic tool. Criminal investigation and abduction investigation have much in common, since they deal with sudden, often traumatic events and witnesses with perhaps only confused memories. Any verdict on hypnotically enhanced testimony is thus a matter of great interest for ufologists. Police use of hypnosis during the 1970s scored some spectacular successes and some equally spectacular failures due to confabulated testimony (Serrill 1984: 62). Law enforcement hypnotists have defended hypnosis as reliable when used properly and argued that any form of investigation risks distorting witness memories (Kroger and Douce 1979: 358). The International Society for Clinical Hypnosis and the Society for Clinical and Experimental Hypnosis sounded an alarm in 1979 with resolutions calling for extreme caution in procedures and corroborating evidence for any assertions made under hypnosis. In 1985 the American Medical Association reviewed the relevant scholarship and also rejected hypnosis as a generally dependable forensic tool. Several state supreme courts sided against hypnosis as too unreliable for trial purposes. Then in June 1987 a U.S. Supreme Court decision ruled that states could not absolutely ban testimony acquired by hypnosis. The ruling was 5 to 4, hedged with many warnings, and permitted such testimony for defense purposes only (*New York Times*, 23 June 1987, II:8). Hypnosis won a victory but not a vindication.

One of the experts' key reservations focuses on the motivations of everyone in an investigative situation. Motivations are powerful determinants in hypnotically influenced behavior, and everyone in an investigation brings motivations along (Orne 1965: 110-11). Witnesses wish to tell their story and cooperate with investigators, while investigators want information and may demand more from witnesses than they really know. Investigators may have an opinion of their own and convey it consciously or unconsciously to the witnesses (Orne 1979: 322). Self-interest takes a hand at every point and can distort results even in interrogation of fully conscious subjects. Hypnosis simply amplifies the danger.

Another reservation is that a demanding investigative situation increases suggestibility and leads to the creation of fictitious memories. As critical judgment flattens out under hypnosis, the true and the false, the real and the fanciful, the sharp recollections and hazy half-memories assume equal stature as the witness perceives them. The boundaries between the real and the unreal blur beyond recognition. Investigators often assure witnesses that they will remember the truth or give a posthypnotic suggestion to remember everything that comes to light during hypnosis. The witness then becomes even less able to sort out the real from the unreal. In a therapeutic situation fact and fantasy can mix to the benefit of the patient, leading to a relief of symptoms (Orne 1979: 316-20). In a courtroom or UFO investigation where truth counts, nothing could be more perilous than this mixture. What makes it all the worse is that the witness testifies with honesty and good faith that the confabulations are true, because they seem as real as actual memories (Orne

1979: 320; American Medical Association 1986: 9). Once established and repeated, true and false memories may become inseparable—at worst hypnosis may spoil legitimate memories (Orne 1979: 323).

(c) Techniques for Memory Enhancement

How reliable hypnotically aided recall may be depends in part on the means for improving memory. Two techniques are in common use—age regression and direct suggestion. For age regression the hypnotist instructs subjects to revert to a particular date or time of life. The degree of subject involvement may differ from dissociated observer to involved participant. Responsive subjects actually seem to relive the past and assume a character appropriate to their age at that time. Sigmund Freud used this technique in his studies of hysteria, but soon realized the results were an amalgam of truth and fantasy, mirrors of a subjective rather than an objective reality. Subsequent experiments show a duality of consciousness, with subjects combining the past role with current knowledge and adult abilities. The show is impressive but the results are often inaccurate. Subjects fill in memory gaps with improvised fiction, and only objective checks can separate the true from the false (Orne 1979: 315-18; Kroger and Douce 1979: 363; American Medical Association 1986: 3-4).

Direct suggestion (or hypnotic hypermnesia) relies on suggestible subjects to respond with more detailed memories when instructed to do so. A common technique sets up an imaginary television or movie screen and proposes that witnesses view an event as objective observers, watching the action unfold with attentive concentration and with the ability to stop the motion or rerun the "tape" when necessary to gather as many details as possible. Witnesses will remember with vivid clarity but not relive the experience as first-person participants. Though seemingly free of hints and clues that might lead subjects, this technique often induces them to confabulate. Its very structure demands responses even if subjects have no valid memories to contribute. In practice the hypnotists are often demanding, and their encouragement may reveal their personal biases. Experimental studies find some increase in memory responses, but many additions are spurious (Orne 1979: 318-20, 324-25; Relinger 1984: 212; American Medical Association 1986: 4-5).

An alternative and less demanding approach—it may not rightly qualify as a technique—seems particularly well suited for abductions. Hypnosis has long served as a successful therapy for spontaneous amnesia and memory loss from traumatic experiences. In case of true traumatic blockage, if the hypnotist asks no questions but instructs subjects to relive the event, they may succeed in overcoming the amnesia without further prompting. The block usually breaks suddenly to release a flood of memories and their accompanying emotions. The experience usually returns to mind as a whole, not a piece at a time, so subjects relive the events in narrative form and may later fill in details under questioning. Nothing can guarantee the accuracy of these memories, but they seem more reliable than most, and circumstances offer the

fewest opportunities for contamination or confabulation (Orne 1979: 324). In fact allowing hypnotized or unhypnotized witnesses to recall in a narrative promises to introduce the fewest errors into testimony, though experiments also show that fewer details emerge this way (Hilgard and Loftus 1979: 348). Traumatized crime victims (and perhaps abductees) are prime candidates for the narrative form of memory restoration, in contrast to witnesses who suffer no mental block and undergo hypnosis only to refresh normal recall. Here, if anywhere, hypnosis stands to benefit recollection of real events.

(d) A Final Verdict

The traumatic element in memory loss may bear on an abiding conflict between "field" results with hypnosis and laboratory findings. Police investigators consistently praise hypnosis for aiding memory while experiments largely fail to confirm and sometimes even deny significant improvement. Of course the laboratory situation is far removed from real life, while the police work with witnesses whose experiences are vivid, emotionally charged, and deadly serious. Where learning takes place under stress the circumstances are most true to life, and results indicate some improvement in recall under hypnosis, though these findings are open to question (Smith 1983: 387-88, 390-92; Relinger 1984: 213-14). The fact remains that experiments designed to simulate real-world situations most closely also continue to furnish disappointing results (Smith 1983: 393-98; Relinger 1984: 214-18). Not every variable can be controlled, not every experiment is entirely negative, and not every authority agrees that increases are insignificant, but confidence in hypnosis as a way to enhance valid recall has weakened steadily even as laboratory work has become more realistic.

Anecdotal support for memory improvement remains strong all the same. Some tenuous experimental evidence shows that hypnosis betters memory for incidentally learned material—that is, learning by natural observation (Smith 1983: 398). When the hypnotist repeats attempts to draw the same memories from witnesses, the returns often grow from one session to the next, though again, so do false returns (Smith 1983: 403). Other evidence suggests that the situation of hypnosis rather than hypnosis itself may enhance recall. The relaxed condition of subjects, the slow and deliberate effort to remember amid the otherwise upsetting environment of an investigation, and careful efforts to visualize the context in which observation first occurred may be responsible for any improvements in memory (Putnam 1979: 445-46; Smith 1983: 402; Relinger 1984: 222). The subjects themselves add another complication, since susceptibility to hypnosis and behavior under it differ from individual to individual (Hilgard 1965: 67-93). Some people recall more than others, some fantasize better than others.

All this uncertainty underscores the fact that hypnosis is a complex phenomenon, and almost every aspect of it may act as a variable. On one matter the experts speak with a unified voice: hypnosis is no miraculous key to the truth. If hypnosis improves recollection at all, the improvement works only under limited circum-

stances and is fraught with the risk of distortion, fantasy and false memories. Scrupulous care in procedures of investigation is essential, and so is external evidence to back any statement taken. Hypnosis by itself validates nothing. The one circumstance where hypnosis really seems to help is in cases of traumatic repression of memories. In these instances the fact that witnesses recover anything at all may be more important than how much they recover. If abductions are as shocking as we might reasonably expect them to be, then traumatic repression is a real possibility and justification for a continuing faith in hypnosis as a useful tool.

PRACTICAL RECOMMENDATIONS FOR HYPNOTIC INVESTIGATIONS

Getting at the truth of abductions through hypnosis is clearly a hazardous undertaking. Some procedures are more reliable than others, and proper safeguards to take account of the dangers cited above can minimize undesirable results.¹ The following list closely follows recommendations for forensic investigators (Orne 1979: 335-36; American Medical Association 1986: 10-11).

The hypnotist should:

- 1) be a psychiatrist or psychologist with special training in hypnosis;
- 2) have no prior convictions about the case and know only enough about it to question effectively;
- 3) allow free recall first and only then ask specific questions;
- 4) avoid leading and demanding questions;
- 5) permit no one else in the room with the subject, to reduce the risk of accidental cues.

An implicit precaution for abduction research, where witnesses often undergo hypnosis over several sessions, is for the interrogator to:

- 6) withhold from conscious recall by means of posthypnotic suggestion the memories obtained in each session, until the series ends;
- 7) explore all conscious memories of witnesses in detail before hypnosis begins;
- 8) keep a full record of the entire investigation, on videotape if possible, to allow a check on the behaviors of both subjects and hypnotists;
- 9) evaluate subjects for susceptibility to hypnosis. A large academic literature exists on hypnotic susceptibility, with formal scales to classify subjects according to the depth they achieve and behavior they exhibit while under hypnosis (Hilgard 1965: 211-68; Sheehan and Perry 1976: 50-52; Hilgard 1970). This information could add immensely to our understanding of abductees as individuals and witnesses, but so far no abduction investigation seems to have included these standardized tests.

[Note: Dr. Richard F. Haines has pointed out that for reasons of legal liability, silent onlookers should be present during sessions. Concern for the welfare of

¹A detailed guide for do's and don'ts in hypnotic investigations of abductions can be found in the article by Hobart Baker (1986). An excellent program for the use of hypnosis in abduction research prepared by Richard F. Haines answers all reasonable objections and still remains practical (pp. 163-67)

witnesses as they experience the emotional stress of rediscovered memories underscores the need to have a trained professional in charge of hypnosis. Legal and ethical considerations lend an important extra dimension to theory-motivated precautions in the formulation of procedures, but I do not feel qualified to advise in these areas. My discussion will remain limited to theoretical ideals—with an understanding that practice must encompass broader concerns.]

HYPNOSIS AS PRACTICED IN ABDUCTION RESEARCH

Despite the reservations of experts, UFO researchers have plunged full speed ahead with hypnosis. Abduction research contains almost every possible pitfall of hypnotic investigation: witnesses who come forward with their suspicions are usually motivated to cooperate, may wish to find an abduction, and may have a psychological need for such a spectacular experience. Investigators may be believers in one particular interpretation, prone to convey this bias, and insufficiently trained to take precautions against it. Exposure to abduction ideas is almost unavoidable, and witnesses might unwittingly incorporate these ideas into a story. If a hypnotist pressures witnesses for answers, as an enthusiast might, those witnesses may well

Table 1. Hypnotists and Their Adherence to Precautions

-
- 1 = professional credentials in hypnosis
 - 2 = lack of prior convictions
 - 3 = allow free recall before questioning
 - 4 = avoid leading and demanding questions
 - 5 = no one else in room
 - 6 = memories withheld by posthypnotic suggestion
-

Hypnotist	Cases	Recommendations					
		1	2	3	4	5	6
Aphrodite Clamar	Kilburn, Rich	+	+	+	+	-	-
Harold J. Edelstein	Andreasson	+	+	-	-	-	-
Girard Franklin	Kilburn	+	+	-	-	-	-
James Harder	Roach, Whitley	-	-	-	-	-	-
Budd Hopkins	Davis	-	-	-	+	(-)	-
Donald Klein	Strieber	+	+	+	+	(+)	-
William C. McCall	Shaw, Whitley	+	-	-	-	-	-
Fred Max	Andreasson, Luca	+	+	-	-	-	-
Martin Reiser	Shaw	+	+	+	(+)	(+)	-
D. Scott Rogo	Briggs	-	-	-	-	-	-
Benjamin Simon	Hill	+	+	+	+	+	+
R. Leo Sprinkle	Higdon, Larson	+	-	-	-	-	-
+		compliance with recommendation					
-		non-compliance with recommendation					
(+)		insufficient information					
(-)		borderline compliance					
		borderline non-compliance					

oblige with elaborate but fictitious "information" and then believe their own fantasies with conviction and sincerity. Every appearance of a real phenomenon would result, but the truth would be nothing more than a tissue of confabulations shaped into alien form by suggestion and belief. The scientific understanding of hypnosis warns that this scenario is possible and Klass urges it as the full solution of the abduction mystery (1988: 40, 42, 70, 79, 81, 93, 102-103, 116, 155-56, 172, 187-88).

Are UFO investigators guilty as charged? A thorough evaluation would require a detailed examination of personal theory and practice for each investigator. In lieu of inspecting private records, a look at published descriptions of procedures and transcripts of sessions offers some clues about the practices of various investigators. The recommendations above provide a yardstick to measure actual investigations against an ideal standard. Table 1 summarizes how a dozen hypnotists active in one or more prominent cases have fared against the first six tenets of that standard. A "+" means the hypnotist abided by that recommendation, a "-" means a violation, and a blank means insufficient information to decide.

Precautions 1, 5 and 6 are straightforward and the answers come directly from descriptions of the investigation. Precaution 3 requires a faithful transcript or careful description of procedures for an accurate answer, and the answers offered here are based on the assumption that those descriptions are complete. The second precaution involves a degree of inference. The active ufologists (Harder, Hopkins, Rogo, Sprinkle) have made their inner beliefs clear enough, but the other hypnotists are less certain. Some have indicated skepticism or lack of interest (McCall, Reiser, Simon). The remainder appear at least less committed to the alien interpretation than the ufologists. The fourth precaution is the most difficult to score. What counts as a leading or demanding question depends on inference, and these inferences are based on the fragmentary, sometimes edited transcripts included in published accounts. Some transcripts are extensive, but how representative they are of each hypnotist's methods remains unknown. Within the bounds of these already serious limitations, hypnotists qualify for a favorable score whose usual questions seem open, indirect, free of specific content, or balanced with alternative possibilities; whose usual responses seem noncommittal; and whose usual method seems to allow witnesses to narrate their accounts with minimal guidance. Of course judgments here are subjective and the results impressionistic, but they offer at least a narrow index of how hypnotists fare with this important aspect of procedure.

On the whole this survey of hypnotic techniques leaves a rather favorable impression. Only Dr. Simon's investigation of Barney and Betty Hill rates as exemplary in every respect, though Drs. Klein and Reiser come close. Most investigators are professionals with extensive training and experience in hypnosis. Enough of them are "unbelievers" that if prior convictions were a significant variable, significant differences in testimony should occur. The fact that stories remain pretty much the same whether or not a hypnotist believes in UFOs discredits the importance of the hypnotist's influence.

Few investigators appear to allow free recall first, but published transcripts may emphasize the more detailed results from question-and-answer sessions over initial free recall as a way to save space. Another dilemma is the fact that some witnesses re-experience their abduction but are too emotional to share it unless the investigator prods them into verbalizing their memories. A no-win situation results: without questions the experience never comes out; with them, skeptics can complain of leading the witness. In key parts of testimony many witnesses narrate spontaneously and in the present tense (e.g., Fuller 1966: 118-19, 149, 189, 191; Fowler 1979: 23, 37, 54-55; Fowler 1982: 66, 122; Druffel and Rogo 1980: 18-19, 50-51; Hopkins 1981: 58-60, 65-71, 98; Hopkins 1987: 40-42; Strieber 1987: 64, 80-84). Some whole cases come out mainly in past tense (Roach, Higdon, Larson) and some past-tense narrative occurs in most transcripts, usually when the investigator questions witnesses in detail or reviews previous testimony. The use of present tense makes for a compelling account and suggests that free recall comprises a part of many testimonies. Such immediacy cannot in itself prove the reality of the story, but when explosive emotions accompany the narrative, and they often do, abductee behavior compares closely with the behavior of crime victims during forensic hypnosis.

Leading and demanding questions are especially threatening to sound testimony. The limited picture offered by published sources shows that most investigators use direct inquiries from time to time, some only after free recall when the practice stands to do the least harm, but others appear to jump in from the start with specific questions and thereby encourage confabulation. Some transcripts indicate that witnesses are less susceptible than theory might suggest. They resist leading questions and stick to an inner conviction in a number of instances (e.g., Fuller 1966: 93; Druffel and Rogo 1980: 24, 41, 67, 163; Fowler 1982: 65). Budd Hopkins remains somewhat tight-lipped about his techniques, but insofar as the transcripts included in *Intruders* (1987: 40-41, 209) are representative, he comes across as aware of the dangers of leading, gives the witness considerable freedom to narrate, and usually neutralizes his inquiries with suitable care.

Every investigator since Simon has regularly permitted observers in the room during hypnosis, but the seriousness of this offense varies from case to case. Klein allowed only one observer (Hopkins) and permitted him to ask questions only at the end. Clamar, Hopkins, and Reiser likewise minimize the number of observers, and their participation appears negligible. At the less favorable end of the spectrum are the two Andreasson investigations, where a squad of participants surrounded the witness and took an active part in the interrogations. Some sessions conducted by McCall and Sprinkle have also included more than a minimum audience. Any hints of interests and wishes from these participants, however unwitting and innocuous, could contribute to false memories.

As far as published accounts indicate, the investigator seldom imposes on witnesses a posthypnotic suggestion to contain their newly released memories. Dr. Simon regularly took this precaution so that the Hills could not share ideas with one

another, and only in later sessions did he allow his patients to integrate the hypnotically recovered memories into conscious awareness. Most other investigators seem to have handed over these recollections immediately to the witnesses. Some, like Reiser, anticipated only a single session. Other investigators have followed hypnosis with further dialogue to find how the conscious witness reacts to these memories, using them as the starting point for a new and sometimes fruitful line of inquiry. An immediate follow-up is appealing but perhaps not wise, given the dangers of creating a false memory with all the weight of a real one.

A final accounting finds that abduction investigators use hypnosis with better care than we might fear, though their efforts fall short of laboratory perfection. The investigators bring individual styles to their hypnotic work and sometimes compromise ideal procedures to suit the realities of field investigation. Practices stray in varying degrees from the recommended ideals, but the overall picture is one of conscientious effort to achieve valid results. Professional competence seems high and sensitivity to the limitations of hypnosis is widespread though not universal. Skeptics might complain that too many hypnotists know something about UFOs, but necessarily so—even an unbeliever becomes contaminated after a single case and there are not enough hypnotists to go around for each abductee to get a fresh one. What matters more is that the pool of investigators contains a healthy mixture of believers and unbelievers. If the hypnotist's predispositions influence witnesses, these influences should work both ways. Some measure of free recall appears to be part of most testimonies, though leading questions also figure into every case to a degree that varies considerably from investigator to investigator. The skeptic scores an honest point by arguing that some abduction testimony could take shape under the influence of improper questioning. In most cases the impact of observers seems minimal, but they could be a significant factor in a few instances. Witnesses may gain false conviction because of open access to memories, while repeated sessions may serve to work and rework the same fantasies into ever more presentable shape. Enough doubts still cloud the issue of hypnotic procedures that the resulting testimony also must remain under a shadow.

THE TESTIMONY OF RESULTS

Both theory and practice could provide some grounds for skeptical dismissal of the abduction evidence obtained by hypnosis. Another approach to the reliability of hypnosis is to start from the other end and look at the evidence itself. Instead of considering what might happen under hypnosis, we turn to what has happened, what investigation shows about the form and content of abduction reports and whether the results indicate a stable phenomenon independent of the hypnotic procedures used.

A project sponsored by the Fund for UFO Research to catalogue and compare abduction reports provides the raw materials for this study. The effort netted about 300 reports of abductions or abduction-like events in the published literature, and of this number, 104 cases qualified as high in both reliability and information content.

This sample of reports allows several tests for the effects of hypnosis on the abduction story.

(a) Comparison of Abductions Revealed With and Without Hypnosis

Any attempt to dismiss abductions as a side effect of hypnosis runs up against a serious obstacle from the start—not all abduction testimony emerges under hypnosis. Even for the well-investigated, high quality cases, 30 do not depend on hypnosis and 74 do. Among those 30 cases the recall may be fully conscious all along, as happened with Antonio Villas Boas and Charles Hickson, or initial memory loss may be followed by spontaneous return, as with Sgt. Moody and Carl Higdon. Subsequent hypnosis may check conscious recall, probe for additional memories or firm up indefinite points in primarily conscious testimony, as in the cases of Hickson, Higdon, Travis Walton and Whitley Strieber; but these reports qualify as non-hypnotic because most of the story surfaced first into conscious awareness. Many witnesses keep some conscious recollections or recover fragments through dreams or incidents that jog the memory, but if hypnosis is responsible for revealing most of the story then the report takes its place in the hypnosis column.

Comparative study of abduction reports demonstrates that numerous aspects of form and content recur time after time. Fifty recurrent traits, each too distinctive to arise easily by chance alone, provide a basis to compare reports of hypnotic and non-hypnotic origin. If the traits differ considerably between these two samples of reports, a case can be made that hypnosis is responsible. If reports are essentially alike, however they come to light, the hypothetical role of hypnosis in making the abduction story diminishes. The traits used for comparison cluster into eight categories:

1. *Order.* Abduction stories follow a specified sequence of capture, examination, conference, tour, otherworldly journey, theophany, return, and aftermath. If such episodes as occur in a report conform to this order, then the report scores for proper sequence. The capture episode has a sequence of its own—intrusion, zone of strangeness, time lapse, and procurement—while procurement in turn breaks down into eight characteristic events—beam of light, drawing force, beings appear, conversation, controls imposed, escort, flotation, and doorway amnesia. Examination consists of eight steps—preparation, manual examination, scanning, instrumental examination, sample taking, reproductive examination, neurological examination, and behavioral examination. Then the abduction concludes with the four events of return—farewell, exit, departure, and re-entry. Each of these events is a non-obvious incident and scores for keeping its proper place.

2. *The Craft.* This category cites external and internal characteristics, notably the disk shape of the craft, or a domed and circular inner room with uniform lighting and a cold, damp atmosphere.

3. *The Beings* Geared to the “standard humanoid”—a composite of the features most often described—this category includes key traits such as shortness, large head,

large eyes, hairlessness and gray skin, also such personality traits as politeness or evasiveness.

4. *Examination*. The climactic episode of most abductions, examination is marked by such bizarre and vivid events as cleansing, scanning, sample taking, implants and concern with reproduction.

5. *Communication*. Most communication with the beings takes place by telepathy and instructs the witness to forget, prophesies future events, or promises a return visit.

6. *Otherworld*. The predominant motif in this category is the sight or indication of a barren, devastated or catastrophe-racked planet.

7. *Effects*. Strange mental and physical effects accompany abductions, chief among them being a vacuum or extraordinary isolation, defiance of gravity, time lapse, mental controls like pacification or pain relief, controls over movement like paralysis or heaviness, electromagnetic effects and control over vehicles.

8. *Atereffects*. When the abduction ends its consequences begin. These include short-term physical effects like eye irritation, sunburn, skin cuts and sickness; intermediate-term mental effects like nightmares and anxiety; and long-term phenomena like subsequent encounters, personality changes, alterations of beliefs and experiences with the paranormal, such as men-in-black, poltergeist activity and new-found psychic powers.

Traits cited here represent the commonest or majority expression, but alternatives also appear in reports. The order of events may differ from the norm, the craft may be cigar-shaped, communication may be verbal, and beings may be tall humans with hair rather than diminutive humanoids. These minority or "deviant" traits offer a second index for comparing abduction reports.

A quick but useful crude comparison considers the rate at which various traits occur in the hypnotic and non-hypnotic samples.² A count of standard and deviant traits divided by the total number of cases gives the standard traits per category and deviant traits per category for each sample (Table 2).

One result predicted by theory and confirmed by most categories is that hypnosis fetches more details than spontaneous recall. Yet the increase is surprisingly small. Standard order, craft descriptions and atereffects traits occur at very nearly the same rate in both samples, and effects show only slightly larger differences. The rate at which abductees describe the otherworld as barren and introduce deviant traits is nearly identical with or without hypnosis, though here the actual count of traits is small. Extenuating circumstances may explain some similarities—the craft may be the most familiar aspect of the story and atereffects usually emerge without

²Two tables available directly from the author list the standard and deviant traits for the 74 hypnotic and 30 non-hypnotic cases. They are adapted from Bullard (1987, vol 1 332-33), with three Kathie Davis abductions added from Hopkins (1987) and two of Whitley Strieber. In one case Strieber describes the same abduction both consciously and under hypnosis, while Betty Hill describes her abduction in dreams and under hypnosis. These two cases enter into both the hypnotic and non-hypnotic tables.

**Table 2. Frequency of Occurrence (per case) for Standard and Deviant Traits,
Hypnotic vs. Non-Hypnotic Cases**

Trait	Hypnosis (74 cases)		Non-hypnosis (30 cases)	
	std / categ.	dev / categ.	std / categ.	dev / categ.
Order	13.5	1.7	11.6	1.1
Craft	2.3	0.3	2.1	0.3
Beings	6.5	1.0	4.2	1.8
Examination	2.6	0.1	1.7	0.1
Communication	1.8	0.1	0.7	0.2
Otherworld	0.2		0.2	
Effects	3.5		2.8	
Aftereffects	1.5		1.5	
All categories	31.9	3.1	24.9	3.4

hypnosis, so equal rates here cannot rule out hypnosis as the reason for stronger rate differences among traits for beings, examination and communication. Even the largest distinctions still remain small. If hypnosis added much fictitious content to reports we would expect greater divergence than we actually see.

More sensitive analysis can refine these rough impressions. Table 3 lists results from two types of comparison. One is a chi-square test, a statistical test for the homogeneity of frequency distributions in the two samples. If the distribution of a trait, deviant possibilities and "no response" is essentially the same in both samples, with less than a 5% probability that chance could account for the similarity, then the samples are homogeneous. A "+" indicates that the samples are alike, a "-" means they differ, and an "*" says the reading is borderline. The second comparison simply converts the raw counts of traits and alternatives in each sample to percentages, to compensate for different sample sizes. When a trait tallies few entries, the distribution of alternatives or "no responses" may carry a positive result for the chi-square test, while the percentage figures may show a mismatch. This conflict accentuates the danger of small sample sizes and signals for caution in interpretation.

A finding of homogeneity means that the same traits appear as often in one sample as the other, report for report, within the standardized bounds of tolerance allowed by the test. Hypnotized and unhypnotized witnesses would tell the same story and it would show no sign of varying on account of hypnosis. If differences predominate between samples, then we will have reason to suspect that hypnosis is an important variable. An overall tally of findings shows the two samples compare as follows:

Homogeneous	36 traits	(72%)
Borderline	6 traits	(12%)
Not homogeneous	8 traits	(16%)

In other words, traits occur with similar frequency among hypnotic and non-hypnotic cases nearly three-fourths of the time. A further breakdown of the findings is found in Table 4.

Table 3. Comparisons of Hypnosis vs. Non-Hypnosis, Investigators

	χ^2	Hypnotic		Non-Hypnotic		χ^2	Investigators					
		% std	% dev	% std	% dev		C	H	M	S	D	
Order												
OV=overall order	+	374	30	350	10	+						
CP=capture	*	299	34	270	23	+						
PR=procurement	+	258	43	237	43	+						
EX=examination	-	234	30	153	23	+						
RT=return	+	189	30	163	23	+						
Craft												
DK=disk shape	+	50	7	53	10	-					<	
BM=beam of light	+	47		47		-					<	
FG=fog	+	9		10								
CR=circular interior	+	28	4	27	7	-					<	
DF=diffuse lighting	+	43	11	30	10	-					< +	
CD=cold atmosphere	+	28	5	27		-					< +	
BD=breathing hard	+	23		17								
Beings												
HD=humanoid	+	81	5	67	17	+					+	
SH=short or av height	+	62	11	53	23	+					+ +	
LH=large head	+	53	4	40	0	-					<	
HL=hairless	-	49	8	23	27	-					< +	
LY=large eyes	+	58	5	40	17	-					< +	
SM=small mouth	*	49	5	23	10	-					+ +	
SN=small nose	+	38	12	17	13	-					< +	
SE=small ears	-	31	9	10	23	-					< <	
GR=gray, ashen skin	*	51	14	37	3	-					+ +	
CV=overall clothing	+	41	15	43	13	-					+ +	
LD=leader	+	35	3	23	0	+						
FN=friendly	-	62	8	33	30	+						
EV=evasive, deceitful	*	38		20		-					>	
Examination												
TB=table	+	59	7	47	7	+					+ +	
ND=undress	*	39		20		-					<	
CL=cleansing	+	16		7								
SC=scan	+	35		30		+						
SA=sample taking	+	15		17								
IM=implant, neural	-	35		3		-					< <	
RP=concern w/reprod	+	28		17								
MI=mission suggested	+	32		27		-					>	
Communication												
TL=telepathy	-	65	5	23	23	+						
RG=must forget	+	38	7	27	0	-					<	
WR=warning	+	27		13		-	<				<	
RE=promise to return	-	46		10		-	<				<	
Otherworld												
BR=barren otherworld	+	16	0	17	3							

NOTE The last column indicates a high count of deviant entries from one or more hypnotists

Table 3 (continued)

	χ^2	Hypnotic		Non-Hypnotic		Investigators					
		% std	% dev	% std	% dev	χ^2	C	H	M	S	D
Effects											
VA=vacuum, isolation	+	23		10		-				<	
FL=flotation	+	57		40		-				<	
MT=missing time	-	95		70		+					
MC=mental control	+	72		60		+					
CM=body control	+	54		43		-			<		
EM=EM effects	*	24		43							
VC=vehicular control	+	26		17							
Aftereffects											
PY=physical	+	36		33		-			>		
MN=mental	+	20		37		-					
PN=paranormal	+	26		30		-				<	
PC=personality chng.	+	16		13							
OE=other encounters	+	54		33		+					

Hypnotized and unhypnotized witnesses describe the craft, other-world and aftereffects in similar ways with about the same frequency, though some aftereffects and craft descriptions subsist on dangerously small numbers. Descriptions are alike for examinations and effects in about three-fourths of the traits, down to under two-thirds for order, and about fifty-fifty for beings and communication traits.

Some differences actually define what we mean by distinct samples and therefore do not count as troublesome incompatibilities. A time lapse is the hallmark of cases requiring hypnosis, but some cases never require hypnosis for the simple reason that no time lapse ever occurred. This same difference explains one dissimilarity in order as well. Since the time lapse event figures in the capture episode, cases without time lapse necessarily diverge in a comparison for order.

What remains are the irreconcilable differences, the elements most likely to condemn hypnosis as an active agent in abduction-making. The examination involves several of these problems. Under hypnosis the episode proves longer and more detailed than without hypnosis; hypnotized abductees report the undressing incident twice as often as nonhypnotized abductees, while in a surprising outcome, just one unhypnotized subject reports an implant into his head or body.

Hypnosis might account for these differences, perhaps because the investigator presses to find an implant and the witness obliges. Cleansing and sample taking compare in frequency, but carry little weight because their entries are few. Scans are also compatible, but this element has been familiar ever since the Pascagoula case. Reproductive tests like the needle in the navel might stand out in the memory of anyone acquainted with the Hill case. The many reports of witnesses being charged with a mission or having their thoughts altered is surprising because the notion is less familiar and yet comparably represented in both samples. The high frequency of

Table 4. Homogeneity in Frequency Distribution of Traits, Hypnotic vs. Non-Hypnotic Cases

Trait Group	Traits / Group	Homogeneous Traits		Borderline Traits		Non-Homogeneous Traits	
Order	5	3	60%	1	20%	1	20%
Craft	7	7	100%	0	0%	0	0%
Beings	13	7	54%	3	23%	3	23%
Examination	8	6	75%	1	13%	1	13%
Communication	4	2	50%	0	0%	2	50%
Otherworld	1	1	100%	0	0%	0	0%
Effects	7	5	71%	1	14%	1	14%
Aftereffects	5	5	100%	0	0%	0	0%

NOTE Data taken from Table 3

implants in the hypnotic sample may result from investigators who favor this trait as something concrete, a potential for physical confirmation; but they might push equally hard for scans and sample taking as vivid, "traditional" and meaningful parts of an examination within the context of alien exploration beliefs. The investigators have as much vested interest in one trait as the other.

Important elements remain too scarce, little-known elements too common, and equal or unequal distributions too unpredictable to allow much confidence that hypnosis is to blame.

An interpretation that takes abductions at face value fares better with these findings. Assuming some captives are less susceptible than others to aliens' control techniques, these subjects will prove less docile and might resist certain procedures. Implants are painful and frightening enough to provoke such resistance. Undressing might offend a conscious captive, though hypnotized subjects may better overcome their bashfulness about relating this incident. Once the aliens discover that a captive is hard to control, they may truncate the examination procedures and seek more congenial subjects. This interpretation solves another problem difficult for the hypnosis explanation to handle—far more hypnotized abductees state that the beings promised to return for them. Susceptible people might be worth coming back for, while for less pliant witnesses, goodbye may mean good riddance. Promises aside, a third of the unhypnotized witnesses nevertheless report some kind of subsequent encounter.

The most serious differences between the two samples concern the beings. Similar numbers of hypnotized and unhypnotized witnesses agree that the beings are short humanoids with large heads, large eyes and small noses, wear coverall clothing and have a distinctive leader. This harmony goes sour over small mouths, gray skin or evasive behaviors, and breaks down altogether over hairlessness, small ears, and friendly behaviors. Hypnotized witnesses are most consistent in their descriptions, so that deviant traits seldom amount to a fifth of the total. The exceptions are

alternatives to small noses and ears, gray skin, and tight coveralls or uniforms, where deviant entries may rise to one-third.

"Standard humanoids" appear to hypnotized and unhypnotized witnesses alike, but the latter describe notably more deviant traits. Alternatives make up a substantial proportion of traits cited in 9 of 13 categories: Human types, robes or two-piece garments, tall stature, average-sized eyes and mouths occur from a fourth to a half as often as standard traits. Large or average noses appear as often as small noses and unfriendliness as often as friendliness. Beings with hair and large or normal ears actually outnumber beings with standard traits in the unhypnotized sample. When the beings communicate, unhypnotized witnesses divide their descriptions equally between telepathic and audible means, whereas hypnotized witnesses favor telepathy over speech twelve times as often.

Serious differences clearly separate the samples. The rather small base number of non-hypnosis reports means one or two cases loom large in the percentages, but an accidental consequence of sample size cannot explain so many high figures for alternative traits. A special plea might account for the beings seeming unfriendly to so many unhypnotized witnesses, since the impression of friendliness may result from a pacification effect rather than genuine kindness, or the beings may have little patience with a captive they cannot control. Otherwise the differences are matters of physical description and ill accord with the hypothesis that everyone sees the same thing.

The most striking contrast between the two samples is the concentration of tall humans with hair and normal facial features in reports from unhypnotized witnesses. A whole type of being distinct from the "standard humanoid" appears more often to the unhypnotized than to the hypnotized. Betty Hill's two reports are especially instructive, since her initial dream recollections of the beings included human figures with hair and long noses, while these beings metamorphosed into typical hairless and small-nosed humanoids during hypnotherapy. No other changes of comparable importance occurred in her testimony. These findings suggest that hypnosis is responsible in part for the humanoid aliens.

If the occupants are actual aliens, we might expect above-average variety in their descriptions. They are literally and figuratively the "moving parts" of the story, the elements which make things happen by their activity and which inspire the most curiosity, wonder and fear in the witness. Always busy about their tasks, the beings present ever-changing views and seldom let the witness enjoy a careful look. Then too, the witness focuses on the beings as living things, sentient creatures like himself and the agents of his captivity. The excitement of the occasion combined with a conscious effort to squeeze these beings into a conventional category of understanding might drive the witness to overhumanize them. An unhypnotized witness might be especially prone to the human weakness of reshaping a disturbing past into a comfortable but somewhat fictitious history. With hypnosis to lower the censorship barriers of conscious thought, a hypnotized subject may be better able to relive the experience in all its strangeness and keep more bizarre details intact. On

the other hand perhaps this witness sees the beings as they wish themselves to be seen. Their evasiveness often seems aimed at preventing the witness from getting a good look at them. This effect succeeds best with witnesses requiring hypnosis, so perhaps the humanoid form disguises the real beings and the less susceptible witnesses see real occupants rather than a planted image.

No apology can or should hide the inconsistencies plaguing descriptions of the beings. Whether these inconsistencies point to a causative role for hypnosis is less certain, since the beings are the most volatile aspect of abductions with or without hypnosis. Consider the Pascagoula "mummies," Alan Godfrey's biblical figure, Julio F's tall beings with pointed noses and chins, Carl Higdon's bow-legged "Ausso," Travis Walton's mixed crew of humans and humanoids, Luli Oswald's "rat faces," or Whitley Strieber's four distinct types of humanoids. Truly abductees round up a diverse population of extraterrestrials. Geographical differences pose another challenge for both objective and hypnotic hypotheses: humanoids prevail in North America, but tall humans, perhaps Nordic in appearance, people reports from England in disproportionate numbers whether the investigation includes hypnosis or not. South America concentrates tall humanoids into its geographical province. No good reason comes to mind why a distinctive race of aliens would visit one area and shun another, but geographically distinct versions are characteristic of traditional narratives. In this respect abduction reports resemble folklore rather than news of real events (Bullard 1987: 315-20).

Hypnotized and unhypnotized witnesses alike contribute to the diversity of the beings. More variety comes from unhypnotized witnesses and consistency under hypnosis is uniformly greater, so hypnosis or guidance under it seems to help standardize descriptions in this corner of the abduction story. Hypnosis might explain the floating sensation some witnesses report, telepathic communication, and "doorway amnesia"—a momentary lapse of consciousness on entering and leaving the ship. All these elements share a surreal, dreamlike character and may trace to sensations associated with subjective experience. Caution here is necessary, because fully conscious witnesses have reported the same events. The influence of well-publicized abductions on all witnesses remains a significant open question. The geographical differences and common sense urge that several causes contribute to the final story. Still, some traits seem too minor or underemphasized in media exposure to attract the attention of a casual reader, so in some instances similarities of experience seem to best explain similarities in the story.

Dwelling too long on the beings upsets an evenhanded evaluation of this comparison. Its message is that the hypnotic and non-hypnotic samples match rather well, even with the beings included. Not all abduction cases are alike by any means and most stories veer off the standard line at some point or other, but similarities prevail with or without hypnosis. Under these circumstances the influence of hypnosis appears modest at best. It may shape a few traits, but it leaves the majority untouched.

(b) The Hypnotists Compared

Klass proposes that the beings a witness describes may reflect the personality of the hypnotist investigating the case (1988: 168-69). He bases this conjecture on the observation that Hopkins, used to the fast pace of New York City, discovers businesslike or cruel aliens, while Sprinkle, living in a college town in Wyoming, finds his more easygoing nature reflected in a gentler breed of abductors. This observation is more playful than precise, since Sprinkle's investigations have covered the almost sadistic beings of the Casey County abduction and Hopkins the tender reunion of Kathie Davis with her half-alien daughter. Even if Klass misplaces his evidence, he still raises a good point: Does the hypnotist make a difference? Does personality and individual style cause perceptible variation in the story?

The problem is finding hypnotists with enough cases to their credit for a worthwhile comparison. Four hypnotists have contributed more than five cases involving mostly different witnesses: Clamar (6), Harder (6), McCall (7) and Sprinkle (12). If the frequency of reported traits compares favorably for all these investigators, then little reason will remain to suspect that the hypnotist, his style, technique or personality influences the story in any significant way. A small sample frustrates this effort, since too few traits actually register within the already small samples for each investigator to permit a meaningful comparison of frequency distribution. Only characteristics of order are an exception. No chi-square test is possible for other traits and a cruder measure will have to serve. Cases for Clamar, Harder and McCall number about half as many as cases for Sprinkle, so if traits appear in an approximate ratio of 1:1:1:2 for the respective hypnotists, the findings qualify as similar. Table 3 (right side) shows the results. The first column displays similar "+" and dissimilar "-" traits (based on chi-square tests for traits of order and ratios for the rest), the next four columns show when a hypnotist tallies disproportionately high ">" or low "<" findings for a trait, and the last column notes traits with a high count of deviant entries from one or more hypnotists. The overall scores for similarities and dissimilarities are as follows:

Traits similar for all four hypnotists	15	(30%)
Traits dissimilar for at least one hypnotist	25	(50%)
Insufficient entries	10	(20%)

All four hypnotists return comparable frequencies for the order of abduction stories, the one category where the number of entries rises above marginal values. Other categories prove less consistent. In none of them, not even in descriptions of the craft, do consistencies predominate. What makes these findings less serious is the fact that only one hypnotist may be responsible for an inconsistency. Results are similar for three out of four hypnotists in 21 of the 25 instances of dissimilarity, and no more than two hypnotists diverge from a proper ratio with respect to the 4 remaining traits. Table 5 provides a summary of the direction of differences and the occurrence of deviant traits.

Sprinkle's findings most often foil consistency, always by falling short of the expected number. Harder's results most often exceed expectations, while Clamar and McCall offer the most nearly harmonious samples. Deviant traits are fewest in cases from Clamar and Harder, of nearly equal numbers in cases from McCall and Sprinkle.

Interpretation of these findings must begin with an understanding of how small the numbers are. Many ratios are figured from just two or three entries per hypnotist, and I allow a latitude of one or two entries in reckoning the proportions. The margin for error is necessarily vast, so any conclusions count as tentative and impressionistic. Causes other than hypnosis seem responsible for some differences. Perhaps Sprinkle's results fall short so often because his counts are larger and maybe better representative of the average. Any findings for aftereffects depend on how far an investigator goes in following up a case, and some published accounts appear so soon after the alleged abduction that subsequent events may not have had time to unfold in full. Sprinkle's cases are especially vulnerable to this complication, since he has responded quickly to several reports (e.g., Casey County, Schirmer, Higdon, Larson), while Clamar and McCall have investigated mostly abductees with the experience deep in their past (e.g., Kilburn, Rich, Osborne, Horton, the Tujunga Canyon cases).

Patterns emerge only dimly here: the four hypnotists are consistent in findings for order, where the evidence is most reliable, but no consistencies among traits of the craft comes as a surprise. The beings once again vary in many traits and contribute most of the deviations. Implants score low for two hypnotists, reaffirming an unsettled status for this trait. Sprinkle's frequent low readings may represent a trend, but they may be an artifact of the small numbers involved. More interesting are Harder's five excessive readings for traits of the beings. He finds more "standard humanoids" than the others, a result which could mean that he pushes his witnesses to deliver beings cut to his own expectations. The considerable differences among messages communicated by the beings hint that this category owes some of its content to confabulation.

Perhaps as revealing as comparisons between hypnotists are comparisons among their own cases. Some pattern in idiosyncrasies should emerge if the personal touch really makes a difference, but descriptions vary enough from case to case in each investigator's sample to deny that any hypnotists carbon-copy their own work or

Table 5. Disproportionate and Deviant Traits Found by Four Hypnotists

Hypnotist	lower	higher	total	deviant
Clamar	2	0	2	0
Harder	2	6	8	1
McCall	3	1	4	3
Sprinkle	15	-	15	5

successfully impose a predetermined idea on a succession of witnesses. Clamar's sample has fewest deviations and is probably the most homogeneous overall. Even so, qualitative differences set apart the beings described by Virginia Horton from those described by Steven Kilburn. Deviant features appear in several cases investigated by McCall and Harder. Sprinkle's sample contains both the most cases and the most variety. The interior lighting may be uniform and diffuse, but may also be dim; the temperature can be warm as well as cold. Examinations may or may not require a table, and verbal communication may replace telepathy. Most of the beings are humanoids and display many familiar features, but only a minority qualify as "standard humanoids." Instead Sprinkle finds that Sandra Larson's beings were mummy-like, Herbert Schirmer's had thin heads, and Carl Higdon's "Ausso" was uniquely exceptional. Sprinkle's cases echo the commonest descriptions for most traits, but at least some significant feature sets most of his beings apart from one another and from the beings found by other hypnotists.

If the hypnotist truly stamps a significant personal mark on abduction stories, this comparison fails to uncover it. Some differences nuance the various accounts, but except for Harder's overly standardized and Sprinkle's understanderized beings, no consistent evidence points to a causative role for the hypnotist. The variety among each hypnotist's cases seems as extensive as the differences between hypnotists. This finding itself calls into question the source of inconsistencies. If the hypnotist influences the outcome, we should expect the cases from each of the investigators to show more similarity and those between them to show less. Every investigator's cases should betray a self-consistent constellation of characteristics, a pattern of influences as distinctive as a personal signature. What we see is just the opposite. The beings in Clamar's cases vary even within a sample of six cases. Sprinkle's witnesses furnish a whole menagerie of aliens and yet he is the believer, the veteran investigator most likely to have fixed ideas and impose them on witnesses. The idiosyncrasies turned up under hypnosis seem to belong to the witnesses and not the investigators. Rather than a full-scale shaping force as postulated by the skeptics, hypnotists appear less the leaders than the led.

(c) Hypnosis of Real and Imaginary Abductees Compared

Dr. Alvin C. Lawson, Dr. William C. McCall and John De Herrera challenged an objective interpretation of the abduction phenomenon when they hypnotized people with no inkling of an abduction experience, and still recovered "abduction" stories. In a 1977 experiment the investigators selected volunteer subjects with minimal prior UFO knowledge, hypnotized them, then asked them a series of questions based on an outline of reported abduction experiences. The hypnotist asked each subject to imagine a UFO, board it, describe its interior, describe the occupants, describe a physical examination, receive messages from the beings, exit the UFO, and imagine subsequent life changes. Subjects responded and the investigators compared these accounts with reports from "true" abductees (Lawson 1980: 195-204, 211-12).

The outcome was astonishing. Not only did the subjects readily respond to an

initial suggestion with an elaborate and detailed story, with little need for prodding along the way, but the contents bore striking similarities to alleged real abductions, both in more obvious matters and in odd, minute details. The investigators scored their data in eight categories including pattern, strangeness, subject objectivity, and emotional component. When reduced to percentages and plotted on a graph, the findings for abductees and the experimental non-abductees nearly coincided. Lawson hedged his discoveries with a list of differences, cautioning that the emotions, time lapse, amnesia, nightmares, and conscious UFO encounter of real abductees distinguished them from the experimental subjects. Still, these observations did little to soften the impact of the experimental results. The plain fact that a subject with no abduction experience could replicate the abduction story cast serious doubts on the reality of all reports, and bolstered the possibility that hypnosis played a crucial role in a subjective origin.

These experiments have provoked an extensive critical literature from ufologists. Harder condemned the leading structure of questions and contrasted it with the neutral language proper in actual investigations. The cues guided subjects well enough, he said, for their responses to appear similar to the descriptions from real witnesses, but otherwise differences would multiply (Harder 1977: 5-6). Rogo pointed out that the procedures too often let the wolves guard the sheep—McCall was a poor choice for hypnotist because he was already deeply versed in real abductions, and the quantitative comparisons would be more convincing if performed by an outside party unaware of what to expect (Rogo 1985a: 3-4). Dr. Willy Smith criticized Lawson for seeing similarities where differences prevailed. This failure was especially notable among the beings, since humanoids predominate in natural reports but comprise a minority in the experimental cases; but the list of false identities could go on and on (Smith 1981: 3-4).

Whether the experimenters or the critics are right depends in large part on how similar the stories really are. If the similarities are as valid as the experimenters propose, an imaginary origin seems most plausible for all abduction stories. If differences prevail between real and imaginary stories, a difference in origin probably separates them as well. The sequence of questions in the experiment forecloses any test for order of events, so comparison must depend on descriptive features. Lawson's quantitative comparison is of no help here, since it uses generalized categories like "pattern" and "strangeness" rather than particular traits, and relies on a small sample of eight imaginary and four real cases. Specific motifs and descriptions offer more persuasive terms to evaluate the similarities of abduction stories. The following comparison expands the real cases with those in the two samples, but the number of imaginary cases remains at eight. Lawson's article does not include full transcripts of the imaginary reports, only a table of selected comparisons between real and imaginary cases, along with indications of how frequently a trait appears among the latter (1980: 202-204). Traits recur too infrequently among the imaginary cases to pursue formal tests, so again an informal comparison of percentages will have to do (see Table 6).

Table 6. Percentages of Traits Present in Imaginary, Real Hypnotic, and Real Non-Hypnotic Abduction Cases

Trait	Imaginary	Hypnotic	Non-Hypnotic
Craft			
Disk shape	75%	50%	53%
Saturn-shaped	38%	1%	7%
Fog	13%	9%	10%
Beam of light	38%	47%	47%
Cold inside	38%	27%	23%
Cold to warm	13%	5%	0%
Misty atmosphere	25%	15%	3%
Bright lights	75%	12%	10%
Screens	13%	11%	10%
Furnishings	63%	58%	50%
"Bubble"	13%	5%	0%
Humming	13%	1%	0%
Beings			
Human	20%	14%	20%
Humanoid	10(40)%	66%	43%
Robot	10%	3%	7%
Animal	10%	4%	3%
Exotic	30(10)%	18%	23%
Apparition	20%		
Two types	25%	9%	13%
Webbed hands	13%	7%	0%
Kindly	13%	62%	33%
Examination			
Mind probe	25%	35%	3%
Communication			
Telepathy	50%	65%	23%
Verbal	25%	5%	23%
Message	25%	66%	40%
No message	38%	23%	40%
Effects			
Doorway amnesia	25%	42%	43%
Paralysis	50%	19(30)%	3(33)%
Pacification	38%	26%	33%
Aftereffects			
Positive attitude	13%	12%	10%
Itching, burns	25%	8%	13%
Dehydration	13%	9%	3%
Greater open mind	13%	11%	10%

NOTE: Since two experimental subjects described two types of beings, the base sample for imaginary beings rises from 8 to 10.

At first glance many similarities seem to characterize real and imaginary abduction stories. Some 13 out of a possible 33 proportions in Table 6 compare reasonably well, indicating that these traits appear about as frequently in imaginary cases as in real cases of hypnotic or non-hypnotic origin. Many doubts nevertheless crowd behind these favorable impressions. The sample of imaginary cases is so small that 13 traits appear in only one case, 9 in just two; so most proportions remain the roughest estimates at best. Another loose end is descriptive terminology. Three experimental subjects described Saturn-shaped craft, whereas this specific term is rare among natural cases. Other metaphors like a "Chinese hat" shape might reduce to the same thing, but Lawson's article does not elaborate on how the experimenters rounded off their terms. A corollary problem is the vagueness of some categories, for example the messages. Several experimental subjects reported messages of ecological and scientific content. Messages from real cases touch on the same themes, so the two samples qualify as alike in general thematic terms. Yet too broad a base of comparison leaves room for largely incompatible traits to stand side by side in an apparent but ultimately unconvincing matchup. Without more specific details of the experimental findings, no informed judgment is possible about whether the categories are tight or tenuous, and consequently, no definite conclusions can be reached about how comparable the traits really are.

The question comes to mind of how far chance goes in accounting for many of these similarities. Where one example sustains a comparison, or where generalizations grow broad, an accidental likeness becomes a real possibility. Lawson's table of comparisons contains two columns, one for more obvious patterns and one for rarer patterns. The obvious patterns include furnishings inside the craft, calming influences from the beings, a good feeling about the experience, or a more open mind afterwards. Traits like these could occur to anyone. Even more distinctive traits like a quick-healing incision or burning skin might occur now and then by chance alone.

Similarities actually account for a minority of traits. Many quantities in the above table register differences, and a qualitative comparison of imaginary and real cases even further dispels any impression of their likeness. Most people expect disk-shaped UFOs and notably more imaginary than real abductees fulfill this expectation. Smooth, circular and domed rooms characterize the interiors reported by real abductees, but go unmentioned in the imaginary sample. Imaginary abductees cite brilliant lights inside, whereas real abductees far more often tell of a diffuse, all-pervasive fluorescence from no specific source. If the number of imaginary subjects reporting a humming sound or isolation within a bubble or glassed-in area is truly representative, these traits far exceed the norm for real cases.

The imaginary crews of imaginary ships bring an even more incompatible variety into the comparison. Something approaching monotony characterizes the beings described by real abductees. Most beings are humanoid in outline and include some of a set of features definitive of the "standard humanoid." A rich but finite array of alternative characteristics may vary the appearance of beings in given accounts, while entire different types of beings diversify the full body of reports. Real

abductees seldom utilize this opportunity for variety. Their descriptions huddle closest to the humanoid type and standard features, so that the less standard a form becomes, the rarer it occurs.

What a contrast the imaginary cases present: Lawson's table identifies only one humanoid out of ten beings in the experimental sample. He may underestimate his own results, since at least one illustration of a subject's apparitional being looks humanoid, and two forms categorized as exotic could qualify as deviant humanoids. Still, none of the illustrations depict a "standard humanoid." When the proportions in Table 6 include every possible humanoid the imaginary sample may hold, the result nearly overtakes the proportion of humanoids among non-hypnotic real cases. The figure for this latter sample represents only standard or near-standard humanoids, however, and if the total also added all possible humanoids, even the tall and deviant examples, the proportion would soar nearly 30 percentage points and leave the imaginary sample far behind. Occupants with human form are uncommon in the imaginary cases. Animal, exotic and robot beings actually predominate in these cases, yet such forms are quite scarce among real reports. What the experimenters have found is a variety of types comparable to real cases, but in proportions comparable to chance occurrence and not at all like the distribution in real cases. Here the imaginary cases seem well named. They follow a pattern appropriate for imaginations at work.

Traits from imaginary subjects with few if any parallels among real abductees drive yet another wedge between real and imaginary cases. Lawson's articles (1980: 202-204; 1977: 107, 109) note a being shaped like a hairy cone with a single eye, a retracting beam of light coming from this eye, a subject who takes a long sleep after an exam, an entity with a moving mouth but no sound coming from it, a UFO becoming larger and smaller, a long journey taken prior to boarding the ship, and a subject who feels taller after the abduction. These traits are extremely rare or nonexistent among real cases. Even a subject who enters the craft through its solid bottom or within a tunnel of light (three instances in the imaginary sample) is rather scarce. So many unconventional traits in just eight cases emphasizes how prolific of variety the imaginary stories are, and how unlike the real reports.

Picking at individual points may unravel the case for resemblances between real and imaginary abductions, but reading from full transcripts of the experimental sessions gives another, more disturbing impression. When the subjects speak for themselves their narratives bear closer ties to real reports than selected comparisons suggest. One subject describes two beings (Lawson 1980: 209-11). Their overall appearance is idiosyncratic, but they have deep-set eyes without visible pupils, a tiny nose and a round, lipless mouth. These beings stand just over four feet tall. The clothes are seamless and skin-tight, indistinguishable from the skin except in color. The floor of the room moves down like an elevator. Lawson's comparison list omits these traits, yet they mimic the descriptions from real abductees with greater fidelity than some traits he includes. The examination scene is even richer with parallels (1980: 237-38) one being serves as leader and takes a blood sample while another

examines bone structure, the witness lies on a table and alternates between feelings of calm and panic, while the examination includes an X-ray scan and investigation of the reproductive area. Major events, minor details, the atmosphere and spirit of this episode of the abduction story appear with impressive verisimilitude in this imaginary account. It differs enough from real accounts to subdue enthusiasm for these experiments as the certain key to the abduction mystery, yet the variation falls mostly within the range found in natural cases. Too many similarities appear in the transcripts for chance alone to explain.

Imaginary cases thus pose a vexing question—how can non-abductees tell stories even broadly like those of real abductees? For all the differences in frequencies and descriptive specifics, imaginary subjects still bring out unusual details and even extended vignettes of uncanny likeness to scenes from real abduction narratives. Non-abductees have no experiences to draw on, no hidden memories to tap. How can they still imagine a good abduction? More to the point, how can the hypothesis of an objective abduction survive if anyone can tell the abduction story, no experience required?

Any answers can only be speculative, given the uncertainties surrounding the non-abductee experiments. We need to know more about them; we need very much to repeat them. Do the published excerpts from experimental transcripts represent one subject's impressive performance in one episode only, or are the other episodes equally impressive? Do any other subjects report equally convincing details for the same episodes, or are the vivid moments one of a kind? How many truly striking and recurrent traits in real cases never turn up in imaginary cases, and vice-versa? As the number of experimental subjects increases does the variety in reports multiply as well, or does narrative content settle down to a constant pattern? These are a few of the questions necessary to place experiments with non-abductees in meaningful perspective.

Taking the evidence at hand, the role of hypnosis again warrants attention as a possible reason why imaginary accounts resemble real ones. Theory warns and skeptics advocate that a hypnotist familiar with real abductions might pass his prior knowledge inadvertently to his experimental subjects. McCall's position as both hypnotist in the experiments and expert in the contents of real abductions leaves his results vulnerable to this charge. Most of the few Saturn-shaped craft in the natural sample concentrate in the Tujunga Canyon abductions, which he investigated. If the description is not just a terminological convention and the hypnotist-as-guide notion is valid, the frequency of this shape among imaginary cases is a clue that he may have influenced his subjects' descriptions. The transcripts indicate that little overt transfer of information could or did occur. Whether such transfers took place by subliminal cues or other means cannot be settled by available evidence. Why he would convey small details like skin-tight clothing but leave behind an important trait like humanoid beings still poses a serious problem for any attempt to blame resemblances on the hypnotist.

Imaginary abductions actually resemble non-hypnotic real cases most closely.

The frequency of 11 traits in the imaginary sample parallels their frequency among non-hypnotic real abductions, against only 6 parallels among hypnotic real abductions. A wider variety of beings with more human forms and fewer humanoids also links the imaginary and nonhypnotic samples. We cannot expect much reliability in these findings, but for what they are worth, they raise another caution against charging too many of the similarities to the use of hypnosis.

We can even wonder if a convincing imaginary abduction story requires hypnosis at all. How would fully conscious subjects respond to the experimental questions? The experimenters apparently never explored this possibility, but the results would offer a valuable check on the importance of hypnosis. Lawson points out that he and his colleagues screened out subjects who were too familiar with UFOs, yet the participating subjects may have been only relatively naive. UFO lore is pervasive. Some familiarity with the subject comes as part of the baggage of living in the modern world, and learned expectations may stamp a powerful image on both observations and imagination (Haines 1979). Vintage science fiction literature and 1950s space movies incorporate a number of vivid abduction-like details (Méheust 1978; Simon 1979). These images prove that casual exposure is almost unavoidable and that conscious imagination can anticipate abduction ideas. Even a naive non-abductee may know enough to tell a somewhat plausible abduction story, with or without hypnosis.

A reasonable guess would be that real abduction narratives trace to no single source, but represent a melange of contributions. Ideas may come from popular culture, the hypnotist, actual experience, and the life of the witness. Many investigators have noticed that personal content slips readily into an abduction story and becomes an integral part of it, perhaps ideas drawn from general interests and concerns, or matters related to psychological anxieties, or specific memories such as the experience of a painful operation (Hendry 1979: 179-80; Druffel 1979: 29-30; Spencer 1984; Rogo 1985ab). Adapted to an extraordinary context, these mundane elements could distort into unearthly events in keeping with the overall tenor of the story. Real and imaginary abductees might share this earthbound content and outfit their stories with it. The result would be a series of ready-made similarities. Under this scheme a key role would open for hypnosis, since it has proven itself a deft aid in blending fact and fantasy, old experiences and new.

An even more prosaic source for likenesses in abduction stories is the common cultural language shared by real and imaginary abductees. If real abductees experience an objective event, they necessarily would describe it in terms of the vocabulary, metaphors and expectations learned in the course of a lifelong social education, just as non-abductees would draw from this same fund of ideas to create and describe an imaginary abduction. Some terms of this cultural language seem bound to overlap, with the consequence being a series of similarities. They imply nothing more than that the narrators share the same opportunities and limitations of language.

One fact still favors a sharp distinction between real and imaginary cases: real

abductions present the appearance of a coherent phenomenon. Their consistency in content and narrowness of variation contrast with the much greater looseness and diversity of imaginary abductions. Such contrast denies any impression of coherency to the imaginary cases. Real hypnotic and non-hypnotic abduction stories share more in common with each other than with imaginary abduction stories, strengthening the sense that not hypnosis or the hypnotist, not cultural or personal elements can explain the unity behind real reports. Of all possible factors that might contribute to imaginary abduction stories, only experience is surely lacking. An experience of some sort thus offers the most plausible explanation for the underlying coherency of real abduction stories.

What the imaginary abduction story teaches us about the real abduction story is not that the two are ontological equivalents, but rather that real stories may well incorporate extraneous elements. The final expression of the story may represent a core of experience layered more or less thickly with unrelated events and ideas. A real abductee is thus a bad reporter, since his news includes inaccuracies. Understanding the ultimate nature of abductions depends greatly on the proportion of experience to these inaccuracies. Influence of the hypnotist may account for a few of them, but only a few. Hypnosis itself may add a few more, like perhaps the floating sensation in some cases, though its presence in non-hypnotic cases means even this trait cannot be solely an artifact of hypnotic trance. A concession to personal, cultural and linguistic contributions may explain some vivid smaller details and perhaps some larger components as well, but probably not the impressive coherency of the entire body of abduction reports. How much of the story represents experience, and whether that experience is objective or subjective, remain crucial questions still unsettled by experiments with non-abductees. Yet after considering the alternatives, experience seems the only adequate explanation for many traits of real abduction stories.

CONCLUSION. ALARM OVER HYPNOSIS A FALSE ALARM

Scientific studies make clear that testimony obtained under hypnosis can be false, distorted, confabulated and intertwined with fantasy. Far from assuring truth, hypnosis brings manifold possibilities for error. Skeptics have carried this prospect to extremes and concluded that errors riddle the hypnotically derived testimony for abductions. For skeptics the magnitude of these errors is great enough to explain away everything extraordinary about the abduction story. Its components consist of dreamlike fantasy, personal experience, prior acquaintance with UFO lore, or expectations conveyed by the hypnotist, but nothing more. Hypnotism provides the ideal medium in which all the parts come together to form a vivid and convincing—but fictitious—whole. Besides Klass, psychologist Robert A. Baker favors this view, while others who incorporate it in their explanations for particular abductions include Ernest H. Taves and Robert Wanderer for the Betty Andreasson case, Steuart Campbell for Alan Godfrey, and John Spencer for the Hills. A spirit of

extreme caution toward hypnosis permeates writings of Lawson, Hilary Evans, Willard D. Nelson and Hobart Gregory Baker. Many thoughtful ufologists now regard hypnosis with reservations, though some still accept it unconditionally and no consensus is in sight.

The potential for misuse of hypnosis is undeniable, yet an examination of the abduction evidence points to a reassuring conclusion: what might happen according to theory seems not to have happened in fact. Whether comparing abductions reported with and without help of hypnosis or testimonies obtained by four different hypnotists, few incompatibilities appear among 50 outstanding story traits. The traits occur with similar enough frequency among the hypnotists to deny that personal style controls the form and content of abduction stories to any great extent. The similar frequency of these traits among hypnotic and nonhypnotic cases discredits hypnosis as an important influence on story form and content in any way at all. Outcomes in every comparison give little reason to believe that hypnosis enhances the imaginations of receptive witnesses or would-be witnesses to create abduction fantasies, or that Svengali-like hypnotists lead the witness or impose a standardized abduction story. If they do, they achieve the remarkable feat of drawing out the same complex story full of extensive similarities time after time, in spite of all differences in backgrounds, circumstances or personal opinions of everyone involved. The fact that some abductees tell the same story without professional help casts even deeper doubt on how much of a variable hypnosis can be in the abduction story.

Differences in trait distribution do exist. They appear between the hypnotic and non-hypnotic cases as well as among the four hypnotists, even considerable differences where the beings are concerned. More consistency in descriptions of the beings from hypnotized subjects and slight individualized patterns in descriptions associated with certain hypnotists keep alive the likelihood that hypnosis is not entirely neutral. Still, its influence seems minor. Consistencies far outweigh differences, and many differences seem more reasonably attributable to the conditions of an experience than to hypnosis. It may help a witness embroider the narrative here and there, but within the limits of the comparisons presented above, no evidence supports the skeptical claim that hypnotically induced fantasies or the influence of a hypnotist deserve substantial blame for the abduction story.

Results from experiments with non-abductees should prompt some deep soul-searching among supporters of an objective abduction phenomenon. Ways in which imaginary abduction narratives resemble real reports are startling enough to raise doubts about the viability of an objective interpretation, but ways the imaginary stories differ from the real ones are many and serious. The likenesses seem more apparent than real, more surprising than threatening. At the same time they cannot be ignored. If some traits enter the abduction story without benefit of experience, suspicion must fall on the rest. Someone might imagine any individual trait sooner or later, so the coherency of real abduction reports in contrast to greater diversity among imaginary reports offers the firmest basis for an inherent distinction between

them. Only when further experiments enlarge the imaginary sample can we know if coherency is a certainty or a mirage.

These experimental cases should cause a little soul-searching among skeptics as well. They especially need to reexamine the importance they attach to hypnotists leading the witness. If Lawson and his colleagues are right about their experiments, hypnotic leading contributed little or nothing to the imaginary abduction narratives. Then the hypnotist is an insignificant factor behind the similarities of real and imaginary cases. Of course if the experimenters did lead their subjects, those similarities become easy to understand, they drop in status from a challenge to a triviality, and imaginary abductions pose no threat to an objective interpretation. The skeptics have tried to have it both ways, citing these experiments as evidence that non-abductees can imagine as good a story as an alleged real abductee, then blaming hypnotists for steering the witness toward a story configured to their personal biases. These arguments cannot peacefully coexist. Either leading is important in imaginary as well as real narratives, or its restriction to real ones becomes a new mystery for skeptics to explain. No evidence supports a major role for influence by the hypnotist, so individuals must have the raw materials of the abduction story already within them. Other signs cast doubt on imagination as sufficient cause for abduction stories, so suspicion falls at last on experience as a necessary component.

Weighed and found wanting time and again, hypnosis cannot shoulder nearly as much responsibility for abductions as the skeptics have proposed. None of their appeals to confabulation, influence by the hypnotist, and experiments with non-abductees stand up under a comparative examination. In light of these findings, the burden of proof now drops on the skeptics. They can no longer repeat their old claims as meaningful answers. For any future rebuttals the skeptics must look deeper into the phenomenon itself rather than simply deduce the hazards of hypnotic testimony from scientific studies of hypnosis, or read theoretical interpretations into abduction reports from a safe distance. The skeptical argument needs rebuilding from the ground up.

One chance to salvage a significant place for hypnosis in the abduction phenomenon might come from a challenge to the comparisons carried out above. Is the comparative net too coarse or too fine, or its sweep too broad or too narrow in range, thereby missing the really significant terms? Future work especially needs to consider the witness as an individual. If a hypnotized subject is psychotic, all bets are off; nothing learned from a mentally disturbed witness can be taken as reliable (Mutter 1984: 45). Abductees seldom if ever fall into this category, but the issue of personal differences still matters. Individuals vary greatly in their hypnotizability and perhaps also in their ability to fantasize under hypnosis, so the possibility that abduction stories come from people with certain personality types or particular talents opens another avenue for exploration. Prior knowledge of the witness affords one more direction needful of investigation. No consideration was given to complications that might arise from the witness being under hypnosis at the time of the abduction-like experience, either because alien captors used hypnosis or

something akin to it for purposes of mind control, or because some natural state affected the witness. Various sleep-related phenomena could serve the purpose, and so could highway hypnosis, a condition often accompanied by time lapse (Basterfield 1981; Williams 1965). No evidence indicates that such conditions lend abduction reports their observed coherency, but the possibility merits inquiry.

The popular reputation of hypnosis suffers from unreasonably high expectations. Contrary to popular belief, hypnosis cannot guarantee truthful testimony. In that sense hypnosis is a disappointment, a technique full of promises it cannot keep. On the other hand, if abductions are actual and traumatic experiences, no other tool may serve as well for releasing the repressed memories. Ufologists can take comfort from the findings that many abduction investigators have followed sensible precautions in the use of hypnosis, and that the body of abduction evidence now on record seems little contaminated with fantasies and inaccuracies of hypnotic origin. Investigators are becoming increasingly aware of the potentials for danger in hypnosis. Carefully worked out programs of abduction investigation now under development promise far tighter control over hypnotic procedures in the future, leading to even more reliable testimony.

One cloud still darkens this otherwise bright vista: a negative scientific reputation also burdens hypnosis. Too many doubts surround it for the scientific community to readily embrace hypnotic testimony as valid, especially for any claims as remarkable as UFO abductions. However rigorous the procedures, however unequivocal the comparative analyses, doubters looking for ways to condemn the abduction evidence without facing up to it can always create doubt by questioning hypnosis. For ufologists hypnosis will remain an indispensable tool, but attention to conscious testimony, multiple-witness cases, and physical evidence holds out better hope than hypnosis for gathering the kind of evidence no one can ignore. Only time and open-minded research can reveal the ultimate value of hypnosis in abduction research.

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THE DELPHOS CASE: SOIL ANALYSIS AND APPRAISAL OF A CE-2 REPORT

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ABSTRACT: Three members of a farming family claim to have witnessed an unusual luminescent object hovering over their land. After departing, the soil over which the object allegedly hovered was found to have undergone considerable physical and chemical change, the effects of which lasted for several months afterwards. Subsequent chemical analysis of the soil provided data which virtually discounts any hoax interpretation and even goes a considerable way to corroborating the witnesses' testimony. A plea is made for a conclusive analysis involving the identification of a single unstable compound which just might provide evidence of a genuine UFO-related event occurring at Delphos.

INTRODUCTION

The Delphos case is well known in the UFO literature having been investigated in depth by Ted R. Phillips Jr. and reported elsewhere (Phillips 1972a, 1972b, 1981). For present purposes a brief description of the important aspects of the sighting report will suffice. On November 2, 1971, at Delphos, Kansas, at 7:00 p.m. local time, a sixteen-year old boy, Ronald Johnson, was tending his sheep at his father's farm when he suddenly became aware of an illuminated object hovering beneath a tree about 75 ft. away from him. The object had an estimated diameter of 9 ft. and appeared to be about 10 ft. high (Fig. 1). It also emitted a rumbling noise "like an old washing machine that vibrates" which was not heard before the object became illuminated. The boy described the object as multicolored with blue, red and orange glows about its surface as it hovered about 2 ft. off the ground. He also observed a bright glow between the object and the ground for the duration of the sighting. The boy said that it hurt his eyes when looking directly at the object and for several days after the incident his eyes were painful and he suffered headaches. After 3-5 minutes the object began to move off passing over a nearby shed by about 4 ft. Ronald called to his parents at the farm who then proceeded to the site and saw a ring of soil over which the object had hovered glowing in the dark. Looking up into the sky they observed a bright luminescent object receding into the distance bearing "the color of an arc-welder." The glowing ring so impressed Mrs. Johnson that she ran back to the house to fetch a Polaroid camera with which she took a photograph of the effect.

The witnesses proceeded to touch the ring, which they described as having a cool,

"slick, crust-like" texture, as if the soil was "crystallized." They immediately experienced a "numbing effect" similar to that of a local anesthetic which took several days or weeks to wear off. The Johnsons reported the alleged event to the local sheriff, who took samples and a photograph of the ring the next day (Fig. 2), and to a newspaper reporter. The MUFON Investigator, Ted Phillips Jr., arrived on the scene a month later to interview the family and measure and sample the ring soil. His initial report (Phillips 1972a, 1972b) emphasized the credibility of the witnesses and the puzzling nature of the ring which now displayed pronounced hydrophobic character, so much so that it was still covered by unmelted snow, in contrast to the surrounding muddy environment. The hydrophobicity extended in places to 14 in. below the surface and lasted for some months afterwards. The ring had an unaffected portion at its northwestern edge, while the whole was elongated towards the south-east (Fig. 3). A check of weather conditions prevailing at the time showed wind direction and speed to be 290° and 8 mph respectively, suggesting a possible wind spreading effect.

Because of its high "strangeness" the sighting report was awarded a best case "Blue Ribbon" award by a panel of ufologists, despite the absence of a proper analysis carried out on the soil. Skeptics such as Philip Klass have postulated on various mundane causes for the ring that have suffered the same drawback while essentially disregarding the multiple-witness aspect of the case (Klass 1974). The one potentially important piece of evidence—the Polaroid photograph taken by Mrs. Johnson of the "glowing" ring soon after the alleged event—proved inconclusive because it showed on analysis a high contribution of reflected moonlight by the ring surface. The photograph taken by the sheriff nineteen hours after the alleged event (Fig. 2) showed the ring to have a white surface color likely to render it visible in moonlight. This has generally been accepted as the most likely explanation for the

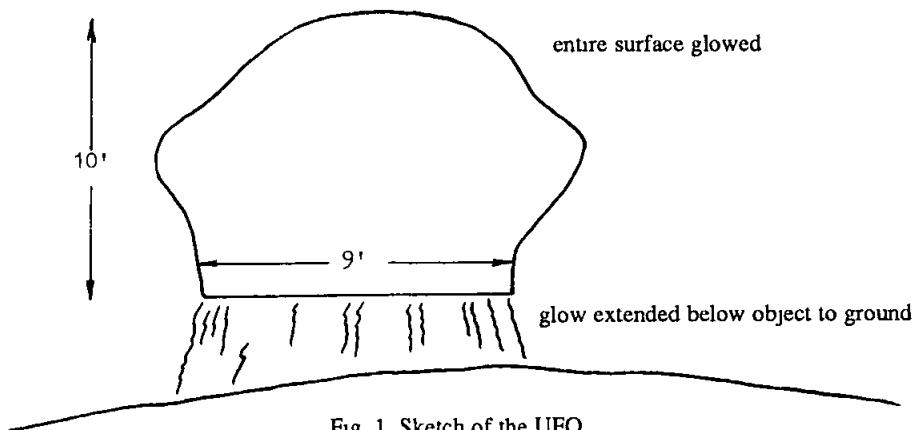


Fig. 1. Sketch of the UFO.

purported "glowing" of the ring soil by the witnesses, although of course no account of the soil chemistry had yet been taken into consideration.



Fig. 2. Photograph taken 19 hours after the alleged event.

MATERIALS AND METHODS

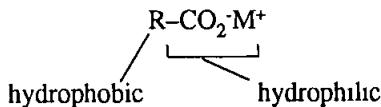
Numbered soil samples taken from various locations and depths of the ring one month after the alleged event were received from the principal investigator, Ted Phillips Jr., in late 1977. A sample of surface control soil taken several feet outside the ring was also sent for comparison purposes. All samples had been kept refrigerated and sealed in airtight opaque containers to avoid possible decomposition. The manipulation and analysis of the soil was carried out employing standard organic chemical techniques which should be easily reproducible.

RESULTS

(a) Ring Soil Hydrophobicity

Samples of ring soil were initially inspected for their alleged hydrophobicity. They did indeed appear to be surprisingly impervious to water, contrary to the usual expectations for soil matter. Further agitation, however, induced the aqueous soil mixture to disperse with a resultant loss in the hydrophobicity of the soil. Centrifugation of the suspension separated out the soil matter leaving a clear brownish-yellow to red solution which was mildly alkaline and foamed on shaking such as a solution of household detergent would. These properties were consistent with the dissolved substance being an alkali metal salt of an organic acid and

subsequent chemical manipulation supported this idea. Such a compound would consist of a hydrophobic organic residue $-R$ linked to a hydrophilic carboxylate anion $-CO_2^-M^+$ (where M represents an unknown metal ion):



This substance and its direct decomposition products appeared to be the only ones "foreign" to the soil and hence were solely responsible for the observed hydrophobicity. Extracting the ring soil with any organic solvent gave rise to a negligible amount of soluble material. A similar negative result was obtained when the control soil was extracted with water. The apparent paradox of a water soluble—indeed, highly soluble—substance being responsible for the hydrophobic nature of the ring soil can be explained in terms of a surfactant phenomenon. The hydrophilic sites normally present in the soil matter are bound up through non-permanent "hydrogen bonding" with those of the substance enabling the organic residue R to behave as the new "surface" of the soil (Fig. 4). The action of wetting the soil disrupts the hydrogen-bond linkages, allowing dissolution of the substance while exposing the soil hydrophilic sites to re-absorb water.

To test this idea further a number of organic acids were converted into their sodium salts and their aqueous solutions mixed with some of the control soil. After allowing the mixtures to dry water was placed on the surface of each sample to test for any acquired hydrophobicity. Compounds such as sodium benzoate (1) and sodium naphthoate (2) did not produce any appreciable effect, whereas sodium anthraquinone-1-sulphonate (3) imparted to the soil a certain degree of hydrophobic character. This indicated that the increased molecular size of (3) combined with the

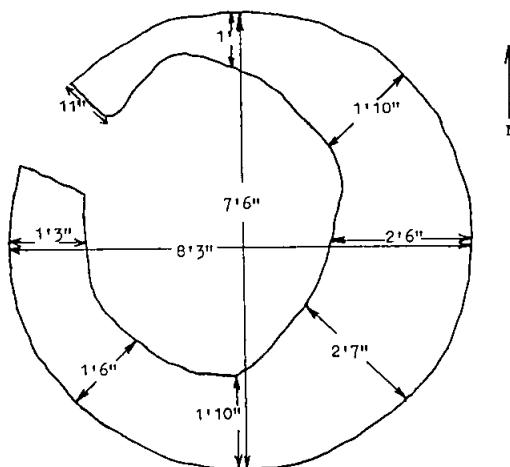


Fig. 3. Dimensions of ring soil

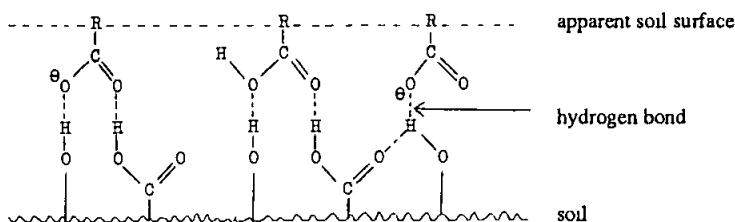
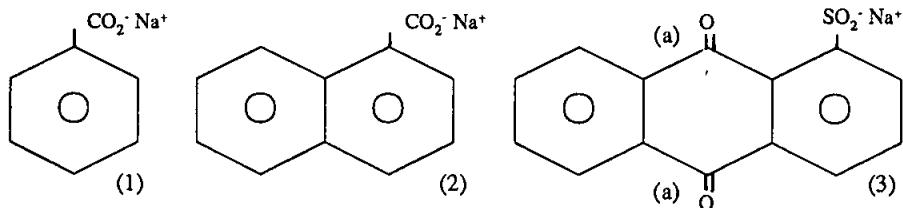


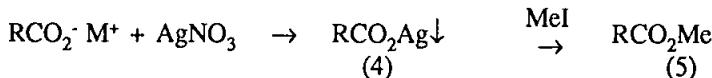
Fig. 4.

presence of additional polar carbonyl groups (a) able to participate in hydrogen-bonding and thus bind with the soil in "template" fashion was causing the hydrophobicity. This finding becomes significant when the chemical nature of the ring soil compound itself is considered to explain the unusual degree of hydrophobicity apparent. Apart from producing the desired effect, the test also revealed how such a change in soil absorption could be brought about by the application of an aqueous solution of an appropriate compound from an external source, an observation which may be significant.



(b) Chemical Manipulation of Ring Soil Extracts

In order to begin analysis of the compound present in the ring soil extracts, these were first treated with a slight excess of an aqueous solution of silver nitrate. An immediate precipitation of the corresponding silver salt (4) of the presumed carboxylic acid occurred which was centrifuged off and washed, first with ethyl alcohol to remove water, then with diethyl ether and dried with a stream of nitrogen gas. The quantities of silver salt isolated in this way varied considerably for different ring samples (Table 1). Treatment of the silver salt with excess methyl iodide (MeI) in acetone for several hours afforded the corresponding methyl ester (5) which was soluble and imparted a yellow color to the solution



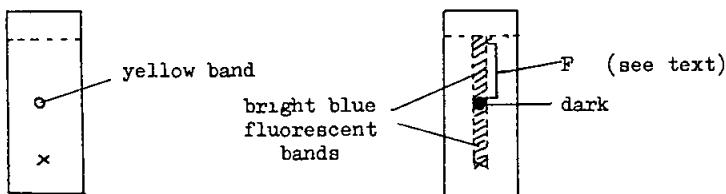
Analysis of this solution was carried out using thin layer chromatography, a

Table 1. Silver Salt Precipitation

Soil sample	Quantity of silver salt precipitated (averaged) mg per gram of soil
*2	34.8
*3	12.8
*10	10.6
*7	10.1
Control soil	Negligible precipitation observed

technique which permits physical separation of the components of a mixture in the form of "bands" or regions of discrete compounds. Analysis in this way revealed one major yellow band of retention factor (Rf) of ca. 0.5 (stationary phase : silica gel HF 254; mobile phase = methanol:acetone:benzene in proportion 20:5:25) situated among a continuum of bright blue fluorescent bands when the chromatogram was viewed under ultraviolet (366nm) light. This yellow band was very unstable and readily oxidized within minutes to an almost colorless product. When viewed under 366nm light the product from this oxidation had identical fluorescence to the others, thus merging with them (Fig. 5). Covering the chromatogram with a glass slide to reduce exposure to oxygen slowed down this process considerably.

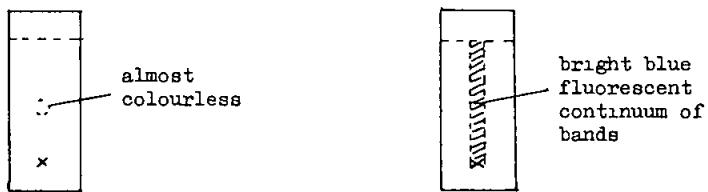
a) Appearance before oxidation:



(i) under visible light

(ii) under 366nm light

b) Appearance after oxidation (after a few minutes):

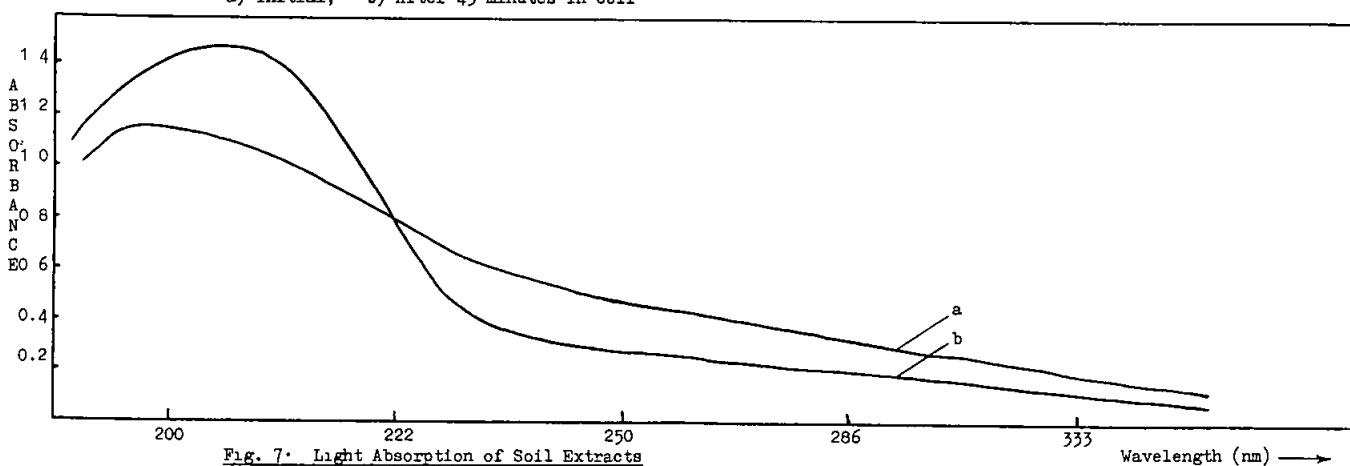
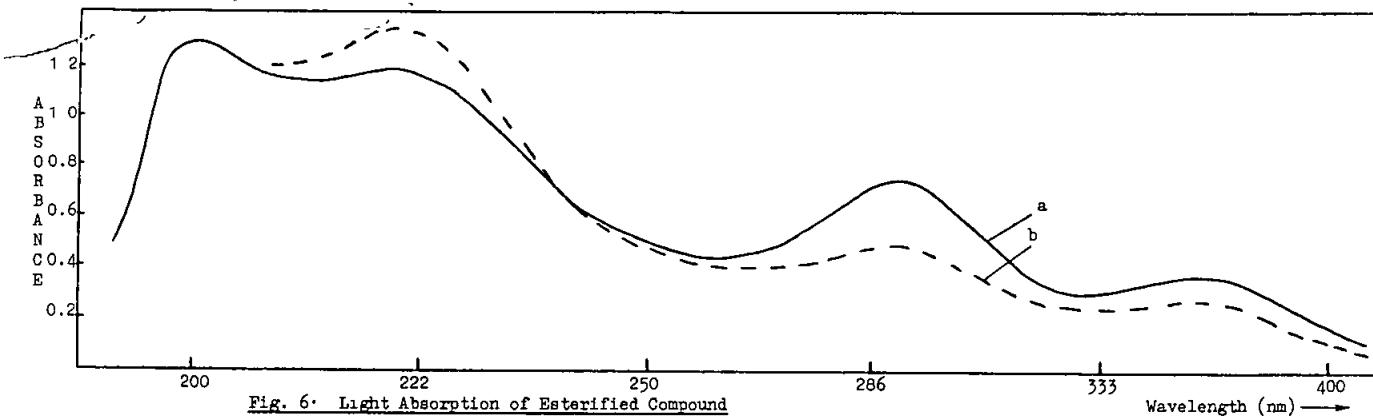


(i) under visible light

(ii) under 366nm light

Fig. 5

The yellow band could be eluted off the chromatogram before it had time to fully oxidize and its UV-visible light absorption spectrum recorded in ethyl alcohol. This



showed maxima at 220, 290 and 358nm (Fig. 6, Curve a). The two longer wavelength bands can be seen to decrease with time while there is a simultaneous increase in the 220nm band. After ca. 45 min. in the cell the absorption curve in the visible region has decreased considerably (Fig. 6, Curve b). This change represents a decolorization process and parallels that occurring on the chromatogram during oxidation. That oxygen is indeed implicated for the change will become more evident in due course. An assumption that can be made on basis of the observed spectral changes is that the 220nm band arises from the oxidation product whereas the 290 and 358nm bands represent the true absorption peaks for the compound. Thus the initial spectral curve (Curve a) may reflect a considerable degree of oxidation having occurred in the short time it took for the yellow band to be eluted off the chromatogram for the spectrum to be recorded. Once in solution in the cell the stability is apparently increased giving rise to the recorded change after 45 mins.

(c) Soil Extract Absorption Curves

Having isolated the purified compound as the apparent methyl ester and determined its light absorption behavior, the information could now be related to the light absorption characteristics of the crude aqueous ring soil extracts. On centrifugation of such mixtures it became immediately evident that material taken from beneath the soil surface gave solutions that were much redder in color than those from surface material. The UV-visible light spectrum of the former typically gave rise to a broad absorption band which extended gradually into the visible region (Fig. 7, Curve a). In contrast, a spectrum of a surface soil extract showed a much more abrupt loss of absorption towards the visible region with the major band occurring in the UV region (Fig. 7, Curve b). In view of the spectral behavior of the purified compound, this gross difference may be attributable to the greater degree of oxidation having occurred of the compound towards the soil surface. The overall broadness of the spectra relative to that of the isolated compound is presumed to reflect general decomposition, as opposed to oxidation, incurred while present in the soil. That gradual loss in color of the extracts towards the ring surface was caused primarily by oxidation was independently inferred from a spectrum recorded on one occasion of an extract of sub-surface material.

The initial spectrum (Fig. 8, Curve a) showed a broad hump in the region of 286nm attributable to the 290nm absorption band of the pure compound. The compound's instability in its natural aqueous state can be judged from this spectrum since on completion of the recording (taking just two minutes to scan from right to left) it was immediately repeated and this now gave Curve b (Fig. 8). The hump has disappeared and an increase in the region 200-222nm is evident. When more of the same extract was treated with hydrogen peroxide ("40 volume") as an oxidant the red color was immediately discharged to leave a pale yellow solution whose spectrum (Fig. 8, Curve c) showed the extent to which this decrease/increase in absorption characteristics could be effected. The resulting pale yellow solution on evaporation yielded a whitish solid, and this observation may have considerable

A
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O
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E

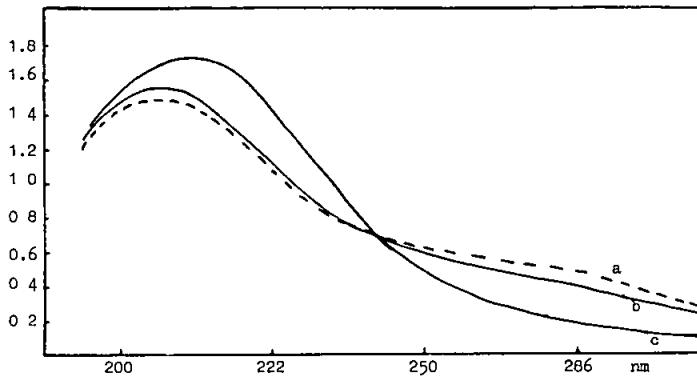


Fig. 8 Light absorption of a sub-surface soil extract (*3)

- a) Initial
- b) After 2 minutes in cell
- c) After treatment with hydrogen peroxide solution

A
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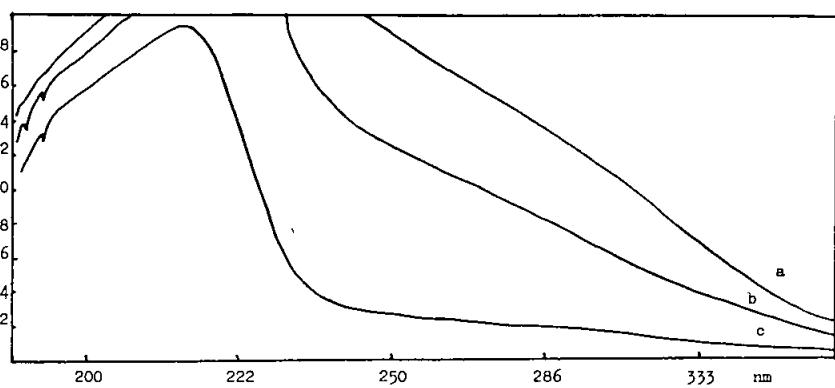


Fig. 9 Soil extract absorption curves

- a) Sub-surface (*2)
- b) Surface (*1)
- c) Control

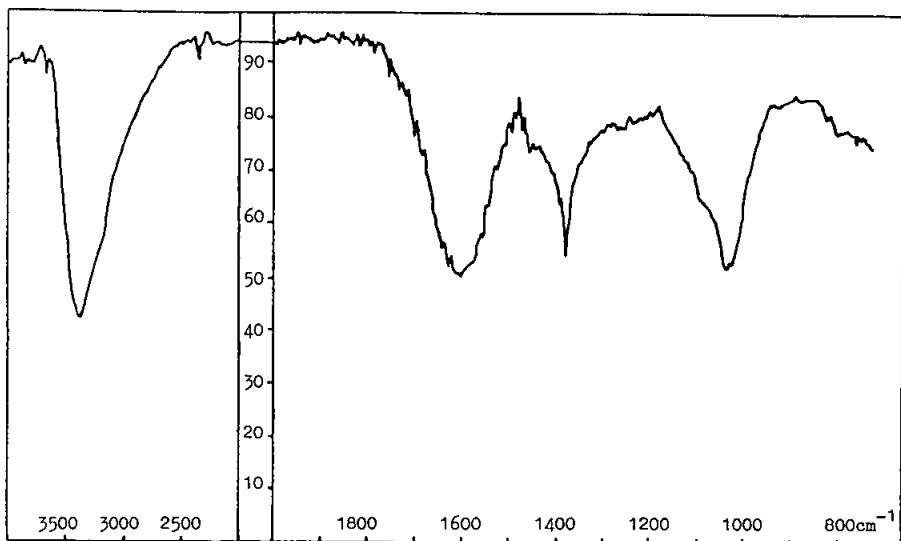


Fig. 10. Infra-red spectrum of silver salt (as KBr disk).

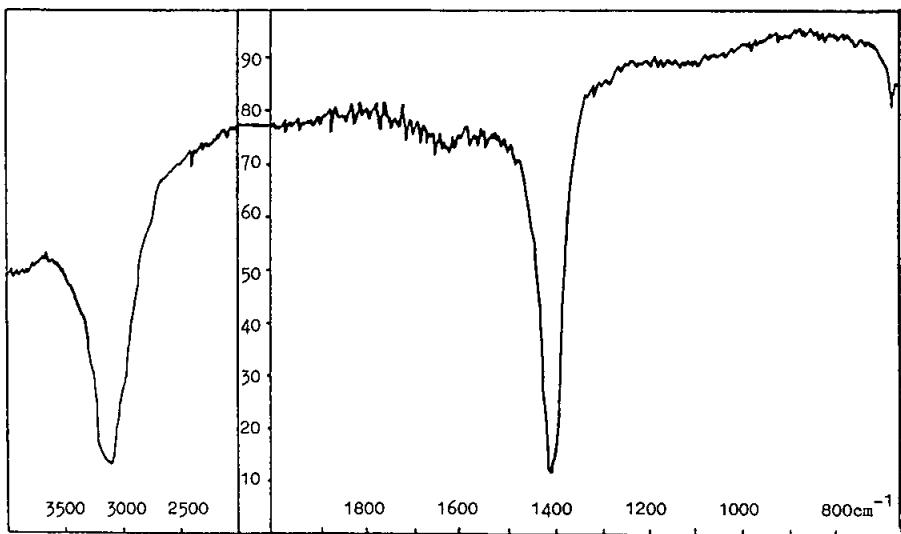


Fig. 11. Infra-red spectrum of volatile amine hydrochloride (as KBr disk).

significance when attempting to explain the white surface color of the ring soil. The strong implication is that this has been caused by a layer of the fully oxidized compound coating the soil surface. The witnesses' description of a "slick, crust-like....crystalline" feeling on touching the ring soil may be a reference to such a layer.

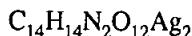
It might be instructive here to show a semi-quantitative comparison of surface (*1) and sub-surface (*2) soil absorption curves along side that of the sample of control soil taken from outside the ring.

This is shown in Fig. 9. Each curve was recorded after extraction of 70mg of the relevant soil sample with 0.5ml water. The greater absorption of the ring soil extracts towards the visible region of the spectrum illustrates the degree of impregnation of the soil with the compound.

(d) Chemical Analysis of the Silver Salt

Because of the instability revealed during chromatography and the high degree of decomposition that already occurred to the compound while in the soil, various analytical techniques employed to determine the chemical structure were of limited value. An infra-red absorption spectrum (as KBr disk) of the dried silver salt showed strong hydroxyl (O-H) and carboxyl (CO_2^-) stretching bands at 3,400 and 1600 cm^{-1} respectively with the broad band at 1040 cm^{-1} being attributable to C-O stretching (i.e., of C-OH) (Fig. 10). A mass spectrum of the crude methyl ester derived from the silver salt was poor owing to its impure nature and possible involatility and a molecular ion with a characteristic loss of 31 mass units (corresponding to loss of a CH_3O^+ radical from the ester group) was not apparent in the spectrum. This may also have been due to thermal instability of the ester at the high probe temperature (190°C) used to volatilize the compound. The ion with the highest molecular weight occurred at m/e 395 and this was followed by one of similar but weak intensity at m/e 377. The difference of 18 AMU corresponds to loss of water and would be expected for a compound containing hydroxyl groups. The next ion of any significance occurred at m/e 337 and this also lost water to give a fragment ion at m/e 319. Peaks also occurred at m/e 59 and 57, the former being attributable to the species CO_2Me^+ that would result if a methyl ester had indeed been formed during treatment with methyl iodide.

Elemental analysis of the dried silver salt gave 27.55% carbon, 2.40% hydrogen and 3.83% nitrogen. Another performed for ash content gave 27.60% carbon, 2.28% hydrogen, 3.53% nitrogen, and 36.95% ash. Analysis for sulfur and chlorine were both negative. If the residue was assumed to be principally composed of silver oxide (Ag_2O) and the molecular weight of the methyl ester to be in the region 400-500 AMU then a very crude approximation of the empirical formula of the silver salt could be derived as:

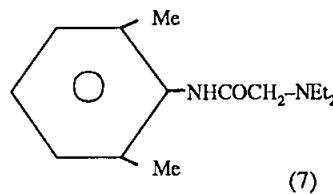
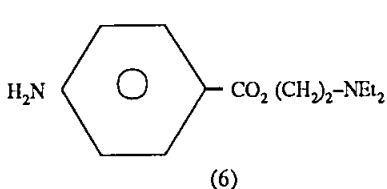


The formula as written has a molecular weight of 618 and is composed of 27.18%

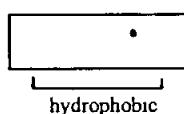
carbon, 2.27% hydrogen, 4.53% nitrogen, 31.07% oxygen and 34.95% silver (corresponding to 37.54% silver oxide or ash content). It has to be emphasized that this formula can serve only as a rough guide for the soil compound since, apart from the number of assumptions made in its derivation, it also represents a silver salt containing decomposition and oxidation products as well as of pure compound. The formula's usefulness comes from being able to gauge the relative proportions of each element present in the soil compound. A striking feature is the high oxygen content, which may be accounted for by the presence of two carboxyl groups to pair off with the silver ions, along with a number of hydroxyl groups as indicated by the intensity of the O-H stretching band in the IR spectrum. The presence of such hydrophilic groups would, in turn, explain the high water solubility exhibited by the soil compound and increase its surfactant properties, underlining further the chemical basis for the hydrophobic nature of the ring soil.

(e) Alleged Local Anesthetic Effects

The presence of nitrogen in the soil compound may be of significance regarding the alleged local anesthesia reported. The chemical nature of the nitrogen would have to be determined before this can be properly assessed, however. In order to throw light on this aspect of the case a brief description of the chemical basis of local anesthesia needs to be presented. The majority of local anesthetics in use today are tertiary amines which can exist as uncharged or positively charged molecules depending on the pH of the solution and the pKa of the compound. Two examples are Procaine (6) and Lignocaine (7).



The aqueous solutions of the salts of these compounds with a suitable acid (e.g. hydrochloric acid, HCl) would contain mixtures of the uncharged and charged species, the charge being located at the terminal amino group:



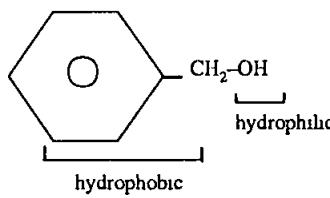
(A)

(B)

Local anesthetics act at the cell membrane and the block in the conduction of nerve impulses they produce is a result of interference with changes in membrane

permeability to potassium and sodium ions. The penetration of a local anesthetic to its site of action depends upon its ability to cross lipid barriers and the uncharged form (i.e., "A" above) will be able to penetrate lipid layers with ease. Once in the nerve tissues the low pH of the environment generates the charged form (i.e. "B") and it is this species which is responsible for the anesthetic effect. A mechanism similar to this might apply for the soil compound if the nitrogen present existed as an amine of some kind. Aqueous extracts of the ring soil were found to exude a penetrating putrid odor which on close proximity to hydrochloric acid generated white fumes indicative of a volatile amine present. The odorous component could be extracted out using diethyl ether and the ethereal solution then evaporated down to furnish it in concentrated form. The strong odor of this solution on brief inhalation produced an immediate but short-lived dizzying effect which was rather unpleasant. In an attempt to identify this volatile compound, nitrogen gas was passed through some of the ring soil extract while the gas outlet tube was immersed into a small volume of concentrated hydrochloric acid. Any volatile amines liberated by the soil extract would thus have been trapped in the acid in the form of their hydrochloride salts. After two days the acid solution was removed and evaporated to yield a white crystalline solid which was identified as ammonium chloride from the I.R. spectrum (Fig. 11) (see Fig. 12 for authentic ammonium chloride). This result was curious, since the odor was not recognizably caused by ammonia.

While the nature of the nitrogen remains to be determined, another causative factor for the alleged local anesthetic effect may simply be the dual hydrophobic-hydrophilic property exhibited by the soil compound and manifested, as described earlier, in the hydrophobicity of the ring soil. In this regard it is of interest to note that nonnitrogenous compounds such as benzyl alcohol (8) can exhibit anesthetic properties by virtue of this same property.



With regard to the alleged rapidity of the anesthetic effect we must first assume that the sensation occurred on essentially unbroken skin (e.g. fingertips) on touching the soil. Local anesthetics are generally administered to mucous membranes or damaged skin and consequently their effectiveness on unbroken skin has been little studied. One such investigation was carried out in 1957 when a variety of local anesthetics were administered to the anterior surfaces of the arms and forearms of volunteers and anesthesia tested with the prick of a needle (Monash 1957). Both the salts of the anesthetics (charged forms) and the free bases (uncharged forms) were tested, usually as solutions or ointments. Repeatedly swabbing the skin at 15-minute

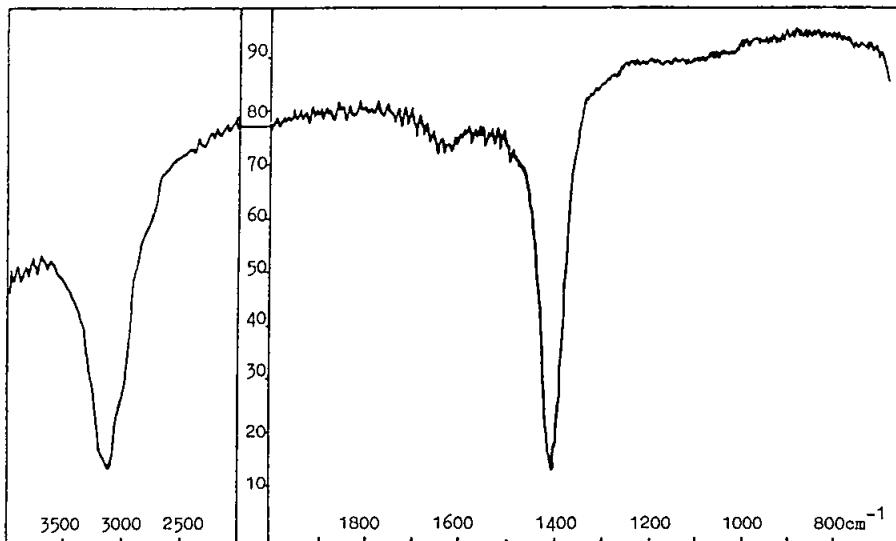


Fig. 12. Infra-red spectrum of ammonium chloride (as KBr disk).

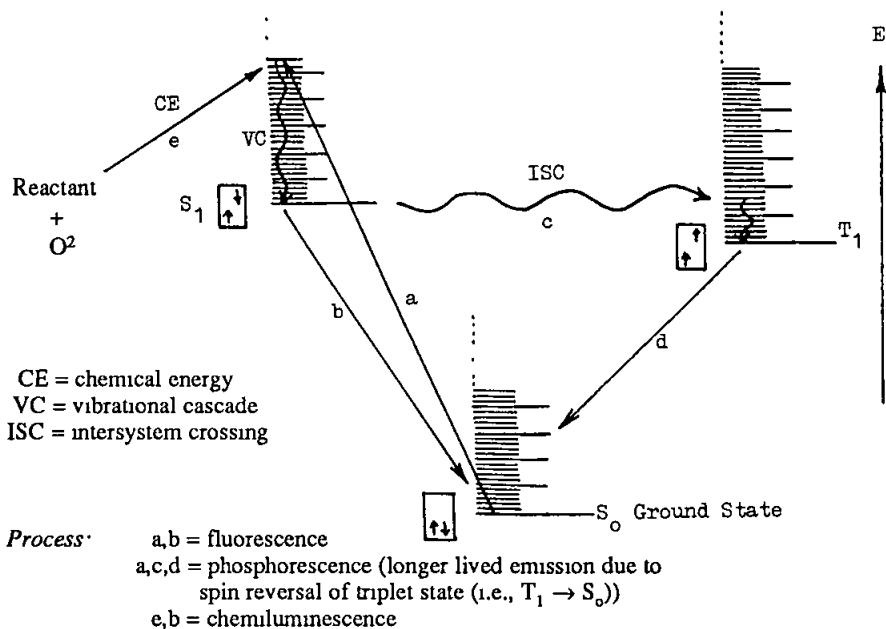


Fig. 13. Fluorescence

intervals for three hours with 2% solutions of either the salts or the free bases was found to produce no anesthesia. More success was obtained with an occlusive dressing soaked with 2% solutions of a number of bases. In this case local anesthesia was produced in 45-60 minutes and was quite prolonged, averaging two to four hours. Perhaps most relevant for this case was the method of continuous contact in which the solution to be tested was placed into a well formed on the skin with petrolatum. A number of anesthetic salts tested in this way as 2% aqueous solution produced anesthesia after two hours. These results were interpreted as showing that the free bases (uncharged forms) penetrated the skin more readily than did the salts. The long time interval between application and onset of anesthesia for both types (45 minutes-2 hours) showed that the outer layers of the skin acted as an effective barrier to penetration. From this it may be argued that the "immediate" numbing sensation allegedly felt by the witnesses was unlikely. However, the unknown factor is the localized concentration which would appear to be very high in the witnesses' case in view of the sensation of "crystallinity." One feature which would be predicted from the alleged anesthesia is that the ring surface should have been wet or at least moist to provide intimate contact of the substance with the skin. My own attempts to reproduce anesthesia using an aqueous extract of ring soil on my fingertips left a peculiar sensation which couldn't be described as anesthetic, although it is possible the solution was not left in contact for long enough.

(f) Chemiluminescence

Although the foregoing is of value in possibly corroborating the alleged local anesthetic effects, the real significance of the Delphos case lies, I believe, in the instability to air of the compound. The fact that the compound has the rather unusual property of oxidizing to give a fluorescent product leads to the prospect of chemiluminescence (i.e., chemically generated light) being observed. This would, in turn, have implications on the reported "glowing" of the ring soil. To appreciate this fully it will be necessary to describe the mechanism of oxidative chemiluminescence in some detail. Fluorescence is a process in which light of a short wavelength (high energy) is absorbed to promote an electron from the highest bonding orbital to the lowest anti-bonding orbital to produce the first excited singlet state (Fig. 13). After 10^{-9} to 10^{-6} seconds the process is reversed and a photon of longer wavelength (in the visible region) is generated. When an organic compound oxidizes to give a product which is fluorescent, emission of light may occur because the energy liberated during oxidation may give rise to a proportion of the product molecules already in their first excited singlet state. Emission would occur when these reverted to their ground state. In such chemiluminescent oxidations the energy supplied should be at least 41 kcal mol^{-1} for emission of red light (700nm) and 65 kcal mol^{-1} for blue light (440nm). Providing that the product molecule is the emitting species (and not some transient chemical intermediate) the fluorescence spectrum of the product should match the chemiluminescence spectrum.

One quantum of light can in principle be emitted by one molecule of reactant and

in a perfectly efficient process 1 mole of reactant would generate 1 mole of quanta or 1 einstein. From this it can be calculated that 1kg of perfectly efficient chemiluminescent material might provide 1.47×10^5 lumen hours of light, equivalent to the output of a 40W bulb operating for 13 days.

The quantum yield of a chemiluminescent oxidation is governed by various factors, however, which invariably lead to an overall low efficiency. From the description given above it can be seen that the quantum yield (ϕ_{CL}) for the process will depend on:

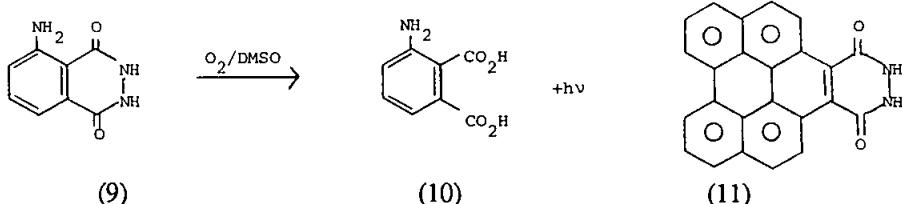
- i) the fraction of reactant molecules taking the correct chemical pathway in the oxidation ($=\phi_R$)
- ii) the fraction of product molecules being generated in the first excited singlet state ($=\phi_{ES}$)
- iii) the fluorescence efficiency of the product molecule (if this is the emitting species) ($=\phi_{FL}$)

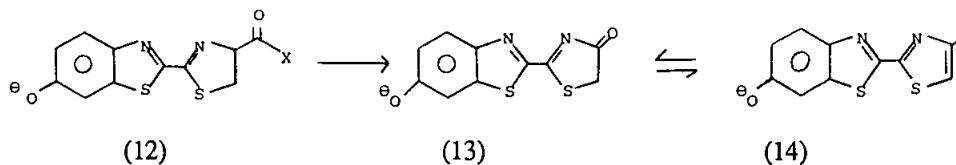
from which:

$$\phi_{CL} = \phi_R \times \phi_{ES} \times \phi_{FL}$$

From this relationship it can be seen that all three of these processes must occur significantly for light emission to occur. The product molecule may be highly fluorescent (as is the case for the soil compound) but if the fraction being generated in the excited state during oxidation is small a low chemiluminescent yield will result. One of the most studied chemiluminescent oxidations is that of the hydrazide, luminol (9). In alkaline dimethyl sulphoxide, luminol reacts with molecular oxygen to produce amino phthalic acid (10) with simultaneous emission of blue light (480nm). The emission spectrum corresponds to the fluorescence spectrum of amino phthalic acid. The chemical yield (ϕ_R) of the process can be as high as 85%. The fluorescence efficiency (ϕ_{FL}) of amino phthalic acid has been found to be 30%, and its efficiency of formation in the excited state during oxidation of luminol is estimated to be ca. 5%, from which a quantum yield for the process of ca. 1.5% can be calculated. Despite this low figure the emission can be strikingly bright.

One of the most efficient hydrazides yet synthesized is the benzoperylene compound (11) which has a chemiluminescence quantum yield of 7.3%. One can





compare this purely chemical process with the enzymically controlled oxidation occurring in the American firefly which is estimated to have a quantum yield of 88%!

The emission wavelength for a chemiluminescent oxidation depends on the energy difference between the first excited singlet state and ground state for the product molecule. In general, the more extensive the chromophore (indicating greater complexity in structure) the smaller is the energy difference giving rise to emission at longer wavelengths. Thus those synthetic chemiluminescent compounds which are structurally relatively simple (e.g., luminol) emit in the blue region of the spectrum.

Another factor which may have an effect on the chemiluminescence spectrum is the chemical environment. Depending on the solvent, pH, etc., the product molecule may exist in different forms and so cause different emissions. An example is the oxidation of the firefly luciferin analogues (12) in alkaline dimethyl sulphoxide. With low concentrations of alkali, red light (626nm) is produced while higher concentrations cause emission of yellow-green light (562nm). The emitting species for the two processes are the mono-anion (13) and dianion (14) respectively. Also, the quantum yield for the oxidation varies with the nature of the substituent X.

These examples have all been taken from a number of reviews on chemiluminescence to which the interested reader is referred (Rauhut 1969; White and Roswell 1970; McCapra 1970; Gunderman 1974).

How does all this relate to the ring soil? If a chemiluminescent oxidation had occurred at the soil surface one would expect the soil extracts to contain the fluorescent species responsible for the glow. The surface soil extracts do indeed exhibit a bluish-white fluorescence when viewed under 366nm light. This fluorescence was apparent in all the ring soil samples and was similar to that displayed on the chromatogram of the esterified mixture. A sample of control soil on extraction with water also gave a solution which fluoresced but this was considerably weaker. In an effort to quantify these observations a sample (1.0g) each of the surface ring soil (*1) and control surface soil were stirred vigorously and at the same rate for 45 min. with deoxygenated water (8.0ml). The mixtures were allowed to settle and the aqueous suspension removed and centrifuged. The control soil gave a very pale yellow solution (for absorption curve see Fig. 9, Curve c) while the ring soil solution was deeper yellow in color (Fig. 9, Curve b). The fluorescence spectrum

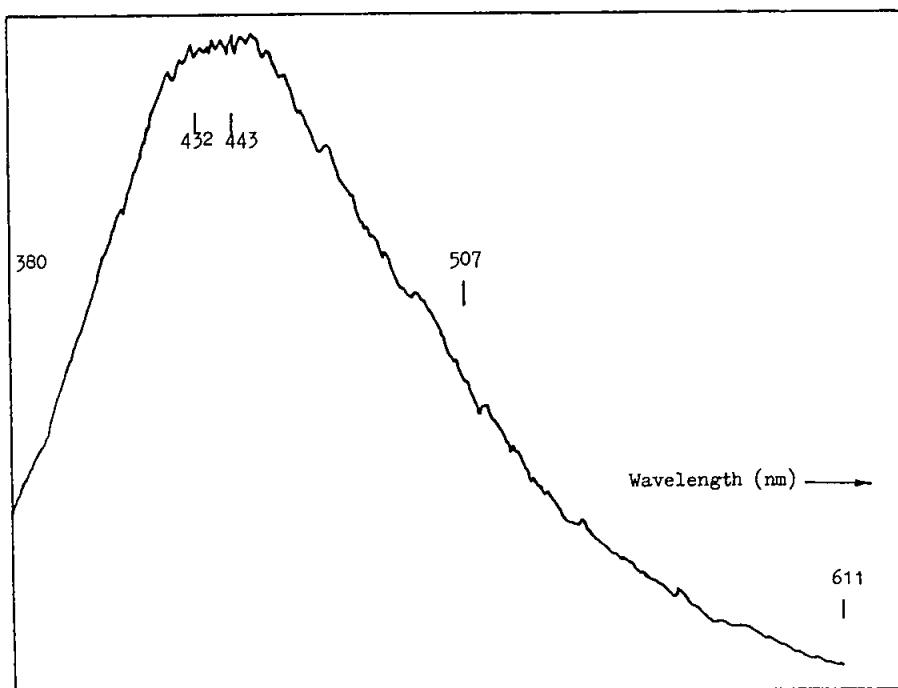


Fig. 14. Fluorescence spectrum of control soil sample.

of the undiluted control soil solution showed a maximum at ca. 443nm (λ (excitation) = 350nm) (Fig. 14). The ring soil solution had to be diluted by a factor of five for the spectrum to be recorded. This showed a similar broad emission but with a maximum at ca. 432nm (Fig. 15). The difference in intensity between the fluorescences of the ring and control surface samples can be seen to best effect if the latter is corrected for the dilution factor and superimposed on the former.

The result is shown in Fig. 16. The ring soil thus fluoresces more brightly than the control soil and this finding is therefore not inconsistent with the claim that the soil was glowing. An attempt was actually made to detect light emission directly from aqueous extracts of the ring soil using a scintillation counter but this was unsuccessful. This may however be attributed to the extensive decomposition/oxidation that has already occurred of the compound, and the fact that these decomposition products gave rise to the broad absorption curves recorded, which might actually hinder any emission from being registered. Colored impurities are known to weaken or quench the light emission from such reactions. A true demonstration of chemiluminescence may therefore only be possible with purified extracts of the soil compound. The same phenomenon may also explain why the

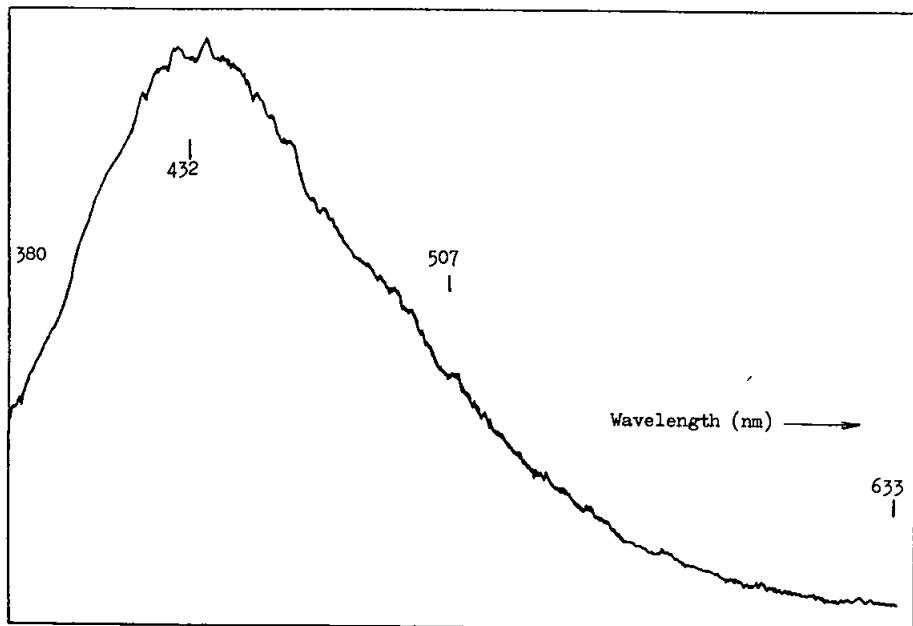


Fig. 15. Fluorescence spectrum of surface ring soil (*1).

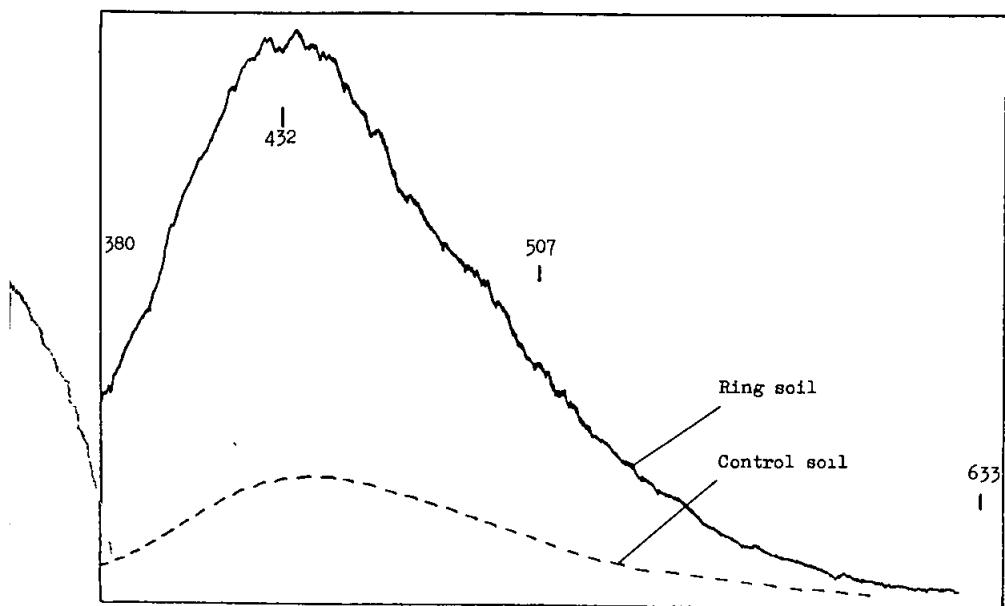


Fig. 16. Flourescence spectrum of ring soil (*1) vs. control soil.

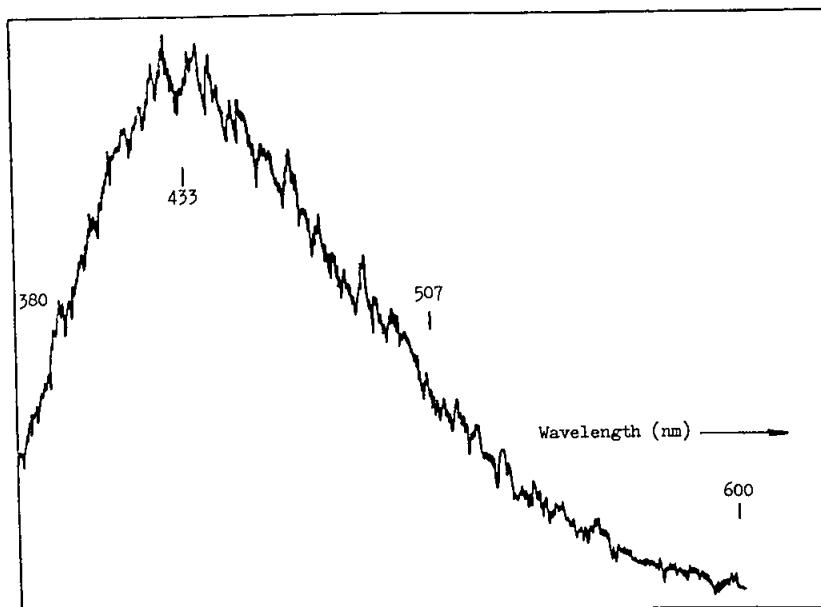


Fig. 17. Fluorescence spectrum of sub-surface ring soil (*9)

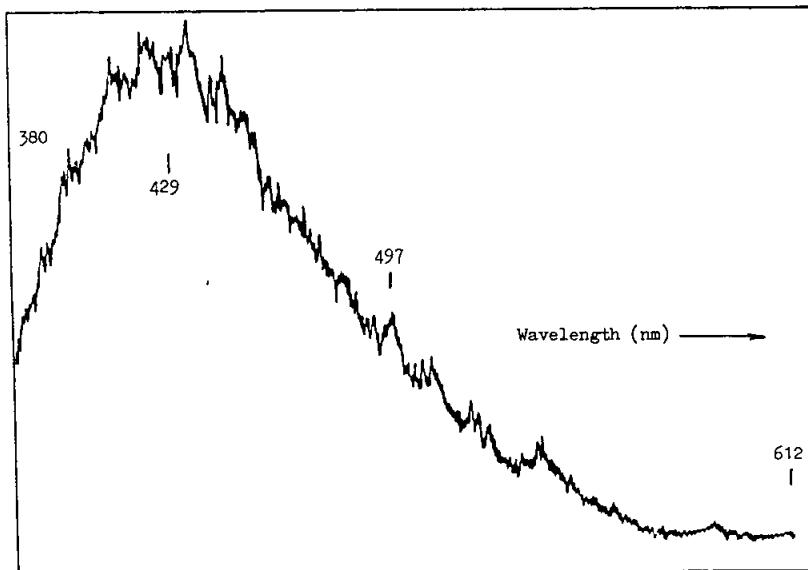


Fig 18. Fluorescence spectrum of region "F" (from chromatogram).

fluorescence of the ring soil extracts appeared suppressed when viewed under 366nm light and is apparently only five times greater than that of unaffected control soil. A much greater difference would have been expected under the circumstances.

The fact that the control soil has a similar fluorescence curve to that of the ring soil may at first seem surprising, but I believe it to be purely fortuitous. The reasons for this are as follows. To begin with the presence of trace organic compounds such as appear to be present in the control soil would not be unexpected. That one or more of these might have a chromophoric component leading to a fluorescence in the near UV-visible is likewise not surprising. Secondly, the control soil fluorescence maximum does actually differ from the surface ring maximum while the latter is identical to that of a sub-surface ring sample (*9, Fig. 17). This indicates homogeneity of the ring soil samples. Finally, and most important, a direct association between the ring soil fluorescences and the unstable ring compound which is not present in the control soil can be inferred from another fluorescence spectrum taken of the bands collectively appearing above the purified ester on the chromatogram (i.e. region F, Fig. 5a(ii)). This shows a fluorescence maximum at ca. 429nm (Fig. 18, solvent = spectroscopic acetonitrile). The small difference between this and the aqueous ring soil fluorescences (432-3nm) can be attributed to the different solvent used. Since, on oxidation, the purified ester on the chromatogram gave rise to a fluorescent product indistinguishable from this region and was therefore linked to it though decomposition not affecting fluorescence, this would indicate that the ring soil fluorescences were directly attributable to the unstable compound.

DISCUSSION

Although the data obtained from the soil analysis is not in any way complete, it does permit the critical examination of certain hypotheses which might be put forward to explain the ring. As I see it, three interpretations are possible.

(a) Hoax

The marked air-sensitivity of the compound and its unusual characteristics render it most unlikely that the ring was the result of a hoax. While this cannot be ruled out completely until the soil compound has been unambiguously identified, it remains for me, the least plausible of explanations.

(b) Fungal Ring

This explanation appears at first sight to be an attractive one in view of the dimensions and overall appearance of the ring. However, a number of discrepancies become apparent arising from the soil analysis. The chemical nature of the ring soil compound appears to be of a water soluble metal salt of an organic carboxylic acid. Can such salts be produced by fungi? A common characteristic of fungal rings is that they gradually spread outwards with time having started from a central point of

infection. This process would have been expected to continue after discovery of the ring. However, inspection of the ring over a period of six years showed no evidence of growth or even change in shape consistent with such an explanation. Examination of the ring soil did reveal the presence of small clumps of fungal mycelia but the distinct impression was gained that these had resulted due to the enriched organic content of the soil rather than vice-versa. There appeared to be far too much of the compound to have been biologically synthesized by the fungus present. Furthermore, the sample removed by the sheriff the day after the alleged event showed no evidence of fungal growth (Phillips 1979), suggesting that this arose only after a period of time had elapsed. As in the hoax interpretation a conclusive answer to this question will not be possible until the soil compound has been identified.

(c) Genuine Sighting

We come now to the third possible interpretation for the ring, however remote this may at first seem. The information obtained from the soil analysis can, in fact, be assembled together in a manner that leads to a scenario fitting exceedingly well with the sighting report. What follows is my own "best fit" hypothesis for the ring that takes into account the analysis data and what is generally known about the requirements for chemical light production. It is accepted that this hypothesis is likely to be one of several that may be proposed as an explanation. Nevertheless, I believe it has a degree of symmetry and simplicity that merits presentation, and would welcome any constructive feedback from interested readers regarding its feasibility. Alternative suggestions or ideas for tests that may be additionally carried out to determine the ring's cause would be equally welcome. We have in the ring soil a highly water-soluble organic compound which is potentially chemiluminescent. Although I was not able to demonstrate chemiluminescence I have suggested reasons as to why soil material sampled a month after the event might fail such a test. It should also be added that one of the eighteen laboratories originally involved in investigating the ring soil did apparently succeed in detecting chemiluminescence: "The results initially didn't look very encouraging. On closer examination I did find two curves which did look significant, and which suggest that further study might be fruitful. Most of the light emission appears to be chemiluminescence rather than thermoluminescence. I will try to discover a better way to examine them later" (Phillips 1981: 110). Apparently no further information was forthcoming.

The presence of a chemiluminescent compound in the soil in the shape of a ring and the alleged glowing of the object above it suggests that the two are related. I would propose that the soil compound was responsible for the surface light emission of the object. Based on this proposition a number of features of the sighting report now apparently become much clearer. The reported glow between the object and the ground during Ronald's observation would be attributable to the actual deposition of the compound from the object as an aqueous solution. As this met the air beneath, the compound would spontaneously oxidize to create the effect perceived by Ronald. The brightness of the glow suggests that the solution was deposited in a dispersed

state such as a spray might be. This would, in turn, lead to two other corroborating features of the ring. The first is the observed elongation of the ring towards the wind direction on the night in question. The second is the reported blistering of the ring soil by the witnesses on touching the soil. Questioned by Ted Phillips Jr., Durel Johnson stated, "...I never will forget the blisters on the ground, I couldn't describe it, little blisters on it, you know.... little holes, like hail had hit the ground." Similarly with Erma Johnson: "Oh it had a funny feeling.... it felt like it was kind of moist-like.... it was like little blisters like, no holes, bumps, like bumps, blisters..." (Phillips 1981). The moistness of the ring soil reported by Mrs. Johnson would, of course, be entirely consistent with a recent spraying of the soil and would tie in with the anesthetic effects felt by both witnesses.

A picture now begins to emerge as to what possibly happened that evening. The hovering object of presently unknown origin appears to have contained within its periphery an aqueous solution of an unstable compound whose sole function would be for light emission. Since oxygen is a requirement a mechanism for controlling the emission might come from regulating the absorption of air through its outer surface. The latter would have to be constructed from a transparent material permeable to oxygen (Fig. 19).

Some of the solution was deposited into the ground while the object positioned itself under a tree (to avoid observation from the air?). Both the surface emission of the object and that between it and the ground occurred simultaneously according to Ronald. This may suggest that oxygen absorption through the surface occurred in response to the solution being ejected from underneath. The rumbling noise heard at the same time "like an old washing machine that vibrates" might be associated with the manner in which the deposition occurred. Once enough of this essentially

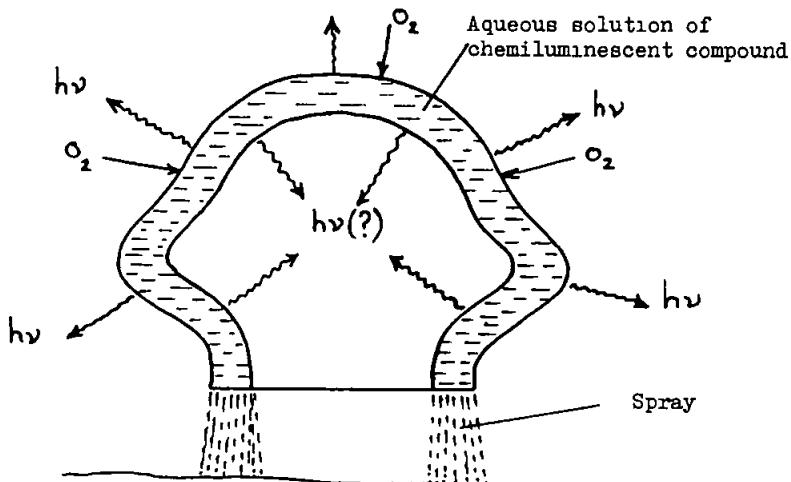


Fig. 19. Possible chemical emission from the UFO

expendable solution was ejected the object departed while Mr. and Mrs. Johnson approached the ring area. The freshly deposited material was still emitting light at the ring surface which both adults observed and described as "glowing." Mrs. Johnson rushed back to the house to fetch her camera. During this time the intensity of the light emission diminished leaving the oxidation product as a white layer on the surface of the ring. Here the apparent discrepancy in the witnesses' testimony in describing the ring as glowing on subsequent nights becomes understandable. The initial true surface emission was replaced by a reflective white material which could easily be seen on subsequent moonlit nights. The same could be said for the abortive photograph taken by Mrs. Johnson on her return to the ring. What needs to be considered here is the rate of oxidation (i.e., decolorization) occurring at the ring surface which must be judged as quite rapid according to the decrease in longer wavelength absorption characteristics described earlier for an aqueous extract of ring soil (Fig. 8, Curves a-b). The photograph's importance as corroborative evidence is that Mrs. Johnson was *sufficiently impressed* by that initial glowing for her to have rushed back for a camera.

Finally we come to the color of the alleged object. From the description given earlier on oxidative chemiluminescence the emission spectrum can be equated to the fluorescence spectrum of the oxidation product which in this case is a blue emission (432nm) in aqueous solution. Ronald initially described the object as multicolored with blue, red, and orange glows about its surface. Two possibilities come to mind for explaining this. The first is that the precise chemical environment within the object might have produced a different form of the product molecule resulting in emission of the red-orange light. An alternative, and more satisfying interpretation, is that while hovering there was a non-uniform absorption of oxygen about the objects' surface resulting in patchy emission of the blue light. This would have had the effect of illuminating non-emitting regions whose observed color would be concentration dependent and arise from the tail absorption of the 358nm band of the pure compound. That such colors might result was suggested from concentrating down the crude yellow acetone solution obtained from the silver salt esterification process. This invariably resulted in red gums being obtained. After departing the object was described by the family as receding into the distance with "the color of an arc welder." One supposes here that the arc-welding process referred to is the typical mild-steel one that can be found in operation in any garage workshop. Such welding processes commonly emit intense bluish-white light, and having seen one in operation myself the similarity between the emission and the ring soil fluorescence was very striking.

Now, is all this just sheer coincidence—the product of a fertile imagination? I for one would dearly like to know! The Catch-22 situation with the Delphos case is that unless this kind of corroborative evidence is presented and considered, thereby exposing oneself to considerable risk of derision, the tendency would be for it to be conveniently dismissed as a "probable fungal ring." Thus an event which might be of profound importance is lost through the sheer fear of ridicule engendered by those

sceptics "wishing to be presented evidence," but whose very actions and pontificating render it unlikely to ever happen.

There is a wealth of information still to be obtained from the ring soil which should provide a conclusive answer, not the least of which is the identity of the soil compound. My delay in publishing this report stemmed from the desire to have such conclusive data, and I was gratified to learn early on that certain U.S. soil laboratories including the "finest" in that country had expressed interest in my findings and wished to analyze the soil (Phillips 1979). These laboratories have, however, remained curiously silent to this day. Under these circumstances I've decided to present my results and hope that it stimulates further research into this most interesting case. If it can lead to a satisfactory conclusion one way or another, then it will have been justified.

NOTE: The theories and conclusions presented in this report are my own and are not associated with or endorsed by any institution or company.

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SCIENCE AND THE EXTRATERRESTRIAL HYPOTHESIS IN UFOLOGY

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ABSTRACT The literature relating to extraterrestrial intelligence (ETI) is surveyed to provide a basis for judging the extraterrestrial hypothesis to be an acceptable alternative concept for use in analyzing UFO phenomena. Other common issues facing ufology, ranging from the general argument about its scientificness to concerns about specific and puzzling characteristics of some reports are addressed.

INTRODUCTORY REMARKS AND THE GROWING INTEREST IN ETI

The idea that extraterrestrial intelligence could be behind some elements of the great mixture of experiences lumped together under the term "UFO phenomena" has rarely been seriously discussed by the scientific community (Sagan and Page 1972; Hynek 1972; Condon 1969). It is natural that this silence has been taken by other academics and the educated public as an indication that the position is not worth taking seriously. Given the tenor of our debates upon extraterrestrial intelligence *elsewhere* in the galaxy, this is a peculiar and certainly inappropriate state of affairs. This paper will attempt an overview of the status quo of facts and hypotheses which are most relevant to the subject of ETI and the odds on life elsewhere visiting nearby space. It will try to place ufology and its extraterrestrial hypothesis into this context.

Since the 1960s, a growing group of scientists has directed a significant amount of thought and writing to the question of ETI. They have debated the odds of the existence of such beings, the possibility of their travelling between the stars, and the means of contact between them and ourselves. Carl Sagan and Frank Drake have become the leading proponents of the belief that our galaxy is teeming with intelligent life and technologically advanced civilizations (MacGowan and Ordway 1966; Shklovskii and Sagan 1966; Sagan 1973; Drake 1976).

Despite the intelligence and prestige of many of the leaders of this optimistic view, the vision had an air of complexity yet lack of concreteness which made it easy to disregard as unfocused speculation. Many conservative scientists felt that the field of study was not a field at all. The major tool which has swung the atmosphere of opinion has been the "Drake Equation," constructed as a heuristic device by Frank

Drake, and which has served well in generating discussion about specific issues where data of some sorts are available.

The Drake Equation is a mathematically simple string of multiplicative factors, as follows:

$$N = R_* f_p n_e f_l f_i f_c L$$

The definitions of the factors are:

N : the number of currently extant hi-tech galactic civilizations;

R_* : the rate of galactic star formation;

f_p : the fraction of stars which have planets;

n_e : the number of earth-like planets per system;

f_l : the fraction of earths which will form life;

f_i : the fraction of ecologies which will evolve intelligences;

f_c : the fraction of ETI which will develop civilizations;

L : the mean lifetime of an advanced civilization.

This mathematical "outline" has allowed discussants to split up the complex problem into more discrete bits upon which current science may have a say. Tentative conclusions from the last decade's debates are sometimes surprising in their concreteness and always interesting in their scientific, sociological, and psychological insights.

When one peruses the ETI literature, the following major discussions stand out:

- a) the Drake Equation factors n_e , f_l , and L ;
- b) interstellar travel and "colonization waves";
- c) time scales and extremely advanced societies;
- d) ETI motivations and behaviors towards ourselves.

Taken as a piece, the literature tends toward the following vision: ETI occurs in great numbers of locations in our galaxy, and probably has the means and even the motivation for some degree of exploration and/or communication. A minority opinion holds that ETI is disinterested, paranoid, rare, or non-existent. What follows is a review of the major facts and points of issue in this dialogue.

It is intriguing when placed against the backdrop of the UFO phenomenon.

THE GALAXY AND THE STARS-THE ARE-SUNS

Everyone agrees that the universe is vast and old and loaded with galaxies and stars. Almost nothing in science is more obvious. And because of this, and the foundation stone faith of science in the "Uniformity of Nature," almost no intuition is stronger than that the universe is filled with life. There are many people for whom all that is required to settle that question is one good look at the night sky. The methods and attitudes of science are more slow afoot, however, yet perhaps more

sure. The factor in the Drake Equation which takes "one good look at the night sky" is R_* .

R_* , the rate of star formation in our galaxy, seems a straightforward matter, and in fact there is very little debate. If we have a reasonable understanding of starbirth, we can look to likely galactic locations and make a direct estimate. Or, if we have a reasonable history/timescale of the galaxy and a good starcount, we can divide stars by time and get another estimate. Both approaches have been taken and the results are given with an aura of confidence: our galaxy has averaged about 25 starbirths per year, and has perhaps slowed down to between 1 and 10 starbirths per year in its current mature stage of development.

This author prefers to alter the meaning of R_* to remove some of the confusion which enters later factor-analyses in the Drake Equation. Because some stars are never suitable for life-formation, and others become unsuitable as their life histories progress, it seems appropriate to settle the "star question" all at once at the beginning, and to eliminate unsuitable categories of stars now. This amounts to changing the concept R_* to R_\star , the rate of "sun-formation" in the galaxy. "Sun" is here defined in its limited sense as a star possessing the proper lifespan, metallicity, and force-environment (re: Luminosity; stability; companion stars) such that a life-advancing timescale and planet-formation were at least possible.

How many proper stars or suns are born in the galaxy per year? The question is less difficult than it may seem. In fact there is also little debate about it in the literature. The key assumptions are regarded as conservative:

- a) Life in advanced forms needs a long time to evolve, perhaps 2 to 6 billion years. Any proper star should have a lifetime at least that long;
- b) Life in advanced forms needs a planet to develop upon. Any proper star should have arisen from a molecular cloud rich in heavy elements so as to make planet formation at least possible;
- c) Life in any form needs a hospitable energy environment, not involving wild energy swings and radiation bursts. Any proper star should allow stable orbits for rotating planets and planets beyond radiation flare zones.

Assumption "a" eliminates all fast-and-hot burning blue giant stars of the so-called O, B, A, and upper-F classes. Assumption "b" eliminates all so-called first generation stars, stars arising early in the history of the galaxy from the only available elements of that era: hydrogen and helium. Forming as they did before the building and dispersal (by supernovas) of the heavy elements, there was no heavy material to initiate planetary cores, ergo no planets, no base upon which to evolve ecologies.

Assumption "c" eliminates several categories of stars. No stars close to the galactic center are candidates due to extreme violent energy environments throughout the nucleus area. In fact it has been postulated that the nucleus

occasionally erupts violently in extreme forms of radiation outbursts, the waves of which would scour at least the near-nuclear systems of life (Clarke 1981). Such outbursts could be violent enough to destroy ecologies galaxy-wide unless their systems were shielded in the galactic arms when the "killer wave" passed by. On the other hand such shock waves could be the impetus for new star-system condensation and be ultimately a "biogenic" wave instead. Either way, the concept of the Milky Way as an occasionally explosive Seyfert galaxy brings an unknown but potentially time-synchronizing element into the discussion about the level of advancement of galactic ecologies.

Other stars are eliminated by assumption "c" as well. No small cool red-dwarf stars of so-called M and Lower-K classes are proper suns. Their relatively dim heat sources require planets so close as to be at risk from solar flaring and to be gravitationally locked (one face always roasting while the other freezes). A third category, multiple star systems, might be eliminated due to the planetary formation and orbital destabilization problems caused by the gravitational dynamics between the close stars. Many multiple star systems have been shown to allow stable close-in planetary orbits, however, and the estimates of acceptable multistar systems vary from 10 to 90% (Ksanfomality 1986; Gillette 1984; Dole 1964; Harrington 1977).

When we take our "good look at the night sky" with these restrictions in mind, we find that our galaxy has about 250 billion stars. Eliminating the mass at the nucleus and the non-heavy-metaled star systems of the halo, we are left with about 100 billion disk stars. Getting rid of the few large bright stars and the many small dim ones, and about half of the remainder which exist in multiple systems (keeping the other 50% of the sun-like multiple partners), we are graced with a total of about 6 to 15 billion "proper stars," or suns.

These are the later generation stars of the lower F, G, and upper K classes, most single but some in permissible double-star arrangements, and all in the galactic disk. If these stars formed at a somewhat regular rate across galactic history, there would have been about one per year. Because we are interested in the formation rate far back into the past (5 billion years ago when our solar system was being born) so as to estimate civilizations of our level of advancement or greater, perhaps this would be the most accurate figure to accept. Our system formed about halfway into the current lifespan of the galaxy. The use of $R_{\star} = 1$ is, if anything, conservative, as there was certainly an initial period in galactic history when no high-metallicity stars formed whatever, and so the proper stars we count are probably more bunched toward our own time frame. But, $R_{\star} = 1$ is an acceptable starting point.. and 6 to 15 billion sun-like environments.

Such a beginning springboard of the imagination could lead a prominent scientist such as Philip Morrison of MIT to state "it is both timely and feasible to begin a serious search for extraterrestrial intelligence," while almost simultaneously declaring about ufology: "I have now, after a couple years of fairly systematic listening and reading, no sympathy left for the extraterrestrial hypothesis" (quoted in Ridpath 1975).

As this is on the surface of things an extremely puzzling dichotomy of positions, and yet one which seems to accurately reflect establishment scientific thinking, we must proceed on in search of some explanation.

PLANETS

Whereas there is almost no confusion about the vast numbers of proper stars, there is an apparent disagreement about planetary systems around them. This "debate" evaporates into a near uniformity of opinion once it is unraveled, however. Planet theorists and observational astronomers are arguing about whether clear evidence exists as yet for an extra-solar planetary system, leading some listeners, perhaps, to conclude that scientists think that planets are rare. Actually, astronomers are nearly universal in their belief that although planets are extremely difficult to detect with our current tools, they are commonplace, almost ubiquitous in the galactic disk. David Black, one of the most eminent planetary researchers, has stated that "Current planetary theories suggest that planets should be the rule rather than the exception" (Black 1987). In fact he asserts that if, once our technology improves, we cannot find large numbers of other planetary systems, we will have to revise our whole theory of star formation.

Confidence in numerous planetary systems is based upon more than pure theory. Several lines of research have indicated the overwhelming likelihood of such systems. They include:

- a) Since, in terms of the mechanism of formation, stars and planets differ from one another only in the amount of mass originally involved in their condensation, the formation of a *second* star orbiting about a primary is essentially no different than the formation of a big planet. Multiple stars are, therefore, planetary systems wherein at least one "planet" condensed from a lump of the cloud which was so large that it allowed nuclear fusion in the core, and the "planet" became self-luminous, a second star. We can see and count such "planetary systems" quite easily. About one half of our disk stars seem to be in such systems, and on that observation alone the phenomenon of a larger mass with smaller masses allied to it must be common. Unless there is something unforeseenly unique about stellar-sized objects which favors their formation while blocking that of slightly smaller planet-sized objects, planetary systems must be at least as common as double stars.
- b) Our own solar system provides several, not one, examples of such systems. Not only do we have our system at large, but also several mini-systems in the moons of the Jovian planets. Large rotating centers-of-mass seem to naturally acquire secondary bodies revolving about them. An intriguing added fact that the elemental composition

of our solar system almost precisely matches the composition of the galactic disk leads to a further intuition as to the normalcy of our situation. Given similar basic materials and forces, what took place here should have taken place elsewhere in the galaxy as standard practice. Leading planetologists John Lewis and Ronald Prinn say: "It is widely, but not universally, accepted that stars form from moderately dense nebulae comprising gases and dust with overall elemental abundances essentially identical to those in the Sun and in other normal (Main Sequence) hydrogen-burning stars" (Lewis and Prinn 1984).

- c) Several physical measurements have indicated the probable existence of planets around specific nearby stars. These measurements include gravitational tugs or wobbles caused by the pull of large unseeable objects on the stars, or infrared indications of circumstellar dust disks (expected accompaniments of planet-formation), or the slow rotational movements of stars (as if they had transferred some of their rotary motion to other bodies which now revolve about them) (Hobbs 1986; Hecht 1987; Gatewood 1987). Recent Doppler shift work by Campbell seems to confirm our positive expectations on the common occurrence of planets around nearby stars (Waltrop 1987).

The subsequent conclusions of almost all planetary theorists and astronomers are optimistic and eminently reasonable:

- 1. Planets are a natural ordinary feature of the cosmos;
- 2. Only our inadequate technology prevents us from directly settling the question.

To this position, the current author would add the following corollary, which is the view of almost everyone interested in ETI:

- 3. Probably *all* the sun-like stars in the galactic disk, as defined above, will have planetary systems. In the terms of the Drake Equation, the fraction of "suns" which are accompanied by planets is very close to unity ($f_p = 1$). There are perhaps 6 to 15 billion sun-like disk stars with associated planetary systems.

EARTHS

Earths are defined here as rocky terrestrial planets which stably orbit their suns for long periods of time at a distance which allows a proper temperature/radiation input so as to keep the solvent-of-life, water, in its liquid state.

The frequency of occurrence of these objects has been the point of a quite intense debate, which is not totally resolved. The core material initiating the debate was provided by Michael Hart, who felt that certain facts and models indicated that our Earth was a very lucky, exceptional place, perhaps even unique (Hart 1978, 1979). The majority of the "pessimistic" commentators, however, seem merely to repeat Hart's conclusions, or, at best, build slightly off his basic model. The motivations of

this school of thought seem to range from a need to explain the "absence" of ETI visiting our solar system (a position which not only assumes the absence of evidence in the UFO phenomenon, but also ignores the obvious fact that we have not explored most likely locations in our system for evidence of present and past ETI), to apparently emotional concerns about humanity's place and future role in the universe. The most vocal of this school are enthusiasts for either human interstellar migration via advanced spaceships or for the "anthropic principle" as seen as "proof" that the universe has been designed particularly to evolve human intelligence as some sort of climactic pinnacle (Bond and Martin 1980; Martin and Bond 1983; Tipler 1980, 1981). If we scrape away the irrelevancies, the argument, as regards "earths," is still based on essentially one thing: Michael Hart's conceptualization of what he called the "Continuously Habitable Zone" (CHZ) for life-bearing planets.

To critique this issue we should begin with the standard version of what planetary theorists think would go on in the formation of a system around a sun. When a sunlike star condenses by gravity out of a heavy molecular cloud (a hydrogen/helium cloud littered with substantial amounts of heavier elements), other grains and lumps and centers of attraction also form. Such meteoritic or cometary lumps aggregate and condense into the cores of planets surrounded by the hydrogen-rich gas of the cloud. The cloud condenses, spins, flattens until there is a disk-like system with the proto-sun at the center and the proto-planets revolving in a flattened plane about it. An early super-bright phase of star-formation then blows the primaevial light gas of the original cloud from the rocky cores of the planets-to-be which are nearest the star. The cores continue to condense and heat-up as heavy elements engage in radioactive decay. Solids melt and metals sink to the center, while a lighter crust forms and floats. The crust fractures and gases escape to reform an atmosphere (more hydrogen and helium, but, more importantly, carbon dioxide, water vapor, nitrogen, and a few other components). The solar wind has now abated, and this new atmosphere becomes the true primordial atmosphere of our earth-like planets (Torbett et al. 1982; Lewis and Prinn 1984).

Now the planet cools. This is the critical phase. Will the planet cool enough to rain out its vaporous oceans-to-be? If the planet is too near the sun, it will not. Instead, insufficient liquid water will be present to dissolve the carbon dioxide. CO₂ will pack the atmosphere as continued venting of gases occurs in the crust. This "greenhouse gas," CO₂, will trap more and more heat until the atmosphere and surface temperatures are at a level unsuited for even elementary life. Such was the fate of Venus. Thus, some promising planets will be too near their star.

They can also be too far. On such a planet the rains will be complete and the CO₂ will be dissolved. The processes leading to life may well begin. But as the primordial heat of the planet, insufficiently augmented by the incoming radiation of its star, continues to drop, liquid water freezes and glaciation begins. Such an early potential life-generating planet will die. This was probably the fate of Mars (Pollack et al. 1987). Even better placed life-generators may reach a later crisis caused by

atmosphere changes due to the biogenic release of massive quantities of oxygen. Such changes also result in less heat retention and potential irreversible glaciation. This last risk may be substantially modulated by the atmosphere controlling activities of the most primitive life forms in the oceans (the so-called GAIA force), however (Lovelock 1980; Margulis 1982).

Therefore, there is a life zone surrounding each sun-like star, a strip within which a planet must luckily form if it is to be a liquid-water earth. What are the odds that such a stroke of luck will occur? Hart and the school of minority opinion say that the chances are so slight that it is almost impossible to get a planet slotted into this narrow channel. Hart's models indicate that the galaxy is filled with Venuses and Mars lookalikes, and the Earth, the fabulous fluke, could be unique.

This position is now largely discarded or severely modified even by the pessimists. The reasons are several:

- a) The original atmospheric models have turned out to be overly simplistic and even directly inaccurate in some of what they did include (Schneider and Thompson 1980);
- b) The original models totally ignored the effect of life forms (microorganisms) in stabilizing atmospheres;
- c) More complex, and probably more accurate, modelling of early atmospheres predicts the probability of much wider liquid water zones, particularly on the "cold side" of the strip (Kasting et al. 1988);
- d) Our own Earth's history shows adaptation to widely differing solar energy inputs while maintaining remarkable temperature stability at the surface, a stability impossible if the pessimists' models were anywhere nearly correct (Schneider and Thompson 1980).

Newer models of atmospheres and temperatures point to life zones six or seven times wider than the Hart estimate. In our own solar system with the Earth at the reference distance of 1.0 astronomical unit, Hart's model pointed to a life zone between 0.95 and 1.01 AU. The new estimates increase the local life zone to between 0.86 and 1.25 (or greater) AU. Venus, for reference, is too hot at 0.72 AU. Mars is a bit too cold at 1.52 AU. With this wider zone what are the odds of an earthlike planet forming there? We do have some guides with which to estimate this answer.

When we look at the spacing of the planets in our own system, we are struck with an intuition of a patterned array. The great rocks seem to lie in lanes of movement at "respectful" distances from one another, gradually widening the gaps as we look further from the Sun. The Bode-Titius equation hints at a regularizing mathematical physics which rules their positions, as if primaevial forces of gravitational resonance, collisions, available mass, or whatever, determined the design. As our theories of system formation become better at approximating the realities we see in our own planets, we are able to alter the initial parameters (star size, cloud metallicity, angular

momentum) and watch as our computers form alternative planetary arrays in moments. The arrays stay essentially the same: small rocky terrestrials in close to the star, a transitional zone, big Jovian gas balls further out, all gradually widening their gaps to their next further neighbor. Our own system should not be widely deviant from the others of the galaxy.

If the arrangement of our terrestrial planets was precisely the rule for our galaxy, it would be an easy task to lay down a grid containing the "too hot," "habitable zone," and "too cold" regions, and overlay the spacing of our four terrestrials on it. We could then slide the planets up and down and make a quick estimate of how often one would happen to fall in the zone. For our system, a planet falls in the life zone over 90% of the time (about 92.4% actually). If our system was average in this sense, then the vast majority of extra-solar systems would have a terrestrial planet in the zone. Our own spacing would allow a few systems (about 8.5%) to have two earths in the zone. The fact that the two numbers add up to something very close to 100 is not mysterious; it simply follows from the fact that our life zone's width (0.39 AU) is about equal to our average planetary spacing in the terrestrial zone (0.38 AU). This is perhaps just a coincidence, and maybe not even that true, given our future refinements of life zone width estimates. But it may also be just another intuitive reason to believe that earths are a natural product of the cosmos.

Such reasoning and the perusal of many computer-generated arrays has led researchers to estimate varying numbers for the amount of earth-like worlds. Planets do form and almost always one falls in the ecozone, but other concerns (axis inclination, mass, orbital eccentricity, and period of rotation) moderate many of the guesses. Depending particularly on what the model used says about planetary mass, estimates made upon widened (non-Hart) life zones would place earthlike planets with all the proper characteristics in the zones between one-third and two-thirds of the time for stars very much like the sun. Because most of the suitable stars will be smaller, perhaps calling for generally smaller planets as well, the odds may drop. Stephen Dole drops them by a factor of ten (to 1 earth in every 200 stars in the disk); Martyn Fogg drops them by a factor of fifty (1 in 1,000 stars); and the "Hart school enthusiasts" of Bond and Martin drop them by a factor of five hundred (1 in 6,000 to 12,000 stars). Bond and Martin, and even Fogg, used modified Hart models and their estimates would seem too low. Dole seems more legitimate and perhaps his guess is best for the moment (see Fogg 1986ab, for comparisons). If there are more determinant factors ensuring proper mass contents for terrestrial planets near the life zones (and other orbital characteristics), then the following more optimistic estimate by Sebastian von Hoerner of the National Radio Astronomy Observatory could well be true:

"Some astronomical estimates show that probably about 2 percent of all stars have a planet fulfilling all known conditions needed to develop life similar to ours. If we are average, then on half of these planets

intelligence has developed earlier and farther, while the other half are barren or underdeveloped" (quoted in Ridpath 1975).

THE RIGHT STUFF IN THE RIGHT COMBINATIONS

Will the right sort of planet revolving at the right sort of distance around the right sort of star produce life? The answer seems to be: yes, if it has the right sort of material to work with. Everything to date points to the conclusion that the right materials are automatically there. It is a conclusion practically without debate.

We have a convincing concept for the general formation of the elements (everything heavier than hydrogen and helium). They are formed ubiquitously in the galaxy in the cores and the death throes of stars. The larger stars disperse these elements to space in similar ratios wherever they destroy themselves in their titanic explosions. We have measured the composition of the resultant molecular clouds by spectroscopy. It is a pleasing revelation to find that the composition of the galaxy at large matches that of our solar system. The crucial fact seems assured: the elemental stuff that allowed planets, Earth, and life in our solar system was, and is, available everywhere else in the disk, once the galaxy went through its initial element-building and dispersing stage (Fowler 1984; Wood and Chang 1985).

We find, then, that the proper elements exist ready for further formation, and these elementals are already combining to form useful molecules. Some of these molecules are chemically active organics which could lead to biology. Especially creative scientists have even imagined life itself being pieced together in space on dust grains or cometary particles (Hoyle and Wickramasinghe 1980). Whatever the truth of that, it is almost a certainty that the chemistry-of-space produces important biological molecules such as amino acids, the monomeric units of proteins (Ferris 1984; Greenberg 1984). Such substances and others of importance have been found in carbonaceous chondrite meteorites (Engel and Nagy 1985; Irvine 1987).

"Around 4 billion years ago, showers of comets and meteorites may have carried the basic compounds of life to Earth. During their encounters with Halley's Comet, the Vega and Giotto spacecraft detected many of the elements necessary for life. Analyses of meteorites and cometary dust that have fallen to Earth have shown us that these interplanetary objects are often rich in organic material."—William Irvine, University of Massachusetts.

These discoveries are important in that they add three almost certain pieces to our vision of the formative days of planetary systems and earthlike worlds:

- a) chemical reactions between the elements are so programmed that massive quantities of organic chemicals are made in space and exist in the heavy molecular clouds from which planetary systems form;

- b) much of this organic substance condenses into chondritic dust and lumps which form the basis for early planetary cores, contributing ready-made organic chemicals to the neonatal planets;
- c) even after planet formation, more lumps and dust (a carbonaceous meteoric rain) continue to fall into the new environments of the "earths," seeding them with potentially biogenic compounds.

This should be happening, and did happen in the past, all over the galaxy: billions of earths soaking up a prebiological rain. The right stuff is present at the right time. Is this enough to ensure life?

When our chemists began to simulate the primordial atmosphere and energy conditions, they were delighted to discover that these original circumstances spontaneously began creating the chemicals of life. For two decades the advances have been continual and positive (Calvin 1975; Dickerson 1978; Hartman et al. 1985). The primitive conditions not only produce the right biochemicals but they seem to do so in a non-random way. Chemistry's products are determined, and not just anything is possible. Certain atomic arrangements (for example, just certain amino acids or nucleic acid bases) are strongly favored over other arrangements in the same biochemical classes of compounds. There seems to be a limited set of biochemical units out of which earthlike life, and presumably all galactic life, can be constructed.

The linking together, or polymerization, of these small units into the vital structures of proteins or nucleic acids is currently impossible to imitate in our labs in short time frames. Nevertheless, three lines of reasoning lead us confidently to suspect that such polymerization occurs in orderly, rapid and probably uniform fashions on Earthlike worlds:

- a) Several polymerization mechanisms have been researched and a few seem to work. They involve high-energy sources (e.g., UV-radiation, lightning, volcanic heat) and high-surface-areas for encouraging catalysis (such as on the bubbles of sea-foam or in the matrices of clay materials). All of these conditions should be available galaxy-wide. Related work, such as the melting of pure biochemical monomers together, and analyzing the resultant products, again shows that not just anything is possible. These melts yield a surprisingly limited variety of polymers.
- b) A second line of reasoning involves attempts to calculate the most stable aggregation of molecules, the molecular alliance which would have the best chance to persist in primitive planetary environments. The winners seem to be those aggregates which ally proteins and nucleic acid polymers, the same crucial alliance which lies universally at the basis of Earth's life (Eigen et al 1981, Schuster 1984).

- c) The third line of reasoning is a deduction from a single observation. *Whatever* route the biochemicals took to form polymers and beyond to simple life, it was not difficult and it happened very rapidly. Life appeared in its simplest forms almost as soon as the Earth had cooled and settled enough to permit it (Groves et al. 1982; Ferris 1987; Gould 1978).

"On Earth, Life began almost as soon as the planet was cool enough to form seas. If this is typical, there may be as many as 10 billion Earth-like planets in our Milky Way alone. Today we contemplate a universe teeming with life, some of which may be intelligent."—Bernard Oliver, chief, NASA SETI program (1987).

More pieces of the prebiological puzzle continue to come to light. The discovery of microspheres, bilayered spherules which spontaneously form from certain proteins, is another important example. These structures behave much like cell membranes, creating differential electric charges on their surfaces and showing division behaviors uncannily like living units. Work with these microspheres and other simple pre-biological systems has inspired their discoverer, Sidney Fox (1984), to say: "The experiments suggest that evolution of molecular complexity was capable of occurring from simple beginnings very rapidly...in days or less" (quoted in Ridpath 1975).

Such optimisms about life formation abound in the cosmochemical and protobiological literature. The trend of the work to date supports such optimism. Given the right stuff in the right places (a situation which is the expected galactic norm), life will spontaneously and rapidly form. Returning to the Drake Equation, the factor " f_l " is "1"; life does it every time, and quickly. It is the basic biochemistry of the universe.

"The elements required for life—carbon, nitrogen, hydrogen, oxygen, phosphorus, and sulfur—originate in the formation of stars. Then they evolve into larger organic (carbon-based) molecules in space between the stars. In primitive planetary environments they combine into the building blocks of life, evolve into enzymes and the genetic code, organize into complex and stable cell-like structures, develop self-replication processes, and grow from simple to complex living things"—Donald DeVincenzi, NASA Ames Research Center (1987).

BIO-ADVANCE

The subsequent two factors in the Drake Equation, f_i and f_c , which concern themselves with the advance of life in complexity until it achieves intelligence and tool-using civilization, are usually considered together, and often as arbitrary

benchmarks on an inevitable progression of bio-abilities. Some years ago opinions concerning biological advance would have been largely intuitive. Now the answer is essentially certain. Life inevitably advances in complexity. This insight is the gift of one of the twentieth century's great discoverers, Ilya Prigogine (1980; Nicolis and Prigogine 1977).

Prigogine solved the paradox of an evolving life-force in a thermodynamically dissipating universe by demonstrating the following:

- a) If an entity is both unstable (i.e., malleable, alterable, flexible, changeable) and self-organizing (i.e. capable of structuring and maintaining itself),
- b) and such an entity is "perturbed" (i.e. challenged, altered, stressed, damaged) by some force,
- c) then that entity will re-organize itself taking the perturbing force into account. It will tend to maintain its previous talents, while adding to them something which contends with the offending perturbation. It will become "more clever" in existing.

Such great insights always have the characteristic of being "obvious," once someone finally sees them.

Life forms are quintessential "unstable, self-organizing systems." Unless the perturbations they face are so disruptive as to kill, they will advance, they will evolve. Although this "advance," through extinctions and difficult times, is not uniform, the arrow of time and the arrow of bioevolution generally are in step.

All across Earth's surface and Earth's time, perturbations and restructurings have been taking place. Uncounted numbers of biological trials and errors have offered themselves up for testing by the physical and living environment. The winners have survived. Some writers have suggested that we make very risky judgments about advanced life in the galaxy when we base our thoughts on the "single case" of life on Earth. "Planetary chauvinism," Carl Sagan and others call it. Surely life fills the galaxy in unthought variations. Perhaps. But, whereas we are probably at great risk to apply specific macroscopic appearances from Earth forms to other galactic life, concerning the fundamental patterns of life there may be little or no risk at all. The patterns of design and basic structures of our life forms are neither random nor inflexibly linked to some peculiar or singular set of conditions on this planet. Our life forms do not represent "one case." They are the consummation of the experiments of billions of years to find the tools of survival, the structures and behaviors that work. And we have already seen how much alike the earthlike physical environments throughout the galaxy should be.

Support for the idea of common patterns of advanced life comes from more than intuition. Concrete evidence lies all about us. It is called convergent evolution. In isolated ecologies we see life forms which not only occupy similar niches but have also developed similar sizes, shapes, functional structures, and even behaviors. Life,

through all the experiments-to-exist, finds and refinds the paths to success. Convergence of form and behavior implies that "getting it right" involves a limited number of structures and abilities for each task. Our world separately evolved two kinds of bats, animals so alike that we didn't recognize their evolutionary separateness until very recently (Pettigrew 1986). We have marsupials almost indistinguishable from placentals. We have mammals (dolphins) looking like fish (sharks) looking like reptiles (mosasaurs). We have two dozen independently developed kinds of eyes. Some things obviously work and some don't. Some are so valuable that they are bound to arise many times. As biologists begin to take more and more physics into account in their discipline, it will be seen that the forms and abilities of organisms can not be infinitely variable in their basic patterns. And the same physics will operate throughout the galaxy (Reif and Thomas 1986).

There is little or no debate in the ETI literature about the general end-product of the advance of life. Complexity, great size, even intelligence and civilization are viewed as inevitable stages along the flow of evolution.

"Parallel or convergent evolution is a common phenomenon. Hence we see on Earth repeated, but separate, appearance of advantageous characteristics such as multicellular organisms, eyes, or wings. Such evolutionary developments are therefore not unlikely in living systems elsewhere in space."—John Billingham, NASA Ames Research Center (1986).

Intelligence, or encephalization, has been shown to be part of the strong trend of complication in bio-development as well (Russell 1981), and our own advanced intelligence is viewed as the product of a sequence of events which could as well operate on other life forms of our world should we have failed.

"The view that mankind's development was a lucky chance, and the only one, may perhaps be not quite right. It may well be that nature was making a number of experiments in hominization....It's quite conceivable that, given the same starting conditions, and given enough time and evolutionary opportunity, it could happen more than once."—Philip Tobias, University of Witwatersrand (quoted in Ridpath 1975).

Reflecting on these matters, David Attenborough argued that, if man became extinct and vacated the top of the intelligence niche in Earth's ecologies, there exists "a modest unobtrusive creature somewhere that would develop into a new form and take our place."

Without quibbling about the exact details of similarity between ours and other planets' life forms, the consensus of the literature upon the Drake Equation factors f_i and f_c is: once life begins on a long-existing earthlike planet, the advance to intelligence and tool-using civilization is inevitable. f_i and f_c are "1."

"Something like the processes that on Earth led to man must have happened billions of other times in the history of the galaxy. There must be other starfolk...these non-human creatures of great learning have doubtlessly been sending explorative expeditions through interstellar space for countless millennia."—Carl Sagan, Cornell University.

SUMMARY OF THE DRAKE DEBATE

The ETI literature and related scientific research developments indicate good reasons for optimism about the amount of life, even intelligent life, which has arisen in the galaxy. As Frank Drake likes to put it: about one new intelligent civilization appears in the Milky Way a year. The question remains: how much of this intelligent life is still around? In the Drake Equation this refers to the final term, L, the mean lifetime of an advanced civilization. This current author has been quite impressed with the insights of modern science in casting light on all the other factors of the Drake equation. We know a great deal and we're advancing all the time. But this last factor, L, is almost a complete mystery. Sadly, all we can offer is a few tenuous guidelines.

Our galaxy was formed about 10 billion years ago, and it was at that time composed almost entirely of hydrogen and helium: no heavier elements, no heavy molecular clouds, no planets, no life. A significant but undetermined amount of time must have passed while the first generation stars built heavy elements in their cores, the larger stars exploded as supernovas, and these elements were dispersed to space. A great deal of this needed to happen before the "metallicity" of the galaxy would be high enough to allow formation of rocky terrestrial planets. For perhaps the first three billion years this process went on in the sterile galaxy. Perhaps seven billion years ago some solar systems outside the nucleus formed planets upon which the processes described earlier in this paper began. Two billion or so years later our own solar system was formed and we began the crawl up evolution's ladder.

If anything like the above picture was true, then some systems may have begun life-building a couple of billion years before our own. If so, and if Frank Drake's "one civilization per year" (essentially referring back to between one and ten sunlike stars per year) rule-of-thumb is anywhere near, then perhaps 2 billion civilizations have arisen before our own. The extremes are easily determined. If no civilization ever dies off (i.e., L=lifetime of galaxy), then all 2 billion or so are still "out there." If civilizations execute themselves immediately (i.e., L = 1), then there is only one. So one can be either form of extremist: pessimist or optimist. For the optimists one must admit that nearby supernovas or huge galactic nucleus events may scour some systems of life. For the pessimists one must admit that even our own erratic selves have managed to make it forty-plus years past the invention of nuclear weapons and are still staggering into the future. Intuition, all that we have on this issue, would seem to say: some make it, some don't. Even the most pessimistic

scenarios would seem to be forced to the conclusion that there are advanced civilizations out there somewhere. And a little more faith in intelligence produces this:

"There may be abundant groups of 10^5 to 10^6 worlds linked by a common colonial heritage. The radar and television announcement of an emerging technical society on Earth may induce a rapid response by nearby civilizations, thus newly motivated to *reach our system directly* rather than by diffusion [emphasis added]."—William Newman, UCLA, and Carl Sagan, Cornell (1981).

THE QUESTION OF APPEARANCE

As we have seen, knowledgeable commentators on ufology do not object to the extraterrestrial hypothesis on the basis that there are no extraterrestrials. Some apparently learned commentators do object that any visiting extraterrestrials will not look at all like us, and that the anthropomorphic similarity of the described "ufonauts" is alone enough to disqualify those reports as fantasy (Simpson 1964; Dobzhansky 1972). But, whereas a precise identity to *Homo sapiens* in UFO reports would be very difficult to explain in any independent evolution scenario, a similarity of basic patterns of structure may be far more likely than is generally recognized.

Commentators on advanced extraterrestrial life can agree on several foundation stone concepts. This life will be based upon the same primary elemental mix, the same solvent, the same basic chemistry, and polymers of amino acids and nucleic acids, and the energy systems utilizing phosphate molecules. The life forms will develop in relatively similar physical environments, including solar radiation, atmosphere contents, comparative planetary masses, temperature similarities.

Observing the apparently required sequence of evolutionary events, one must add to those similarities multicellularity, oxygen-use, sexual reproduction, large size, mobility, and, if a manipulative tool-user, evolved from a land-dwelling animal form. The large size (required of any intelligent evolved creature) demands several other crucial characteristics. The creature must be a large tube with an input end and an output end, a "head" and "tail." Nutritional intake, processing, absorption, and rejection proceeds most efficiently on a linear assembly line basis. Simple osmosis or other more passive mechanisms cannot deal with a large land-dwelling situation. For the same reason there must be a branching tubal circulatory system powered by a pump to reach all cells. The gas transport system should use the same tubes to avoid redundancy. The large mass will require a skeleton, which must be internal to allow mobility and flexibility. Such an animal will be bilaterally symmetrical along the line of the tube. The head end will concentrate the central nervous system and the major information-gathering senses, especially sight and sound. The brain must be seriously protected by some enclosure, and be directly and proximately attached to the major sensory organs.

These traits are recognized as required or determined by simple logic and physical laws. They are also recognized as being wholly dominant in all large land-dwellers and most large water-dwellers on Earth. This is not in any way an accident peculiar to our planet, but the result of limited sets of possible forms being tested and retested in the fires of universal physics, chemistry, and predator-prey relations. We are beginning to discover these limitations as biologists begin to apply physical principles to biological structures and systems. We are beginning to realize the power of certain structures or packages of characteristics as we learn more about evolution and its parallel or convergent production of similar traits. As is now commonly stated in reference to the two dozen or more independently evolved eye structures: some ideas are so important that they must independently reoccur many times. If ETI life forms did not have *very* similar visual organs situated close to the brain and above the food-intake orifice it would be an astonishing surprise.

The most convincing trend in biology which will indicate the likelihood of structural similarity of advanced life forms everywhere comes from the growing application of physical principles to biology. The field is still largely in infancy but the initial insights are impressive. Limitations on the variety possible in design turn out to be far more restrictive than most biologists suspected. The systems of fluid transport and filtration are based on only 5 and 6 design principles, respectively, no matter in which life form they appear. An interesting specific example of limited design is the "fibrewound cylinder," the commonest skeletal unit on the planet. This structure appears in plants, many lower animal forms, and some higher animal forms such as the swimming mammals. It allows lateral bending while resisting longitudinal compression, a useful combination of flexibility, mobility, and strength. A particular angle for winding the fibre around the cylinder is most efficient in balancing these traits. *This exact angle evolved several times*, let alone the separate evolution of the structure-at-large (LaBarbera 1986). Mathematics and physics will apply everywhere. So too will fibre-wound cylinders wound at "terrestrially-observed angles."

Even large biological categories, such as skeletons, have limited numbers of designs. A finite definable number of skeletal types has been described and related to earthly forms. Almost every type turns out to exist on Earth, most of them with many representatives (Reif and Thomas 1986). The message is this: physics, geometry, strength of materials limit the number of structural possibilities. Within these limits a dynamic ecology will inevitably fill each useful structural niche, usually many times over.

"We are not pretending that the outcome of evolution was fully determined or predictable, but we want to argue against the supposition that all things are possible. The same design elements show up again and again."—R.D.K. Thomas, Franklin and Marshall University.

A rather amazing case of structural determinism has been presented in the relationship between the capacity of mammalian bones to accept stress (before breaking) and the maximum likely stress those bones will be called upon to withstand in their owner's lifestyle. Investigators looked at small mammals such as rodents, at medium ones such as humans, at big ones such as elephants. All the ratios turned out to be *exactly the same*. Somehow the trials and errors of survival in nature have converged (Reif and Thomas 1986). Balancing all the differences of mass, activity, jumping, running, fighting, every type of mammalian bone became designed to achieve the same safety factor: they all can sustain three times the force they are likely to encounter in their lifestyles. This is another apparent example of a powerful order-giving trend governed by basic physical principles, which in this case makes all bony skeletal mammals astonishingly the same. Similar mathematical relationships exist for hydrostatic skeletal structures such as tentacles, tongues, and elephant trunks. Would these same principles apply elsewhere in the galaxy? It is difficult to conceive why not.

With these encouragements in mind let us address a prominent observable feature in advanced life forms which some scientists seem ready to doubt in an alien life form: the number of limbs, two arms, two legs. How really unlikely is it that advanced intelligent life forms evolving elsewhere will have this familiar morphology? A brief examination of our own development of this pattern may offer some grounds for more than a purely intuitive comment. Life here developed in the seas and moved to the land. Such a pattern must be the pattern elsewhere as well. Earthly life in the seas had a long period for advancement before the constitution of the atmosphere allowed movement to the land. Oceanic life was therefore quite advanced before any elaborate land life was possible. Given the time scale for such atmospheric change, this also should be the general pattern elsewhere. Many sorts of things can ultimately crawl up out of the sea to make a living on the land, but only the bony skeletal vertebrates were able to support the size, mobility, and potential for intelligence necessary to be a dominant advanced form. Again, and as we have seen, it is simple physics. It was therefore the fishes from which came the dominant land animals, amphibians, reptiles, birds, and mammals. But what determined the limbs? (Radinsky 1987).

Fish have fins, and it is from the fins that the four-limbed pattern of land-forms developed. Not all fins evolved. Fins along the midline of the animals simply disappeared in the land-forms. Why? They weren't useful anymore. They didn't help move the animal, and steering and stability in a dense fluid medium were no longer relevant. Fins distributed bilaterally in pairs were still useful. Primitive amphibious landlubbers could paddle and flop themselves forward using such fins in the way we might use oars in a rowboat. The more out-of-water time spent by the species, the more effective these fins needed to be as true walking structures. But why "four," and not six as in the insects, or eight as in the octopus, or any other number?

One might claim that the major reason for advanced land animals having four limbs was simply an accident of having evolved from fish having four bilaterally

paired fins, the pectoral and the pelvic. But fish were not always this way. The earliest forms had no fins. Later, all sorts of patterns appeared, including types with more than four bilaterally paired. Such experimentation by nature continued until the seas became dominated by the pectoral/pelvic pairs pattern. Accidental? Random chance? Almost no serious evolutionist utilizes such explanations today. This pattern became dominant because four was, on the average, more useful; it had a survival advantage. Can we understand what that advantage was?

Any such understandings, like all scientific queries which probe into the past, cannot be stated with certainty. We can, however, make some reasonable assessments based on our current knowledge. To start, since all advanced land life develops from bony vertebrate mobile ocean forms, and such forms are tubal and strongly "ended" in structure, these developed land forms will be tubal, ended, and bilaterally symmetric. The likely numbers of fins, which become primitive and evolved limbs, will be "paired": two, four, six, etc., rather than three, five, seven. For all of our advanced forms, the "answer" has been four. A large animal not yet possessed of a significant intelligence, might benefit on the basis of stability alone from more than two limbs. But the main reason is simply that having only two limbs nearly cripples the individual from doing more than one thing at the same time (e.g., standing while defending oneself). But then should not six or eight be better yet? There are two possible reasons why this may not be true, and as knowledge progresses, we'll probably know exactly why four is not only a useful number but a demanded one.

When an animal is large, every major structure of its body is a major genetic and energy expenditure, and a major site of risk. It is a place which can be hurt, infected, and cause death. Adding major structures to a species' form is a situation, therefore, which is carefully weighed by nature's struggle of survival. Six, eight, or multi-limbed organisms minimize their problems by strategies of dropping limbs or regrowing them, strategies inconceivable for a large advanced animal, given the energy and material commitment. Small creatures such as salamanders are probably at the limit of those which can afford such a luxury. Large land-dwellers need very strong supportive members. The problems of dispensing with strong joints and elaborative circulatory and nervous connections, and then restructuring it all later, make it obvious why such a large animal is "stuck with" the number of limbs it has in good times and in bad. More is, then, not necessarily better.

The main factor may be the nature of the brain. A big animal is, in a sense, in more than one place at the same time. Its brain must be able to independently and effectively control each of its limbs so as to avoid the most trouble and accomplish the most gain. The brain seems to be limited as to just how much of this it can do. Perhaps because of the stress of monitoring and station-keeping labor it does keeping track of bones, muscles, sense perceptions, and spatial relations in the limbs, or perhaps because of something even more fundamental about brain structure, the brain seems not to be able to properly focus upon 6 or 7 things at a time. Four things, four limbs, seem easily manageable. Five appendages as with prehensile tails or

elephant trunks, seem well-managed also. But six? At this point the brain seems to fail. The six-legged world of insects operates on a non-independent 3-up/3-down "tripod" walking pattern, most of the time. Very little independent control is possible for the minute brains of insects, and so the complex task of walking is simplified by a six-limbed robotic system with a stable tripod always on the ground. Instead of six, we might better consider their brain's task a task of controlling two sets of three during this apparently complex activity.

The octopus is quite intelligent and seems to do a good job controlling its eight limbs, thus contradicting our theory. But despite its abilities as one of the Earth's best problem-solvers, the burden of controlling eight limbs severely limits what it can do. Tentacle movement is extremely complex and most of it must always be left to unconscious robotic control rather than focused intentionality. So limiting is this burden, that despite its high intelligence no octopus can learn a maze (Reif and Thomas 1986) The explanation for this brain-dependent preference for lower numbers of limbs is not clear, but it seems to be clearly true, and points to why we have four limbs and not six or more. Does this mysterious "mathematics" of our earthly brains apply only to our world? Maybe, but considering that the preference has held so strongly across time and types of species on Earth, one wonders if something more powerful and universal may be going on.

The point of the foregoing is not to prove anything but to show that, at the least, the facile dismissal of morphologically similar aliens needs a lot more work than authoritarian guesswork. A reasonable case can be made that common macroscopic designs happened here and elsewhere on the basis of simple physics, geometry, strength of materials, and whatever yet unknown processes limit the controlling abilities of central nervous systems. Further arguments might be made for four or five digits on hands and feet, the arrangement of facial features, basic advanced reproduction designs, certain patterns of sensory intake and brain processing. But there are also many areas allowing much room for variation within these larger structural designs: mass, size, relative dimensions of structures, colors, textures, secondary sex characteristics, aging and immune system patterns, consciousness cycles, etc. *Exact* duplication of an Earth-human by an independently evolved ETI is indeed inconceivable by any biologist. Such a UFO report would cry out for a *non-independent* relationship between the reported "alien" and the reporter. The first place a researcher would look for such a relationship would be in the imagination of the reporter. But a report of a morphologically *similar* but non-identical alien seems a totally different matter. It is intriguing in fact to note, that on the facts and reasoning discussed above, these reports tend to agree with those things deemed likely to be universal, while differing in those things we know may differ (Bowen 1969; Webb 1976). Such an "inspired" dichotomy might well be seen as a positive aspect of the reports rather than a reason to dismiss them.

"If we ever succeed in communicating with conceptualizing beings in outer space, they won't be spheres, pyramids, cubes, or pancakes. In all

probability they will look an awful lot like us."—Robert Bieri, Antioch College (quoted in Ridpath 1975).

TRAVEL AND BEHAVIOR

Other objections to the study of UFOs and the possibility of extraterrestrial visitation of Earth have occasionally been used as absolutist rejections of the concept. Of these, the commonest may be "the inadequacy of space travel technology" and the so-called "Fermi Paradox." Both of these have been rigorously and negatively critiqued, if not wholly dispensed with. A few remarks on each will be sufficient here, and will serve to develop some views particularly germane to the UFO phenomenon.

A. Space travel. Writings concerned with ETI almost always admit that interstellar travel is not only possible within the limits of what we know and can project, but that advanced civilizations could probably manage it if they were so motivated. It should be enough for us to learn from history about the absurdity of assuming that we know what our absolute technological limits are. But if vague intuitions about history aren't enough, we need only to look at the present. Any serious perusal of the writings of Robert Forward, among others, should convince a reasonable person that even extensions of today's technologies could achieve travel to the nearest stars in travel times of twenty to one hundred years (Forward 1984, 1985). Nuclear fusion designs and lightsails seem most concrete, and anti-matter engines are much written about as well (Forward 1982; Bond 1977; Winterberg 1983). Certainly we and others will uncover other methods as our knowledge progresses.

B. The Fermi Paradox. This conviction that there is little (technologically) to prevent ETI from traveling to the stars has inspired a "back door" argument that ETI doesn't exist. It is an argument of a puzzling sort. It is dominated with peculiar assumptions, even prejudices, and it fails the test of logic (Freitas 1983ab, 1985). Nevertheless, it has received an apparently serious hearing in the literature, giving one some concern about presumptions and prejudices playing overly important roles in scientific discussion. Perhaps, though, this is better viewed as a healthy willingness to explore new concepts, however unlikely.

The argument is called the Fermi Paradox, after Enrico Fermi, who allegedly first, even casually, formulated it. The thinking goes, in its briefest form: a) if lots of ETI exists, and b) if they can travel from star-to-star in any reasonable time-frame, then c) because the galaxy is so old and many of these ETI's comparably old with it, the earliest ETIs will have had plenty of time to travel to all the stars many times over. But, since we have no evidence of them visiting here, one of our assumptions must be wrong. Conclusion: since the case for possible space travel technology seems secure, it can only be that no such ETI existed in the first place (Tipler 1980; Martin and Bond 1983).

— Most readers will have already spotted the flaws in this position, but, especially

for ufology's sake, it is useful to point out the major fallacies. The initial prejudice which is apparent to anyone even mildly conversant with the UFO phenomenon is the cavalier assumption that we have no evidence whatever which could be interpreted as ETI visiting this planet. Most serious UFO researchers would be willing to admit that we have no *conclusive* evidence for an extraterrestrial visitation, but to say that nothing in our recent, or even distant, history might be so interpreted bespeaks of a profound prejudice or ignorance of some kind. In a straightforward way, the whole thrust of the ETI literature should lead one to an intense research interest in the mysterious elements of the UFO phenomenon, as it is in these elements that the predictions of the Fermi Paradox reasoners would be borne out: that is, by every scientific line-of-reasoning, ETI should have visited our system. Any refusal of interest in investigating the UFO phenomenon, using an ETI concept as one working hypothesis, should surely be astonishing.

But, for the moment, we may set aside this problem and move on to a second, equally troublesome one. This second fallacy or unnecessary assumption was originally hidden between the lines, but is now openly discussed in the body of Fermi Paradox articles. The assumption begins with the view that, if ETI visited our solar system, the evidence of these visitations would be overt if not overwhelming. This rather "science-fiction" vision of ETI activity seems to pervade all thinking by the Paradox supporters. They seem to have grave difficulty imagining their ET-travelers as being anything other than colonizers.

When one speaks of "colonizing," giving "overt display," or "leaving obvious evidence about to be observed," we are talking about behavior, and we are talking about motivation primarily. Almost everyone addressing the topic admits that it is a dangerous game to guess what alien behavior and motivation would be, and *that* wisdom alone should place the "colonization hypothesis" into perspective as just one of many possible ideas. A certain sort of reflecting upon possible behavior and motivation is not dangerous however, if we display the proper attitude. Such reflection will be objective if we do not arbitrarily select just one motivation or behavior and then build absolutist conclusions out of that viewpoint. Some consciousness of alternatives is healthy surely.

C. Alternative ideas on motivations. We can imagine, probably, a nearly endless run of motivations for ETI meandering the stellar systems, but here we will briefly assess seven of the most discussed. We won't delude ourselves that we've covered the scope of possibilities, and we will hope that the discussion serves only to place ETI and the UFO phenomenon into useful alternative perspectives. The seven motivations are:

- 1) Colonization;
- 2) Material gain and power;
- 3) Threat at home;
- 4) Threat here,
- 5) Galactic kinship;
- 6) Religious conversion,

7) Curiosity and exploration.

The first of the list has already been mentioned as the motivation most debated (Hart 1975; Newman and Sagan 1981; Singer 1982; Fogg 1986ab). Although it is possible to envision “colonization waves” being driven by needs other than population growth, this is the factor which has dominated the discussion. This dominance is one more oddity in the discussion of ETI, as the choice of population pressure as a driver would seem to be one of the poorest choices we could focus upon.

If, as most feel, the moving of craft through interstellar space will involve a major resources and technology effort, then this is not something which will be done either casually or on a massive scale. A culture wishing for relief from population pressure will not find it by sending 300 citizens to the nearest star while 300 billion remain at home. Some other solution will be sought, like population control. Since on our own planet we have spotted the dangers of overpopulation even at this rudimentary stage of our development, and most of the advanced nations are vitally concerned with attaining stable population levels, it stretches credulity to think that advanced ETIs would not long ago have seen this problem and dealt with it. When you read the literature you get the intuition that the writers are using this particular motivation because it allows them to play “number games” (doubling times, filling times, expanding colonization waves) and so to make irrelevant “estimates” of how long it takes to saturate the galaxy based on a veneer of math and implausible assumptions. It reminds the reader of the drunk and the lightpole. The drunk spends all his time looking for his lost keys near the lightpole (despite the fact that he knows that he didn’t lose them there), because it’s the only place that he can see. The other more probable motivations do not lend themselves to the mathematical game, so they aren’t often discussed.

Let us stretch the population problem scenario to its limits by assuming that the ETIs have developed some absolutist position such as a “sacred priority of propagation,” and are, therefore, mindlessly spewing out citizens and somehow surviving all the crises this creates. Even this scenario does not demand colonization of all Earth-like planets or Sun-like systems in ways that require readily recognizable extraterrestrial presence. For instance, such a civilization would surely do the easier task of colonizing its own system thoroughly, prior to launching to the stars. In doing so, it would learn to live efficiently in space colonies or cities. Should such a civilization later decide to colonize other systems, eventually entering our own, such a colonizing group might easily choose to settle in space with the readily accessible solar energy and asteroidal minerals rather than at the bottom of a difficult gravity-well on our planet’s surface. They might not even want to risk immersion in our alien biosphere any more than necessary. In short, they could have been here many times, and could still be in the solar system, without ever setting up housekeeping on Earth. And, at our crude level of solar system exploration, it could be many years into the future before we suspect what has been going on nearby (Papagiannis 1978ab).

"Following life's innate tendency to expand into every available space, technological civilizations will inevitably colonize the entire galaxy establishing space habitats around all its well-behaved stars. The most reasonable place in our solar system to test this possibility is the asteroid belt, which is an ideal source of raw materials for space colonies."— Michael Papagiannis, University of Boston (1983).

The point of this speculation is that being absolutist about any of these scenarios makes no sense. Many possibilities are readily imaginable. The second scenario, material gain or power, is really an analog of the population problem. If it is truly difficult and expensive to travel star-to-star, then this possibility makes even less sense than the first. Mass freighting of some relatively abundant universal constituent seems inconceivable, and the specialty freighting of some rare commodity (genes? humans?) seems a poor return on the investment if this is some economic game. And could some power-mad tyrant want to go out and conquer star-systems just for the kick of it? Maybe. But if such existed, how many would be required to saturate the galaxy? And, each would have to spawn generations of power-mad successors to keep the "power wave" expanding for several millions of years. And, how does one hold "The Empire" together with the most isolated chains-of-command imaginable? Most tellingly, we *know* that this bizarre idea is irrelevant for us anyway. Despite Hollywood, no conquerors have arrived.

A third possibility is threat-at-home. This we can divide into two: a specific threat prejudicial to a small group, or a cosmic threat against the whole system. Hi-tech pilgrims in their fusion-powered Mayflowers may leave the stifling repression of home worlds for freer spaces, but this is a piecemeal effect not likely to give us the sustained continuity of expansion necessary to cover the stars of the galaxy. And our space-faring pilgrims may also be no more interested in planetary surfaces than our generic colonizers discussed earlier. A more certain occurrence would be the flight occasioned by rare but inevitable coincidences of an advanced civilization lying about an unstable sun. Would such a civilization meekly accept its end or make a heroic effort to reach safe havens in the stars? Of all the mass movement scenarios this seems the most necessary, although the cosmic coincidence needed to inspire it should be exceedingly rare. Such people would be a reluctant group of colonizers seeking a long-lived star, and stopping their expansions after one great wrenching jump. If one's own Sun did not happen to be the nearest stable neighbor to such a tragedy, there is little reason to expect visitors from such a cause (San 1981).

What if we comprise a threat of some sort? Such may seem another bit of human egocentrism, but perhaps not. We are constantly reminded that we are competitive, xenophobic, and violent. We are also curious, inventive, and risk-taking. We understand nuclear power and the rudiments of space flight. We have been very fast to accelerate into a high-technology lifestyle. How fast and how far will we go? Recently there has been talk of "relativistic rockets," devices which might approach

the speed of light. Science fiction? Maybe, but who knows when we will "turn over the right rock" and discover the key secret to make it a reality? Such a device would participate in the relativistic effects of objects moving at very high speeds, including tremendously increased mass. Relativistic rockets have been called "planet crackers," a doomsday weapon, the "gun" that makes all civilizations equal (Pelligrino 1986).

If you were living around a nearby star, you might well want to know what we, your neighbors, were like. Once you found out, you probably would want to keep track of us, while keeping a low profile yourself. Depending upon your level of interspecies ethics, you might be sitting "out there" right now, weighing our existence in the balance, hoping that we learn how to behave properly, or just paranoidly biding your time until you give up on us and pull the trigger. Many such paranoia scenarios might be possible, but they all call for one alien behavior: ultra-secrecy. The last thing a worried civilization wants to do is give itself away. A larger organization of civilizations might not feel as threatened, but still be concerned. In such a scenario more genuine concern over the survival of dangerous but fledgling species could be evidenced out of both self-interest and a sort of cosmic morality.

This leads us to a possibility of some galactic kinship group, oft termed the "Galactic Club" (Bracewell 1975). Such an alliance is pictured as an association of advanced civilizations who oversee the maturation struggles of species such as ours. This overseership could be driven by anything from total self-interest to total "moral duty-to-others." Within that spectrum can be imagined any amount of overtness, ranging from nearly-total quarantine (the so-called "leaky embargo" hypothesis) to blunt intervention. Once again the point is: this possibility allows an ETI presence in the Solar system in a variety of levels of covert activity with, however, some purposeful interaction or manipulation (Tough 1986).

Only certain extremes of alien motivation would *demand* overt display, and one such extreme relatable to the above is the sixth scenario: religious mission-work. It has been reasoned that if interstellar travel is as difficult as it seems it should be, then only extreme survival pressures or powerful "matters of the spirit" would motivate ETI to engage in the task. One of the things that has made blood run hot here on Earth has been religion and the desire to bring one's truth to others no matter what the sacrifice. Such an interstellar apostolate is quite conceivable, but it is difficult to conceive as other than an overt interactive mission. Since nothing like that is happening, we are left only with the unlikely situation of a "conversion by stealth" to an alien thought-system. Subtle persuasions through hidden means: an excruciatingly slow method for evangelization. This possibility, despite the claims of some UFO contactee groups, seems irrelevant to reality as we currently find it.

The last possibility is the one this author finds most congenial and most likely, hopefully on more than purely intuitive grounds. This seventh scenario is motivated by curiosity: the desire to explore. It is a motivation that strikes a responsive chord in most of us because it is the motivation which has primarily driven our own space

excursions. There is little question upon listening to our spacecraft designers and "high frontiersmen" that if (when) *Homo sapiens* goes to the stars it will be because we want to know what's out there. Curiosity, for us, is a powerful "matter of the spirit" which is one of those irrational urges which disregards economics, security, and other practical values and plunges forward anyway. Curiosity is the driving force of Discovery. As such it would be the same motivator that pushed any technological civilization forward in the development of its elaborate tools.

But is there any reason other than intuition and the history of our own species to give better validation to this idea? Perhaps there is. First let's try logic. Imagine any life form in any situation. To be able to behave appropriately (to survive), the life form must have some means of either altering its situation to move toward (become more involved with) something, or of altering its situation to move away (become less involved with) something, or of maintaining its present situation. We might call such abilities "exploration," "flight," or "stasis" in common language, or, if we were psychologists, "novelty seeking," "harm avoidance," and "reward dependence." For an intelligent species, the triggers for these instincts would be located in the brain and serve as the foundation of behavior. It has been said, loosely and without any depth of analysis, that alien intelligence would never share any behavioral similarities with our species. Yet logic, simple deductive reasoning, indicates that the foundation stones of behavior *must* be the same three universals, one of which is closely related to, if not identical with, curiosity (Cloninger 1988).

Now that the tools of science have advanced enough to let us probe the physics and chemistry of the brain, psychologists are moving beyond the limits of external observation of behavior and are beginning to apply the physical sciences to their discipline. Some of these researchers have already shown that a chemical trichotomy serves to facilitate the three foundation stone behavioral drivers just described. These researches delineate a "Behavioral Activating System," related to impulsive and exploratory activity, driven by the critical consciousness-alerting hormone, dopamine. A second "Behavioral Inhibiting System" relates to caution and shyness, and is driven by the major sleep-state controlling hormone, serotonin. The third "Behavioral Maintenance System" relates to dependency and conservatism, and is inversely driven by the main energizing hormone, nor-epinephrine (Cloninger 1988).

We have known that these three neurotransmitters (brain hormones) are vitally important to behavioral stability for some time. Imbalances in these chemicals have been accused of producing certain schizophrenias, depressions, hyperactivity, and neuroses. We are just now realizing how fundamental they are. They go to the roots of behavior, and one of them is the activator of what we see as a biological essential relatable to the ETI story: curiosity, exploration, novelty-seeking. Species everywhere should seek novelty, avoid harm, and conserve the good. If we were to assume the absence of a powerful curiosity and exploration instinct in ETI, we assume that they are missing one of the three required instincts of life forms. Would their level of curiosity be strong enough to take them into the stars and ultimately to

us? No one, of course, can say. But if they do come, they will come with curiosity and a sense of exploration among their other instincts.

UFOLOGY AND SCIENCE

The discussions of this paper have argued for the following:

- a) There are billions of proper suns, planetary systems, and life-bearing worlds in our galaxy.
- b) It is extremely probable that many of these systems evolved intelligent life-forms, some much earlier than our own.
- c) It is extremely probable that some of these civilizations still exist, and possible that all of them still do.
- d) It is extremely probable that some, if not all, of these life forms are based upon a physical structural format similar (though not precisely identical) to our own.
- e) It is extremely probable that some, if not all, of these advanced civilizations have the means, albeit with difficulty, of traversing interstellar space.
- f) And, it is essentially a certainty that these advanced life forms have several instincts/motivators/behaviors in common with *Homo sapiens*, one of which (curiosity) may be particularly germane to such journeys.

If there are scholars who do not agree with the arguments upon which the above conclusions are made, they should at least agree that each of the points is possible, not inconsistent or forbidden by scientific information as we know it. A perfectly congenial scientific working hypothesis might be: advanced extraterrestrial visitors have reached our solar system and may still be here. Though not identical, they have much in common biologically and psychologically with our species. They are partly motivated by curiosity and (scientific) exploration.

This is the classical "ET hypothesis" from ufology. When stated simply without the extensive previous discussion, it is often disregarded ad hoc or even derided. However, we have seen that it is an eminently defensible and scientifically respectable beginning hypothesis. We see its respectability in the growing interests of scientists in closely related research. There is the large upsurge in interest and programs for detecting ETI by radiotelescopy by the Drake-Sagan school of explorers. Other astronomers have suggested that an intensive exploration of the asteroid belt, looking for space colony-dwelling ETI, is in order (Papagiannis 1983). The famous "Face on Mars" and the "Pyramids of Elysium" are intriguing (DiPietro and Molenaar 1982). Some established scientists have mused that they are probably natural but just maybe not (Sagan 1980). Another researcher has scanned the Earth-Moon Lagrangian gravity-well points for possible alien artifacts (Freitas

1983ab; Valdes and Freitas 1983). No true scientist disapproves of these investigations as being outrageous, laughable, or beneath scientific dignity. Nearby stars, the asteroid belt, Mars, the Lagrangian points. how much closer does "respectable science" have to come to Earth itself before UFO research is accorded equal dignity?

"The supposition that we are alone in the solar system is based essentially on the assumption that if others were here they would have made contact with us, or at least we would have become aware of their existence. Neither of these assumptions, however, is true, though it is possible that some of the thousands of UFO sightings might deserve some further consideration."—Michael Papagiannis, University of Boston (1978a).

The ET hypothesis is an acceptable concept to be weighed alongside others in the analysis of UFO phenomena. UFO phenomena, like any other natural (physical, biological, psychological, etc.) events, are acceptable subject materials for research. The only question can be: is this research being pursued properly?

As J. Allen Hynek was fond of saying, the science of ufology is the analysis of UFO reports (and any attendant artifacts or other remnant features). As in any fledgling science, the primary duties of researchers have been data-gathering, data-clarification, and pattern-finding. These are the classical first steps of the scientific method and much of the effort in ufology has been directed properly to just this work. Many patterns were found (e.g., times of sightings, population density relationships, witness numbers and types)(Hynek 1972). Some patterned subsets were discovered. Some of these led to known but somewhat unsuspected phenomena (e.g., rocket booster re-entries). Some of these led to rare or possible new natural phenomena (Persinger and Lafrenière 1977). And some led to intriguing unsolved puzzles (e.g., motor vehicle engine interferences, Rodeghier 1981; and ground markings, Phillips 1981).

Beyond the pattern-finding step, scientific methodology requires testing or at least some form of pro-active observation to proceed further. However, as in many non-laboratory sciences, variables were difficult to control and replication was not possible, in general. Occasionally, as in photographic analysis work, labwork has been possible, and has often been pursued with high standards (Maccabee 1988). Scientific deductions based upon the available patterns are possible in part, but as the phenomenon is idiosyncratic regarding time of appearance (and as no one seems to be able to produce the phenomenon on demand) only the crudest predictions can be made and checked (see Persinger 1981 for a creative attempt at this).

On the other side of scientific methodology (researching causal agencies, rather than patterned behaviors or "laws of nature"), hypotheses for "why" the experiences are as they are obviously can and have been made. The ET hypothesis has been one of many hypotheses weighed in the pursuit of explanations. "Lying,"

"misperceptions," "confabulation," "psychiatric problems," and "unknown natural phenomena" are several of the other hypotheses always taken seriously by the better UFO researchers: a fact proven by the vast majority of UFO reports being explained by those same researchers. True control of variables is not possible in all of the hypotheses (especially the more extraordinary ones such as the ET hypothesis). As such, testing and scientific deduction aimed precisely at these possibilities has not yet been fertile. However, in any given case, all of the hypotheses are theoretically falsifiable, and, in each explained case, all but one has been falsified. And this is not a trivial point in a fledgling science wherein one case bears no necessary relationship to any other. Science must permit piecemeal testing of cases or no new field of science could begin.

Beyond this, some cases have resisted explanation by the array of "mundane" or "ordinary" hypotheses, and yet are consistent with extraordinary ones like the ET hypothesis. They do not *prove* the hypothesis, as "hard," unambiguous lab-testable evidence does not exist for any such case. Such cases, therefore, present the scientist with flaws. By definition, since they are unexplained, they lack sufficient data. They may lack data because the data was not able to be uncovered, or because the witness or the researcher were not clever enough to uncover it, or because the methodology used in the case has somehow clouded the data. Certainly all of these situations exist in the vast numbers of cases in the field. But the conclusion of a scientist should be this: if cases exist, flawed or not, which resist explanation in ordinary ways, and which are consistent with extraordinarily interesting alternatives, these reports constitute an area worthy of scientific research. Even if all of the reports and all of the past researches are flawed in some form or another, this statement still stands. Ufology is, after all, a difficult field to "surround," and thereby difficult to research. It is eminently interdisciplinary, and taxing for the narrowly trained investigator. Its complexity should be recognized and approached with proper humility by the skeptical commentator as well. But the difficulty of the field is not a reason to abandon the field or to oppose the reasonable work of those who choose to pursue it.

Comparing the scientific approach of J. Allen Hynek to the scientific charade of the so-called *Scientific Study of Unidentified Flying Objects* headed by Edward U. Condon (Hynek 1972; Condon 1969), an outstanding U.S. scientist wrote in *Science* (the journal of the American Association for the Advancement of Science):

"On balance, Hynek's defense of UFOs as a valid, if speculative, scientific topic is more credible than Condon's attempt to mock them out of existence. The fact that Hynek was granted no NASA or NSF support at all for study of UFO's can be regarded as a rather dismal symptom of the authoritarian structure of establishment science. It is also disappointing that *Science*, which has earned the respect of U.S. scientists and occasionally the enmity of U.S. bureaucrats by providing an independent forum for controversial views, failed to publish a responsible rebuttal to the Condon report, treating it instead as a news item. As a result, the

substantial criticisms raised by Hynek now were not adequately aired then. Thus, from this juror's point of view at least, Hynek has won a reprieve for UFO's with his many pages of provocative unexplained reports and his articulate challenge to his colleagues to tolerate the study of something they cannot understand."—Bruce C. Murray, California Institute of Technology (1972).

In the view of this current author, this situation has not appreciably changed. Hynek's articulate wisdom and his cases remain, the public attitude of official science has remained cool to hostile, and Dr. Murray's enlightened tolerance has not been followed by his peers.

SUMMARY

There have been many goals of this paper and many issues treated. The following general positions have been defended:

- a) The UFO phenomenon is a proper field of scientific study.
- b) Some UFO researchers have proceeded with the elementary first steps of the scientific method in a proper fashion.
- c) Some UFO researchers have pursued the more advanced steps of the scientific method properly, albeit with the difficulty expected in a complex, uncontrollable, *de novo* science.
- d) The ET hypothesis is a proper alternative hypothesis for use in evaluating UFO reports.
- e) Reasonable scenarios within the ET hypothesis are consistent with debated and puzzling characteristics of many unexplained UFO reports.

And, concerning the possibility that an advanced ETI civilization could be visiting our planet, it is easy to conceive why the following specific characteristics of the UFO phenomenon would follow:

- f) UFO experiences would not be able to be controlled or easily predicted by Earth scientists
- g) UFO experiences might be deliberately made confusing whenever total secrecy was not possible or desired.
- h) "Good" (related to ETI) UFO cases would be relatively rare, buried within a multitude of mundane experiences.
- i) Some UFO experiences might appear to be deliberately "staged" to accomplish some specific purpose.
- j) "Magical" or "impossible" characteristics of some experiences might rather be manifestations of ultra-advanced technology accord-

ing to the "Clarke Law" of the impact of such technology on relative primitives.

- k) Occasional awarenesses or subtle programmed information might be transferred, but never concrete physical evidence.

These last comments are highlighted simply as a reminder that the rejection of some reports, or the whole study area, on the basis of "absurd or confusing content" is another inappropriate attitude in this ETI context. Such a list as above may be a bit depressing for the scientist who would much rather be the controller than part of the controlled, but it is a possibility well within our concept of the universe and what could be going on around us.

"I cannot presume to describe, however, what UFOs are, because I don't know; but I can establish beyond reasonable doubt that they are not all misperceptions or hoaxes."—J. Allen Hynek (1972).

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Issues Forum: UFO Abductions

To the Readers:

The following cluster of contributions constitutes the first of the "Issues Forums" which we hope will be a regular feature of the journal. The first forum is on abductions research, due to the topic's critical timeliness. We have recruited seven knowledgeable commentators of varying views to reflect upon the state of abductions research and to give counsel. This was done in the following manner: the editor sent a generic statement to all forum members to which they responded. All responses were photocopied and sent to all responders, who then commented on their fellow colleagues' views. You will find both the initial commentaries and the second responses in the forum that follows.

The material is presented in the following order: a "Round One" section incorporating two longer submissions by Dr. Robert Baker and Dr. Peter Rojcewicz, who articulate positions different from the "typical" ETI-abductions hypothesis current in ufology, and the five ordinary-length submissions of our other colleagues. Then all seven of our "Round Two" responses are printed back-to-back. Following a brief wrap-up comment by the editor, we have appended Dr. Richard Haines' suggestions for hypnotic interviewing protocol.

The contributors to the forum are the following: Dr. Stuart Appelle, Department of Psychology of the State University of New York at Brockport; Dr. Robert A. Baker, Department of Psychology of the University of Kentucky; Dr. Donald C. Donderi, Department of Psychology of McGill University; Mr. Hilary Evans of London, one of our most experienced UFO researchers; Dr. Jean Mundy of New York, a practicing psychologist working with well-known abductions researcher Budd Hopkins; Dr. Peter Rojcewicz of the Department of Liberal Arts at the Juilliard School; and the editor, Dr. Michael D. Swords of the Department of General Studies Science of Western Michigan University.—*MDS*.

Round One

Q: ARE UFO ABDUCTION EXPERIENCES FOR REAL?

A: NO, NO, A THOUSAND TIMES NO!

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ABSTRACT Despite many and varied claims, today there is no concrete evidence establishing beyond a reasonable doubt that any of the many UFO abduction claims is true. There is no concrete evidence that alien spaceships have invaded our skies, have landed on earth, and have established any kind of contact with homo sapiens. Skeptics are convinced that all abduction experiences are fantasies and fabrications, partly conscious and partly unconscious. Hallucinations, personality disorders, and the boundary-deficit hypothesis can and do account for most if not all of these reports of contact and abduction. If the abduction experiences are real they should be reported to the FBI. If the aliens are real they are incompetent and do not constitute a threat to humanity.

In the Steve Martin film *Roxanne* there is a sequence in which Martin encounters a group of elderly ladies on their way home. Jokingly, he informs them that he has just been kidnapped by a UFO and the aliens are still parked down the street. The ladies are, at first, quite skeptical. Then Martin tells them the aliens rejected him because they really wanted to have sex with a group of elderly women. The women look at each other and say, "Aw hell, let's check it out!" and tear off down the street. In the skeptic's opinion all of the so-called alien abductions are similarly motivated by deep-seated human needs that are frustrated and unsatisfied by modern life. As a result of these frustrations people meet their needs as best they can through visions, dreams, and fantasies. The abductors, the skeptics contend, are not aliens from distant planets or interdimensional space but are the imaginary creations of their all-too-human, would-be abductees.

Despite the claims of some 300-odd individual "victims" scattered over the surface of the planet, today we have no concrete evidence establishing beyond a reasonable doubt that any of these abduction claims is true. The raw number of claims that have been and are currently being made are, by themselves, insufficient evidence. Saying it doesn't make it so. During the Middle Ages everyone—millions—knew the earth was flat and said so. Although strange and unusual things have been seen in the skies of our planet since the beginning of man (Story 1981), again we have not a single shred of tangible evidence that unquestionably establishes the fact that what is seen are alien spaceships. There is simply no evidence that aliens have invaded our skies, have landed on earth, and have established any kind of

contact with homo sapiens. Photographs, drawings, eyewitness-testimony, rings on the bare earth or in the grass, and scratches and scars upon the human body, while of some interest, are each and every one subject to possible forgery and distortion. Each and every one of these manifestations can be the result of human intervention rather than being due exclusively to extraterrestrial action.

Despite the hundreds of claims of alien contact and abduction, the thousands of books and articles speculating about the source of UFOs, and the millions of sightings of unknown things in our skies, to date no one on earth has either in or on hand any material artifact of a tangible nature that *unquestionably* proves alien spaceships exist, or that alien forms of life exist, or that any human being living or dead has ever been aboard an alien spaceship. Until such completely irrefutable, hard evidence is on hand and until such evidence has been publicly presented and authenticated by reputable scientists, skeptics will remain unconvinced of any and all reports of aliens, alien spaceships, and alien abductions. If such abductions have occurred, why, in the name of common sense, have not these felonies been reported to that powerful human agency best equipped to deal with such emergencies—The Federal Bureau of Investigation—as Philip J. Klass has recommended (Klass 1988). If any of the alleged abductees had been kidnapped by other human beings this would be their immediate normal response. What is so different about the so-called aliens? Is it that the abductees have no faith in the Federal Government? Or is it that they are afraid of not being able to prove that any felony was committed?

There are many and sundry reasons for the skeptic's reluctance to believe in the validity of such claims, no matter how detailed, how dramatically embellished, or how sincerely emotive the claimants become. Most skeptics are convinced that the abduction experience is a fantasy and a fabrication called up—with or without full awareness—from the subconscious. Elsewhere, this particular skeptic has discussed at length the psychological characteristics of fantasy-prone personalities, the ease with which hypnotized individuals can be led to confabulate and to fall prey to suggestions from the hypnotist, the ease with which our memories can be distorted, how the "missing time" experience can delude us, the prevailing UFO folklore and the myth of salvation from the skies, the unreliability of eyewitness testimony and ordinary human perception, as well as other aspects of anomalistic psychology that can easily persuade the unwary that something most extraordinary has happened (Baker 1987). Many or most of these things are at the bottom of or they at least play a significant role in all so-called "close encounters of the third or fourth kind."

Another possible explanation for some of these alleged encounters is that many of the encounters are "waking dreams," i.e., hallucinations. The fact that many perfectly normal, mentally healthy, intelligent and clear-headed individuals occasionally hallucinate—even though they are neither drinking nor on drugs—is not commonly known. Edmund Parish in 1894, following up work undertaken earlier by Edmund Gurney, published a study called *Nature and Frequency of the Occurrence of Hallucinations in the Sane*, which was part of a larger study called *The International Census of Waking Hallucinations* (Parish 1897). Data for this

census was gathered in America by no less an investigator than William James. In France the data was collected by Louis Marillier, in England by the Society for Psychical Research, and in Germany by Parish and Von Schrenck-Notzing. One of the questions put to all persons included in the study was:

"Have you ever, when believing yourself to be completely awake, had a vivid impression of seeing or being touched by a living being or inanimate object, or of hearing a voice; which impression, so far as you could discover, was not due to any external physical cause?"

In response to this question, 27,329 answers in all were received, of which 24,058 were negative and 3,271 (or 11.96%) affirmative; that is to say 3,271 persons stated that they had experienced hallucinations. Although a certain proportion of these cases might be explained away, as due to mistaken identity for instance, or in the example of auditory phenomena, to the real banging of a door or the creaking of furniture and such, when we consider the high percentage of results and the careful investigation of a number of the individual cases—especially among the English collection—it is impossible to doubt that the frequent occurrence of so-called "waking hallucinations" is proved. It is also reasonable to assume that some of the reports from our population of alien abductees might fall into this category. If so, these abductees would not be in bad company. Among the great and distinguished who have reported waking hallucinations we find Socrates, Thomas Hobbes, Savonarola, Luther, Loyola, Oliver Cromwell, Theodoric the Great, Raphael, Montagna, Benvenuto Cellini, Sir Walter Scott, Tasso, and Schumann. These notables discussed their waking visions at length in their work. That such waking dreams are not reported more frequently today is perhaps due to the fact that in a psychological and psychiatric age to report seeing things that are not there too often is the quickest possible way to get tossed into the loony bin. Among the luminaries listed above the most frequently reported waking dream was that of hearing the voices of people the recipient knew were not there or seeing a vision of the bodies of dead friends or of friends who were far away in another country. It is, the skeptic would argue, not too far fetched to assume true UFO believers would see alien spaceships and alien spacemen in lieu of the dead or distant.

In addition to the ever-present possibility of waking hallucinations there are other types of psychological aberrations that could also play an etiological role in the abduction fantasy. Martin Kottmeyer has suggested two intriguing possibilities: The Boundary Deficit Hypothesis (Kottmeyer 1988a) and Ufology Considered As An Evolving System of Paranoia (Kottmeyer 1988b). Both of these explanations are worthy of serious consideration. In the first of these two brilliant papers Kottmeyer shows how Hartmann's boundary deficit theory of the nightmare (Hartmann 1984) also characterizes the personalities of many alien abductees. For biochemical and genetic reasons some individuals do not form strong separations (boundaries) between what is self and what is not-self, ego and id, fantasy and reality, and other

experiential categories. If the boundaries are too thin, psychopathologies like schizophrenia develop; if they become too rigid and impermeable, neuroses develop. People who suffer from nightmares have very thin boundaries and they can experience their inner life in a very direct fashion, they can become lost in daydreaming quite easily, and, in Kottmeyer's words, "even experience daymares." From what is currently known about many of the abductees, although they were found to be normal they were also found to have "rich inner lives, a relatively weak sense of identity, particularly sexual identities; vulnerability; and an alertness characteristic of both perceptual sophistication and interpersonal caution. All four of these traits are characteristic of boundary-deficit minds." Kottmeyer also shows how the boundary-deficit proposition can resolve the paradox of how people without significant psychopathology can entertain the belief that they are victims of alien abduction. In his words:

"The abduction myth has opportunistic features wherein boundary-deficit traits act to justify id material crossing ego boundaries being considered real. Whether the crossing is prompted by leaky sleep/wake boundaries or the opening of the boundary for role-taking behavior, the narrative material itself is no more evidence of pathology than a symphony arising from a composer's mind can be called a product of pathology...If you have a forgotten scar and a ufologist unleashes a creative id to pull together a dramatic nightmare, is it illogical to wonder if the myth is right and the nightmare explains the scar? In the context of a belief in extraterrestrials, it is not."

In his second article Kottmeyer shows that a belief in UFOs follows in step-by-step fashion the clinical profile of developing paranoia: beginning with social setbacks and humiliations, through irrational revelations, somatic delusions and projection to theories of conspiracy and delusions of grandeur and world-saving missions. Kottmeyer also stresses that apart from the hoaxes, the physical evidence for the reality of the UFOs is as trivial as the things used to support the more personal delusions of other paranoid: "Lost rings, dimming lights, mechanical failures, medical ailments, metal fragments, overinterpreted photographs, quotes out of context, etc.... UFOs never melt cars into radioactive puddles, snatch up football stadiums, invert amino acid handedness in victims, or leave behind slabs of multi-quark strong force adaptors when they crash. In short, there is nothing that requires an extramundane explanation."

At the moment the weight of the evidence supports a purely psychological explanation and points to a personality aberration as the source of the abduction phenomenon. In other times and climes where religion or superstition was the dominant social force, these abductees would be either "taken up into heaven by a host of angels" or be "taken away by the little folk—the elves and fairies" or they would report having encountered the Virgin Mary. There is no essential difference

in the behavior then or now; there is only a difference in the themata, i.e., the dominant social myth or metaphor.

Another reason for the skeptic's incredulous stance rests upon the purported nature of the aliens themselves—particularly with their behavior and their mental makeup—as revealed through their contacts and communications with their abductees. If such aliens as these exist, humanity has absolutely nothing to fear from such mentally incompetent and moronic bunglers. Irresistible and all-powerful? Hardly! If they are vastly superior to humans why do they sneak around under cover of darkness and contact only a few isolated individuals in lonely places and avoid exposing themselves in broad daylight at, say, the Super Bowl or the World Series in front of millions? Moreover, if they are truly interested in collecting and studying the human race, their quixotic, unsystematic sampling procedures are the sloppiest and most inept in the history of the galaxy. As for carrying out breeding experiments, again, their lack of scientific acumen would embarrass an eight-year old. Further, if they were sincerely concerned with helping humanity and promoting intergalactic harmony, why do they not contact the true leaders and shakers of human society instead of the powerless and the obscure? Whatever happened to "Take Me To Your Leader?" Haven't they heard of Public Relations? Sociology? Psychology? Winning Friends And Influencing People? As for communication, their means and media are so poor they can talk only to people who are dazed, in a trance, or asleep. Or, as Dr. Fred Bell reports, while the poor human is having an out-of-the-body experience (Steiger 1988). Similarly, while making love this too has to be carried out while most human participants are paralyzed or drugged unconscious or in the OOOBE state—a totally unsatisfactory substitute for fleshly contact.

Of even greater significance is the aliens' total lack of understanding with regard to modern human society, the workings of propaganda and attitude change and the principles of psychological warfare. They have not a smidgen of an idea as to how to sway the masses or how to deal with any of these "backward" or "inferior" humans. Despite the fact that they have, supposedly, been around our planet for a good quarter of a century they seem to have learned absolutely nothing from the experience. And *the ability to profit from past experience* is a good working definition of intelligence! Their tools for studying biological specimens are both antiquated and clumsy. Even inferior humans know how to find out what is inside an organism without poking it full of holes or sticking probes up the organism's nose. Reports of the alien's physical appearance and structure vary, but with the exception of the fair golden humanoids from the Pleiades, most depict a frail, slow-moving and thinking, weak-eyed creature similar to a number of arboreal simians in our tropical jungles. With no apparent weapons, a few crude tools, and a total lack of any sophisticated scientific methods and techniques (except for an alleged blue lift-beam or two) how can they possibly threaten the human race? To waylay even a few stray earthlings they are forced to sneak around in the dark, stop a lonely car on an isolated road, and brainwash its occupants. Even here they are amazingly incompetent; with only a little hypnosis the human mental fog is gone! It is very clear why they have

not appeared in force; they are frightened to death of our mental and physical superiority! No wonder they wish to interbreed. All they seem to have going for them is the ability to flit about rapidly in our atmosphere, play hide-and-seek with our aircraft, and detain a few unwary citizens. The skeptic finds it most intriguing that during their entire time on our earth few of them have shown anything faintly resembling a frontal attack or an aggressive, war-like act. When Officer Zamora chanced upon a crew in the Sonoran desert they fled in terror; when Father Gill hailed them in New Guinea they returned his friendly wave but refused to land (Story 1981). One can draw only one conclusion: they are more afraid of us than we are of them. If they are hostile they seem to have few, if any, effective weapons. If they come only in peace, they are totally unprepared and painfully ignorant of how to go about this in an effective and efficient manner. In fact, unless they clean up and improve their act no one should book them for the coming season. It may be that members of Brad Steiger's Fellowship (Steiger 1988) find their routines both promising and exciting but most skeptics find them a crashing bore and the more they hear of alien wit and wisdom the more they prefer the messages of our own evangelists: Billy Graham, Jimmy Swaggart, Jerry Falwell, or the Bakkers. At least these preachers have sense enough to talk to the citizens in a friendly manner, with mellifluous words, and ask for donations.

Giving the abductees the benefit of the doubt and assuming that each and every confused, garbled, and contradictory report is the gospel truth, the aliens' intergalactic or interdimensional experiment is so poorly designed and ineptly carried out it is a lead-pipe cinch to fail. Furthermore, no respectable journal of either alien or human science would dare to publish it! But not to worry, neither the believers nor the abductees are able to round up the extraordinary evidence absolutely essential to the corroboration of their extraordinary claims. Until this is done the only reasonable answer to the question, "Are UFO abduction experiences for real?" is the maiden's response: "No, no, a thousand times NO! I'd rather die than say YES."

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SIGNALS OF TRANSCENDENCE: THE HUMAN-UFO EQUATION

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ABSTRACT: UFOs and abductions are neither wholly objective-material nor subjective-immaterial events and so necessitate a special methodology not bound to strict materialism. A human-UFO interactive model is proposed here as a fruitful explanatory context for future UFO investigation [This paper was delivered at the Seventh Annual Meeting of the Society for Scientific Exploration, June 2-4, 1988, Cornell University, Ithaca, New York]

INTRODUCTION

Barring fraud, misperception, and psychosis, UFO abductions involve an interface between consciousness and an unknown factor X (which may or may not include physical spacecraft and extraterrestrials). Because the abduction experience includes mental factors subject to personal and cultural influence, as well as physical properties capable of being observed and recorded, no single body of knowledge is sufficient for full comprehension of the UFO phenomenon. A methodology utilizing findings from several physical, behavioral and social sciences is required to account for the paradoxical nature of the UFO experience,¹ the nature of which is not wholly objective or subjective. UFO abductions display a non-trivial and multiple nature which is initially viewed best, perhaps, in the context of the nature of knowledge and *knowability*.

A rather common idea is that all knowledge begins with the senses. Knowledge may begin with the senses, but it does not result from them. Some ordering of sense data is necessary. We inherit *cultural maps* (LeShan 1976: 32-33) that provide us pictures of what is real in the world. Normally we understand reality exclusively through a sensory *map*, that is, only what we perceive through our senses is real. Because what we see is influenced by our *maps*, the way we ultimately perceive the

¹Donald K. Stern (1975) has argued that "all aspects of the social sciences would play important roles in the event of contact between human and extraterrestrial." Stern calls for a synthesis of disciplines of both the social and physical sciences he terms *xenology*. In a similar vein, David M. Jacobs (1980) has referred to the study of UFOs as a "polymathic field, that is, an area of study which draws on many different already established scientific disciplines and combines them with its own special attributes." Dr. Jacobs has asserted that "no scientist can lay claim to a special expertise simply because his or her own specialty might overlap part of UFO research." Finally, the late J. Allen Hynek and Jacques Vallee (1975) wrote, "The carefully gathered and sifted data [on UFOs] are amenable to scientific study of an interdisciplinary nature but probably necessitating new departures in methodology."

world is a creative collaboration of us and *it*. An explanation of reality that is utterly from one or the other perspective will not for long be verified by experience.

We need to understand the mind's contribution to reality to appreciate how the mind both organizes and invents what is real. There exists a *threshold* of perception beyond which our senses cannot perform. Because our eyes are selective, we all must learn how to see (Young 1960). Information received through our senses from the material world must first be interpreted by the *laws* of our cultural *maps* before the physical world as we know it appears. No photographic one-on-one relationship exists between the perceiving eye and what is perceived. What we see is significantly shaped by what we have already seen. The brain directs the eyes' selection and adds or subtracts information so that what is finally perceived makes sense according to our cherished world view; but this is a *hallucination* since we cannot possess extensive knowledge of an absolute reality.

THE INTERACTIVE NATURE OF MYSTERIOUS EXPERIENCES, TRADITIONS, AND BELIEFS

The way a witness describes and interprets anomalous events involves an interplay of psychological and material factors. Both factors are circumscribed by the social context. That psychological and cultural values may color the abduction narrative does not necessarily invalidate the basic reality of the event; it simply means that we must work harder to uncover it. We are not dealing here wholly with a case of wish-fulfillment, cultural expectations, *folie-a-deux*, or hysterical contagion, but all of those must be considered.

Several points should be kept in mind when dealing with psychological and cultural reflectivity. First, we need a knowledge of the common traits and patterns of UFO reports in general and abductions in particular in order to establish the narrative norm. Moreover, knowledge of both must be placed within the larger framework of world folklore and ethnology so that traditional antecedents of motif and type can be perceived. Equally important is a knowledge of the rules of the form and content of ethnography, as well as the style of "literary journalism" (i.e., journalistic fiction) in order to distinguish the quirks and biases of investigators and popular writers from the actual experience. A psychological profile of the witness, and perhaps his entire family (Schwarz 1965) by a medical expert is useful. Lastly, a general familiarity with the literature on creative processes and artistic performance (i.e., storytelling) will help us differentiate between experiential (i.e., social) and imaginative products. By knowing the perceptual and interpretive lenses of the investigator, medical expert, popular author and the witness, we can gauge the likelihood of individual elaboration and variation. Guarding against personal and cultural reflectivity allows us to know fact from confabulation. Finally, the investigator should expect some variation in the recounting of UFO stories to different people in different social contexts, as might occur when a witness speaks to an empathic friend, as opposed to an open but noncommittal journalist or hostile debunker. To assert that these variations prove the witness is lying or dissociated would be unwarranted. People

learn to offer certain responses in a particular situation and not in another (Persinger 1979: 166). In addition, people are known to invest differing degrees of belief in the same event (Goldstein 1964), a fact that points to the general ambiguity in the concept of belief as a descriptive tool (Hufford 1977).

TRADITIONAL "PROOF"

Human abductions did not originate with the modern age of "flying saucers." All cultures possess narratives and beliefs concerning people being kidnapped. For example, the devil of tradition, who can transport people through the air over vast distances (an ability shared by the *loup garou*, i.e., werewolf), lures, abducts and murders children. Gervaise of Tilbury, who dedicated a work on prodigies to Emperor Otto IV around 1214, points out the abduction tendencies of witches, incubi, sylphs, and other enigmatic entities (Russell 1972: 118-19). Gervaise found eyewitnesses to the flight of witches over land and sea and was himself confident that they could fly effortlessly across the globe.

The fairies of folk belief similarly abuse humans by stealing children and leaving behind stunted, ugly-faced *changelings* (Hartland 1891: 93-134). Fairies of western Europe and the British Isles abduct adult men and women from whom they often take blood samples (Briggs 1978: 71, 139), an activity reminiscent of contemporary UFO abduction accounts. Farm animals are also fair game for the fairies, and researchers familiar with the lore and history of ufology will recall the case of Snippy the Horse, whose fleshless carcass was found on September 15, 1967, six miles from the main highway of the Great Sand Dunes National Monument in Colorado, after mysteriously missing for two days. Fifteen circular marks presumably from the exhaust of an alien spacecraft covered an area of approximately 100 by 50 yards (Vallee 1969: 47).

Humans have been paralyzed or made lame by *elf-shot* and have been *fairy struck* by the strange lights of pixies (i.e., *pixie-led*), hobgoblins, and bogies which confuse travelers' senses and distort their minds. They hide familiar paths and roads causing even the surest of foot to wander about bewildered. Time-lapse is as prevalent a motif in fairy lore (Hartland 1891: 161-252; Keightley 1835: 416) as in UFO lore (Hopkins 1981). Fairy "glamour" or "pishogue" enchant the traditional world so that it appears in ways detrimental to humans. The fairies are believed by some in the British Isles to originate from other planets (Evans-Wentz 1911: 151-52) or from a sublunar world just above the clouds from which they plan their attacks, and although vastly superior to mortals, they paradoxically need humans to be parents to fairy offspring, subsequently enriching their own bloodline (Briggs 1978: 93, 139). Ufologists of the past and present have speculated that extraterrestrials abduct humans for the purposes of genetic engineering and interspecies breeding, as was presumably the case with Antonio Villas-Boas (Creighton 1980) and more recently with Debra Tomey, alias Kathie Davis, of *Intruders* (Hopkins 1987). Folklore evidence pertaining to the sexual manipulation of humans by non-human entities

since time immemorial throughout the world is well documented (Gatti 1978). In addition, fairies must remove the nutrients or *foyson* from farm and dairy products to invigorate and maintain their health. Like UFO occupants believed to manipulate human beings (Fowler 1979; Fuller 1966; Strieber 1987), fairies likewise abuse mortals, and because they fear the fairies, folk refer to them euphemistically as the Good People and the Gentle Folk. Perhaps it is for the same reason that some folk today speak of the Space Brothers.

Haitian voodoo tradition will serve as the final example here that abductions are neither ultimately culture-specific nor trivial to science. In the 1940s a secret society of sorcerers known as the *zobop* terrorized the Haitian peasantry. Possessing many of the traditional traits of witch and fairy abductors, the *zobop* traveled about surreptitiously in a motor vehicle known as the *auto-tigre* (i.e., tiger-car) or *motor-zobop* that flashed a bluish beam while abducting peasants in the area of Marbial (Metraux 1972: 292-300).

The impact of culture upon beliefs is significant, and yet reflectivity does not always influence the way a witness identifies a non-ordinary event. Witnesses completely unaware of a traditional body of lore nevertheless undergo and report recognizable anomalous experiences such as attacks of the classical nightmare or Old Hag (Hufford 1982: 15), near-death experiences (Moody 1976: 123-24), "Men in Black" encounters (Rojcewicz 1987: 152-53), and apparitions of the Virgin Mary (Melton 1980: 316). Likewise, witnesses to UFOs often find that their experiences contradict rather than reflect their cultural values and personal beliefs, and yet they still insist on the validity of the events (Hall 1972: 215-16). Even when abductees are conversant with the UFO literature they sometimes confirm details purposely withheld by investigators from publication (see Fig. 1).

CONSCIOUSNESS OF THE PERCIPIENT

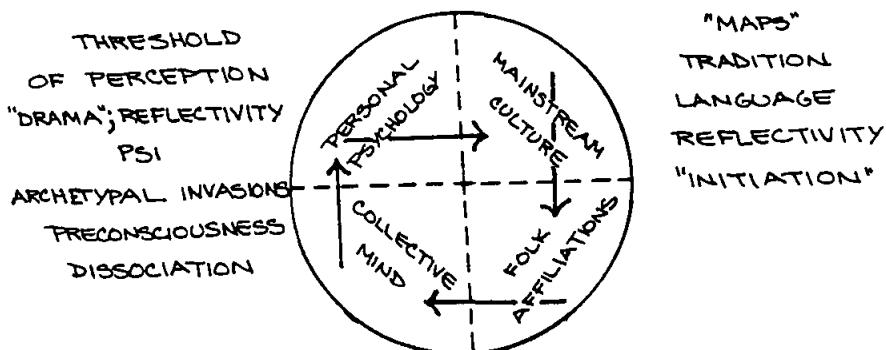


Fig. 1

Just as traditional understandings can influence descriptions and interpretations of experiences, so repeated encounters with prodigies can influence traditional beliefs. From this perspective, people believe in UFO abductions because something truly uncanny actually occurs, and not simply because the local belief system permits or encourages such a belief. The latter perspective maintains that descriptive continuities among accounts of extraordinary encounters are always generated from a common tradition rather than from a formally consistent experience. While it is important to know that tradition often colors witnesses' reports, it is equally imperative to know that mysterious happenings influence tradition at least as much. The latter, while not providing unequivocal proof, nevertheless vouches well for something non-trivial behind the UFO abduction experience. Furthermore, when one knows that UFO witnesses and abductees attend school to some degree (Lorenzen 1977: 155) and tend to be policemen, businessmen, and schoolteachers (Hynek 1972: 30), the case for abduction authenticity is better still. Controversy exists, however, concerning the exact psychological status of people who report UFO experiences.²

METHODOLOGY AND TOOLS

We shall never solve the problem of UFOs either by limiting our research exclusively to the study of abductions³ or by limiting our abduction research to a literal interpretation uninformed by related findings from the social, physical, and behavioral sciences. Because the abduction experience contains psychological, cultural, physical and presumed psychic features, no single specialized body of

²In her recent doctoral dissertation, June Parnell (1986) studied 225 people who self-reported UFO experiences involving either visual sightings or communication with UFO beings. Dr. Parnell found that the participants were "self-sufficient, resourceful, and preferring their own decisions." Although participants also displayed a greater tendency to 1) endorse unusual feelings, thought, and attitudes, 2) be suspicious or distrustful, and 3) be creative and imaginative or possibly have schizoid tendencies, Dr. Parnell concluded that "participants were honest persons and no overt psychopathology was indicated." At a recent meeting of the American Psychological Association, Dr. Parnell (1987) pointed out that Vallee and Ballester Olmos (1972) and Westrum (1979) cited studies indicating that UFO witnesses are most often professionals or white collar employees; that sightings took place in rural settings, and that witnesses are neither pathological nor unusual. Sprinkle (1976) and Schwarz (1983) found no clear psychopathology. After studying nine UFO abductees, Bloecher, Clamar, and Hopkins also found no conspicuous mental aberrations. On the other hand, Gordon (1971), Grunspoon and Persky (1974), and Meerloo (1968) suggested that mental illness of self-proclaimed UFO witnesses is a factor to be considered. Warren (1970) uncovered status inconsistency in UFO witnesses. Ballester Olmos and Fernandez (1987) concluded that psychological irregularities appear to exist in the minds of UFO abductees.

³In an editorial in a special issue of *Flying Saucer Review*, then editor Charles Bowen (1966) wrote that "it is paramountly obvious that we will never solve the problem [of UFOs] by limiting our efforts to the study of 'flyovers' Landings, however, are a very different proposition." Today, ufology faces the similar problem of limiting our research efforts predominantly to abductions. We should study abductions, but not at the expense of numerous other UFO-related phenomena.

knowledge is adequate for its full comprehension. In addition, UFOs and abductions are continuous with angels, demons, fairies, witches, Old Hags, and other phenomena (Rojcewicz 1984). Conventional science fails to appreciate the diversity of the extraordinary encounter continuum (Rojcewicz 1986; Grosso 1986) by its tendency to divide and separate discrete but related factors (more on this later). Awareness of the pertinent folkloristic, psychological, and paranormal literature is necessary to isolate the complete abduction anatomy⁴ which extends beyond *flying saucers*.

The folklorist can place UFO abductions within the larger cross-cultural tradition of prodigies through the ages (Bullard 1982). This will prevent us from mistaking something newly rediscovered for something new. The psychologist/psychotherapist can define the role of transference in hypnosis and establish the roles played by a fantasy-prone (Baker 1987: 152-57) or abduction-prone personality. A complete psychological profile and history of the witness and his entire family can be rendered. And the parapsychologist (Rogo 1977) can elucidate conditions for and processes by which psi (i.e., psychic activity) manifests as part of the witness-UFO symbiosis.

Human verbal behavior lies at the center of the UFO enigma, and its role must be considered by our methodology. Since UFO witnesses often display great difficulty describing their experiences (Hynek 1972: 17) our approach must be informed by a knowledge of the role of language in the descriptions and interpretations of anomalous events. For example, editing out negative and hyperbolic modifiers because they are thought by the investigator to be mere colloquialisms rather than accurate descriptors can significantly alter a witness's memory and thus camouflage phenomenological traits (Goldstein 1983: 112). Memories are a special class of verbal behavior previously associated with words or thoughts linked with objects and events. Several well known experiments have demonstrated the effect of labeling on memory (Persinger 1979: 170). Our method must not only address the quantitative aspects of the abduction experience, but also the qualitative, subjective, and metaphoric as well (Rojcewicz 1984: 5-10) to fully appreciate the nuances both of form and meaning. This method which addresses values and qualities is rightfully scientific as it is to rest upon systematic observation expressed in self-consistent but limited and approximate models (Capra 1982: 375-76).

⁴An early study seeking abduction patterns was conducted by Dr James A Harder (1979) on more than 100 subjects. Male-female statistics, multiple participation, case publicity, family relationships, occupations and educational backgrounds were examined with the conclusion that the abductees "tend to be more highly educated and skilled, as well as psychologically stable" than many people might have guessed. A more recent examination of UFO abduction narratives that seeks out dominant features has been conducted by Dr Thomas E Bullard (1987) for the Fund for UFO Research. Dr Bullard breaks down the abduction experience into eight episodes that include 1) capture, 2) examination, 3) conference, 4) tour, 5) otherworldly journey, 6) theophany, 7) return, and 8) aftermath. Not all of the above traits will be found in any single abduction.

THE PSI FACTOR

In the 1960s investigators became increasingly aware that UFO experiences, particularly CE (i.e., close encounter) cases, sometimes involved an apparent paranormal aspect (Vallee 1976: 17; Schwarz 1980: 284-86). For example, some witnesses reported seeing UFOs after receiving presumed extrasensory *instructions* as to where to look for them. Psychokinetic disturbances were reported in the homes of UFO witnesses, which on occasion developed into volatile poltergeist activity. Some UFO witnesses claimed miraculous healings of degenerative illness (Rogo 1977: 93). As a result of the increased number of such claims, some investigators began to question the exclusivity of the *nuts and bolts* hypothesis, and wondered how psi could be associated with UFOs. The answer lay in the interface between percipient and *object* perceived, between consciousness and what consciousness encounters. An indeterminate *object* fuses with powerful psychological forces. How do these forces function? To answer this we must for the moment isolate and focus on the witness side of the human-UFO equation, keeping in mind, however, that any definition or methodology that focuses exclusively on one side of the equation at the expense of the other ultimately misses the mark.

Abductions are in part a mental *drama* (Rojcewicz 1984: 633-70) or *initiation* (Thompson 1988) involving someone under stress. The human-UFO *drama* often features ostensible telepathy, psychokinesis, out-of-body travel, etc., attributed by the abductee to extraterrestrial agency. This *drama* often occurs when the witness has undergone excessive or deficient sensory stimulation, causing everyday awareness to rise above or fall below the midpoint level of its normal performance. A *shift* into a preconscious state occurs, characterized by a dissociation of personality. Sometimes a new personality nearly unrecognizable to the abductee emerges as a result of the reconstruction of dormant abilities and attitudes. No abduction may actually include all the above-mentioned processes, but in any event, the psychic activity associated with CE cases reveals strong parallels with otherwise non-UFO related spontaneous psychic events (Schwarz 1983, 1:xxi) suggesting a larger human-UFO-psi continuum. This *drama*, it must be stressed, occurs in conjunction with the material UFO side of the equation and should not be taken to represent the complete abduction experience.

CONCEPTS OF THE ULTIMATE REALITY

Abductions are part of a volatile human-UFO-psi interaction that produces both traumatic and creative effects, the latter being the more difficult to assess. We need to comprehend the mind's contribution to anomalous events. The conventional dismissal, "It's all in the mind," may be substantially true, but ultimately misleading since it flatly denies the mind's ability to effectively shape experience.

For example, Tibetan folk and religious traditions speak of *tulpas* or thought forms materialized through vigorous visualization rites (Evans-Wentz 1968: 29). The process consists of giving concrete expression to a studied image in much the

same way an architect gives three-dimensional life to a two-dimensional blueprint. Solid evidence for the reality of tuloidal entities may be impossible to obtain. However, in the literature of psychical research there is discussion of the presumed creation of ectoplasm and apports by gifted mediums. Although fraud is always possible and sometimes at play, serious consideration has nevertheless been rendered to the subject (Fodor 1933; Richet 1975; Inglis 1984).

Perhaps the best theoretical information suggesting that mind interacts with and even creates reality comes from the recent fusion of concepts from analytical psychology and subatomic physics. Carl Jung, over a lifetime of consciousness research, constantly refined in print his increasing understandings of mental dynamics. Between 1947 and 1954 Jung developed his notion of the psychoid nature of archetypes, i.e., cognitive structures containing primal images, ideas, fantasies, emotions, and behavior acquired through our psychic evolution. By psychoid Jung meant quasi-physical, which is another way of asserting that although archetypes originate in the mind, they occasionally transgress the psychic realm and assume a physical or quasi-physical expression in the world, however temporary (Jung 1973: 99). This concept is directly connected to Jung's most controversial idea he called synchronicity. For Jung, synchronicity involves the meeting of one or more inner psychic states with an outer event closely associated in time which the percipient considers meaningful. Jung himself witnessed many instances of synchronicity (e.g., a scarab at the window while a client tells a dream of a scarab; or two birds copulating at the foot of a client discussing sexual deficiency), and he came to see these events related to consciousness. Jung posited that at the mind's core, the psychoid level and Nature became one (i.e., the *unus mundus*). Synchronicities like UFO experiences signal that the nature of mind and the nature of Nature are part of a reality without rift.

NATURE

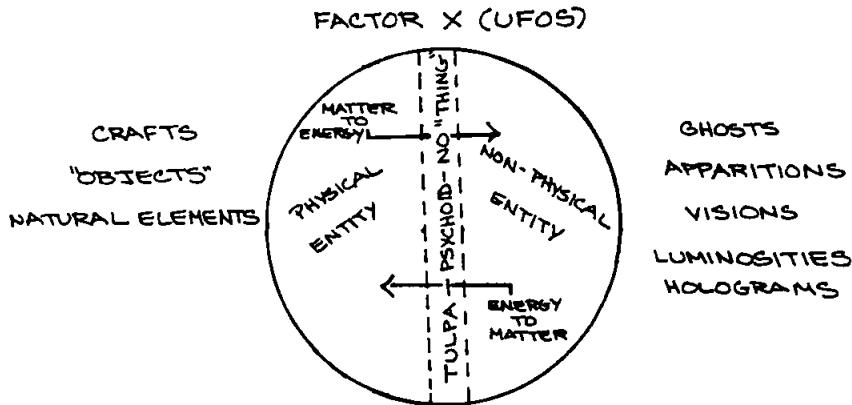


Fig. 2

The archetype with its psycho-physical potential mirrors the wave function of the particle of subatomic physics. The subatomic units of matter possess a dual aspect and, "Depending on how we look at them, they appear sometimes as particles, sometimes as waves; and this dual nature is also exhibited by light which can take the form of electromagnetic waves or of particles" (Capra 1977: 55). Similarly, Heisenberg's famous 1927 "Uncertainty Principle" states that the observer through an act of measurement necessarily alters the observed by virtue of the very act. Heisenberg believes that the concept of objective reality itself dissolves into the mathematics that represents only our knowledge of the behavior of elementary particles and not their actual behavior. All this indicates that subatomic physics must deal with data defined psychologically, i.e., through behavioral observation (see Fig. 2).

The recent fusion of depth-psychological concepts with speculations of quantum physics suggests that the deepest levels of Nature and mind form a dynamic overlap. Physicist David Bohm, who worked with Einstein, posits an ultimate reality of primary energy lying unseen beyond time and outside space, a strange elsewhere he calls the Implicate Order. Sounding perhaps less like a physicist and more like the mystic-poet William Blake, who in *The Marriage of Heaven and Hell* (1792) refused to divide the natural unity of matter and spirit, Bohm posits an "unbroken wholeness of the totality of existence as undivided flowing movement without borders" (Bohm 1982: 172). Matter (i.e., explicate order) is but a manifest ripple on an ocean of non-manifest energy (i.e., implicate order). Bohm maintains that consciousness and matter are fundamentals of the same indivisible reality. If the world as we know it is generated from the brain's neural strategies for knowing and sensing discussed earlier, we cannot scoff at the idea that UFOs and abductions are also products of the same mind-matter energy interaction (see Fig. 3).

THE QUESTIONS OF MEANING

If UFO abductions are composites of primary reality and deep structures of mind, they can neither be completely objective nor subjective, but rather *omnijective* (Talbot 1981: 2). This is another way of saying that UFOs are multiple-presence (Bearden 1980: 114-15) phenomena, i.e., they are sometimes physical or non-physical events, sometimes neither, and sometimes both. The latter condition is best illustrated by photographs of UFOs (and related anomalous phenomena) revealing both dark and light areas of what look like energy forms, as if parts of the UFO are photon absorbing (i.e., taking in light) and photon releasing (i.e., giving off light), and perhaps in transition between a solid state and a pure energy state. This omnijective nature of UFO experiences poses an obstacle to the conventional, orthodox approach. Multiple-presence phenomena will always withstand the materialistic onslaught of conventional science because a limited monocular perspective sees only the most conspicuous physical aspects. Because we are not trained to see border phenomena (i.e., energy-matter composites), we see no *thing* at

all. UFOs and abductions are partially no things, meaningful nothings if you will, possessing multiple natures, and thus they may not be perceived in their totality, or at all. David Bohm argues that primary physical laws of reality cannot be discovered by a science that would divide unified Nature into parts. In any event, abductions are dynamic composites of consciousness and matter offering fleeting glimpses of the psycho-physical foundation of life which can only be hinted at rather than grasped since its essence is at least partially transcendent. Increasing numbers of reported abductions signal the continuum between the visible-real and the unseen-real, between what is in here and what is out there. The illuminating and illusive link between those realms, as in the case of synchronicity, is meaning itself, both affirming and frightening. That such an assertion approaches mysticism need not be bothersome to the scientist. Several recent writers, notably Capra (1977), LeShan (1974), Talbot (1981) and Zukav (1979) have pointed to analogues between the world views implied by relativity theory and quantum mechanics and that of mystical revelation. Some writers have gone so far as to state that all pioneering physicists are mystics (Wilber 1984).

At the core of the human-UFO dynamic lies an argument for a more unified existence and a transcendent realm toward which to express will and imagination. UFO narratives link the experience we call *I* with the experience we call *Other* (i.e., that which is *Not I*). Human consciousness throughout history has longed to fuse

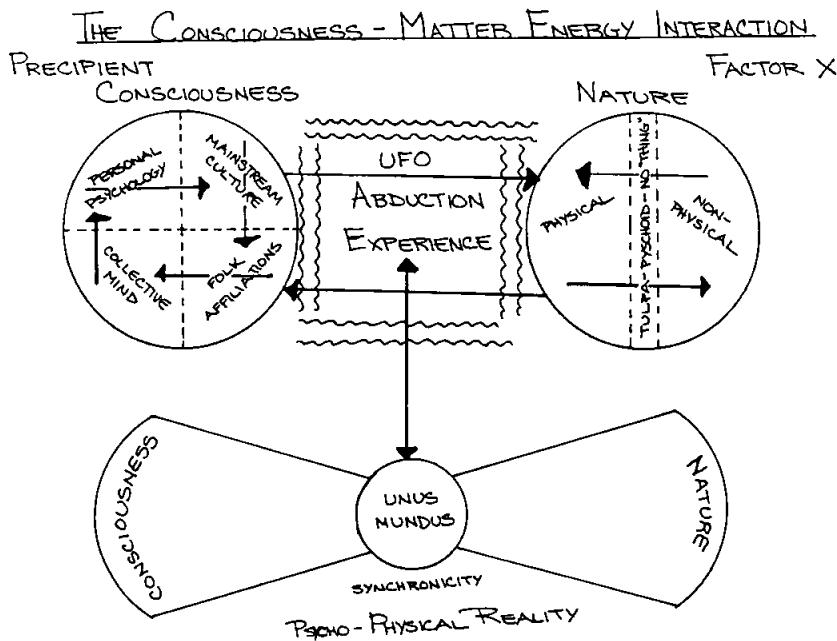


Fig. 3

with a creative process flowing through it so that it could be free to become that process. This thought both gratifies and terrifies. We see in the human-UFO equation a timeless appeal to renegotiate our conventional relationships to the world and renew the role of man as a free creator. We witness here the eternal longing for human security and a worthwhile collective life. Danger lurks, however, in our need for an effective modern mythos capable of equitably structuring contemporary life, a symbol that we hope will not be derived at the cost of psychic surrender.

SUMMARY AND CONCLUSION

We shall not fully understand the UFO enigma by 1) limiting our research to abductions; 2) failing to see abductions as part of a larger cross-cultural continuum of anomalous events; and 3) limiting our abduction research to a literal interpretation. UFO abductions exhibit traits that warrant the scrutiny of several social, behavioral, and physical sciences. The goal here has been in part to call for a cooperative UFO research effort among ufologists, psychologists, folklorists, and physical scientists. Those disciplines should not study UFO abductions separately from each other since their ideas and attitudes constitute world views and conceptual frameworks that consistently occur together and influence each other, as well as the people who report UFO encounters.

I have offered here a hypothesis that establishes a middle ground between the contextualism of the cultural relativist who argues that UFOs and abductions are real only within specific ideal contexts and thus misses their transcultural presence, and the positivism of the naïve materialist who asserts that the only real UFO is the one we can bring into a laboratory. While both positions are problematic for the cooperative research effort proposed here, it is the contextualist position which is more subtle and in need of comment.

The contextualist position is largely influenced by Thomas Kuhn (1970) and Paul Feyerabend who maintain that conflicting theories cannot be rightfully compared on the basis of a system of meaning external to the theories themselves. This is another way of saying that conflicting theories are incommensurable, i.e., lacking a means of common measurement. Rather than proving the incommensurability of the findings of physical science, psychology, parapsychology, and folklore, the case of UFO abductions suggests that the problem lies with the *method* of commensuration, rather than in the principle. When opposing theoretical systems drawing upon specialized databases are compared utilizing only the data of one of the theories, mere assimilation via translation results. Historically this is what has occurred when scientific concepts have been applied to folklore belief materials in general, and UFO and abduction claims in particular. David J. Hufford (1985) has offered an alternative to assimilation: 1) Theories must be compared on the basis of their combined data; or 2) new data gathered as the result of the application of all theories in question; or 3) a different theory that does not contradict the others. Only when such conditions are met can we find that a valid sort of commensurability is possible.

Let the future of UFO research include the search for commensurability among our conflicting theories so that we will have at our disposal the very finest methodology and tools with which to proceed.

This paper is part of a continuing effort to realize a coherent hypothesis of UFOs that neither rejects outright reports of abductions simply because they lack strict scientific verification, nor uncritically accepts them as true in order to argue that extraterrestrials and their spacecraft exist. The human-UFO interactive model presented here serves primarily as an explanatory context for investigation, and not yet as the definitive description of abductions by the unknown.

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REFLECTIONS ON THE REPORTS OF BEING ABDUCTED BY UFOs

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The database in ufology has always been the reports of apparently extraordinary events. Hynek noted the dilemma this presents for science in that "perfectly incredible accounts of events are given by seemingly credible persons." These accounts, he felt, could lead one "almost irresistibly...to reject the testimony of the witnesses outright" (Hynek 1972: 20). The characteristics of abduction reports make this temptation especially great. The challenge, then, is to resist this temptation, and take the scientifically appropriate course of accepting the reports for study. As "conventional" UFO reports continue to decrease in number, and these more startling accounts of abductions gain greater prominence, it becomes especially important that these data be examined with objectivity.

However difficult it may be to remain dispassionate about a topic that has such portentous implications, it is possible to study the reports with sobriety. The approach used in examining conventional UFO reports can serve as a model. Historically this has focused on a) the credibility of the individuals making the UFO report; b) documentation of the "facts" presented in the report; and c) the weighing of conventional interpretations of these facts (e.g., atmospheric phenomena, misperceptions) against radically new interpretations (e.g., extraterrestrial spacecraft). How well do abduction reports fare under similar scrutiny?

The credibility of abduction reporters, seems, in general, to be at least as good as the credibility of those making conventional UFO reports. Although the usual arguments about hoaxes and publicity seeking have been raised against a number of these individuals, most abduction reporters shun publicity or accept it in spite of its potential damage to well-established reputations. As a group, their behavior suggests to me no obvious motive to fabricate or relate known falsehoods. Nor (in the opinion of examining health professionals) do they typically exhibit any obvious pathology to which their reports can be ascribed. On the other hand, they often do seem genuinely traumatized by the memories they report, a fact consistent with the veracity of the reporters, if not the authenticity of their reports.

To what extent can the content of abduction reports be authenticated? Documenting facts in abduction reports presents some of the same problems associated with documenting UFO reports in general. It must be based largely on examination of the reports themselves rather than the phenomena they purport to represent. Because of this, the facts that can be documented are primarily those

related to the circumstances surrounding the reported event: times, dates, weather conditions, geography, etc. Due to the limitations of perception and memory, even these mundane aspects of UFO reports can often be difficult to document. And in the absence of tangible correlates (photographs, radar echoes, etc.) the more subjective details of a sighting cannot be substantiated.

With abduction reports, observer limitations present even greater problems and interpretation of reported experiences becomes even more tentative. These problems arise both from the content of the reports, and in the nature of obtaining them. Abductees often report an addled state of mind during their experiences, and/or emotional trauma. Neither is conducive to accurate observation. And their experiences are often made available to them only as a consequence of hypnotic solicitation. Such "memories" have been shown to be subject to distortion and simple fabrication (Hall, McFeaters, and Loftus 1987). Although there is no reason to doubt that these memories are anything but subjectively real to the abductees, there are reasons to remain uncertain about their objective accuracy.

These concerns have been minimized by some researchers, because of the many consistencies that appear across the various accounts. But one consistency presents yet another problem of interpretation, even for those who assume that alien abductions have occurred. I refer here to the repeated references to mind control: induced amnesia, implantation of suggestions, control of emotion (e.g., pain and fear), the elicitation of mental images, communication of thoughts by telepathy. If the reported abductions are real, these accounts of mind control must raise serious questions in regard to which reported memories (including those of the mind control itself) are real and which are induced. Consistency across reports is not a clue here. This cannot distinguish between those memories that are consistently real and those that are consistently manipulated. The content of abduction reports, by its very nature, requires caution in interpretation. Hopkins has noted that "if any aspect of the UFO phenomenon as reported is true, then any of the rest of the reported phenomenon may be true too" (Hopkins 1987: xiii). But if this aspect of alien mind-control is true, any other aspect of abductions (as reported) may be false.

Oberg, as a self-proclaimed "sympathetic skeptic" in regard to UFOs, has argued that "extraordinary claims demand extraordinary proofs" (Oberg 1982: 4). I suspect that most scientists (regardless of their personal beliefs about the existence of UFOs) share this position and would feel it is especially applicable to claims of kidnappings by alien beings. Has such a proof been established? I think not. Can ufology develop such a proof? Morrison, in discussing the nature of scientific evidence, states his approach for accepting reports of new phenomena, especially those of a transient nature that do not sit still for traditional laboratory experimentation. He argues that acceptance must be based on "multiple, independent, link-by-link, verified chains of evidence" (Morrison 1972: 290). The task for ufology then, would be to doggedly pursue each abduction report until such evidence is obtained. This effort is not merely legitimate, it is proper. It is proper on scientific grounds because the reports, whether reflecting physical events, mental events, or merely the behavior and

motivations of the reporters, constitute a mystery that needs to be understood. It is proper on humanitarian grounds, because of the anguish expressed by the reporters of abductions, and their need also, to be understood.

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COMMENTS ON THE EVIDENCE CONCERNING ABDUCTIONS

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The philosopher of science Karl Popper (1959) has made some comments which are relevant to evaluating the evidence that humans have been abducted by extraterrestrials, examined, and released, frequently with inhibitions against remembering the abduction and examination. Popper points out that no theory can be logically confirmed by accumulating positive evidence. Existing evidence matching a theory's predictions cannot guarantee that a future piece of evidence will not disconfirm the theory. According to Popper, a theory can only be *corroborated* by trying to disconfirm it. The more disconfirmatory challenges the theory survives, the more highly corroborated it is, and the more useful it is as a guide to interpreting nature.

Popper's argument means that the best way to corroborate the extraterrestrial abduction theory is to try and disconfirm it. A powerful step in this direction was taken by Bloecher, Clamar, and Hopkins (1985) when they obtained blind psychological evaluations of nine alleged abductees. The lack of psychopathology among these abductees, which would have been an alternative explanation for the abduction experience, means the extraterrestrial abduction theory survived one attempt to disconfirm it, which, in Popper's language, corroborates the theory.

No single corroborative test is sufficient, and Slater, the psychologist who carried out the blind evaluations, suggested an excellent new test of the theory: to compare psychological evaluations of alleged abductees with equivalent evaluations of non-abductees, in order to determine what aspects of personality revealed in the evaluation might be related to the abduction experience per se (Slater 1985).

As an extension of Slater's idea, I suggest that evaluations of alleged abductees be compared with equivalent evaluations of adult victims of the other forms of psychologically damaging interference which are similar to the alleged forced abductions: rape or child abuse. Slater pointed out that the extraterrestrial abduction theory predicts that the personality profiles of alleged abductees should be similar to the profiles of these victims of self-demeaning powerlessness at the hands of others. Both sets of profiles should differ from a sample of "normal" people who are known not to have experienced either abduction, rape, or abuse.

The psychologist Leon Festinger (1969) developed a theory which helps explain how scientists evaluate the evidence for extraterrestrial abductions. Festinger's cognitive dissonance theory states that people adjust their opinions to remain

consistent with their knowledge. According to Festinger, a discrepancy between an established opinion, and positive information which contradicts the opinion, is a source of tension or discomfort which must be resolved. The resolution can occur either by modifying the opinion to match the information, or by modifying the information to match the opinion. The contradictory information can be removed as a source of tension if it is ignored, or if it is devalued by challenging its relevance or credibility.

Festinger's theory provides an explanation for the fact that most professional scientists cannot take any UFO evidence seriously. As Thomas Kuhn (1962) so clearly relates, the vast majority of professional scientists are "puzzle-solvers," who work comfortably and well within what has actually been characterized as a "central dogma." In molecular biology, the central dogma is the identity of the DNA molecule with the genetic code (in fact, an already frayed dogma). In general, the dogma, or "paradigm," is the currently accepted metatheory which sets the limits on how scientists working in a particular field elaborate their understanding of and their control over nature.

A scientist who positively evaluates the UFO evidence must, according to Festunger's theory, then accept the possibility that all of the metatheoretical limits which govern his or her work are going to be burst simultaneously: in Kuhn's terms, all of the scientific paradigms will be simultaneously overthrown. Positive evaluation of UFO evidence means accepting new phenomena, which do not fit the existing paradigms, in physical science (transportation systems), psychology (telepathy and distance control of motion and motivation), and zoology (extraterrestrial life).

According to Kuhn, the psychological strain of overthrowing existing scientific paradigms is great, and they are almost never overthrown by the mere accumulation of contrary evidence. As a consequence, we can predict that, until the UFO evidence can be subsumed under some new understanding of mind and matter, most scientists will strenuously resist it. If they cannot discredit the evidence *qua* evidence, they will be even more strongly impelled to use ridicule or to invoke ignorance.

The physicist R. V. Jones (1978), who directed British scientific intelligence during the Second World War, argued that the average working scientist is the worst person to evaluate evidence for new technical developments of the "enemy." Because working scientists are committed to existing paradigms and to their own narrow understanding, they cannot look with open eyes at the evidence for developments which others have made, which are beyond their own current understanding. He cited, as examples, the failure of some British electronics specialists to accept the possibility of electronic beam guidance of German bombers, which they thought was theoretically impossible, in the face of observational evidence that the beams were actually being intercepted over Britain.

Fortunately some scientists and lay people are quite capable of reviewing and testing the evidence of the senses. The task of understanding and elaborating the UFO evidence remains the province of the part-time professionals and dedicated

amateurs who have both the imagination to perceive the possible real outlines of the problem, and the intelligence and training to deal with it in a critical and scientifically useful way. The abduction evidence is a perfect case in point.

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ABDUCTIONS: A POSITION STATEMENT

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1. Though it is possible that ET life exists, there is no convincing evidence that it does.
2. The evidence for ET visitation—whether ancient astronauts, UFO crews, cosmic brothers making contact, or alien entities abducting humans—is equally unsatisfactory. The stories told in all these categories are implausible, inconsistent and contradictory; so though we may accept that some people are having some extraordinary experiences, face-value acceptance is possible only if critical standards are abandoned.
3. Parallels to abduction stories can be found in witchcraft, demon possession, shamanic trance, and folklore from many cultures. If we question the claims of witches to rendezvous with Satan, of the nuns of Loudun to be possessed by demons, of shamans to make otherworldly visits with their deities, of peasants that fairies kidnap their babies, we should question the claims of abductees likewise.
4. Parallels to abduction witness behavior can be found in psychology, notably in hysteria and other alternate states of consciousness; parallels to the proliferation of abduction stories can be found in sociology, in countless manifestations of collective behavior.
5. Lawson and McCall have demonstrated that alternative psychological processes are available to explain what is happening in abduction stories: Lawson's birth-trauma hypothesis offers a viable example of the kind of subconscious motivation which may be involved.
6. In the light of the foregoing, I believe that abduction stories represent the current form of a process which has probably occurred throughout human history, whereby an individual who is undergoing a personal crisis (or what his subconscious mind feels to be a crisis) subconsciously exteriorizes his situation in the form of a hallucinated "psychodrama." This will be cast in a form which is consistent with his personal beliefs and feelings, and which is "authorized" by his community: hence its manifestation in times past in terms of witchcraft, demon possession, encounters with the Virgin, etc., and its current manifestation in terms of the prevailing myth of our time, the myth of extraterrestrial visitation.
7. UFOs, per se, are irrelevant to abduction stories, except as they provide a suitable setting, abduction stories are a dead end for the UFO researcher.

This bare outline, as it stands, will convince nobody. Supporting evidence, and step-by-step argument, may be found in my books: *Gods, Spirits, Cosmic Guardians* (Aquarian, 1987) and (not yet published) *The Myth of Extraterrestrial Visitation*.

Speaking personally, I find the abduction mania fascinating, just as I am fascinated by the witchcraft mania, the demon possession mania and other such manifestations of man the mythmaker. Myths can be dangerous if we mistake them for reality; but rightly seen, they testify to man's supreme ability, the ability to transcend reality.

A PSYCHOLOGICAL STUDY OF SUBJECTS WHO REPORT CONTACT WITH INTELLIGENT ALIEN BEINGS

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Omni (Anon. 1987), a science fiction magazine, invited readers to send in reports of their belief or skepticism about the existence of intelligent alien beings. A random sample (not statistically random, but grab-bag random) of 100 replies revealed about 50 who professed belief in the existence of extraterrestrial life forms. Follow-up letters to these "believers" invited them to express the reasons for their belief.

The replies were astonishing. Most (the statistical analysis has not yet been completed) stated that they believed in alien life forms because they had seen them. The letters, and in five cases, hour-long phone calls, were filled with minute details. The letters were accompanied by drawings, and supportive testimony from families, newspaper clippings, even photos. Many were relieved that they could finally tell of their experience after decades of silence. One elderly man from Michigan was in tears during our phone conversation because none of his family would let him talk about "that night."

There are many research questions that can be investigated with this raw data (the letters and tapes of conversations). One is: do these believers have anything in common? Two: what is the level of reality of their experiences? It was immediately obvious that these people were sincerely reporting their experiences as honestly as possible. But what of their experience? Was it a vivid dream, a hallucination, a hypnotic trance state, some state of consciousness we have not yet understood, a post-hypnotic suggestion planted in the subject by someone unknown, a temporal lobe seizure, etc., etc.? We must even raise the possibility that these people were witnesses to exactly what they have reported, contact with intelligent but alien life forms.

How to proceed with our investigations? To take a stab at the first issue: do these believers have anything in common? I mailed a drawing completion form and more questions to each person who indicated that they were willing to participate in future research. (Several letters were lacking return addresses and one pencil scrawl from a 15-year old boy read, "Please don't let my mother know I saw a UFO.") Preliminary review of the returned drawing completion form is now being carried out.

I have functioned as a staff psychologist, administering test batteries, including drawing forms, for almost ten years. In my professional opinion these believers are, by and large, without psychiatric disorder.

Now what? Another surprise. Many of the details reported by the group about their "night visitors" or aliens jibe with reports from others. Have these witnesses been influenced by books or movies about aliens? I am investigating that question, and will report my findings later.

I am now proceeding according to the conditions set down by Dr. Lawrence LeShan. "In [our] reality, a thing is real [exists] if one or more of three, often overlapping, conditions are true:

1. If we can directly perceive it.
2. If we can directly perceive its effects.
3. If we must believe in its existence in order to account for effects we can perceive but cannot account for in any other way." (LeShan 1976: 133).

My research question is: Are the believers holding their belief in intelligent alien life forms because they have perceived effects which they cannot account for in any other way?

Am I asking the right question? How should I proceed, given my data? I would be happy to hear the views of other professionals regarding my research.

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ABDUCTIONS: QUESTIONS IN THE DATA

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Abduction experiences in ufology present us with a complex situation because, as far as anyone can determine, many of the people involved have been seriously disturbed by whatever it is that they have experienced. Because sensitive human beings are involved, it is difficult and inappropriate to be insensitive to their situations. But, as this is a discussion of "reality," I respectfully set the question of humane concern aside for the moment, in order to focus upon what scientific concerns exist as regards these reports.

Science wishes to probe questions of reality, and to probe these questions as objectively as possible. Science wants to know of these reports: did they really happen as described? Did some external intelligent reality have primacy in manipulation of these experiences? Was the reality anything at all like the ultimate reports we read? The initial questions for science, as always, are questions of the quality of the data. How good is this data? What uncertainties exist in it? How much potential is there for subject error? For experimenter error? Future speculations and conclusions about the phenomena must wait upon answers to these questions or be recognized as imaginative concepts possibly bearing little or no relation to truth.

Potential for problems in the data is rife and obvious. Human subjects are involved, and no one can claim that the activities of the human mind are well understood. The human mind is a reality not easy to make deductions about with any feeling of security. Secondly, hypnosis, as the leading investigative tool, multiplies the uncertainties resident in dealing with the human mind by creating a state of consciousness wherein that mind is extremely sensitive to the mind (and technique) of another. Sophisticated, disciplined, "interviewing" techniques are necessary by the hypnotist to avoid muddling the data of the report by the investigator's own conceptual system.

The leading current investigators believe that these dangerous subjectivities have been minimized in their work, and defend that view by pointing to patterns in the reports, plus specificity of detail, which repeatedly appears across many "independent" reports, widely scattered about the nation. These patterns and specific details are the stones upon which the major proactive supporters build their positions. Occasionally some other element of possible evidence (such as a "landing trace" mark) is involved, but, by and large, without the repeated patterns and details, the argument for some specific, manipulating, external intelligence would be difficult to defend.

So the questions of most importance to science concern these patterns and details.

How "independent" are the details in the reports? One obvious source of non-independence would be the investigators themselves. The investigators share a vision of reality which grew out of the work of essentially one researcher. Such concerns can be mitigated, somewhat at least, by intensive scrutiny of transcripts, or, better, audiotapes of the investigators' sessions with their clients. Such scrutiny should be done objectively and fairly by persons themselves having hypnosis expertise and varying personal views upon what may be going on.

The critique of research methodology in novel areas is a common feature of scholarship and need not become "personal" on either the researchers' or the reviewers' parts—in fact it *must not* become personal if we are to progress in these matters. Researchers may feel that they can not make their tapes available for reasons of confidentiality. If so, they make this as purely a personal decision since they are not usually licensed counselors and, as such, are not professionally bound by official ethical positions of the profession. Personally created ethical positions are, of course, understandable, but as many of their clients have shown willingness to partially or wholly break confidentiality, there are surely many cases in which tapes or transcripts could be available. I am confident that, if the proper protocol could be worked out, the major investigators would be willing to participate in such a check on their methodology.

A second major data issue concerns the independence of the reports. Repeated patterns, once crystallized in print, do seem unusual and difficult to immediately explain, but how much repeatability could one expect in a segment of the American public? Arguments that these people have little in common are not proved. Understandably, it is difficult given the lack of research resources to make thorough background, personality, and awareness surveys of these reporters. Such surveying, if possible, should be done; and an objective retesting of the Lawson Hypothesis (and other ideas) should be completed and the phenomena seriously compared between "real" and "imaginary" abductees. Emotions run high in research, it seems, but more investigators, more studies might cool off tensions and allow some light to shine through. What *can* be explained merely by "being a late 20th century American" and what *can't*?

Lawson's work tries to do what any serious research project tries to do: create a "baseline" or "control group" to which things will be compared. Another means of checking the amount of dependence in a cultural setting is to do a cross-cultural comparison. As it would seem unlikely that only Americans are being abducted in a particular pattern or style, such a project would bear fruit probably in terms of clarifying where the data is coming from.

The field of abduction research needs data clarification. It needs a serious discussion and critique of the methodology. It needs some redoing of types of research and some new research programs. And, most of all, it needs serious people of varying viewpoints talking to one another, not about each other but about the phenomena.

Round Two

REACTIONS TO THE ABDUCTIONS FORUM CO- CONTRIBUTORS

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In reading a collection of comments regarding the UFO abduction phenomenon, I would expect a broad spectrum of opinion to represent unabashed belief, unabashed disbelief, and the conviction that a definitive conclusion is premature. Not surprisingly, these latter two groups were represented. I was surprised that the first group was not. Perhaps in a future forum, this position could be represented as well. [Editor's Note: Strong proponents of the extraterrestrial hypothesis, Budd Hopkins and David Webb, were asked to participate; they agreed, only to drop out due to other commitments.—MDS]

As a member of the last group (those regarding a definitive conclusion as premature) I was gratified to find that most of the contributors (as I perceive it) not only share this point of view but defend it specifically on scientific grounds. For example, Swords refers to the needs of science, the interpretation of data, the importance of objectivity, and the attention to research methodology. Mundy focuses on survey data in addressing the issue of belief and the need to ask the right experimental questions. Donderi discusses the philosophy of science, offers some hypothetical constructs that can be tested, and ultimately appeals for an approach to the problem that is "critical and scientifically useful." Rojcewicz presents a detailed case for the multi-faceted nature of the abduction phenomenon and calls for "a cooperative UFO research effort" across various disciplines. As a group, those who have not yet reached conclusions seem clearly concerned with the scientific process.

The skeptics, as is their forte, have enumerated alternative explanations and raised questions about the extraterrestrial intelligence (ETI) hypothesis. In defense of alternative theories, Evans makes note of the parallels to certain states of consciousness and the similarities between abduction reports and folklore and mythology. To this list Baker adds personality anomalies, memory distortion, perceptual problems, and the distorting effects of hypnosis. In challenge to the ETI hypothesis, Evans notes the lack of definitive evidence regarding the existence of extraterrestrials now or in the past. Baker finds significance in the failure of abductees to report to the FBI, and in the failure of the reputed aliens to report to the White House.

The position statements of Evans and Baker leave me with mixed feelings. The scientific process involves hypothesis testing—which means there must be hypotheses to test. In this sense, generation of alternative explanations, and challenges to the ETI argument are legitimate, necessary, and make an important contribution to the scientific effort. But I am uncomfortable with the arguments Evans and Baker present. This is not because they reject the ETI position (I am not personally committed to any single interpretation). Psychological explanations may indeed prove to be correct, and Evans is correct in pointing out that “face-value acceptance” of extraterrestrials is inappropriate. But it is scientifically incorrect to conclude that the ETI hypothesis is untenable *because* alternative hypotheses exist. I may be misinterpreting the thrust of Evans’s argument, but as presented in the position statement, “in light of” the parallels with folklore and psychology, UFO abductions are considered a form of “hallucinated psychodrama” and “a dead end for the UFO researcher.” I prefer to be more cautious in attributing cause-and-effect to correlation, and in accepting hypotheses that have not been adequately tested by “disconfirmatory challenges” (see Donderi’s discussion of hypothesis testing). And even if dismissal of the ETI hypothesis did follow from the observations presented by Evans, why are mythological etiology and mental processes not appropriate areas for the UFO researcher? Isn’t this the basis of Evans’s own books on the subject? On this issue I stand with Rojcewicz. The UFO phenomenon has many aspects, and they should all be pursued with vigor.

In turn, Baker states that “hallucinations, personality disorders, and boundary-deficit hypotheses can *and do* [italics added] account for” abduction reports, and concludes that “*the weight of the evidence* [italics added] supports a purely psychological explanation and points to a personality aberration as the source of the abduction phenomenon.” What is the weighty evidence that leads to this conclusion? As best I can tell, it is the small set of similarities between the psychological conditions referred to and the reports of abductees. These similarities may indeed be an important piece of the puzzle, but analogy and innuendo are not evidence, and ridicule of alternative hypotheses is not a substitute for research. In reference to claims of alien abductions, Baker notes that, “Saying it doesn’t make it so.” This insight is applicable to the alternative claims as well.

My own guess is that it is not a coincidence that those who reserve judgment about these matters make primary reference to the scientific process while those who have already reached strong conclusions (either belief or disbelief) rarely do. Since so little that can pass for legitimate scientific research has been done, little can be generated at this juncture in the way of scientifically derived conclusions. On the other hand, appeals to “logic” can be based on premises that have not been subjected to scientific scrutiny, and appeals to emotions can be independent of either logic or science.

If this forum demonstrates anything at all, it is that the same database can be interpreted by different people in different ways. This, of course, is common to most areas of scientific endeavor, and explains, in part, why even the most conventional

and mundane issues in science can generate seemingly endless publications. Certainly, we should expect nothing different in regard to such a controversial subject as UFO abductions. But, as has been true with the more conventional issues, this enterprise of ideas, interpretation, and disagreement, often leads to understanding. Swords states that above all, the field of abduction research "needs serious people of varying viewpoints talking to one another." I find that a fitting conclusion to this forum.

COMMENTS ON UFO ABDUCTION PAPERS

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As a long-term admirer of unbridled speculation, I found Peter Rojcewicz's "Signals of Transcendence" (pp. 111-26) totally delightful. In a universe such as ours, truly, everything is connected to everything else. Unfortunately, some of Peter's relationships are a little too tenuous and remote for my intellectual comfort but of great value, in my opinion, were his suggestions for dealing with the witnesses' descriptions and interpretation of such anomalous events and the expected variations in the recounting of UFO reports. His discussion of problems with traditional "proof" are also beneficial, as well as numerous suggestions in his section on methodology and tools. I remain, however, a conservative skeptic with regard to the psi factor and any other extensions into the realm of the paranormal.

On the other hand, Hilary Evans's terse and accurate arrow-like statements were all in the eye of the bull and, for my money, he is the argumentative archer we should bet on. I agree one hundred percent with each of his statements—particularly his statement, "Myths can be dangerous if we mistake them for reality" (p.134). This should be emblazoned on the walls of every room that Budd Hopkins and Whitley Strieber inhabit.

I was also most intrigued with Dr. Mundy's psychological study of the replies of persons responding to the *Omni* survey (pp. 135-36). The questions she is asking are pertinent and I am sure the answers will be even more fascinating than the conversations she has had thus far. All are the type of questions that contactee investigators need to ask and answer, and these questions underline and emphasize Stuart Appelle's warning that we need to resist the temptation to reject the incredible accounts outright and examine the abductee reports objectively and soberly, looking at witness credibility, documentation, and conventional interpretation, taking into account observer limitations, perceptual and memorial flaws, confabulation, and hypnotic distortions. Appelle's recommendation that we adopt Morrison's criteria for proof and the need to obtain "multiple, independent, link-by-link, verified chains of evidence" is a most welcome recommendation. He is also correct in stressing the humanitarian aspects of the abductee claims and urging consideration and kindness (pp. 127-29).

Dondeni's references to Popper's arguments for the corroboration and disconfirmation of theories is cogent, and his suggestion that evaluations of the alleged abductees be compared with equivalent evaluations of adult victims of other forms of mistreatment is highly valuable. The references to cognitive dissonance theory

and Kuhn's paradigms are also insightful and useful, although I am not sure I agree with his conclusion that "the average working scientist" is the least capable of evaluating and understanding the UFO abduction claims (p. 131).

Because of my training and experience, as well as my hobby of investigating reports of haunted houses and apparitions, I cannot help but regard all abductee claims not as evidence for some other sort of "reality," but rather as nothing other than a behavioral aberration, i.e., a fantasy, a delusion, or a hallucination. Until better and more persuasive evidence is forthcoming, I remain unconvinced by reports that most of the abductees are "normal," well-adjusted individuals. In their case their abduction claim *is* the pathology and, I would argue further, that upon close examination we would find that all of the abductees are neurotic—not psychotic. Each and everyone is "normal"; that is, in the sense that they can carry on all of their daily activities without problems and behave like most everyone else in most ways. But in one small and particular area of life they have a tiny mental screw out of place, like the lady who is fine in every way except that she has to wash her hands fifty times a day. Compulsive hand-washers come in all shapes and sizes from all walks of life—even in child sizes, rich and poor sizes, and sizes foreign and domestic. What they have in common is their hand-washing compulsion. Similarly, our abductees. There are no aliens among us, only *homo mal-sapiens*. This diagnosis is by no means recent or unusual. Grinspoon and Persky (1972: 238), over a decade ago, specifically noted this type of syndrome and the difficulty it poses to the diagnostician. In their words:

Of the several categories of mental disturbance from the ranks of which one might expect unreliable reports of UFO sightings, ambulatory schizophrenia would be expected to be most important. People who suffer from this illness frequently have hallucinations, although more commonly auditory than visual, and often are delusional. One would expect that a grossly psychotic reporter would be recognized as such by the person accepting the report in a vis-a-vis situation. Of course this is not always the case, as it depends on the sophistication and experience of the person who is evaluating the reporter. Recognition of psychosis may be especially difficult if the report is part of a relatively fixed, systematized, and encapsulated delusion. *Here, aside from the delusional system, there is no other apparent disturbance of affect, and the reporter continues to function normally in the other areas of his life.* The existence of an underlying psychosis may be especially difficult to recognize if all that is available is a written account of the UFO sighting or experience. *In fact, in this instance even the most experienced clinician would find it almost impossible to make a diagnosis from many if not most reports of this nature.* [Emphasis mine—RAB]

The authors go on to discuss another form of disorder known as *folie-à-deux* in

which one of two closely associated people develops certain mental symptoms, particularly delusions which are communicated to and accepted by the second person. The person suffering from the delusion is the dominant individual, while the one who develops the induced delusion is of a submissive and suggestible type depending upon and having a close emotional attachment to the infector. The primary neurotic or psychotic may have, at first, a rather limited delusion which, as he develops it, systematizes it, and invests more and more in it, he imposes on the weaker person, who comes to share and even participate in the development of the systematized delusional ideas of the dominant person. This is mentioned because it is such a common occurrence among true UFO believers who, possessing strong dominant personalities, use the power of suggestion in the form of hypnosis, to convince many submissive and suggestible individuals that they have, indeed, been abducted by UFOs. Hopkins's cases, cited at length in his two most recent books (1981, 1987) contain many splendid textbook examples of *folie à deux* at work.

Finally, no one who has read his comments would have any desire to cross swords with Swords (pp. 137–38). All of the questions he raises are questions we must have answered if we are to pursue the abduction phenomena further. He is certainly on target in pointing out the sloppy, pseudo-therapeutic, hypnotic approaches and the lack of independence among the abductee investigators and the contents of their reports as well as the "American" pattern and style of the abductions. Yet his questions are relevant and deserve further investigation only if we assume that one or more of the abductee claims are legitimate. If all of the claims are fraudulent then the pursuit of the questions Swords raises becomes a mere academic exercise only, similar to the game of "I wonder what would happen if...?"

A few years ago, working with over a hundred student volunteers in the exploration of past and future lives regression and progression, it became apparent to me that many of the students—especially the highly imaginative and suggestible ones—found it very difficult to discriminate between memories of actual happenings and imaginary events. Did it really happen? Or did I imagine it? As I grow older, at times I find myself having the same difficulty with regard to many minor and insignificant things. Although the past and future lives of all of the students varied considerably in richness of content and detail, none of the material they produced could be attributed to anything other than something they had seen, read about, heard or witnessed in this lifetime. In every case, after detailed interrogation both the student and the investigator were satisfied that all of the material produced during the hypnotic sessions was wholly imaginary. During the course of this work I also discovered that both regressions and progressions could be produced in many of the students without any "hypnosis" at all. Merely having them relax and "play the game" of going back or forward in time was sufficient to produce unconscious material of a rich and complex nature. It should come as no surprise that man's unconscious is a rich and marvellous storehouse—the source of all creativity and the wellspring of imagination filled with heroes, demons and monsters. Unfortunately it sometimes even includes aliens who drift down from the skies and take people away.

We must be careful, however, to separate the outer world of facts from the inner world of fables and never allow the "private" fictions to destroy the larger and "public" truths we share.

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COMMENTS ON THE ABDUCTION DEBATE

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No first-round contributor thought that abduction stories were *prima facie* evidence of abduction by extraterrestrials, but contributors gave widely different reasons for their restraint.

Baker said about UFOs that "we have not a single shred of tangible evidence [and that] photographs, drawings...are each and every one subject to possible forgery and distortion." And, about abductions, "If such abductions have occurred, why, in the name of common sense, have not these felonies been reported to the Federal Bureau of Investigation?" Baker reasons that UFOs do not exist because the UFO evidence is nonsense, so abductions cannot be extraterrestrial because there are no UFOs. Besides, he concludes, if there are extraterrestrials, then they are incompetent because, instead of meeting the President, they "sneak around in the cover of darkness...and avoid exposing themselves at, say the Super Bowl." So, according to Baker, either there are no extraterrestrials, and therefore no alien abductions, or if there are extraterrestrials, they are incompetent. In either case, not to worry.

Hilary Evans, in his very concise summary, reasons from his premises to his conclusion. "Though it is possible that ET life exists, there is no convincing evidence that it does." After carefully outlining "paranormal" alternatives (Evans 1982) to an ET explanation of abduction, he concludes that "UFOs, *per se*, are irrelevant to abduction stories, except as they provide a suitable setting: abduction stories are a dead end for the UFO researcher." Evans ends where he begins, by dismissing the ET explanation of the UFO evidence, and by dismissing abductions as relevant to the UFO phenomenon.

Rojcewicz followed Evans in elaborating the context of UFO and abduction experiences. He calls for theories which draw on the physical sciences, psychology, parapsychology, and folklore to explain the data.

Swords, Appelle, and Mundy recognize a perennial problem: the quality of the data. Swords emphasized the potential for contamination of data when collected by only a few researchers. He suggested that Lawson's hypnotically elicited abduction experiences are a control for cultural contamination, which should be used to compare with reports from alleged abductees. Appelle pointed out the lack of corroborating physical evidence. He also points out that the "mind control" reported by alleged abductees complicates interpreting their reports. Mundy pleaded for help in assessing the validity of her collection of letters and tape recordings of people who have experienced CE-3's.

Donderi said that verifying the ET hypothesis for either UFOs or abductions

requires corroboration through attempted disconfirmation. He mentioned the normal personality profiles of alleged abductees as corroborating the reality of their experience, as against the alternative explanation of psychopathology. He also described the scientific community's strong bias to reject the ET hypothesis, and cited Festinger's cognitive dissonance process as the mental biasing mechanism.

There is not yet enough evidence to explain the consistent abduction reports (Fuller 1966; Hopkins 1987; Strieber 1987). But there is enough evidence not to simply dismiss them as a phenomenon of abnormal psychology, and not to simply relegate them to a niche within Evans's inexplicable panorama of the paranormal.

I think that at this time, all of the extant explanations of abduction reports are about equally likely. Why? Because each explanation requires an equally shaky chain of imperfectly verified assumptions.

If abduction reports are psychological aberrations, then the hypothetical psychopathological syndrome which produces them has yet to be verified and linked to environmental and/or biological causes. This has not been done. The "boundary-deficit hypothesis" (Baker, pp. 104-10) is not a recognized psychopathological condition; it is just another name for reports of uncommon experiences. The only recognized relevant psychopathology is "Schizotypal Personality Disorder" (American Psychiatric Association 1987). Symptoms of this disorder may include "magical thinking" or "unusual perceptual experiences." None of the alleged abductees who were tested were found to suffer from this disorder. Waking dreams occur, but are an equally ad hoc explanation for an uncommon experience, unless the alleged abductees can all be shown *a posteriori* to be unusually susceptible to waking dreams.

Enough is commonly known about UFOs, and abductions, so that almost any normally conscious literate person could simply invent an abduction story, if asked. This does not prove, any more than Lawson's hypnotically invented stories, that the abductions actually reported are inventions.

Calling abduction experiences "paranormal" does not explain them. Classifying the abduction reports together with other unexplained phenomena is simply an admission of defeat.

Finally, there is the face-value hypothesis—that the reports describe abductions into UFOs by alien, possibly extraterrestrial beings. This presupposes the existence of UFOs and UFO occupants. Evidence for UFOs and occupants is substantial but controversial. However, its quality is at least as high, in my opinion, as the alternative presuppositions of psychopathology or of the escapist classification as paranormal.

The debate is not over. How will it end? It may end with a whimper. If only a few additional credible reports are made, and if the press finds several reports which are self-evidently psychopathological, then the phenomenon will be dismissed as a "quirk" or aberration. Neither scientists nor the informed public waste much time on quirks or aberrations. Alternatively, if more consistent abduction reports are

made, and if they withstand disconfirmation as psychopathological, then there will be a sufficient body of evidence to generate interesting theories of the phenomenon.

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MORE THOUGHTS ON ABDUCTIONS

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The great thing about being self-employed is that you can take a sabbatical (albeit, an unpaid one) whenever you like. After a surfeit of UFOs in 1987 (Evans and Spencer 1987; Spencer and Evans 1988), I did just that, and wrote a book on alternate states of consciousness (ASCs) (1989).

I wrote it for the same reason I write all my books—to learn about the subject. Though the literature on ASCs is extensive, there is a curious reluctance of authors to confront the questions, why do ASCs occur, and why do they take the form they do?

In seeking answers to these questions, I confirmed (surprise, surprise!) views I had already formed about other things that puzzled me, such as what is happening when people report encounters with otherworldly beings (1984, 1987a). And I also found confirmation of the ideas I was accumulating about alleged contact with and abductions by extraterrestrials (1988).

But enough of these references to Evans this and Evans that, which none of you have time to read anyway. Let's get to cases. Being, in my way, an honest researcher, with myself if no one else, I told myself I must confront the challenge posed by those cases which are generally reckoned to be the strongest. If I could not show good reason for not accepting the face value interpretation of, say, the Hill, "Davis" and Strieber cases, I ought in all honesty to accept it.

The Hill case. I do not propose to waste your time and mine by going into this well-known case (Fuller 1966). I have given elsewhere (1983, 1988) reasons for questioning the version of the case with which we are usually presented, and I am not the only researcher to do so (Klass 1988; Spencer and Evans 1988, etc.). In addition, we know that the Hills' own doctor did not accept that the events actually occurred.

The Davis case. No question, the incidents in Kathie Davis's life, as presented by Hopkins (1987), seem to offer a consistent and plausible story, in which she is used as breeding stock by visiting extraterrestrials. However, as analysis makes clear (Evans 1988), *it is precisely this characteristic of her story which shows up its implausibility*

Unlike so many other encounter protagonists, Davis is entrusted with no mission, supplied with no information, given no conducted tour of the spaceship, taken for no spaceflight, invited to visit no other worlds; her abductors do not identify themselves or indicate their place of origin. *There is virtually nothing to her experience except matters of pregnancy, copulation and childbirth*

Yet we are asked to believe that—having the entire human race at their

disposal—the aliens choose Davis, with her obvious ill-health, anxieties, marital and associated problems, to be the source of their experimental offspring.

In this case, too, there are scores of contradictions and inconsistencies which should give us pause; but divorcee Davis's preoccupation with pregnancy, coupled with the improbability of her being chosen, are alone enough to turn what at first sight seems the strongest, most coherent abduction story ever told into the one which most encourages us to seek its explanation in the psychology of the witness herself.

Strieber. Others (Klass 1988) besides myself (1987b) have pointed to the ambiguities, contradictions, inconsistencies, etc., of Strieber's narrative (Strieber 1987). I will confine myself here to another aspect, the extraordinary attitude of his psychiatrist, Donald F. Klein, Director of Research at New York State Psychiatric Institute, who is quoted in the publisher's press release for *Communion*. "I see no evidence of an anxiety state, mind disorder or personality disorder."

By strict clinical standards, this may for all I know be a valid assessment. But no one can read Strieber's account of his safety precautions at his home and not feel that he is displaying more anxiety than most of us; no one can read about his several cases of amnesia without feeling that his mind has been periodically disordered; and no one can read of his ability to "forget" about his childhood preoccupation with extraterrestrials, and not feel that his personality is somewhat less than ordered.

So how could Dr. Klein fail to apply the critical standards which any of us with common sense would apply? How have so many people for so long been ready to accept the Hill story with its manifest discrepancies? How can so many American ufologists fail to consider the possibility that Hopkins, Jacobs, et al., are *causing* the abduction phenomenon to proliferate just as the inquisitors caused the witch mania to proliferate, and fundamentalist ministers cause the demonic possession delusion to proliferate?

On the question of the psychological soundness of abduction witnesses, I am grateful to Don Donderi for raising this vital question, because too many researchers seem to be reasoning as follows:

ASCs happen only to people with psychopathological problems.

Tests show that abduction witnesses do not have psychopathological problems.

Therefore abduction witnesses do not have ASCs.

Therefore, since hallucinations by definition occur only within ASCs, abduction witnesses are not hallucinating.

Therefore their experiences are real.

Of course, others have trodden this logical path before them. Otherwise intelligent Catholics continue to believe that Bernadette Soubirous encountered the Virgin Mary, largely because they cannot accept that she could have been hallucinating (Lhermitte 1933). Yet, as Robert Baker reminds us, even the healthiest of us can hallucinate if the circumstances are appropriate.

One would have thought that in the wake of Szasz (1961), to mention no other, this confusion between mental illness and ASC-proclivity would no longer prevail; but alas, no.

I have used my "second chance" to elaborate on my own ideas rather than comment on others. This is partly because it is clear that the majority of the forum commentators seem to have come to more or less the same conclusions as I have.

However, I do feel stirred to comment on Peter Rojcewicz's offering—not because I wish to fault it; most of it lies, in any case, beyond my competence (and much of it beyond my comprehension); but because I think that in the context of this round table it is a dangerous distraction.

Before we start playing his academic games, we need a simple, down-to-earth answer, first, to the simple, down-to-earth question: is it a fact that the Hills, Davis and Strieber were abducted by actual, flesh-and-blood (or whatever their equivalent) ETs?

If it is, we might discuss such questions as why the fact is presented in so ambiguous a manner, but that would simply be an academic exercise pending better acquaintance with the ETs and their intentions.

If it is not, we might discuss such questions as what makes the witnesses themselves, and the investigators, think it is.

But the crucial second question must be: Can we provide a model which would provide an adequate alternative explanation for their behavior within the parameters of what psychology and sociology already have to offer?

Only if the answer to both questions is no, should we consider invoking Peter's omnivjective human-UFO interactive model. I don't think we've reached that state yet. My study of alternate states satisfies me that we can find a model for the abduction mania within the knowledge we already possess.

Alternate states, with all the hallucinatory and other effects they bring with them, occur to perfectly healthy people on a far, far wider scale than is often supposed. People like Hopkins, Jacobs, Fuller, Strieber and company ought to know this. If they don't know it, they have no right to be seen as authorities on the matter of abductions; if they do know it, they are guilty of misrepresentation in not taking it into account when they present these cases to the public.

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THE PSYCHOLOGICAL PROBLEM OF PROVING THAT UFOs EXIST

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Corroborating sensory evidence pours in daily from current media for the existence of UFOs (*TV Guide*, October 14, 1988) and additional numbers of abduction reports of Close Encounters of the Fourth Kind (Bullard 1987). Yet 27% of Americans, according to the 1978 Gallup poll, do not believe in UFOs. Fifty seven percent do believe the Earth is being visited by extraterrestrial spacecraft, while 16% have no opinion. The belief in "flying saucers" correlated positively with education: the higher the level of education, the more likely to hold the positive view. In the same poll, incidentally, 5% of Americans said they did not believe that man has landed on the Moon. No one has systematically surveyed the professionals or the scientific community, where, at least in public, few will testify to their belief that the UFOs have landed. Privately, the noted scientist, J. Allen Hynek, stated that the alien abduction experience is real. Why the discrepancy between private and public expression? And why the inability to accept the facts, or at least to look at the data objectively?

Professional statements made while one is functioning as a professional, such as a psychologist speaking of a diagnosis, or a lawyer arguing the merits of a case, must be made in accord with the written and unwritten laws of that profession.

At least if the individual wishes to remain a member of that profession, and continue to carry the "union card," one must not be "unprofessional" by word or deed. It is an interesting example of Catch-22 that no one in a closed group can go against the public statements of the majority of members of the group (unless willing to risk being discredited) even though privately, many, and possibly even a majority, of members in that group hold a contrary view. This is exactly the problem of Professor Hynek. He repeatedly told colleagues whom he could trust to maintain confidentiality, that the evidence for alien encounters was solid; yet he knew that if he said so officially, his entire work would be discredited. In fact, Project Blue Book was dissolved soon after he concluded that UFOs exist. This statement was, at that time, unacceptable to his employer, the United States government. Dr. Hynek judged that it was more important to disseminate some of the data, and wait for a more favorable climate to express the less popular conclusions, rather than have all this work censored or ridiculed. The tenor of the times is now more favorable. Fortunately, now that "hard-core" leading scientists have come forward and said

this is a respectable problem which must be studied, the social sciences can follow suit.

Peter Sturrock is a distinguished Stanford professor of space science and astrophysics who has published more than 150 scientific articles. In 1949, when he was a graduate student at Cambridge University, he won the prestigious Cambridge Rayleigh prize for his theoretical research on electron physics. Since then, he has made fundamental advances in plasma physics and astrophysics, and is a fellow of the Royal Astronomical Society. Since 1983 he has served as deputy director of Stanford's Center for Space Science and Astrophysics. He started an organization in 1982 called the Society for Scientific Exploration to investigate, among other things, UFO landing sites. He stated, "I surveyed members of the American Astronomical Society about UFOs in 1977. More than half of the respondents thought the subject merits scientific study. Furthermore between 5 and 6 percent of the members reported possible UFO observations of their own" (Goldman 1988: 52). Sturrock's interest in this work was sparked by the Condon report, a study commissioned by the Air Force in 1966. Dr. Sturrock said that the conclusions of the report—that there was no evidence for the existence of UFOs—were simply not justified by the data in the body of the report. To the contrary, the preponderance of evidence indicates the possibility of at least one case of a genuine UFO.

In the social sciences as well, the esteemed psychiatrist Dr. Carl Jung advocated the search for UFOs, and two respected psychologists, Dr. R. Leo Sprinkle, and Dr. Aphrodite Clamar, have presented separate papers at the American Psychological Association meeting in New York City (Clamar 1987; Sprinkle 1987). Dr. Clamar concluded, "It is time we started taking abduction reports seriously."

The second aspect of the problem has been well clarified by the psychologist Leon Festinger (1969). Festinger's cognitive dissonance theory states that if a discrepancy occurs between an established opinion and positive information which contradicts the opinion, the result is tension. The resolution of the tension can occur either by modifying the opinion to match the information, or modifying the information to match the opinion. The contradictory information can be removed as a source of tension if it is ignored, or if it is devalued by challenging its relevance or credibility. Dr. Donderi has explained the application of this theory to the problem of maintaining any objectivity with regard to the UFO data (pp. 130-32). Dr. Donderi explains why the very nature of scientific research rules out strange data.

In addition to his cogent reasons why scientists cannot alter their belief systems to incorporate the scientific evidence for UFOs, I would like to point out two profound, almost insurmountable, problems—one sociological and one psychological.

The sociological problem is actually a political/military problem. The United States Air Force Academy text book, in use in 1972, had this statement at the conclusion of a lengthy historical review of UFO sightings. "Thus, UFO sightings not only appear to extend back 47,000 years through time but also are global in nature. One has the feeling that this phenomenon deserves some sort of valid scientific investigation" (Carpenter 1968: 459). However, four years later, our

government declared that UFOs were a threat to our national security and all information about them was classified above top secret (Good 1987). A joint Air Force and Navy regulation stated that any serviceman revealing information about UFOs, without authorization, was subject to a penalty of fine and imprisonment. For a while, the Freedom of Information Act forced the release of some of the classified data, but now that has been rescinded.

The psychological problem is just as intractable. If the aliens that are now being witnessed by quite sane people (Bloecher 1985) were appearing to be like the ET's of the movies *Close Encounters of the Third Kind* and *E.T.* there would be no problem accepting their existence. The human ego loves the message of those movies, that extraterrestrials are strange but docile and just need help getting back home. But people who are reporting physical contact with aliens are reporting absolutely terrifying abduction scenarios. The many who have come to me for psychotherapy are in a severe conflict, for they both want to reveal the experience and deny that it ever happened. Some beg me to come up with an alternative explanation of the events they feel they have experienced. Their egos are nearly overwhelmed by feeling helpless at the mercy of powerful alien forces. My diagnosis is: Post-Traumatic Stress Syndrome (DSM III-R 300.89). Regardless of the nature of the reality of the experience, the person who seeks help deserves to be treated seriously.

And we need to treat ourselves seriously, as scientists, and not dismiss (or ridicule!) the sources of data which are dissonant to our belief systems. We must increase our tolerance for anxiety. For if superior human beings exist and have visited this planet Earth, it is a challenge to all that we hold sacred. We must heed Jung's warning: that the discovery of extraterrestrial intelligence could mean that we would find our intellectual and spiritual aspirations so outmoded as to leave us completely paralyzed (Christian 1976: 103).

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ROUND TWO RESPONSE

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All the positions on UFO abductions expressed in this journal make either explicit or implicit assumptions about anomalous beliefs. Some have argued that UFO abduction narratives are "implausible, inconsistent and contradictory" (Evans). Others are convinced that the abduction event is a "fantasy and a fabrication" (Baker) or is characteristic of "boundary-deficit minds" and "developing paranoia" (Kottmeyer, in Baker). Still another has discussed the theory of "cognitive dissonance" (Festinger, in Donderi) to point out how people struggle to adjust their opinions to remain consistent with their knowledge. All of those statements presuppose a precision to the concept of belief that does not actually exist. Before we researchers affirm, condemn, or simply note the reality claims of UFO abductions, we need to be clear as to what is actually believed. Unless we can be sure as to the exact nature of anomalous beliefs, we are always in danger of analyzing our own intentions rather than those of our "informants" (i.e. witnesses, percipients, abductees).

Many accounts of anomalous beliefs are presented as if informants' assertions should all be taken on the same level and to the same degree of commitment, regardless of contextual factors. The researcher should expect some variations in UFO accounts relative to belief depending on whether the informant feels that he or she is in the presence of a sympathetic or antagonistic listener, or, as Hall, McFeaters, and Loftus have observed (1987), whether a considerable period of time has elapsed since the original event; or whether the witness has been exposed to potentially misleading post-event information; or whether the witness has recently undergone a change of attitude that would induce a particular bias in the recollection of details of the event. Because no epistemological differentiation among beliefs is offered by most researchers, our informants' statements get fitted neatly together, and thus display a homogeneous world view which is a product of the researcher and not of the informants.

This homogeneity is usually false since some beliefs carry several possible interpretations, and we can hold them without committing ourselves to any single interpretation. We can hold beliefs which involve unanalyzed or partially analyzed terms. Such complex beliefs that fail to identify *one and only one* truth value have been referred to by Dan Sperber (1982) as "representational beliefs of semi-propositional content." Unlike "factual beliefs," which possess clearly determined and fixed truth claims, representational beliefs constitute a "fuzzy set" of related mental attitudes. Why would a person hold such a belief?

Representational beliefs of semi-propositional content offer a means to process ideas and experiences which exceed our present understanding, and thus may serve as a step toward fuller comprehension. Statements containing semi-propositional content cannot be true or false in themselves but determine a wide range of possible interpretations relevant to the speaker and listener.

Many accounts of anomalous events present a continuum of invested belief. Such accounts reveal an indefinite field of attitudes ranging, as Gillian Bennett has suggested (1987: 213), from convinced belief, some belief, unsure/uncommitted, some skepticism, and convinced disbelief. For example, an individual can be convinced he or she had an authentic UFO experience, have some belief that it was truly anomalous, feel unsure as to whether a controlling intelligence was involved, be skeptical that it was a Russian secret weapon, and fully convinced it was not extraterrestrial. There is no reason to assume outright that all apparently irrational beliefs like the reality of UFO abductions are "factual beliefs," as they are sometimes "representational beliefs" carrying multiple meanings and interpretations. If apparently irrational beliefs appear to be rational, it is not because their content has been misrepresented, but because they have been falsely presented by the researcher as having a single and absolute truth value.

This discussion is intended to demonstrate that belief is a vaguely defined and ambiguous research category that investigators of UFOs and other anomalies should handle with care. There is no good reason to assume that people holding the same beliefs will necessarily express the same attitude toward them. This is true not only from informant to informant, but also from one instance or situation to another (K.S. Goldstein, in Rojcewicz). Moreover, some UFO abduction beliefs are factual while others are representational or symbolic. We need to distinguish between such beliefs if we are to understand more fully what is going on with UFO abduction claims.

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ABDUCTIONS: LOOKING BACK, LOOKING AHEAD

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It was a pleasure, an unusual opportunity, to read the reflections of so many serious colleagues on a common issue, and it inspires many thoughts: too much to do justice to here. But briefly, here are a few:

A. Robert Baker and Hilary Evans have pointedly reminded us that no matter what anyone in the "UFO business" may wish to believe, the case for UFO abductions is far from proved in any sense other than the subjective feelings/experiences of certain fortunate or unfortunate individuals. If people doing abduction research choose to simply ignore the critiques and concerns of the wider UFO and scholarly community, even on the grounds that "those other people are just ignorant of the true status of the data," then they make that stand "with their back to the rest of the world," because the mere existence of positions like those of Bob and Hilary indicate that the case for abduction reality has not been sufficiently clarified and has not been properly presented to the "outside world" of scholarship and research.

My view is that most serious abduction researchers are *not* ignoring the concerns and critiques of colleagues like Bob and Hilary, and would very much like to organize proper data, set up various testing and protocols, write proper research articles and publish them in proper journals, and engage in proper forms of discussion with experts of varying expertise. It isn't being done, or is barely being done, due to the lack of personnel, facilities, funding, et al...a situation difficult to blame on the primary researchers, who are doing the work that they *can* do avocationally. The solution to this problem is, on the one hand, obvious: get more professional researchers involved. It is, on the other hand, depressing: how do you do it with the "leper colony" stigma which has been attached to the field? Bob Baker has expressed wonder to me that psychological professionals are not interested in this extremely significant "syndrome," which is so widespread in our country.

B. Jean Mundy has reminded us of two useful thoughts to keep in mind. One, how extremely widespread the phenomenon is, and how it encompasses people who, at first glance at least, form a wide spectrum of U.S. society. Of course that is the question: is this a wide spectrum or not? Is there crucial common ground which is relevant to any alternative hypothesis, such as Bob or Hilary prefer? Secondly, Jean reminds us that people working close to abductees are quite willing to engage in proper research and continue to test the alternative ideas as they arise. One professional can do only so much; Jean, and the few others actively at work, need

support in many ways: ideas and insights and mutually respectful discussion if nothing else.

As a perhaps trivial aside, one wonders how widespread in U.S. citizens' awareness are things like: the Betty and Barney Hill case and the appearance of its aliens, green or blue tractor-lift beams from *Star Trek* or *This Island Earth*, child-stealing from *Close Encounters*, genetic creation of humanity by aliens from Erich von Däniken, alien-human hybrids from the TV movie *V*? There are many powerful and possibly relevant pop-culture images out there. Can we find a way of checking them in abductee backgrounds? Can Jean's *Omni* sample be used in any such way?

C. Don Donderi and Stuart Appelle have reminded us of the proper scholarly researcher's orientation to anomalies or any research project in progress. Don's call for more and better directed research precisely harmonizes with my own opinion...one which would seem in any rational world to be obvious, but one which in our own real world seems to constantly need reaffirming. Don's point about "cognitive dissonance" is brilliantly appropriate, and needs re-reading by both archskeptical debunkers and "sold" believers. I would hope that he is wrong about one thing, and that it will be possible soon for open-minded professionals to devote more than part-time to this area in need of full-time research involvement.

Stuart outlines a troika of critical research concerns: credibility, documentation, and investigation of alternatives. In my view, none of these three areas has been properly presented as yet to the wider UFO research and scholarly community. And I say this not as a criticism of the few overworked researchers in the field. Criticism can only be justly applied, at this point, to individual "positions" which attempt to make too strong a set of conclusions based upon the state of the data available to the rest of us. "Outsider" scholars should not be expected to respond enthusiastically to conclusions based upon a "believe it or not" database. Stuart's important point of "mind control" possibilities, even if one accepts the general thesis of real abductions, should be sufficient alone to give speculators pause about the firmness of any detailed conclusions at this point. Somehow the "insider" database has to be organized for the insiders themselves, and then, somehow, that database (and protocol) has to be properly transmitted to the rest of us. Again, we need additional competent workers.

D. Peter Rojcewicz' contribution is for me the most challenging. It is challenging for a variety of reasons, the first of which is that it assumes some profound "external" (in some sense) reality or X-factor involved in the UFO abduction phenomenon. Although I am certainly willing to entertain that notion, it is, as my previous comments probably make pointedly obvious, premature in the process of "experience—data gathering—data testing—repetitions—alternatives testing—conclusions." However, all good scholars are not averse to imagining possible theoretical constructs ahead of the order listed above, just so long as we continue to label them what they are: speculations and not conclusions. I believe that Peter properly does that.

The factual strength of Peter's construct, for me, is the rather eerie similitude of UFO and folklore experiences stretching far into the past. *Some* sort of profound truth surely lies in there somewhere. Whether that truth lies in extraterrestrials flying real spacecraft from Tau Ceti, in Jungian reified archetypes and tuloidal parallel realities, or in demons or deros from Agharti, I find it difficult to reason upon. Quasi-material archetypes and tuloids present to us a possible aspect of reality which

- a) establishment science does not recognize;
- b) doesn't seem to show up in any predictable way or be easily relatable to any part of the current paradigm;
- c) doesn't seem to play any role in normal experience or resists being recognized as playing such a role.

My imagination is big enough, however, to find room for a quasi-material parallel-reality (as I've written about with regard to potential science-based concepts elsewhere). My religious upbringing also provides me with another sort of parallel-reality involving intelligent activity and beyond the ken of science. But I tread softly when attempting to apply these ideas to any phenomenon before the "mundane alternatives" have been fully investigated. To make the point explicit here, Peter asks us to imagine that the phenomenon results from an interaction between the human mind and some Factor X, but before seriously entertaining such a thesis we must ensure that the phenomenon is not "merely" the result of the interaction of the human mind and the mundane world we live in, and that the "X-factor" is not "merely" an unclassified set of concepts, structures, and activities in our minds. Once it is shown that such "ordinary" explanations fail, then extraordinary ones properly take the field.

My overall impression of the first round responses was delight at the serious, respectful, professional commentary of my new-found colleagues about this important, research-worthy subject.

ISSUES FORUM SUMMARY

MICHAEL D. SWORDS

The editor wishes to thank the forum participants for their wisdom and their knowledge concerning a question, a phenomenon, which all of us seem to view as worthy of proper research. Whether our preferred current hypothesis is anomalistic psychology, ETI, paranormality, or simply objective weighing of many alternatives, we seem to agree that the phenomenon is not well understood, yet sufficiently widespread to call for study. Almost everyone seems of the opinion that the current state of research and/or reporting of the data and methodology of that research is not in an acceptable state vis-a-vis the academic research community, and that a more objectifiable, scrutinizable presentation of the methodology and data is necessary. Beyond these agreements, the commentators apparently feel differently about interpretations of the phenomenon, as best we can know it given the status of data and presentation, and that is to be expected in a de novo field. As a step toward clarifying questions relating to the hypnosis step in the methodology, Dr. Richard Haines, an experienced professional in psychology and hypnosis, has produced for us a suggested technique for interviewing alledged abductees. Dr. Haines's methodology follows.

A "THREE STAGE TECHNIQUE" (TST) TO HELP REDUCE BIASING EFFECTS DURING HYPNOTIC REGRESSION

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INTRODUCTION

The author has tried to improve the quality of UFO evidence over the years by describing special methods and techniques that could be used to help validate temporal, spatial, and energetic experiences of eyewitnesses (Haines 1976ab, 1978, 1979ab, 1980ab, 1981). These reports were published at a time when most investigators were mainly interested in the so-called "nuts and bolts" issues, i.e., the phenomenon could be answered in terms of physical objects. Indeed, UFO abduction cases, now called Close Encounters of the Fourth Kind (CE-4), were not taken seriously by most field investigators. The situation remains virtually the same today. Other papers in this journal present some of the pros and cons of hypnosis as a tool to probe the contents of the subconscious mind concerning alleged abduction experiences. In addition, other researchers and clinicians have raised questions about its validity and reliability in evoking accurate recollections from one's past (Baker 1986; Hilgard 1965; Relinger 1983; Shor and Orne 1965).

The purpose of this paper is to present a new hypnotic regression technique which I have found useful in significantly reducing the possibility of leading or otherwise biasing the witness while under hypnosis. I call this the "Three Stage Technique" or TST for short. Since the TST is built upon a solid foundation of accurate conscious recall it is important to outline what should be done prior to the hypnotic sessions.

PRELIMINARY TST STEPS

(a) *Gaining Witness Confidence*

The hypnotherapist must gain the witness's full confidence before a truly deep trance can be achieved. Among the factors which contribute to development of this confidence are:

- 1) hypnotherapist's professional reputation;
- 2) impressions of technical competence and ethical standards;
- 3) the environmental setting;
- 4) hypnotic induction techniques used;
- 5) ability to cope effectively with stress.

The main purpose of gaining a high degree of witness confidence is to permit him

or her to relax fully and to place themselves under the hypnotherapist's guidance and protection. These preliminary TST steps are crucial in helping ensure the full voluntary compliance of the witness. Mutual trust must be established in advance of any attempt to probe the subconscious. There is another reason why these preliminary steps are so important, namely, the accurate conscious recall of the events forms the social context for what occurs later, i.e., the alleged abduction scenario. For example, it must be established that the witness is a reasonably "normal" person doing normal kinds of activities prior to the event rather than a drug addict who had just injected himself or herself with heroin or an extremely neurotic individual exhibiting a behavioral disorder.

(b) Conscious Recall Interview

The hypnotherapist must also know enough about what happened prior to the alleged experience to be able to plan the type and order of questions to be used when the person is hypnotized. This background information is obtained during the conscious recall interview. Typically I ask the witness to tell me about his or her childhood with special emphasis upon unusual experiences and any evidence of psychic abilities. I try to build carefully and selectively upon the answers received. I also ask about their family background back to at least their grandparents' generation. Using a family tree outline, I try to learn about dates of birth and death, personality types, which relatives the witness liked and disliked the most, which was most like the witness and which influenced the witness the most. These blood-line ties often prove important in trying to interpret details related to alleged abductions of previous members of the family. Of course questions are also asked about the events that immediately preceded the claimed abduction experience.

The way that these preliminary questions are asked is very important in how the witness answers them. These questions can bias the witness as much (or more?) than those asked while under hypnosis. Questions and comments by the hypnotherapist should be unemotional, should be guided by and based upon a thorough understanding of the UFO literature, and should not suggest to the witness that he or she is expected to know the answers to everything. Indeed, much remains buried in the unconscious at this point.

A brief description is in order concerning the environment in which I carry out hypnotic sessions. The room is dimly lit and quiet. The witness lies down if possible. A good quality stereo tape recorder is used; the witness wears one of the condenser microphones placed where it can record whispers, sighs, and other barely audible noises. I wear the other microphone but sit about ten feet away in a position that permits me to see their face and body at all times. Sometimes I also have used a closed circuit TV camera with dim red light to illuminate the face and body. It is valuable to video record the entire body since whole body movements can provide various non-verbal communication cues. The witness also wears a forefinger pulse rate sensor with red numeric display which is placed near their head so as to be visible on the videotape at all times.

(c) The Induction

I will not comment on the hypnotic trance induction except to say that it is very important to be able to achieve a deep hypnotic state for the TST method to be a success. Various depth of trance tests should be used to ensure that the witness is deeply compliant.

THE THREE STAGE TECHNIQUE

Stage 1. I ask the witness to "Please describe everything that you can see, feel, and hear. I will not be present with you. You will be experiencing only these three senses. You will be entirely by yourself. If you need me I will be able to enter the scene and help you. Again, all I am interested in is what you see, feel, and hear. Is that clear?" I try to use as flat and unemotional a tone of voice as possible with no special emphases placed on any word or phrase.

Note that I have done two things in Stage 1. First, I have asked only for three sensory impressions: seeing, feeling (i.e., tactile impressions), and hearing noises, sounds, voices, etc. I have not asked for any other information. Later analysis of this narrative indicates the degree of compliance with these simple instructions. Second, I have made it clear that I will not speak during this stage but will be available for assistance if needed. Note that I remain completely silent throughout this entire narrative; it usually contains long silent pauses punctuated by often exciting and interesting statements. There is a strong urge to join into the witness's narration to ask questions but such tendencies must be avoided completely. I wait until it is reasonably clear that most significant details have been given before I speak. This concludes "Narrative 1."

I then break into the witness's trance consciousness and ask how he or she is feeling and that we will take a brief rest break (muscular relaxation and light social conversation with me). This typically lasts from five to eight minutes. I ask if he or she feels able to go through the experience again. If they answer yes, stage 2 follows immediately.

Stage 2. Here I ask the witness to "Describe to me everything that you see, feel, hear, say out loud, and think to yourself." Note that two new elements have been added, namely verbalizations and thoughts. For instance, if during Stage 1 the witness heard a one-sided conversation, Stage 2 provides its other half and helps it to make more sense. Later side-by-side comparisons of the two stages often show a highly consistent narrative with the same action sequences, symbolism, quiet periods, logic forms, etc. Inclusion of their thoughts, on the other hand, usually include valuable cognitive interpretations of what they believe is happening. Note again that I remain completely silent during the Stage 2 narrative.

Following the conclusion of the Stage 2 narrative I again break into the witness's trance state and inquire how they are feeling and that they should try to relax for a time. This usually lasts five or more minutes as required. If they say that they can go

on, Stage 3 follows immediately. Almost all of my subjects have been willing and able to go on.

Stage 3. In this final narrative I say "Now I want you to go back to the beginning and tell me once again everything you can about your experience, only this time I will go with you. I want you to imagine me right there with you. We will talk about everything in detail. Is that clear?" Having heard two previous narratives with varying amount of subjective detail, now I am in a position to ask probing and clarifying questions with minimal biasing. Sometimes it is necessary to explain to the witness how important it is to go through the story three separate times. In most cases they accept my reasons and comply.

STRUCTURING THE ANALYSIS

In order to facilitate analyses of these often complex verbal narratives I transcribe each of the three stages of verbal text in narrow, single-spaced, typed columns about two inches wide. Gaps are left in the text where pauses occur. If a temporal order analysis seems in order then I make evenly spaced tick marks down each page on which these three paper columns are pasted side by side. These marks are labelled every five or ten seconds apart. Each transcribed section of text is pasted at the exact time when it was uttered relative to a common starting point. This kind of analysis is time consuming and usually does not yield many new insights. However, it does clearly illustrate differences and similarities among the presentation order of narrated events.

As with dream content analysis, hypnotic narratives are often researchable using a "manifest content" and "latent content" analysis approach (Freud 1900). Manifest content consists of the spoken words along with margin notes by the hypnotist specifying voice inflections, special emphases, emotional outbursts, etc. Latent content refers to the narrative as a symbolic representation of the contents of the unconscious. The challenge is to interpret both parts of the narrative in terms of what information and insights they give about the true nature of the person's unconscious mind. From these insights one may be able to learn more about the stimuli which produced the alleged encounter experiences.

In conclusion, I have found that use of hypnotic regression techniques to gain access to the contents within the unconscious need not be unduly biased by the hypnotherapist. The above method has been found to significantly reduce the opportunities for the hypnotherapist to lead the witness because nothing is said by the hypnotherapist during the first two complete narratives! Only during the third time through the story does the hypnotherapist "intrude" into the events being recalled. Readers who conduct CE-4 type research using hypnosis are encouraged to try the "Three Stage Technique" and to let me know the results.

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Book Reviews

UFOs 1947-1987: The 40-year Search for an Explanation. Edited by Hilary Evans and John Spencer. London: Fortean Tomes. 1987. 383 pp. £11.50.

It has now been over forty years since UFOs made their modern appearance near the end of World War II. Beginning with the military services of the Allied powers, attempts at explaining this peculiar phenomenon have continued until today, with little success. However, in the course of that search, we have learned a great deal about UFOs, the people that report sightings, and even something about the limitations of science itself.

This volume by Evans and Spencer, sponsored by the British UFO Research Association, is the latest and best attempt to place our current knowledge of the UFO phenomenon in some perspective. That the authors even partially succeed is a testimony to their effort and abilities. That the volume is not a total success can be attributed to some poor contributions (including odd selection of authors), but also to the inherent difficulties of producing a compilation of UFO research when much of what passes for research in this field doesn't merit that appellation.

Serious, non-governmental UFO research did not begin until the mid to late 1950s in both Europe and the United States (e.g., Aimé Michel, *Flying Saucers and the Straight-Line Mystery*, Criterion, 1958). Even so, it wasn't until the mid 1960s that work was produced that met the stringent standards of scientific research (Jacques Vallee, *Anatomy of a Phenomenon*, Henry Regnery, 1965; Jacques Vallee and Janine Vallee, *Challenge to Science*, Henry Regnery, 1966). Since then work has blossomed in many areas, involving academics from various disciplines, as well as persons with more modest training. Much of the most recent interesting work has been produced by folklorists (see Thomas E. Bullard, *UFO Abductions: The Measure of a Mystery*, Fund for UFO Research, 1988, for the best example).

In a field this diverse, choosing what to include in an edited volume is a potentially fractious task. Moreover, obtaining the cooperation of the authors, when no financial inducement can be offered, is no mean feat. Understandably, Evans and Spencer concentrated on English-speaking ufologists (over half the articles come from that group), but still managed to include contributions from other areas of Europe, and Zimbabwe. Willy Smith contributed a section on Latin American UFO cases and activity which, though condensed, gives a reasonable picture of UFO research in those locales.

It would have been useful to have a contribution from Japanese or Chinese researchers, but the Japanese have contributed little to the study of UFOs, and the

Chinese are new to the game. Parenthetically, it has always been intriguing how few UFO reports have come from Asia, especially India, given the large populations. The lack of sightings might explain why there have been few UFO groups operating in Asia, but the dearth of reports remains one of ufology's unrecognized puzzles.

The contributions themselves are marked by the uneven mix of quality and methodology that typically plague compilations of this type. Some articles are downright silly, such as Ken Behrendt's piece on propulsion. Behrendt presents his theories of how UFOs (i.e., extraterrestrially-manned craft) are propelled by an "anti-mass field," as if this concept was scientifically sound rather than wild speculation. Dennis Stacy's article on alternative theories that have been proposed to explain UFOs is not faithful to the plan of this volume, which was to present the more sober aspects of UFO study, not the wild flights of fancy of persons who, even at the time, had little influence. Thus, Stacy goes on at some length about Wilhelm Reich and his theory of the orgone without informing his readers that few paid attention to this eccentric. He also misunderstands what Carl Jung attempted to do in his interesting book, *Flying Saucers: A Modern Myth of Things Seen in the Skies*, Harcourt, Brace, 1959. Jung not only saw UFOs as a "visionary rumor;" he also suggested that something physical was being seen by witnesses.

The range of contributions is quite varied, which means that we must rely upon the one or two authors who write on a particular topic to cover the area adequately. This is often accomplished. Anders Liljegren and Clas Svahn present a concise description of the odd ghost rocket phenomenon that occurred in Sweden in 1946. James McCampbell's piece on the effects of UFOs on people is an excellent blend of both theory and fact on a topic that should have received far more attention over the years. Chris Rutkowski presents a balanced assessment of the theory that UFOs are some type of natural phenomenon, including both the work of Persinger and the British school, epitomized by Paul Devereux.

An edited volume is not necessarily the place to look for original research, but Alex Keul (an Austrian psychologist) and Ken Phillips (an English school teacher) do report on their long collaboration on a witness assessment project. They find that "the content of UFO reports cannot be statistically distinguished from fantasy," but that "UFO reporters are an average general population subgroup." This reviewer applauds their empirical approach to the neglected question of witness characteristics, but I find their evidence to be less than conclusive. However, this type of work is absolutely necessary if UFO study is to progress, and this paper may be the most important in the whole volume.

It is not surprising that a study on UFO witnesses comes from Europe. More so than before, UFO research has bifurcated into two camps, one represented by the Europeans, who take a more holistic, social science perspective, and the other by Americans, who see UFO study as a subject fit for the physical sciences.

These differences are mirrored in the hypotheses advanced to explain UFOs. As Evans explains in his article, "UFOs as Social and Cultural Phenomena," UFOs can be used as a substitute for religion, as an escape from personal problems, as folklore,

as a deviant belief system, and for amusement. For many European investigators, the UFO phenomenon is caused by the same psychological and sociological forces that caused us once to imagine that witches, fairies, leprechauns, and other strange beings existed.

Many American researchers believe, instead, that it is justified to propose that some UFOs might, indeed, be extraterrestrials in technological devices. That such a hypothesis is consistent with our knowledge of physics and astronomy is clear (see Michael D. Swords, in this issue, pp. 67-102), but the extraordinary evidence required to support such a claim is not available (as most American researchers I have talked with freely admit). The ufologist working in this paradigm believes himself to be more faithful to the data than the psycho/social school, who in turn see the physical school as naïve.

Evans and Spencer slant the volume toward the European view of UFOs, which is fair enough given their own positions. Thus we have interesting contributions on abductions as religious folklore by Bertrand Méheust, and Mark Moravec's article, "UFOs as Psychological and Parapsychological Phenomena." But Bill Chalker is given space to write about UFO physical traces, and concludes that "a physical dimension to the UFO phenomenon has been substantiated." Maurizio Verga's attempt to dismiss the evidence from trace cases is brief and unconvincing.

As a sociologist, what I find interesting, almost amusing, is the parallel between the current situation in ufology and my own field. American sociologists are often accused by the Europeans of being too committed to the use of quantitative models, of using only social variables that we can measure, and of being less interested in the historical roots of any phenomenon. Conversely, Americans often see Europeans as fuzzy-headed and committed to research techniques (e.g., textual analysis, comparative historical research) that will never allow us to generalize beyond the specific case. Just as in ufology, there are researchers on both sides of the Atlantic doing work in the other's area, but the trends are clear. I am, quite frankly, surprised that the European school of ufologists has not pointed out this parallel more often.

But perhaps they don't do so because this convergence of views in two fields both lends support and disconfirmation to their charges of American naïveté. As John Stuart Mill outlined in his *A System of Logic*, one means of comparative inquiry, the Method of Agreement, causes us to look for cases with the same outcome and identify similarities. The similarities I see are the general scientific cultures on the two sides of the Atlantic, whether one is studying reports of creatures from Zeta Reticuli or the stratification systems of industrial societies. In this view, *both* groups of ufologists are products of their cultures; thus, neither is working from any privileged position with respect to the evidence. This logic has been worked out in detail by sociologists of science (Europeans, I might add), who have demonstrated the plasticity of much of what passes for evidence and theory in science (Harry Collins, *Changing Order*, Sage, 1985; Karen Knorr-Cetina, *The Manufacture of Knowledge*, Pergamon, 1981).

One area of extreme disagreement in ufology is the question of a secret U.S. (and

perhaps other Western nations) government investigation of the UFO phenomenon. It is disappointing that Evans and Spencer choose to include, as representative of the pro position on the topic, a less-than-critical contribution by Leonard Stringfield. Much of the evidence for a cover-up is dubious, but Stringfield, once an important figure in this area, has been left behind, and accordingly conflates the reliable with the phony in his report.

I would have appreciated a contribution from a skeptic of the UFO evidence from outside the circle of active ufologists, although that is a tall order. Most scientists and others ignore the UFO evidence rather than attempt to engage it constructively. Other skeptics have their own axe to grind (James Oberg on space launches is an egregious case), and shape the evidence to fit their mold.

Some types of physical evidence also got little attention, such as vehicle interference cases or photographs of UFOs. But all in all, readers of this volume will find good starting points to begin their own research and/or investigation in all the main pathways of ufological research.

What emerges from the best of the studies in this volume is a sense of the complexity of the UFO data and the vast amount of research necessary to progress in our understanding of its origins. A responsible position, I suggest, is to accept the evidence for both a physical and social/psychological component to UFOs. Second, we should expect that, as so many others have suggested, more than one mechanism will be required to explain the variety of UFO reports. And third, we should build on past work, not duplicate it or, worse, forget it—here I have in mind Joseph Accetta's intriguing paper, "A Search for Possible Causal Associations between UFOs and Perturbations in Recorded Geophysical Data," *Journal of UFO Studies*, old ser., vol. 2 (1980), on geophysical correlates of UFO reports.

The physical appearance of this volume is attractive. The type is particularly easy on the eye. The binding is sturdy, and that's all for the good, because every serious researcher should have this volume on his/her shelf and refer to it often. It is not the complete and definitive account of where ufology stands at present, but it will do for now.

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The Spectrum of UFO Research. Proceedings of the Second CUFOS Conference, Chicago, September 25-27, 1981. Edited by Mimi Hynek. Chicago: J. Allen Hynek Center for UFO Studies. 1988. 214 pp. \$11.80.

When this volume of conference proceedings first came into my hands, I viewed it with less than enthusiasm. Material seven years old, and printed in very small, and

not always clear, type! I remember the conference, a very interesting one, but wondered what value the papers from the conference might have.

The answer came when the contents of the book were read. There are some papers which lend themselves to oral presentation, and others which show their value only when, at one's leisure, they can be examined in full detail. It is very much to the credit of the Center for UFO Studies that it has reproduced some very important papers of the latter kind in this volume. Among the particularly valuable papers of this kind is the Maccabee analysis of the Trent photographs from the McMinnville, Oregon, sighting. This is the kind of paper which really needs reproduction in full, with all details. Ditto for the papers on vehicle interference effects by Mark Rodeghier and Donald Johnson. I also found the paper by Allen Hynek and Howard Schechter to be of lasting importance.

Many of the other papers, such as John Schuessler's report of the Cash-Landrum case, are interesting. While Schuessler did update the case somewhat for this volume, there is really quite a bit more on this available now, and a full book-length exposition of the case needs to come out. The papers by Gordon Melton and Roberto Pinotti, on contactees and historical Italian sightings, respectively, are important contributions. In each case, however, some updating would be valuable. Other papers in this volume by Ballester Olmos, Guasp, Basterfield and Holt were useful, but needed updating also.

The volume contains a lengthy essay by Alvin Lawson on abduction imagery and its relationship to other ostensibly similar images deriving from birth trauma or near-death experiences. I would be the last person to deny some of the similarities that Professor Lawson notices, yet I found his argument unconvincing at the time and I do still. Many of the manifest features of ostensible "abductees" are simply untouched by Lawson's analogies: amnesia, multiple witnesses, post-traumatic stress, physical features. Hopkins's objections to Lawson in this volume were pertinent, and of course the whole abduction business has become more complex. I plan to give a copy of Lawson's essay for review soon to an expert in perinatal psychology; I will transmit the results.

The essay by Joan Jeffers reports the results of a well-designed survey to determine whether UFO percipients were more likely to have psychic experiences than others. The control group consisted of people taking a course on UFOs at a community college. While Ms. Jeffers found a strong relationship, comparing sighters to the control group, she did not ask a key question: did the psychic abilities precede or follow the UFO experience? This would be a very interesting point. It is extremely interesting to note that 80% of her UFO percipient sample relates having had psychical experiences. It is unfortunate that she did not compare her results with Andrew Greeley's paper, *The Sociology of the Paranormal: A Reconnaissance* (Beverly Hills: Sage Publications, 1975). Greeley used a national random sample (a much more appropriate control group). Upon a superficial examination, it would appear that the Pennsylvania UFO percipients Jeffers studied were over twice as likely to have a psychic experience as the general population.

To sum up, I think this is a very worthwhile volume, although CUFOS needs to get a better printing firm. Reflecting further, I wonder if it would not be worthwhile for somebody to print up a collection, perhaps two-volume, on "classic papers in UFO research?"

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