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NEW ANALYSIS OF SOIL SAMPLES FROM THE DELPHOS UFO CASE

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ABSTRACT Many analyses have been performed on soil exposed to a purported UFO release in Delphos, Kansas, which occurred in late 1971. Beginning in 1999, a new set of data from numerous analytical tests was generated using state-of-the-art equipment. The goal of this analysis was to determine the molecular composition of the material released by the UFO. Solid and conclusive data presented in this paper accomplished this identification to the extent that the chemical composition of the release is at minimum 95% characterized. The issue of release degradation over the years is certainly debatable and probably not resolvable. However this analyst believes that it did not suffer major degradation because past analytical data from the ring soils compare favorably to those tests that were repeated in the current analysis.

One of the most extraordinary events in the history of ufology occurred in Delphos, Kansas, at approximately 7:00 p.m. on November 2, 1971. Sixteen-year-old Ron Johnson was tending sheep about 200 feet behind his home when he heard a sound like "an old washing machine which vibrates." He quickly discovered that the source of the sound was a mushroom-shaped UFO that suddenly illuminated with multicolored lights covering its surface (blue, red, and orange). The object was approximately nine feet in diameter and ten feet high. It was about 25 yards away in a small grove of trees and hovering two to five feet above the ground. The illumination seemed to flow down toward the ground, and the ground had an unusual appearance, as though a shimmering material was falling from the base of the object to the surface.

Ron's dog did not bark during the sighting but the sheep were bleating. The light was so bright that it hurt his eyes. The UFO continued to hover and rumble for several minutes. Then the base glow intensified and enlarged somewhat, and the UFO took off to the east with a high-pitched wail. When it left, Ron was temporarily blinded, but he could still hear it departing toward the south and past the farmhouse. When his eyes cleared, he saw the object in the sky and went to get his parents. When they went outside the entire family saw the object departing in the sky.

At the site where the UFO had hovered, they saw a glowing ring on the ground and luminescence on nearby trees. Ron's parents placed their hands on the ring. They reported the soil was not warm, and it felt like it had been crystallized. Their fingers became numb, an effect which lasted several weeks. Other witnesses arriving a day later reported a light-colored, doughnut-shaped ring with a hole in the middle. It was

about eight feet across. The ring itself was about one foot across, and it was dry. The soil outside the ring and in its middle, though, was muddy due to recent rains. A foul odor was also reported by some investigators. See Phillips (2002) for a complete account of the sighting and aftermath.

Figure 1 is a photograph of the ring taken 19 hours after the event by the local undersheriff, Harlan Enlow.

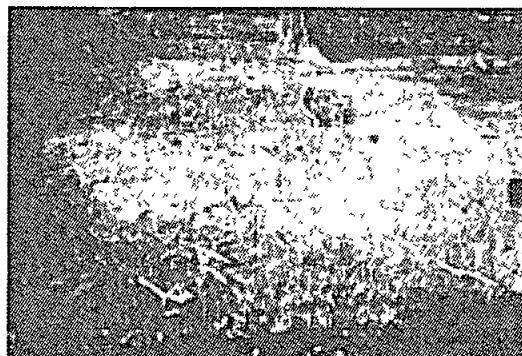


Fig. 1 Ring, Delphos, Kansas, November 3, 1971, 19 hours after the event

The first visit by a UFO investigator to the site was 32 days afterwards, on December 4, 1971, by Ted Phillips. He reported the ring was still there. "It was perfectly outlined in the unmelted snow." The soil underneath was dry to a depth of at least one foot and light brown in color, furthermore, it would not permit water to pass through the surface. The snow from the surrounding area was melting, and that soil was black and moist. Additionally, a high concentration of white substance was observed in all of the ring soil but was not present in the surrounding soil.

Phillips's next visit to the site was January 11, 1972, and this was followed by a number of other visits over the years. Figure 2 shows a photo taken by Ted Phillips 3½ years later. Note that nothing would grow on the ring at that date.



Fig. 2 Ring, Delphos, Kansas 1975 3½ years after the event

Most of the past analyses done on the ring soil focused on physical properties, applied physical forces, and elemental analysis. Unusual hydrophobic effects were noted. Compared to control soils it was noted that the ring soils contained a higher acid content, more soluble salts, and higher calcium content. They also produced less seed growth and were coated with an organic material. A second unusual material with white, crystal-like fibers was noted to be embedded in the ring soils. Very limited progress had been made into the molecular characterization of the white fibers and the other release materials (Swords, 1991, Clark 1998). To this author's knowledge, none of the analytical data were examined by an analytical chemist with specialization in the identifications of unknowns and an in-depth knowledge and experience in correlating data from numerous, different tests to define the substance. It would appear that as each different test was done, the investigator arrived at a different opinion. A few conclusions were erroneous. It is reminiscent of the proverbial six blind men from Indostan (Saxe, 1882) who each attempted to describe an elephant based on the area of the animal he touched, i.e., side (wall), tusk (spear), trunk (snake), knee (tree), ear (fan), and tail (rope).

Some effort had been made to elucidate the molecular composition of the release material. But, as noted above, a detailed compositional identification had not been achieved. In my viewpoint, both skill and experience were needed in data acquisition and interpretation of elemental analysis, and especially molecular spectroscopy, to put the puzzle together. The specific key was a spectroscopist experienced in infrared and nuclear magnetic resonance techniques. I hoped to apply the skills and experience of analytical problem solving gathered over three decades to the solution of this problem. I did not have to entirely start from the beginning. Erol Faruk had done some very revealing initial analyses in the 1970s. Faruk developed his analytical approach based on his experience as an organic chemist. He analyzed these materials using 1970s technology, which has advanced dramatically in the past 25 years. Computerization, new techniques, and instrumentation have advanced the field of analytical sciences to previously unachievable heights. Yet, Faruk's work was outstanding and provided preliminary observations and conjectures regarding unknown residues extracted from the ring soils (Faruk, 1989, n.d.). This was a definite asset in determining the analytical approach to use in this analysis. Though my approach to the analysis, as an analytical chemist, is different, there is nothing to contradict his initial observations.

SAMPLES

I began communicating with Ted Phillips in 1998 regarding additional analysis on the Delphos ring soils. The problem was to find existing samples. At a local Ohio MUFON meeting, I related the quest to John Timmerman of CUFOS. He indicated that he might have some Delphos samples. After a search, he did locate ring and control soil samples on Thanksgiving Day 1998, and I received these on December 7 (Phillips, 1998). Documentation and sample labeling attested to their authenticity.

and they were encased in their original tightly closed Kodak film containers with black tops and showing no signs of tampering. The labeling on the soil samples left no doubt that Ted Phillips, the principal investigator, sampled them on January 11, 1972, two months after the event. Furthermore, they were in a box in which the packing was torn-up pieces of a 1971 edition of a Missouri road map, Phillips's home state. Additionally, Phillips remembered sampling them.

Six Delphos soil samples were received. Their identifications follow:

- Ring sample A-2, surface to $\frac{1}{2}$ inch, taken January 11, 1972 (15.1 g)
- Ring sample C-3, surface to $\frac{1}{2}$ inch (15.9 g)
- Ring sample D-3, surface to $\frac{1}{2}$ inch (14.0 g)
- Control sample, center, surface to $\frac{1}{2}$ inch (23.1 g)
- Control sample A-9, surface to $\frac{1}{2}$ inch (21.4 g)
- Control sample C-8, surface to $\frac{1}{2}$ inch (23.7 g)

ANALYTICAL PROCEDURE

The philosophy for the analytical approach was to first examine the "as received" soils, that is, take an overall look at the "forest." Based on the data harvested from this first look, intelligent decisions were made on the best way to analyze the "trees." In this case, separations were needed to both isolate and concentrate the release materials and other components of interest in order to specifically identify them. Details regarding the testing done on the soils "as received" and their isolates follow. Definitions of the tests can be found in the Appendix.

The as-received ring soils and control soils were analyzed using a battery of tests which includes most of the analytical alphabet. These include elemental analysis by EDX (Energy Dispersive X-ray), %C, %H, %N, XPS (X-ray Photoelectron Spectroscopy) Molecular and structural analyses were done by XRD (X-ray Diffraction), FT-IR (Fourier Transform Infrared) analysis, SEM/EDX (Scanning Electron Microscopy/Energy Dispersive X-ray), headspace GC/MS (Gas Chromatography/Mass Spectrometry). Additionally, numerous individual soil particulates were isolated and examined by FT-IR.

Aqueous extractions of the soils were quantitatively done using nanopure water. Elemental information was obtained from the extracts using the following tests: EDX, %C, %H, %N, SEM/EDX (on D-3 ring soil only). Molecular and structural information was acquired using FT-IR, ^1H NMR (Proton Nuclear Magnetic Resonance), IC (Ion Chromatography), UV (Ultraviolet Spectroscopy). GC/MS analysis was attempted on the extracts, but the material hung up on the GC column, attesting to the presence of very highly polar material. GC/MS was additionally done on the headspace above the extract. IR spectroscopic examination was also done on silver nitrate precipitates of the D-3 extract and an aqueous solution of the sodium salt of humic acid (Sigma-Aldrich Catalog No. H1,675-2).

Organic solvent extractions were done on the soils using progressively polar solvents (pentane, chloroform, 1 : 1 acetone methanol) on the D-3 ring soil and the A-9 control soil. The fractions were examined for molecular information by FT-IR.

RESULTS

The first paragraph of each subsection presents a summary of the results. The remainder contains the technical details. It is organized in this fashion so that details may easily be skipped by the reader with no loss in context, but then are readily available to those who desire more in-depth information.

(a) Analyses of the Soils "As Received"

Ring soil samples have been reported to be much lighter in color than the control soils (Phillips, 1998). Subtle but significant color differences are noted for the samples analyzed in this report. Figure 3 is a photograph of two ring soils and one control soil in front of their original containers.

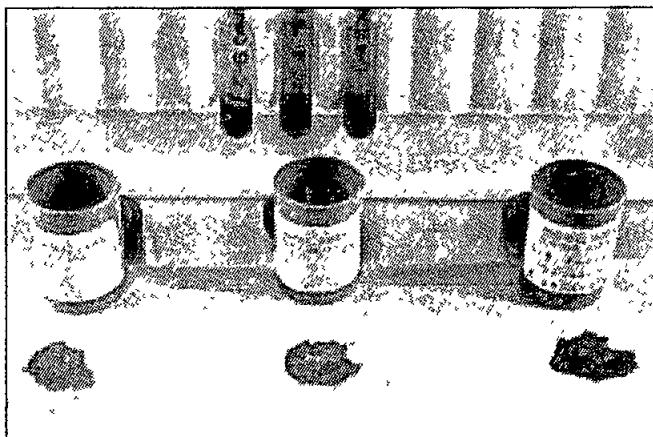


Fig. 3. Photograph of the two ring soils (C-3, left, A-2 center) and the control soil (C-8, right).

Elemental analyses. The elemental data were acquired on the as-received soils using EDX, %C, %H, %N, XPS, and SEM/EDX. Differences between the ring and control soils are clearly discerned, showing that a definite release of materials had occurred. The elements attributed to the release are sulfur, calcium, carbon, and nitrogen. Additionally indicated is organic material adsorbed on the surface of the soil. A very small amount of mercaptan and/or sulfide is detected. Details from each elemental test follow.

EDX analysis suggests slightly higher levels of sulfur and calcium. The increased calcium level agrees with the results of past elemental analysis. The values are displayed in Table 1.

**Table 1. EDX Elemental Data "As Received" Soils
(Normalized¹ Weight Percentage)**

Sample	Al	Si	S	K	Ca	Mg	Cr	Mn	Fe	Cu	Zn
C-3 ring	19.4	59.4	1.3	8.1	4.0	1.4	0.07	0.20	6.0	0.14	0.04
A-2 ring	19.2	60.5	0.97	8.0	4.0	1.5	0.12	0.17	5.5	0.14	0.04
D-3 ring	18.9	57.8	1.0	7.5	4.9	1.5	0.06	0.16	8.2	0.05	0.05
C-8 control	18.8	60.6	0.94	8.0	3.8	1.5	0.08	0.16	5.9	0.15	0.04
Center control	19.5	60.7	0.64	7.6	3.6	2.0	0.06	0.14	5.6	0.12	0.03
A-9 control	19.4	61.4	0.64	7.8	3.6	1.1	0.09	0.17	5.6	0.12	0.02

¹ These are all of the elements that are identified in the window of detection for this test. When the amounts of the elements are calculated, it is assumed that they total 100% of the sample. However, it is known that other elements, e.g., carbon and nitrogen, are also present from other tests.

The percent carbon, hydrogen, and nitrogen analyses suggest a small increase in carbon and nitrogen in the ring soil samples. Carbon/nitrogen atom ratios are also different. They are lower for the ring samples. It is noted that all of the ratios are consistent with those found in surface soils (Weber, n.d., "Organic"). The values are given in Table 2.

**Table 2. Carbon, Hydrogen, Nitrogen Content
(Weight Percentage)**

Sample	C	H	N	C/N Ratio
C-3 ring	2.59	0.54	0.29	10.4
A-2 ring	2.46	0.52	0.29	9.9
D-3 ring	4.01	0.76	0.51	9.2
C-8 control	2.52	0.54	0.25	11.8
Center control	2.93	0.58	0.29	11.8
A-9 control	2.04	0.50	0.21	11.3

At first glance, the above results do not appear to be earth-shaking. However, they are very interesting when viewed in context with the XPS surface data in Table 3.

XPS is an excellent technique for looking at the surfaces of materials. It shows a very significant increase in both carbon and nitrogen on the surfaces of all the ring soils, indicating that some of the release is organic. There is an expected decrease in soil elements (much of the oxygen, magnesium, aluminum, and silicon), because they are coated by the organic material. This had been also noted in a previous SEM analysis done in 1975 at the Oak Ridge National Laboratory. Specifically, for the D-3 ring sample, the data show a higher concentration of phosphorus and calcium. XPS also shows differences in oxidation states of the elements. Further perusal of the carbon data show more of it is associated with oxygen in the ring soils. Evaluation of the sulfur data, which shows sulfur to be present in very small amounts, indicates more sulfur is in the form of mercaptans and/or sulfides than in the ring soils.

Very limited SEM/EDX analysis was done on two samples (D-3 ring, and A-9

**Table 3. XPS Data “As Received” Soils
(Atomic Percentage)**

Sample	C	N	O	I	Mg	Al	Si	P	K	Ca	Fe	SSH/SC	SO _x
C-3 ring	27.8	3.4	48.2	0.1	0.5	4.9	12.7	0.14	0.8	0.6	1.0	0.10	0.15
A-2 ring	29.7	3.3	47.7	0.0	0.6	4.6	11.8	0.14	0.6	0.6	0.9	0.09	0.15
D-3 ring	36.3	4.1	43.0	0.0	0.6	3.8	9.8	0.29	0.6	0.9	0.9	0.09	0.18
C-8 control	16.5	1.7	56.9	0.1	1.1	6.0	14.5	0.18	0.9	0.7	1.5	0.05	0.19
Center ctrl	15.1	1.3	57.0	0.1	1.0	6.3	16.0	0.20	0.9	0.7	1.4	0.07	0.21
A-9 control	16.0	1.3	56.2	0.1	1.0	6.5	16.6	0.20	1.0	0.7	1.5	0.06	0.32

control) because of instrument downtime and other complications. Mostly soil minerals were observed. The data did indicate the ring soil contained more particulates, suggestive of calcium carbonate, than the control soil.

Molecular analyses. The analysis done on the as-received soils for molecular identification includes FT-IR, XRD, and Headspace GC/MS analyses. Results of tests with these techniques show the release material contains calcium oxalate, calcium carbonate, and a humic substance.¹ It is also noted that the ring soil has not been exposed to heat. Details of each test follow.

Extensive FT-IR examination was done on the total soils and individual particulates. Expectedly, infrared analysis of the “as received” soil samples shows predominant silicate absorption (mostly quartz type) from the soil for both the control and ring samples. However, there are weaker bands noted in the ring samples (between 1700–1300 cm⁻¹) that are not present in the controls. These are enhanced in difference spectra generated between the spectra of the ring soils versus the control soils. They are indicated to belong to materials such as calcium oxalate, carboxylic acid (chelated and/or ionic form) containing component, and possibly calcium carbonate. The carboxylic acid component is mostly part of the humic substance identified in later tests (see aqueous extracts). Figure 4 displays representative spectra of a ring soil, a control soil, and a difference spectrum.

Numerous infrared spectra were also obtained from particulates isolated from the ring and control soils. More different types of particulates were noted in the ring soils. This analysis was very revealing in that it provided specific identification of a unique, white, fibrous-appearing material infused in ring-soil lumps that had eluded researchers in the past. It can be definitely identified as calcium oxalate. Figure 5 shows infrared spectra of the fibrous-appearing material along with a calcium oxalate reference for comparison.

Calcium carbonate is also present in higher amounts, especially in the D-3 ring soil. (In the D-3 sample, this component was visually apparent as numerous white lumps of approximately 1 mm in size.) Additionally noted was a higher concentra-

¹ Humic substance refers to humic acids, fulvic acids, and/or humus. These are brown-to-black-colored substances which are relatively high in molecular weight and are formed from the synthesis reactions of humus. Humus is dark organic material produced by the decomposition of vegetable and animal matter in soil.

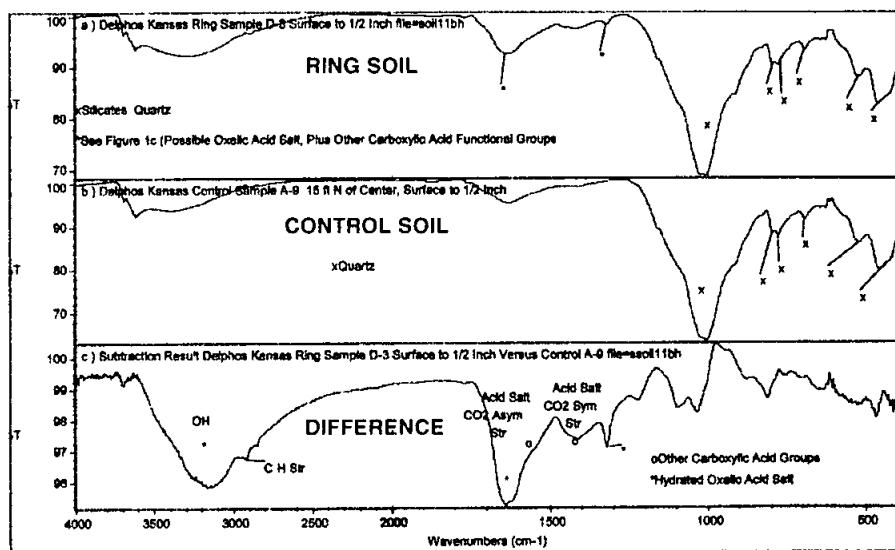


Fig. 4 Infrared spectra for "as received" soils Ring, control, and difference

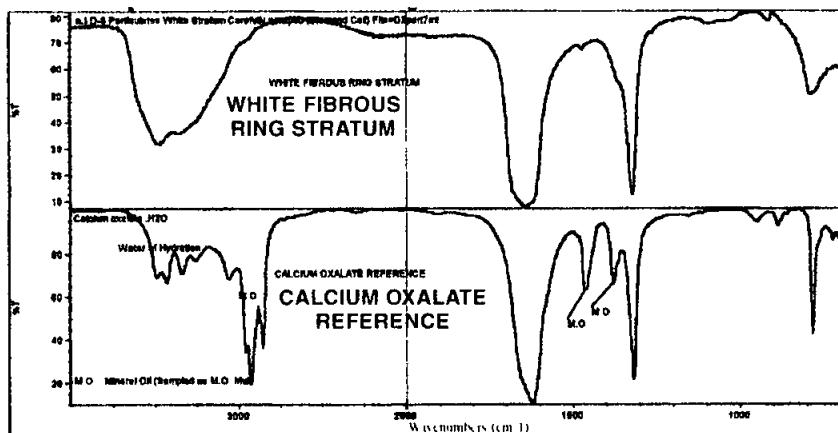


Fig. 5 Infrared spectra for white fibrous ring stratum and calcium oxalate reference

tion of a humic substance that was specifically characterized in the analysis of the aqueous extracts. Other particulate identifications include common things expected to be found in soil such as insect exoskeletons, eggs, and droppings wood and plant fragments, quartz, and other soil minerals. Trace contaminants such as asphalt and polystyrene were also noted.

XRD analysis detects and identifies any crystalline material. The data show soil minerals for all samples. These are identified as mostly quartz with smaller amounts

of feldspars and clays. The data compare to that reported in past analyses done at the University of North Dakota and Northern Illinois University. No significant differences between the ring and control soils were detected, which suggests there was no exposure to physical effects such as heat. If that was the scenario, the clays in the ring soils would have changed, i.e., they would have been dehydroxylated. Additionally, there would have been alterations to the feldspars (Hurlbut, 1966) and quartz (Berry, 1983).

Headspace GC/MS analysis was done on the air space over the selected soils. This was the first test performed when the tightly sealed sample containers were initially opened. It was an attempt to identify any volatiles that may have originated from the samples, because of purported reports of an odiferous emanation from the samples. No volatiles were detected in the headspace. If present, they may have dispersed over the years.

(b) Analyses of the Soil's Aqueous Extracts

The decision to do aqueous extracts was based on Faruk's conclusion that the release material was deposited as an aqueous solution. Therefore, logic dictated the release was mostly water-soluble. When the water was added, round globules of soil floated to the surface showing that it still retained its previously reported hydrophobic nature after all these years (Faruk, 1989). Upon agitation the soil readily dispersed, and the water became clear brown in color. This indicates water-soluble material coating the soil is responsible for the hydrophobic effect. The amounts of material extracted from the ring soils are substantially higher (ave 15.6 mg/g—1.6 wt %) compared to the control soils (ave 6.4 mg/g—0.6 wt %). These data clearly show that more than 1% of the ring soils consist of water-soluble material from a release. The actual release content is probably closer to 2–3% if one considers the release also contains some water-insoluble material, e.g., calcium oxalate and calcium carbonate previously identified by FT-IR analysis of the as received samples. Table 4 shows the amounts extracted from each sample.

Table 4. Amounts Aqueous Extracts

Sample	Weight(mg/g)	Weight% of Soil
C-3 ring	12.8	1.3
A-2 ring	15.8	1.6
D-3 ring	18.3	1.8
C-8 control	6.1	0.6
Center control	6.7	0.7
A-9 control	6.4	0.6

The excessive amounts in two ring samples can be visually observed in the photograph of the extracts in Figure 6. It shows 3 ml aqueous extracts of equivalent amounts (1 gram quantities) of a control soil and two ring soils. The control is notably lighter

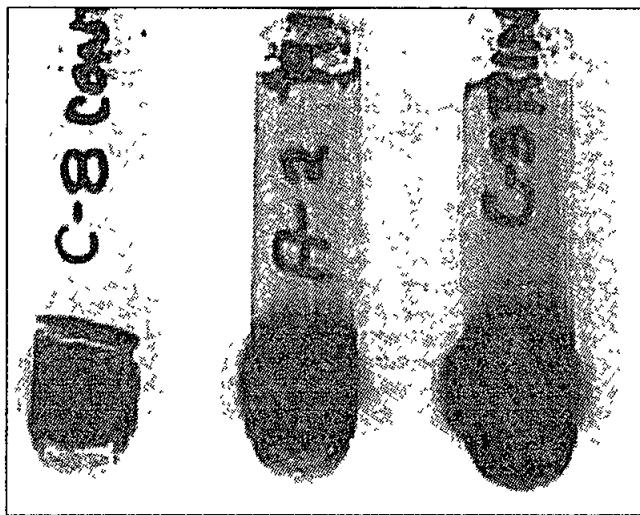


Fig. 6 Aqueous extracts of the C-8 control soil (left), and the two ring soils (A-2 center, C-3 right)

After water removal, the appearance of the isolated materials from the ring extracts is also different from those of the controls. The ring extract consists of brittle, clear-amber, flat particulates. The control extract contains opaque, light-brown particles in a variety of shapes. Figure 7 contains microscope photographs of a ring and a control extract.

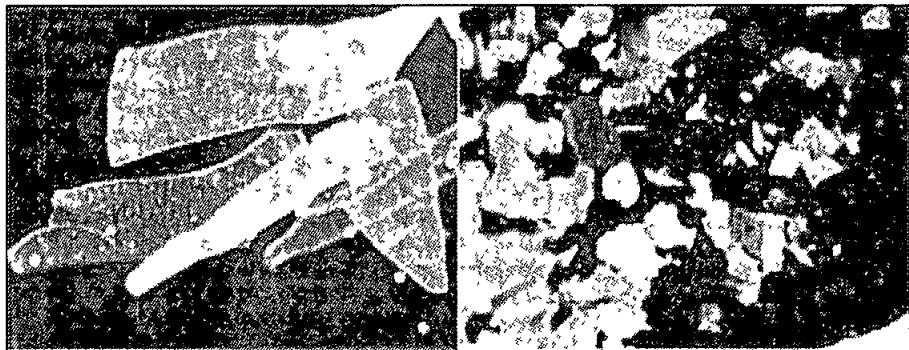


Fig. 7 100X microscope photographs of the C-3 ring extract (left) and the C-8 control extract (right)

Elemental analyses. Elemental composition of the extracts was determined by the following tests: EDX, %C %H %N. Higher levels of carbon, hydrogen, nitrogen, sulfur, phosphorus, and potassium were detected in the ring extracts than in the control extracts. The composition of the humic substance was estimated to be 43% C, 5% H, 5% N, and 42% O. Tables 5 and 6 contain the details from each test.

EDX shows increased amounts of sulfur, phosphorus, and potassium in the ring extracts. The silicon in the ring extracts is believed to be from soil-silicate mineral in association with the organic substance. There has been extensive research done showing that very little humic substances in soil are in the free states. Most are bonded to colloidal clay in various ways (Weber, n.d., "Connection"). However, in the control soils the source of silicon is definitely from very fine particulates of residual unbonded silicate mineral (see explanation in FT-IR discussion).

Table 5. EDX Elemental Data "Aqueous Extracts"
(Normalized Weight Percentage)

Sample	Mg	Al	Si	P	S	K	Ca	Ti	Cr	Mn	Fe
C-3 ring	19.4	59.4	1.3	8.1	4.0	1.4	0.07	0.20	6.0	0.14	0.04
C-3 ring	-	-	3.3	6.7	19.0	49.1	19.8	0.02	-	1.1	0.98
A-2 ring	-	-	6.8	5.3	15.8	37.7	31.9	0.15	0.29	0.90	1.2
D-3 ring	-	1.9	5.0	6.4	9.0	36.0	37.2	0.23	0.05	0.70	3.6
C-8 control	7.5	-	2.1	1.3	4.6	33.9	49.8	0.11	-	0.45	0.35
Center control	-	11.5	19.3	6.0	5.4	27.9	28.0	0.21	-	0.21	1.5
A-9 control	7.2	8.4	18.5	1.4	3.1	29.2	28.1	0.23	-	0.93	2.8

The %C, %H, %N values are significantly higher for the ring-soil extracts compared to the control extracts. These values indicate the predominant organic nature of the release. Additionally, the carbon/nitrogen atom ratios for the ring extracts are lower. For the most part these elements represent a humic substance that was positively identified by ¹H NMR and FT-IR analysis below. When the data from this analysis are examined in context with the following SEM/EDX analysis, a reasonably accurate profile of the elements and their amounts is presented. It is noted that the actual C, H, N values attributed to the humate are skewed to the low side by the presence of bonded soil minerals and other inorganics. The minerals/inorganics amount to roughly 27 wt % based on the SEM/EDX analysis. Taking this into account, the actual C, H, N values for the humate are close to 43% C, 5% H, 5% N. The O value determined from the SEM/EDX analysis is roughly 42%. The humic substance is specifically suggested to be a fulvic acid because of its water solubility, color and the low %C and O/C, H/C, N/C atom ratios (Weber, n.d., "Properties", Francioso, 1996, 1998, Ikan, 1990, Wershaw, 1990, Gaffney, 1996, Visser, 1983). It should be noted that all of these values will vary depending on the source of the humate, i.e., grassland soil, forest soil, desert soil, peat, river bottom, marine bottom, etc. It is difficult to make a confirmation regarding the humic origin, but we can conjecture at this point. Based on a C/N ratio of close to 6, the fulvic acid in the ring extract most resembles a mull-type humus. This humus occurs under conditions of high biological activity. It typically occurs under grass vegetation and is noted in soils under cultivation. In this soil type, fulvic acid predominates (Weber, n.d., "Types"). Although this is also true of the Delphos control soil, the values in Table 6 are different enough to show they are not from the same source.

**Table 6. Carbon, Nitrogen, Hydrogen Analysis
(Weight Percentage)**

Sample	C	H	N	C/NRatio	N/Cratio	H/CRatio
C-3 ring	32.0	4.2	6.0	6.2	0.16	1.58
A-2 ring	31.8	4.2	5.8	6.4	0.18	1.58
D-3 ring	31.6	4.2	6.1	6.0	0.17	1.59
C-8 control	14.2	2.0	4.3	3.9	0.26	1.69
Center control	16.2	2.2	4.7	4.0	0.25	1.63
A-9 control	12.7	1.9	4.8	3.1	0.32	1.79

SEM/EDX analysis was only done on the extract from the D-3 ring soil. This analysis most likely shows all the major and minor elements present in this extract except for carbon and hydrogen. Nitrogen and oxygen predominantly belong to the humate substance and smaller amounts to other minerals and inorganics. The minerals/inorganics probably account for almost 27% of the extract. These are indicated by the presence of Na, Mg, Al, Si, P, S, K, Ca, and Mn. Using the results from the %C, %N, %H analysis and the normalized SEM/EDX results, one can determine reasonable absolute wt % values for the elements in the extract composition. However, one must make the reasonably valid assumption that all of the elements in the extract are detected. Table 7 displays the original normalized and adjusted SEM/EDX data.

Table 7. SEM/EDX of D-3 Aqueous Extract

Element	Normalized Weight Percentage*	Absolute Weight Percentage
N	17.6	11.3
O	62.2	39.3
Na	0.35	0.22
Mg	1.7	1.1
Al	1.5	1.0
Si	3.5	2.3
P	2.5	1.6
S	2.0	1.3
K	4.6	3.0
Ca	4.1	2.6
Mn	0.14	0.09
Fe	0.82	0.53

* The values represent the average of two runs

** The nitrogen value may be slightly on the high side due to instrument error. The 6.1% nitrogen value reported by the previous analysis is considered very accurate.

Furthermore, one can now approximate the C, H, N, O absolute elemental composition of the humic substance. This is also based on fairly valid assumptions regarding the amount of oxygen, nitrogen and hydrogen belonging to the soil minerals/inorganics which are 0.5% H (probably mostly hydrated water), 9% O (oxides and

hydrated water). 1% N (ammonium nitrate) Once the math is performed, the composition of the humic substance is estimated to be 43% C, 5% H, 5% N and 42% O

Molecular analyses. Three important tests (FT-IR, ^1H NMR, IC) along with the above elemental data provided pertinent information regarding the types of components comprising the extracts. The humic substance predominates in the aqueous extracts. It is indicated to be different and in significantly higher levels than the substance native to the Delphos environment. Besides the previous data regarding water solubility, color, and elemental distribution, there is more evidence that the humic substance is specifically low molecular weight fulvic acid. Furthermore, there are indications that the ring extracts contain very slightly elevated levels of sulfate and phosphate. The detailed molecular investigation follows.

^1H NMR spectra of the extracts are descriptive of humic structures in both ring and control samples. All the characteristic resonance peaks prevail, which match those in literature references of fulvic acids and humic acids (Franciosi, 1996, 1998, Malcolm, 1990, Wang, 1990), as well as a reference of purchased humic acid sodium salt (Sigma-Aldrich Catalog No. H1,675-2). Figures 8–10 show representative spectra of one ring soil extract, a control soil extract, and humic acid salt reference.

The interpretation of these spectra is contained in Table 8 on page 15.

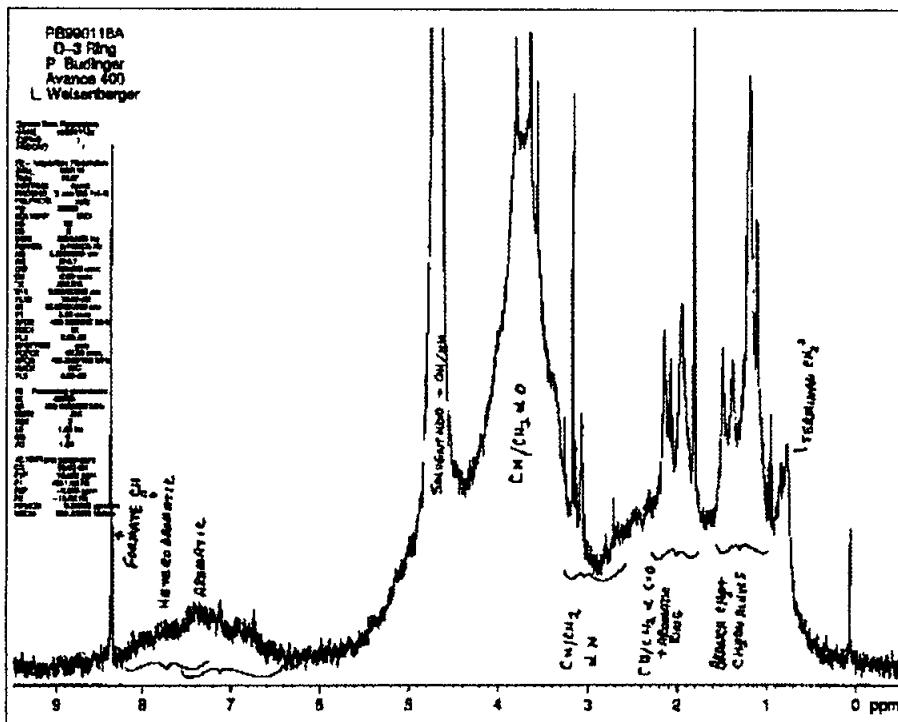


Fig. 8 ^1H NMR spectrum of D-3 ring aqueous extract

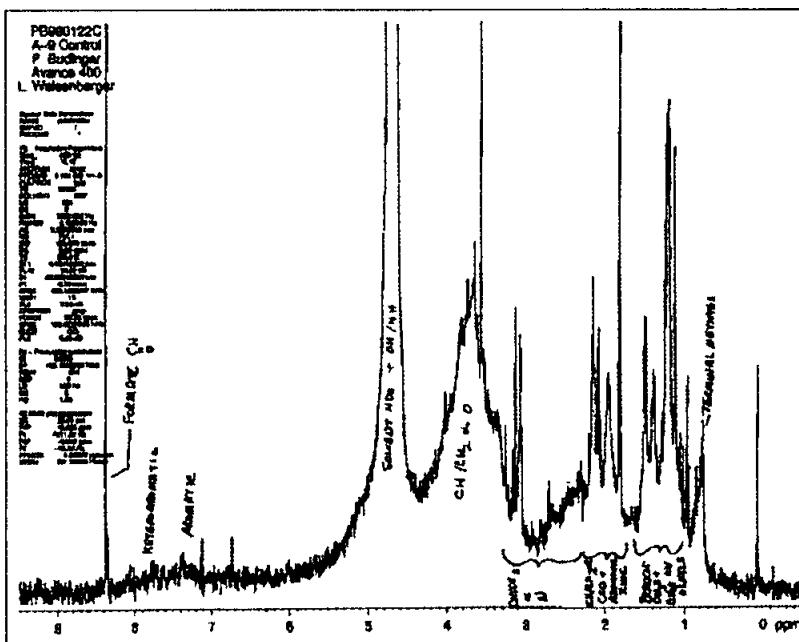


Fig. 9 ¹H NMR spectrum of A-9 control aqueous extract

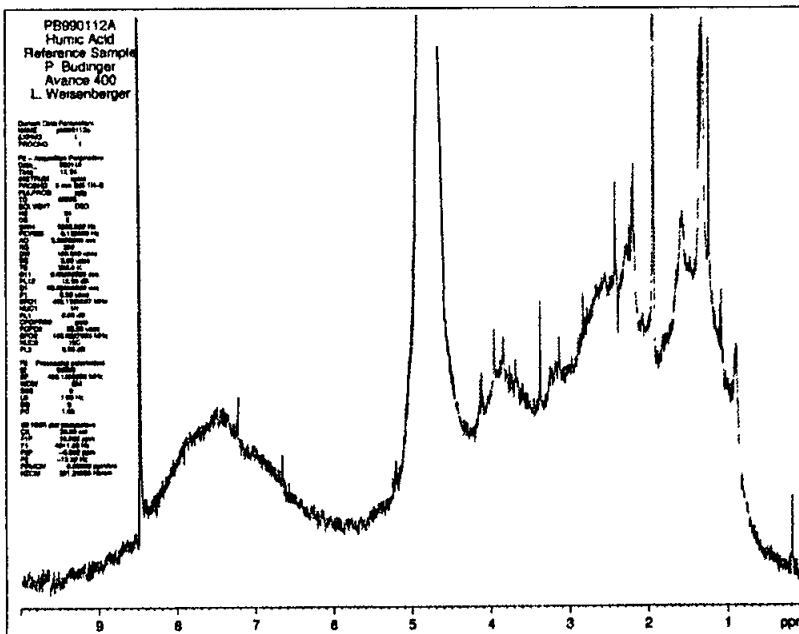


Fig. 10 ¹H NMR reference spectrum of humic acid sodium salt

Table 8. Interpretation of Proton Resonance Areas

δ (ppm)	Interpretation
0.7-1.0	Terminal methyls (CH_3) on alkyl groups
1.0-1.7	Branch CH_3 s and methylenes (CH_2) on alkyl groups
1.7-2.5	Methines (CH) and CH_2 s alpha to carbonyls and aromatics
2.5-3.3	CH s and CH_2 s alpha to nitrogen, some oxygen
3.3-5.0	Primarily CH s and CH_2 s alpha to oxygen, some nitrogen
5.5-8.4	Aromatic and heteroaromatic
8.4	Formate group -(C=O)H

Quantitation of the above resonance areas shows the humates in the ring soils are different than in the control soils. Table 9 shows the integrated areas of the spectra as well as a ratio of the branch CH_x /end CH_3 areas showing the differences between the humic substances. Note the humic substance from the ring extract is more aromatic, contains more branched alkyls (see ratio), and appears to contain slightly less carbonyl-containing functional groups. This is additional evidence that the ring humate is not natural to the Delphos area and is due in fact to a release.

Table 9. Hydrogen Distribution (Mole Percentage)

Samples	Arom	$\text{C}(\text{H})\text{C}=\text{O}$	CH or O^*	Probable CH_3 or N + Some O	CH_3 and CH or C=O + Arom	Branch CH_3 and CH_2	End CH_3	Ratio End/ Branch
D-3 ring	7.2	0.6	40.9	14.5	12.5	19.2	5.0	3.8
C-3 ring	8.0	0.8	43.0	13	13.4	17.6	4.2	4.2
A-2 ring	6.4	0.7	45.6	13.3	12.8	18.3	4.2	4.4
Ring avg.	7.2	0.7	43.2	13.6	12.8	18.3	4.2	4.5
A-9 ctrl	4.0	1.4	38.9	13.8	15.8	22.4	3.8	5.9
Center ctrl	3.3	1.4	40.9	13.2	16.7	21.3	3.3	6.5
C-8 ctrl	3.5	1.3	42.0	13.6	15.5	20.6	3.6	5.7
Control avg.	3.6	1.4	40.6	13.6	16.0	21.4	3.6	5.9

*Solvent peak interference may cause the biggest variation in the CH or O value

As in previous tests, these data also indicate that the humic substance is specifically fulvic acid in both ring and controls extracts. This is evident because of the highly oxygenated (CH/CH_2 alpha to oxygen, 3.3-5.0 ppm) and low aliphatic nature (terminal CH_3 s on alkyl groups and branch CH_3 s and CH_2 s on alkyl groups, 0.7-1.7 ppm), compared to the data from humic acids (Francioso, 1996, 1998, Malcolm, 1990, Wang, 1990).

Infrared spectra of the ring extracts also are typical of references of humic substances (Gaffney, 1996). The data from the ring extracts show very strong absorption bands due to ionic and/or chelated carboxylic acid C=O (COO^- asymmetric

stretch, 1590 cm^{-1} , COO^- symmetric stretch, 1385 cm^{-1}), C-O (1100-1000 cm^{-1}) and OH/NH (H-bonded O-H and N-H stretch ca. 3600-3000 cm^{-1}). There are also bands belonging to quartz (1024, 821, 529, and 470 cm^{-1}). Since great care was taken to minimize as much as possible any insoluble fine particulates from the soil, and the water extract was clear brown (see above), it is felt that the humic material has bonded to the quartz, pulling it into aqueous solution, and not residual particulates. The spectra of the control extracts are different. The predominating infrared bands are due to soluble ammonium nitrate (3350, 2407, 1760, 1372 and 821 cm^{-1}) and residual quartz (1024, 530, and 470 cm^{-1}). (Some ammonium nitrate is also in the ring extracts but is masked by the overwhelming amount of humic material—see organic solvent extract section below.) The humic substance is present in significantly lesser amounts, as exhibited by weak/moderate absorption which is now found at slightly different frequencies than that in the ring samples (bonded OH contribution to the 3350 NH_4^+ absorption, COO^- asymmetric stretch, 1625 cm^{-1}). The solutions were cloudy with material that could not be centrifuged or filtered out. As previously noted, there was also significantly less of this material to examine. Figure 11 contains selected representative spectra of the ring extract, the control extract, and humic acid sodium salt reference for comparison.

UV spectra of the D-3 ring extract and an aqueous solution of humic acid sodium salt extracts are similar and compare to that reported in the literature (Gaffney, 1996). There is a maximum at 190 nm which is consistent with C=O absorption. Broad tailing between 250–375 nm is due to the aromatic/heteroaromatic structure of the humate. This test lends support to the ^1H NMR and infrared analyses. These spectra

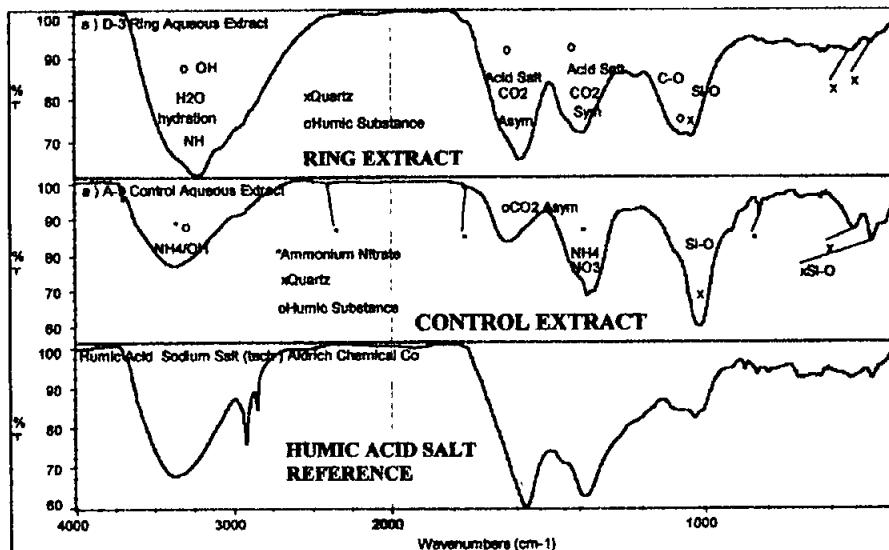


Fig. 11 Infrared spectra of ring soil extract, control soil extract and humic acid sodium salt reference

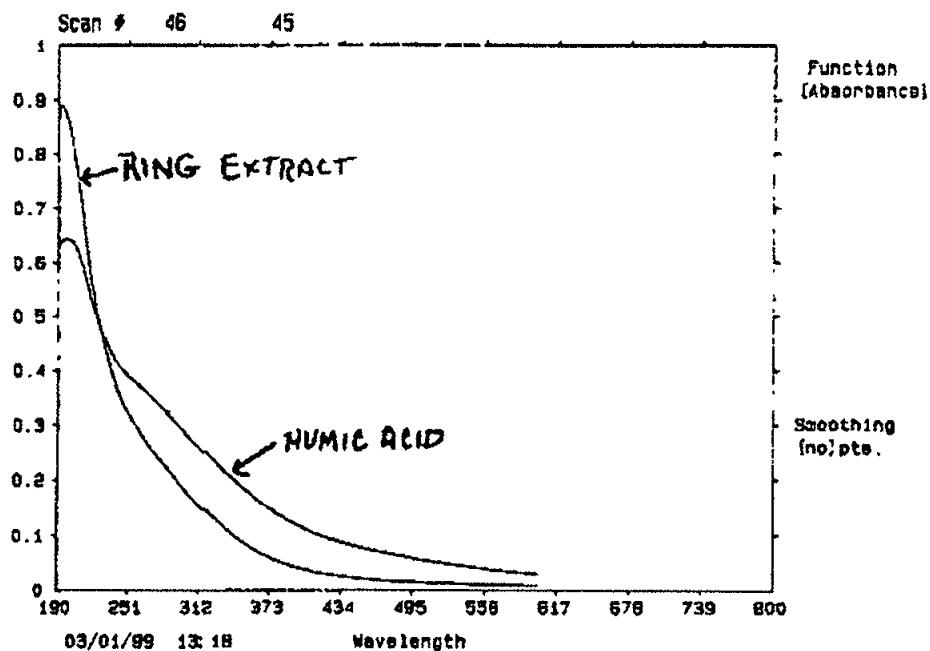


Fig. 12. UV spectra of the D-3 ring extract and aqueous solution of humic acid salt

also compare to those obtained by Faruk. Figure 12 shows the spectra of the extract and the humic acid salt for comparison.

IC (Ion Chromatography) suggests subtle increases of sulfate and phosphate ions in the ring samples. Therefore, to a small extent they are indicated to be part of the release. The ions detected are displayed in Table 10.

Table 10. Ion Identification (ppm)

Samples	Cl	NO ₃	HPO ₄	SO ₄
D-3 ring	130	74	313	287
C-3 ring	160	400	330	640
A-2 ring	160	430	330	460
A-9 control	115	321	43	101
Center control	130	1500	250	340
C-8 control	160	400	330	640

GC/MS analysis of the ring water extracts did not detect any components. This is because of the high polarity and nonvolatility of the previously identified humic substance. This material would be expected to hang up on the GC column. GC/MS analysis of the headspace above the ring extracts detects a very small excess of carbon dioxide.

Silver nitrate precipitations from aqueous extracts. A precipitation using 0.1 normal solution of silver nitrate was done on the D-3 ring aqueous extract and an aqueous solution of the sodium salt of humic acid. This precipitation was similar to that performed by Faruk (1989). It was done in order to acquire data to compare to that obtained by Faruk. There was not much soil extract to analyze because of sample limitations. Therefore, the precipitate was not washed for fear of losing some of it. As expected, both the extract and the humic acid solution completely precipitated leaving clear, colorless solutions. This was due to the chelation of the Ag to the humic substance. FT-IR spectra of the precipitates show bands typical of ionic/chelated acid groups (COO^- asymmetric stretch, 1550 cm^{-1} , COO^- symmetric stretch, 1370 cm^{-1}). These are shifted to lower frequencies than the humic substances before silver nitrate treatment, because the acid groups are now bonded to Ag. OH (H-bonded O-H stretch ca. $3600\text{--}3000 \text{ cm}^{-1}$) and C-O ($1100\text{--}980 \text{ cm}^{-1}$) modes are also noted. These spectral bands are similar to those observed by Faruk. However, Faruk's carboxylate shifts occurred at higher frequencies. This can be explained by the fact that his sample preparation for infrared analysis involved the now-antiquated technique of pelleting the sample in a KBr matrix. Carboxylic acid functional groups notoriously bond with potassium using this preparation, so we are predominantly seeing the potassium salt rather than the silver salt of the humate. Infrared data from the precipitates in this study were examined "au natural" using the relatively new Harrick SplitPeaTM ATR (a single-pass attenuated total reflectance) cell. Additionally noted in the spectra is residual silver nitrate. The spectra are shown in Figure 13.

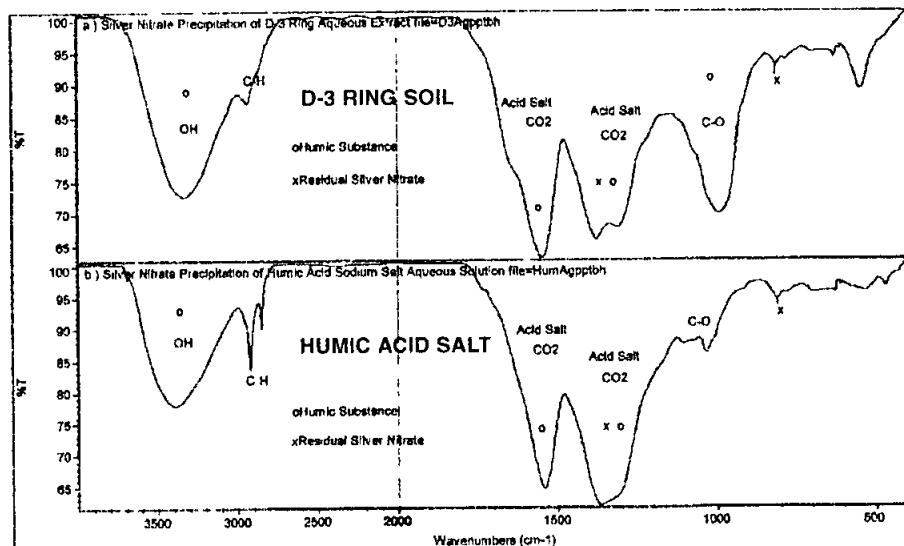


Fig. 13. Infrared spectra of silver nitrate precipitations of D-3 aqueous extract, and aqueous solution of humic acid sodium salt

(c) Analyses of the Soil's Organic Solvent Extracts

Very little material was extracted from two selected soils (D-3 ring and A-9 control) using progressively polar organic solvent systems, i.e., pentane, followed by chloroform then 1:1 acetone methanol. Specifically, there was no detectable amount of pentane soluble material in either ring or control soils. Small amounts of oxalic acid salt and very fine residual quartz particulates were exclusively found in the D-3 chloroform extract. Small amounts of materials were found to be 1:1 acetone methanol soluble in both samples. The ring soil extract contained oxalic acid salt, ammonium nitrate, and residual quartz fine particulates. The A-9 control extract consisted of mostly ammonium nitrate, possibly some carbonate, and residual quartz fine particulates. The above extracts were identified by FT-IR analysis. Figure 14 shows the spectra.

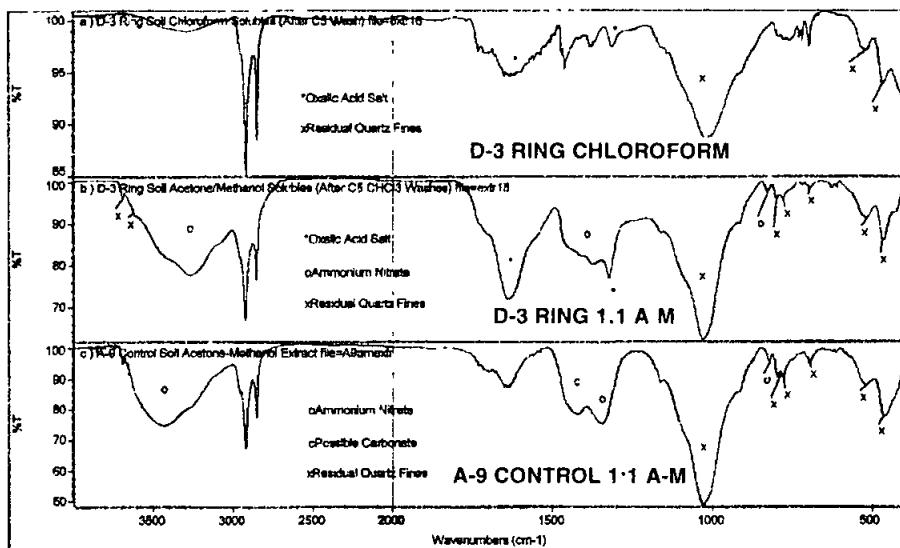


Fig. 14 Infrared spectra of organic solvent extracts of selected soils. a) D-3 ring, chloroform, b) D-3 ring 1:1 acetone methanol, c) A-9 control, 1:1 acetone methanol

SUMMARY

The analysis of the Delphos soils and their isolates show there has been a definite release of one or more substances. I concur with Faruk in that the substances were deposited in an aqueous solution. A humic substance coats the soil's surface imparting the hydrophobic effect that was noted 30 years ago. The white fibrous-appearing material that has eluded identification by investigators in the past is definitely identified as calcium oxalate. Non-volatile ring soil components found amount to approximately 2-3 wt %. Table 11 lists these components and provides a rough estimate of their amounts.

Table 11. Detected Ring Soil Substances (Non-Volatiles)

	Wt %
Humic substance (probably low-molecular-weight fulvic acid)	85 ± 10
Calcium oxalate	5 ± 2
Calcium carbonate	~1
Phosphate	<0.1
Sulfate	<0.1
Sulfide and/or mercaptan	<0.01

CONCLUSIONS

1 The soils analyzed were sampled two months after the event. Also, 27 years passed after sample collection until this analysis. It is unknown if any changes may have occurred to the samples over this period of time. However, I believe that there is no evidence for extensive degradation because past analytical test results from the ring soils compare closely to those tests that were repeated in this current analysis. The ring soils also retain the same hydrophobicity as reported in the past.

2 The humic substance specifically appears to be fulvic acid. It has properties resembling a mull-type humus that occurs under conditions of high biological activities, such as under grass vegetation and soils under cultivation. This material coats the soil surface initially impairing a hydrophobic effect. Upon adding water to the ring soil, followed by agitation, it solubilizes, and the soil readily loses its apparent hydrophobic effect.

3 Both calcium oxalate and oxalic acid are known skin and eye irritants and would account for the physical effects suffered by the witnesses. It is suspected that the calcium oxalate found in the ring soil was deposited as free oxalic acid and combined with calcium in the ground.

4 The source of the chemiluminescence (glow) still remains speculative. Faruk reports that he isolated a compound that he deduced was the source of this effect. The present study did not detect this material. It may have deteriorated over time. If indeed present, it probably was in very minor amounts, i.e., not a major component of the release. My experience with compounds that impart color to materials, and materials that cause chemiluminescence, is that they usually need only to be present at a few ppm to be visually apparent. I can also offer this speculation. Humic substances in the presence of oxalate derivatives and a suitable catalyst, e.g., hydrogen peroxide, may possibly cause the chemiluminescence effect. Hydrogen peroxide would have decomposed within hours of the event.

5 The presence of sulfide/mercaptan could explain any obnoxious odor that purportedly emanated from the ring soils.

6 The analysis shows the ring soil was not exposed to a physical effect, such as high temperature, which confirms the observations of the principal witnesses.

7 The analysis neither proves nor rules out a UFO source of the release. The above natural products have many useful properties. Specifically, humates are known for their chelation/bonding to metals and organics. They are used in fertilizer and for removal of toxic metals and organic pollutants. It is natural to assume other intelligent life forms would also use them. One speculation is they are perhaps waste products of a biological process.

8 A speculation is offered by a colleague (Dr. J. Robert Mooney). It is based on the presence of the high concentration (5%) of oxalic acid. Oxalic acid is a natural product in the soil. However, such a high concentration would not be expected from the usual plant source. Exhaust from a low-temperature ionization or combustion engine (whose fuel source was elemental carbon) could leave a high concentration of the acid along with other lower-molecular-weight acids. Of course, the major exhaust components from such an engine would be expected to be carbon dioxide and carbon monoxide. These would be lost as gases. The acids would concentrate in the soil beneath the exhaust. Use of elemental carbon, as a fuel, seems very reasonable as it is safely transportable and contains a high energy density.

9 Finally, some have countered that the release represents the products of "well seasoned barnyard soil." If this were the case, there should be much higher concentrations of elements such as nitrogen, phosphorus, and potassium present. Also, there should be evidence of significant amounts of other components such as urea, uric acid, and ammonium components, which are typical of animal waste and its decomposition products. These substances were not detected. Only the fulvic acid predominates.

RECOMMENDATIONS

This analysis should serve as a base for analysis of similar events that may occur in the future, or perhaps have already occurred. Most notably, spectroscopic analysis is needed. One such event occurred in Trans-en-Provence, France, on January 8, 1981. Some of the analytical data suggest molecular compounds similar to Delphos could be present in the soil there.

It is recommended that future ring sites be carefully assayed for oxalic acid and other low-molecular-weight acetic type components.

The following procedure is suggested. Perform an acid extraction followed by ion chromatography. Quantitatively, this would yield very accurate amounts of the acids. Acids should then be examined by isotope mass spectrometry to determine the carbon-14 level. Natural product sources of these acids will give the expected values of 15.3 disintegrations/min/gm. Any higher level of carbon-14 indicates the source was nonterrestrial. Lower levels indicate the source is not of recent biological origin or is not terrestrial.

ACKNOWLEDGMENTS

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DEDICATION

This paper is dedicated to Ted Phillips, whose perseverance in this case continues, and without him this analysis could not have been accomplished

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APPENDIX

Definitions of the Tests Used in This Analysis

%C, %H, %N (Wt. % Carbon, Hydrogen, Nitrogen Analysis) These analyses are often used in the identification of organic materials and measure the percent of each element

EDX (Energy Dispersive X-ray Spectroscopy): X-ray fluorescence identifies elements and their semiquantitative amounts Samples are stimulated with X-rays that cause them to emit X-ray fluorescence radiation This emitted radiation is resolved into a spectrum characteristic of each element

FT-IR (Fourier Transform Infrared Spectroscopy): Infrared spectroscopy is used for the molecular structure identification and quantitation of solids, liquids, and gases An infrared spectrum is the result of light (in the 2 to 25 micron wavelength range) interacting with the vibrations of molecules The particular set of vibrations of a molecule gives rise to specific spectral absorption bands, often referred to as the “fingerprint” spectrum

GC/MS (Gas Chromatography/Mass Spectroscopy): Gas chromatography is a separation technique applicable to volatile samples The separation depends on the interaction of sample components with the stationary phase of the chromatography column and the gas mobile phase The separated components are detected with a universal detector like the flame ionization detector (FID) and thermal conductivity detector (TCD) The components are identified using mass spectroscopy

Headspace GC/MS (Headspace Gas Chromatography/Mass Spectroscopy): The headspace above a sample (gaseous volatiles) is isolated GC/MS (see the above

definition) is then performed to identify the components

IC (Ion Chromatography): Trace levels of ionic species are separated and detected by this technique. This type of liquid chromatography is suited for the determination of a broad range of ions in aqueous solutions, e.g., F^- , Cl^- , Br^- , NO_3^- , SO_4^{2-} , PO_4^{3-} , NH_4^+ etc. Requirements are that the sample be a liquid or soluble solid.

MS (Mass Spectrometry): This technique is useful for identification and quantitation of low-level organics. The sample molecule is ionized using a variety of techniques and the masses of the ionized molecules and fragments are measured using electric or magnetic fields. From this information, the molecular weight of the molecule can usually be determined, as well as the structure of significant fragments.

NMR (Nuclear Magnetic Resonance Spectroscopy): NMR is commonly used for molecular structure identification and quantitation of organic and inorganic materials. This is a type of radio-frequency spectroscopy. It is based on the magnetic field generated by the spin of atomic nuclei. This field is caused to interact with a very large magnetic field of the instrument's magnet. The chemical environment of each nucleus produces characteristic shifts in the NMR spectra. Signals from the proton nucleus (hydrogen) were used for structural elucidation in this analysis.

SEM (Scanning Electron Microscopy): Scanning Electron Microscopy (SEM) is a method for characterizing the topography and texture of rough or polished materials over a large magnification range (25 to 100,000x) while maintaining substantial depth of focus. A beam of electrons is systematically scanned in raster fashion across a sample. The result is a variety of electron-induced signals that provide a great deal of morphological, physical, and chemical information about a sample. These signals include secondary electrons, backscattered electrons, and characteristic X-rays. Secondary electrons form the signal primarily used to produce SEM images of the sample.

SEM/EDX (Scanning Electron Microscopy/Energy Dispersive X-ray Spectroscopy): This is an elemental identification using an energy dispersive X-ray (see EDX definition) system interfaced to a scanning electron microscope (see SEM definition).

UV (Ultraviolet Spectroscopy): Ultraviolet spectroscopy is used for the molecular structure identification and quantification of materials. The UV spectrum results from electronic excitation of a molecule, i.e., electron transfer from a lower orbital to a higher orbital by electromagnetic vibrations between the 200 to 380 nm (nanometer) wavelength range. The energies of these transitions are dependent on the chemical environment of the molecule.

XPS (X-ray Photoelectron Spectroscopy): This is a surface analysis technique often used to map elemental distributions. A beam of soft X-rays illuminates the sample surface, and the energy distribution of the ejected photoelectrons is observed. The spectrum both identifies the elements and provides information regarding their chemical state.

XRD (X-ray Diffraction): X-ray Powder Diffraction is used for the identification and quantification of crystalline phases in solids and slurries. A diffraction pattern is obtained from a material by the interaction of very short-wavelength light (X-rays).

with the planes of atoms found in materials with long-range order (crystalline matter). Constructive interference in three dimensions gives rise to the maxima found in diffractograms. Qualitative identifications can be made by computer matching the observed pattern with reference patterns in a database.

ANALYSIS OF PHOTOGRAPH OF A HIGH-SPEED BALL OF LIGHT

© RICHARD F HAINES
Los Altos, California

ABSTRACT This pilot sighting report and color photograph of an unidentified aerial phenomenon (UAP) called for a number of different forensic methods including photoanalysis, aircraft-window study, camera-lens-film analyses, and evaluation of reporter credibility. The single-frame Kodak color, copy negative was submitted for examination by one of the several eyewitnesses. This paper describes the results of these analyses, from which several conclusions can be made. Whatever the UAP was, it was probably in subsonic flight. If the UAP was travelling at subsonic speed, the estimated total sighting duration and/or its estimated distance from the witness are clearly in error by a factor of two or more. No evidence of a hoax or double exposure was found, nor were any bolides, meteorites, or other unidentified aerial phenomena reported for that time and place. The luminance of the main body of the object and immediately adjacent tail area were so high they fully saturated (exposed) the relatively slow film. This may explain why the photograph does not correspond closely to what was seen. The film's optical density as measured along the length of the white tail behind the UAP, changed in a peculiar fashion and is not characteristic of reflected sunlight off water-droplet vapor. Interesting microdetails were discovered that suggest the possibility of some type of energy emissions extending from the UAP but not necessarily in the direction of its flight. The nature of the UAP and constitution of its atmospheric trail remains unknown at this time.

INTRODUCTION AND FLIGHT BACKGROUND DETAILS

As many writers have said before, the credibility of a purported UFO photograph rests far more upon the credibility of the photographer than upon all of the technical characteristics and details producing the photograph. But when the credibility of the eyewitness is found to be high and no evidence of fraud or hoax is found, it is more reasonable to accept the photograph for at least as what it purports to be—evidence of an interesting if unknown, phenomenon of some kind.

An interesting aerial sighting (with 35mm color slide) was reported by photographer-witness, R. J. Childerhouse (1966) on August 27, 1956. He was flying a Royal Canadian Air Force F-86 jet at the time. As noted by Klass (1968, p. 146), "The photo [used on the dust cover of his book] shows an intensely bright, white, egg-shaped object that seems to be suspended below an intense thunderstorm" but visible through a hole in the clouds whose tops were at about 12,000 feet altitude or higher. Childerhouse told Klass that the object seemed to have sharply defined edges and looked "like a shiny silver dollar sitting horizontal." The pilot also wrote to tell James

McDonald (Maccabee 1999, p. 209) that "the photo of the bright object doesn't represent quite what appeared to the naked eye. When I first saw the object it appeared as a very bright, clearly defined discoid, like a silver dollar lying on its side. The photo makes it look like a blob of light, the result of light intensity." Both Klass and Altschuler, a member of the University of Colorado's UFO study panel (Condon, 1968, p. 733) felt that the object seen and photographed by Childerhose was ball lightning. Later work by Maccabee (1999) suggests that few of the characteristics of ball lightning match those seen and photographed by this pilot witness.

Childerhose tried to explain why what he saw did not correspond to what appeared on his photograph. He stated (Klass, 1968, p. 147), "The light it emitted was very much brighter than the existing sunlight at that time of day and this over-exposed the film, causing the blurred edges you see in the picture." Subsequent assumptions and calculations by Maccabee (1999) suggest that the object was actually made up of two distinct bright spots/objects very close to one another whose luminous surrounds merged together and that its power output would have been more than 10^9 watts. This classic photograph has continued to perplex investigators over the years.

Interestingly, the author learned about the existence of another photograph, described in this paper, that contains a number of elements similar to the Childerhose event. As will be seen, the present case is important not only because of the apparent overlap it has with the earlier event, but also because it might shed more light on why some photographs don't correspond more closely with what was reportedly seen.

The author received word via e-mail to the National Aviation Reporting Center on Anomalous Phenomena (NARCAP)¹ on January 27, 2001, that a John Williams (pseudonym) had in his possession an "original photo and negative as well as the flight log." In this e-mail he also provided a relatively complete narrative of his flight location when the event occurred, namely, five miles northeast of Mt. San Jacinto or about eight miles northwest of the Palm Springs, California, airport.

BASIC SIGHTING EVENTS

Williams, piloting a Mini-Nimbus/C sailplane² towed behind a standard tow plane, took off from Ryan airport³ in Hemet, California, at 1315 hrs PST on July 16, 1988, and climbed toward the northeast, eventually reaching an altitude of about 12,000 feet above ground level (AGL). The ground in this area rises from 1,600 feet above mean sea level (MSL) gradually toward the east where the San Jacinto mountain range (typically from 7,000 to 10,000 feet elevation) runs roughly north and south. Since the primary purpose of this flight (which lasted just over 90 minutes) was to obtain color photographs of the sailplane in flight from a chase plane, Williams had arranged for a personal friend (R.C.) to ride both as passenger and photographer in a Mooney 201 aircraft⁴ with the pilot (D.S.) sitting in the left seat. R.C. sat in the right-front seat and took 24 photographs (mainly) through his right-hand window. Williams provided him both the camera and film (discussed later) and recovered all items immediately upon landing.⁵

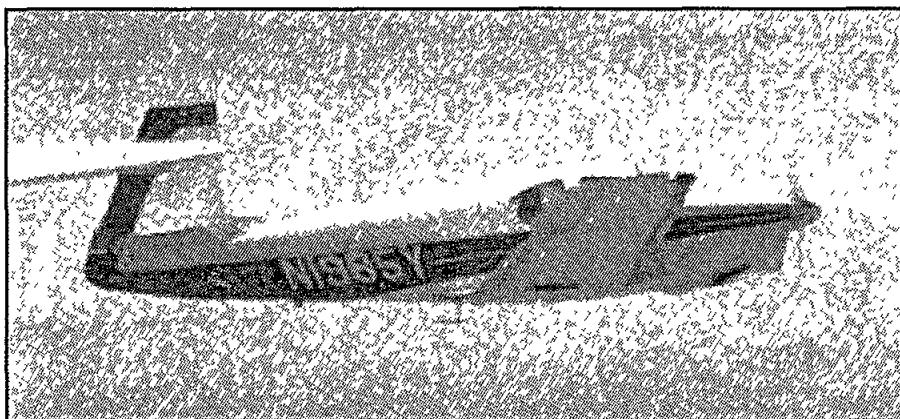


Fig. 1 Mooney 201 aircraft registration N1985Y

Upon reaching 12,000 feet altitude, the commercial tow-plane released the sailplane and immediately banked away to return to Hemet airport. The pilot of the chase plane, D-S, followed behind and generally to the left-hand side of the sailplane, permitting the photographer to take his photos from the right-hand window. All three individuals were in constant radio communication throughout the flight on 123.3 MHz. Figure 1 is a photograph of the Mooney 201 chase plane taken by Williams with his calibrated cockpit camera during the flight.

Figure 2 was prepared to help understand the relative instantaneous locations of the sailplane (S), chase plane (A) and the unidentified aerial phenomenon (UAP) of interest, and other geometry. The heavy black line (V-V') indicates the approximate

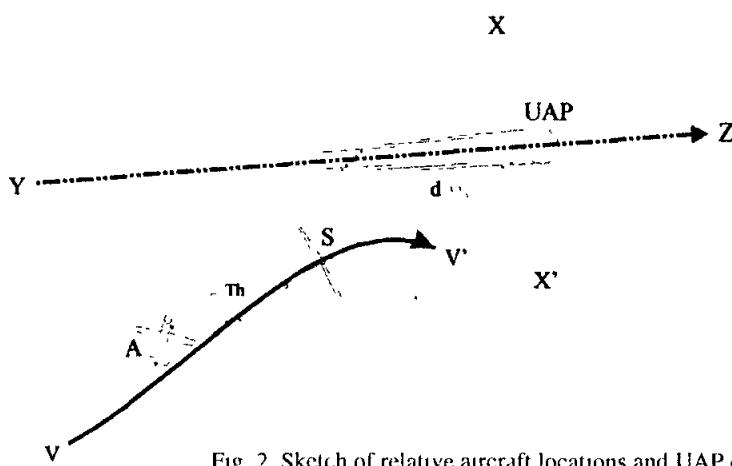


Fig. 2 Sketch of relative aircraft locations and UAP during the visual sighting (Not drawn to scale)

flight path of the sailplane during the 5–10 second visual sighting. The straight dashed line (Y–Z) is the assumed linear flight path of the UAP. The angle (X–A–X', not drawn to scale) represents the angular diameter of the camera lens subtending an arc of approximately 57 degrees (discussed later).

Note in Figure 2 that during the sighting the sailplane was on a heading of about 45 degrees (magnetic). It was approximately “five miles North East of Mt. San Jacinto” at the time. In the words of the primary witness, “a shallow descent was established to 11 000 ft. to build air speed for [the] photo run. A number of photos were taken without anything unusual [happening], then a bank and turn to the right, away from the chase plane was made” (V–V'). During this turn, observers in both aircraft observed, and the photographer in the chase plane photographed, the UAP seen in Figure 3. Williams said that the fast-moving object looked like “a large reflecting sphere almost like a large ball bearing with a tail.”

Initially, the UAP came from the 7 00 position relative to the sailplane (point Y) and passed in front of him at an estimated distance (d) of about 1–2 miles. According to Williams, “It [the UAP] exited {my} vision at the 1 00 position relative to the sailplane” (point Z). Perhaps the single most critical question is How large was distance d ?

Williams indicated that they landed between 1445 and 1500 hrs at Hemet, Ryan Field. This amounted to a total flight duration of from 90 to 105 minutes.

With a propeller tip-to-tip length of 6' 2" located less than ten feet ahead of the cameraman, it would be unwise to photograph another aircraft looking through it directly ahead of the chase plane. A fast shutter speed could almost “stop” a blade making it become visible during its rotation or at least produce a darkened blur region that could reduce the clarity of the image. So R. C. took all photos through the right-side cabin window. These photographs would likely have been taken somewhat oblique to the window plane as suggested in Figure 1.

THE UAP PHOTOGRAPH

Figure 3 shows the Mini-Nimbus/C sailplane against a clear blue-sky background with the UAP (white streaked region) seen just above it. The local time was about 1400 hours. If the photograph is rotated 30 degrees clockwise to place the sailplane in a right-hand bank, the UAP's trajectory is seen in a slight climb just as Williams recalled it. If the UAP was at a higher altitude than the witness and in straight and level flight, it would have appeared to be rising as it passed him.

OTHER POTENTIAL EYEWITNESSES

This event allegedly involved as many as five eyewitnesses in four different aircraft: (1) the sailplane in which Williams visually sighted the UAP, (2) a Mooney model 201 chase plane with a pilot (D. S., now deceased) and R. C. the photographer and friend of Williams, (3) a second sailplane in the vicinity whose pilot (Capt. Leo,

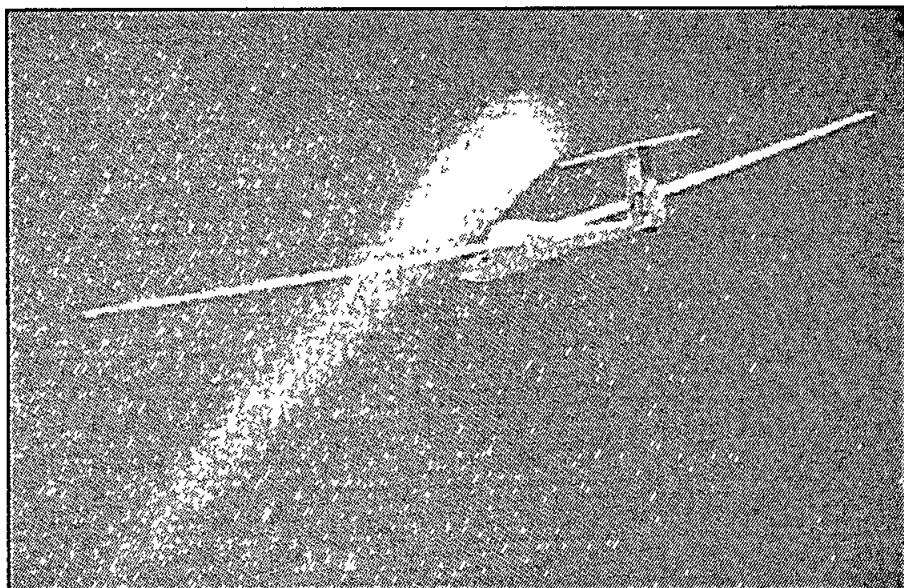


Fig. 3 Photograph of sailplane and UAP

first name) was the first to see the approaching UAP, and (4) the tow plane pilot⁶. It was learned that R. C. was an engineer who had worked previously for the Hewlett-Packard Company. He is a "very private person" according to Williams. In 1988, both he and Williams were employed in law enforcement and were very concerned that their careers would be affected by seeing and reporting this phenomenon. They maintained only infrequent contact after Williams moved from southern California to the state of Washington. Williams did not know the identity of Capt. Leo other than his first name and that he was a commercial pilot. Although over 13 years had passed since this incident took place, the author attempted to locate the other alleged witnesses but without success. When asked why he waited so long to report his sighting, Williams answered that he had no particular interest in UFOs nor did he even place his photograph in that category. He simply forgot about the incident and the photograph until many years later (January 10, 2000) when he came across the National UFO Reporting Center's Web site and decided to submit a report to them "in case someone might be interested in it." As mentioned above, he subsequently learned of NARCAP's existence and contacted us because of our interest in UAP and flight safety.

CAMERA, LENS, AND FILM

Camera A Minolta Maxxum Model 7000, 35mm, single-lens-reflex camera body was used with motorized film advance capability (permitting up to two frames/sec-

ond in the continuous exposure mode) The camera was allegedly set to AE (automatic exposure) mode such that all the photographer had to do was aim, zoom, and shoot.

Lens A Rokor zoom lens was used with focal length range from 28 to 80 mm. The f-stop range for this lens is from 3.5 to 4.5 for these limiting focal lengths, respectively.

Set to the full zoom position (28 mm focal length) the angular width of the resulting photograph is approximately 57 degrees arc. At the manufacturer's standard setting the photo's angular width would have been about 40 degrees arc, the value used for calculations made in the present paper. Since the zoom setting was not recorded, this value could be in error. Nevertheless, the overall conclusions from the analyses are not changed materially if a different angular width were used.

In the AE mode, this camera possesses a fixed exposure "program," i.e., the relationship between aperture and shutter speed at a given zoom setting is pre-established. Figure 4 presents the AE program factors for this model camera. It shows that midway between f3.5 and f4.5 and its telephoto lens setting, the resultant shutter speed would have been approximately 1/500 second. Likewise, if the zoom lens had been set at its midpoint, the corresponding shutter speed would have been approximately 1/250 second. Finally, if the zoom lens had been set at its widest setting, the corresponding shutter speed would have been about 1/30 second. In order to obtain a shot with the sailplane almost filling the entire frame, the zoom setting would have had to be at least at its midpoint or more—an assumed shutter speed of 1/250 second is used here, which is consistent with the sharpness of the sailplane's image.

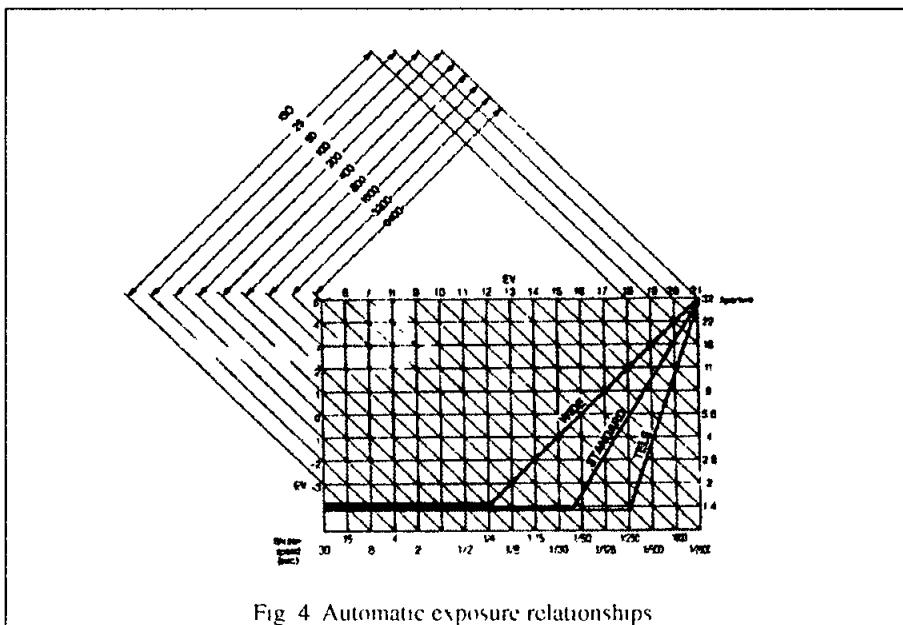


Fig. 4. Automatic exposure relationships

Shutter speed is important because the longer the shutter is open the greater is the chance for image blur to occur due to chase plane/camera motion. Conversely, a sharply defined target object indicates a relatively stable camera and target during an exposure. This clearly was the case here. The upper and front edge of the UAP that appears to have a double boundary must be due to some other cause than camera motion.

Film The negative stock was Kodak VPS 5026, which is also known as Vericolor III Professional Film. This 35mm, medium speed, color negative film possesses a nominal ASA rating of 100. "This film is designed for exposure with daylight or electronic flash at exposure times of 1/10,000 second to 1/10 second" (Eastman Kodak, 1997, p 2). The grain size and image structure on the enlargement received by the author appears to be consistent with statements made in the Kodak specification sheet: their print grain index sets a value of 25 as the "approximate visual threshold for graininess" (given various standardized viewing conditions). A higher number represents an increase in the amount of observed graininess. Kodak's published print grain index for a 35mm negative of Vericolor III film enlarged to 8" by 10" is 61. If further enlarged to 16" by 20" this value increases to 91. Inspection of the present 8" by 11" color positive print reveals obvious graininess, as expected. The yellow-forming dye layer peaks in sensitivity at 425 nm and ends at a maximum wavelength of 525 nm. The magenta layer peaks at 558 nm and ends at 620 nm, and the cyan-forming layer peaks at 660 nm and ends at 690 nm. Its modulation-transfer function curve is relatively flat at between 2.5 and 12 cycles/minute arc and then smoothly falls off to 32% response at about 75 cycles/minute arc. In short, this professional film supports relatively high-resolution photography over a wide range of contrasts.

On March 9, 2001, the author received a 4 25-inch-long, color negative strip containing one exposed frame (no. 3A) connected to frames 4A and 5A that were unexposed for some unexplained reason. The single exposed UAP frame was in very good condition with no scratches at all; it did contain a lighter density, linear border measuring 2.05 mm wide on the vertical dimension and a 0.9 mm wide border on its lower edge. A positive print made by the author from this negative showed these two black borders, which were absent on the 8" by 11" enlargement, received from Williams. (Either they had been cropped out or his photo had been made from another negative.) The total frame width was 36 mm, as expected. The presence of these two visible borders that could not have been produced within the camera during exposure, coupled with the absence of any exposed frames after the UAP frame, strongly suggest that this was not the original negative but a copy negative. Where could this copy negative have originated if not from Williams?

Film processing Williams said that upon receiving his camera from his friend (R.C.) immediately after landing, he placed the camera (with film still inside) into his nylon camera bag. He said he took the exposed film to a one-hour photo processor on Convoy Street in San Diego "that afternoon or the following day on his way to work" and, about a week later, picked up the processed film and standard size positive color prints. "I didn't even look at them then," he explained. "I was going flying."

again that weekend and took them with me to show the guys how they had come out. We flew almost every weekend." When they all noticed the frame of interest (UAP), the chase plane pilot said almost nothing while R. C. simply remarked "Look what we got on that photo!" "He is a very stoic person" observed Williams, who then ordered two each 8-by-11-inch color enlargements of the frame showing the UAP, one of which he submitted with the negative.⁷

DETAILS OF THE PHOTOANALYSIS

The author made a number of digital scans of this UAP frame as described below. The objective of these scans was to better understand the nature of various image details. The initial scan emphasized the left wing of the sailplane where the white ("vapor") trail passed through it. If this was a double exposure, the (positive print) luminance of the wing in the region of the trail should be somewhat higher than in regions where the trail did not intersect it because of exposure additivity. Figure 5 shows the seven equally spaced lines (each perpendicular to the wing's surface) along which density measurements were obtained as well as ten locations along the white tail (see below).

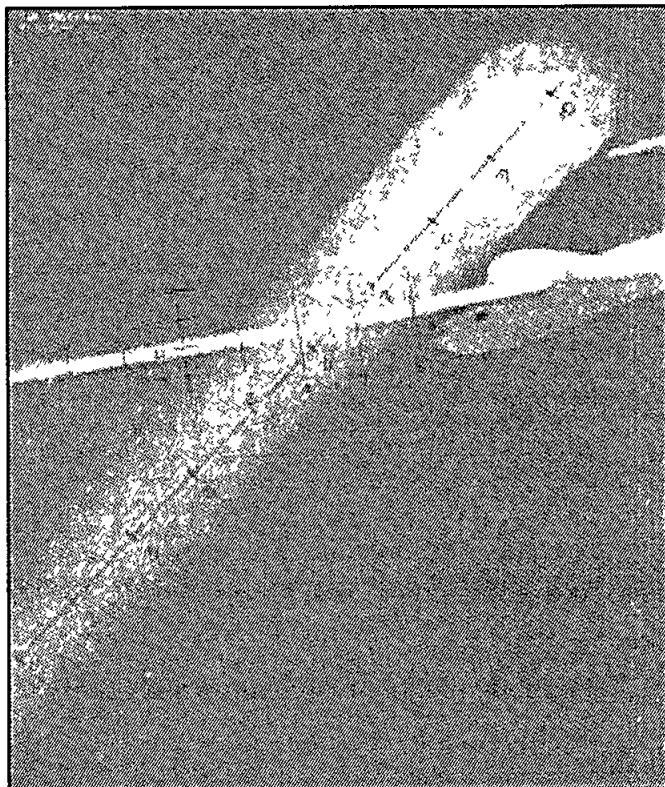


Fig. 5 Sailplane left wing and vapor trail image (250 dpi scan, brightness = -10, contrast = +5%)

No evidence was found that would support the contention that a double exposure had been carried out (within a margin of error of $\pm 2\%$). The luminance of the left wing was not measurably greater where the vapor trail intersected it as compared with the area where the wing was imaged against the clear blue sky.

White trail Two separate tests were performed within the same region as Figure 5 to better understand details of the vapor (?) trail. In the first test, the Posterize filter (Adobe Photoshop) was set to five levels to see if discrete edges could be extracted from the otherwise diffuse white trail behind the head of the object. As expected, several non-parallel, tapering gradients could be discriminated, as is evident in Figure 6.

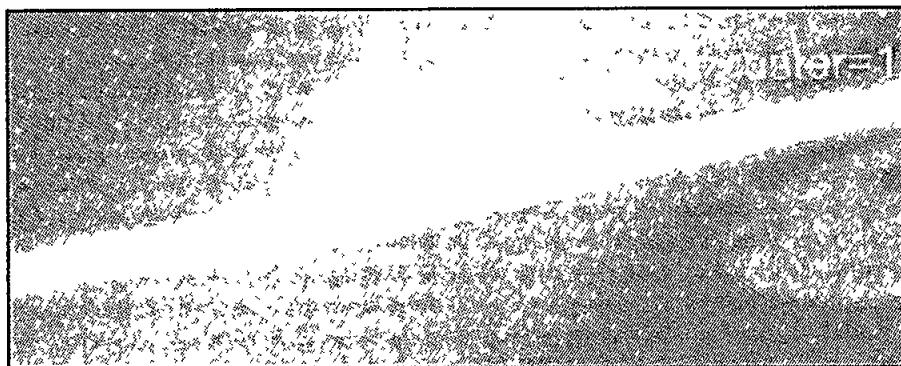
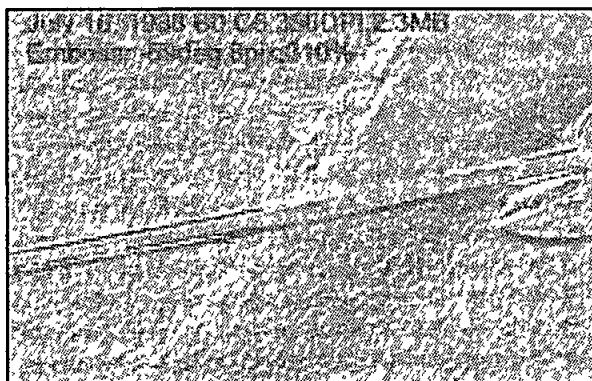


Fig. 6 UAP vapor trail luminance gradients (650 dpi scan, brightness = 5, contrast = 5%, posterize = 5)

The second test performed used the Emboss filter that significantly accentuates low-contrast, micro-image grain details as a function of pseudo-illumination angle and pseudo-depth of the pixel luminance. Figure 7 presents the results of this test where areas of the image that are nearly 100% exposed (i.e., diffuse, very luminous white portion of the UAP tail) appear here as an oval-shaped, smooth, gray region.

Fig. 7 UAP vapor trail grain microstructure
(1300 dpi scan,
brightness = 0,
contrast = 0,
angle = -66 deg.
ht = 10 pixels,
amt = 420%)



Note the enhanced granularity within the tail of the UAP (between lines X and Y) as compared with the clear sky (outside lines X and Y). This large granularity is probably due to sunlight scattered from greater turbulence within the tail. One possibility may be that the UAP's white tail represents ionized or otherwise excited air by emitted microwave energy from the UAP (see McCampbell, 1973, pp. 23-37), a possibility that is further supported by Figures 8 and 9 related to the head or leading edge of the effect.

The final test conducted was on the variation in luminance of the white tail streaming behind the UAP. It was scanned at equal distances along its entire length (equivalent to approximately 27.3 degrees arc) at the positions shown in Figure 5. Due to luminance variations at each location, an upper and lower value was recorded. These relative luminance values are given in Table 1.

Table 1. Relative Luminance Distribution Measured on Each Side of a Central Line Along Entire Length of the Tail
 (See Figure 5 for Exact Measurement Locations)

	Measurement Location* (see Fig. 5)	Lower Value+ (%)	Upper Value+ (%)	Angle (deg.) behind head A	Cos A
(End of tail)	1.0	58	60	27.3	0.518
	1.5	56	62		
	2.0	58	62	23.9	0.443
	2.5	56	64		
	3.0	57	60	20.5	0.374
	3.5	62	64		
	4.0	58	68		
	4.5	63	76	17.0	0.306
	5.0	60	70		
	5.5	58	67	13.6	0.242
	6.0	67	75		
	6.5	70	80	10.2	0.178
	7.0	77	85		
	7.5	95	98	6.8	0.119
(Head of UAP)	8.0	100	100		
	8.5	100	100	3.4	0.059
	9.0	100	100		
	9.5	100	100	0	0.000

*Approximately 0.5 in. apart along entire length of white tail on enlarged image.

+100 % on this scale represents fully exposed film i.e. highest luminance.

It may be noted that, progressing away from the forward end of the UAP, the luminance of the tail decreases very rapidly beyond measurement location 5.5 (just below and left of the sailplane's wing in Figure 5), which suggests an almost exponential decay rate. If the tail were composed only of water vapor, one would expect its reflectance (in the direction of the camera) to be approximated by the cosine of the angle (sun-UAP-camera) (see column 5 in Table 1), which it clearly does not. Is the

tail the byproduct of a totally different process? Perhaps it is made up of a substance with a rapid luminous half-life on the order of a second or two, or is composed of particles possessing directional reflectivity, or some other explanation?

Head of UAP Another set of tests was performed on the region of the head of the UAP. This region is greatly overexposed—virtually to the point of making any discrimination of object edge or surface detail impossible. The Emboss filter was used first. The homogeneous gray, flat-appearing region in Figure 8 depicts the 100% over-exposed area of the film and is very likely the actual UAP itself and part of its high-luminance trail. The left tip of the tail can be seen here. The areas lying outside of this central, gray region are of more interest, however. Thin, parallel fingers are seen protruding from the rounded front of this image. It is interesting that most of these fingers diverge from 10 to 15 degrees arc from the UAP's flight path.

What these short protrusions are is not known but they may represent energy projections of some sort. These protrusions also appear in Figure 9, where the same part of the image was subjected to a sinusoidal filtering (RGB Curves function) using seven equally spaced cycles across the 255 bits of exposure depth. This yields artificially enhanced profiles of equal luminance. The luminance boundaries nearest the head of the UAP tend to include the projections that characterize the head itself while boundaries more distant do not. This effect seems consistent with a radiation effect that decreases in intensity with distance from the energy source.

The appearance of separated striations within the white tail

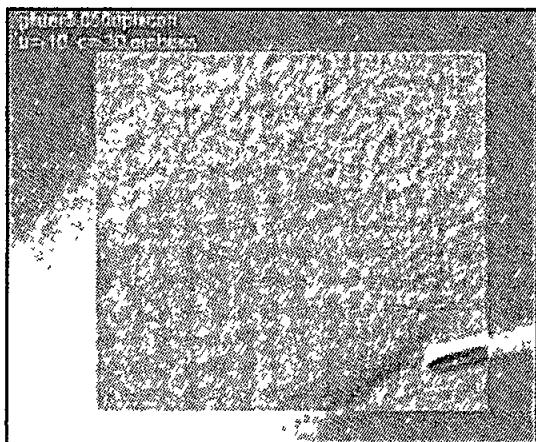


Fig 8 UAP head area, emphasizing coronal microstructure (450 dpi scan, brightness = 10, contrast = 15, emboss filter)

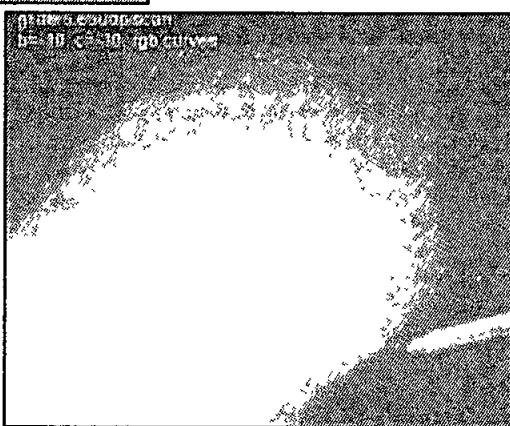


Fig 9 UAP head area, emphasizing corona macrostructure (450 dpi scan, brightness = 10, contrast = 15, RGB curves filter as described in text)

behind the UAP appear to be consistent with condensation trails of a blunt-nose body in subsonic flight through Earth's atmosphere (Smith, 2001). Of course, the tail may be produced by a totally different mechanism. In addition, if the UAP were traveling at a supersonic velocity there would be a significantly different appearance of the bow shock wave than is seen in the photograph. Further, the sailplane pilot did not hear a sonic boom nor feel any sudden air buffeting during or soon after the UAP passed him, which would be consistent with a vehicle travelling at subsonic velocity.

The last test performed on the head of the UAP consisted of "stretching" the exposure so that only thirty (about 12%) of the 255 total (245 minus 215) bits of *input* (exposure) "depth" were stretched over two hundred (200) bits of *output* "depth." This was done to see if very low contrast detail might lie buried within the greatly over-exposed region of the UAP's head. Figure 10 shows what was found.

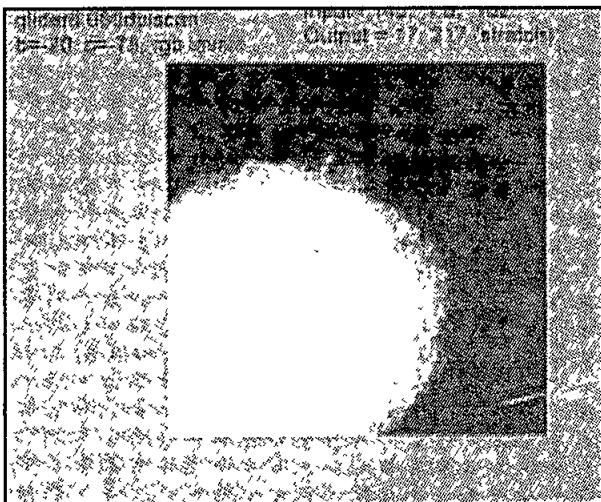


Fig. 10 UAP head area with luminance stretching (450 dpi scan, brightness = -5, contrast = 0, stretched exposure)

The magnification and image centering of Figure 10 are similar to that of Figures 8 and 9 for sake of comparison. The luminance stretching was performed only within the smaller inset square to permit comparison of its diameter with the unstretched image (seen in the remainder of the figure). The front edge of the head is relatively circular and (again) includes several short protusions located near the top of the head. The spherical shaped object that Williams perceived likely corresponded to part of this rounded region.

SUN'S LOCATION, SKY LUMINANCE, AND WEATHER ANALYSIS

On July 16 1988, at 1400 PST the sun was at $56^{\circ} 37' 8''$ arc elevation and $244^{\circ} 33' 6''$ azimuth at the location of the sighting. These values are useful in studying illumination and shadows on the UAP, sailplane, and chase plane windows. The reported heading of the sailplane (approximately 45°) at the moment of the photograph

is consistent with the location of the sun's shadow on its fuselage. In addition, a rather significant amount of sunlight is also reflected from the earth's surface upon the underside of the sailplane as seen in Figure 3.

No clouds are visible in the photograph, which supports Williams's statement that clouds had not yet developed at this hour of the day.

The entire frame was scanned at 175 dpi and a brightness filter applied to emphasize the range of luminance along lines A and B (upper right to lower left). Figure 11 presents the resulting image. When the image is rotated about 30 degrees clockwise, these measurement lines represent the sky's horizontal luminance gradient. Individual luminance values (3 by 3 pixel cursor) are shown at their measurement location. The sky in the upper right-hand corner of this image is visibly darker than it is in the lower left-hand corner. A luminance difference of about 24 was found along line A which is larger than would be expected from the usual atmospheric particle light scattering across this narrow an angle of sky (Allard, 1876).

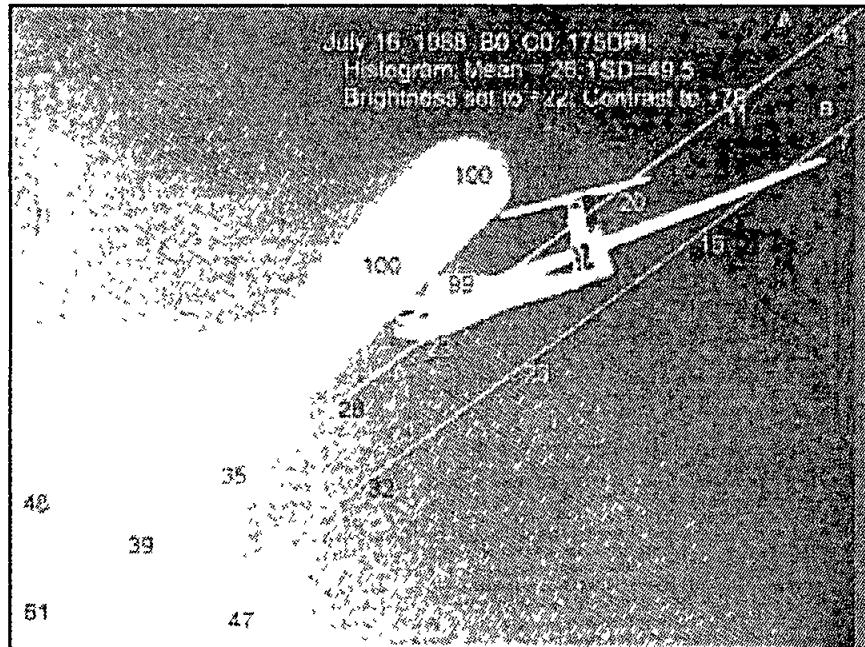


Fig. 11. Sky luminance distribution (175 dpi scan, brightness = +22, contrast = +76)

WINDSHIELD AND SIDE WINDOW OPTICAL ANALYSIS

In order to better understand the possible cause of this large luminance gradient several hypotheses were formulated. The first is that sunlight struck the Mooney's right-hand window to create the veiling luminance seen in Figure 11. An attempt was made to obtain metric details of the side window's rate of curvature and other geom-

etry. A rough estimate of these parameters was made based upon inspection of a front-view photograph of this aircraft (see Figure 12). The passenger side window possesses a large radius (approximately 24 inches) horizontal curve over its upper half progressing to a nearly flat plane over its bottom half.

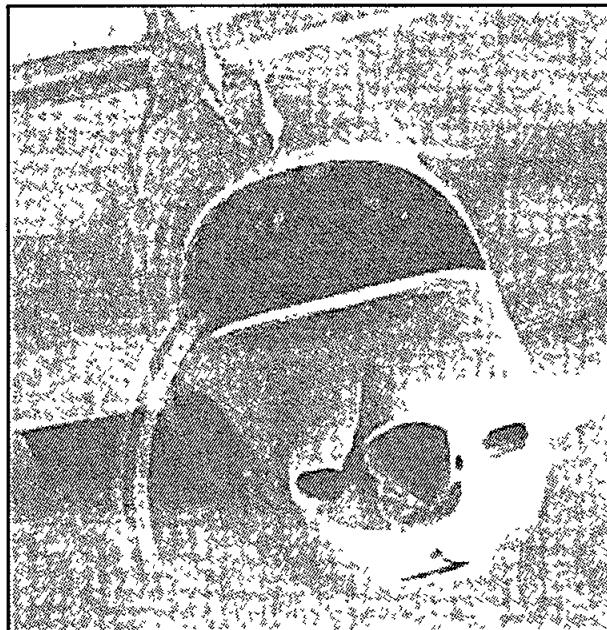


Fig 12 Nose view photograph of Mooney M20S

Assuming that the chase plane was beginning a left-hand bank away from the sailplane when the photograph was taken, the camera's line of sight would probably have been through the lower, planar part of the window. With the Mooney's heading of approximately 360 degrees and the sun's azimuth at about 244 degrees, sunlight could not have struck the tinted plexiglass side window. In short, the lighting conditions were perfect for this photograph, with the sun illuminating the top and left-hand side of both the Mooney and the sailplane. *The window and camera both were in shadow.* The gradient of the sky's luminance seen in Figure 11 is *not* likely caused by sunlight falling on the Mooney's side window if the aircraft headings are those assumed here.

A second working hypothesis is that this large luminance gradient across the film plane may have resulted from processing if a typical darkroom environment has been used. The Kodak film specifications (Eastman Kodak, 1997, p. 2) state "Do not use a safelight. Handle unprocessed film in total darkness." Fortunately, Williams was able to locate five other frames taken from the chase plane during the same flight. He indicated that the photograph shown in Figure 13 is very likely the frame obtained just prior to the UAP photograph (see footnote 7). This frame allowed a comparison to be made of the sky's luminance gradient with that of the UAP frame, approxi-

mately the same range of luminance was found in each, which argues against the second hypothesis as well as a third.

The third hypothesis is that the UAP had somehow caused additional exposure of the film, perhaps due to emitted radiation of some sort. Figure 13, taken many minutes before the appearance of the UAP, makes this possibility very unlikely because of a similar amount of luminance gradient present there as well.

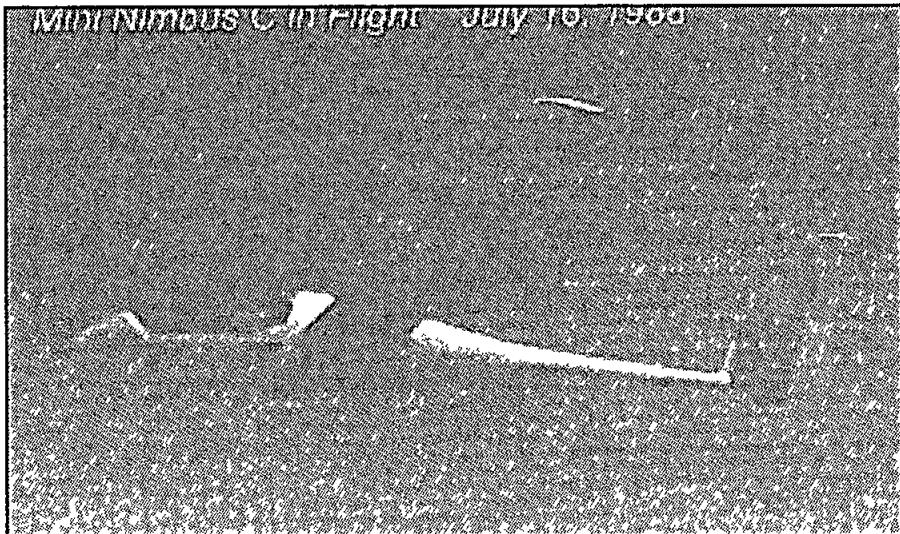


Fig. 13 Photograph of sailplane taken several minutes before the UAP photo

The fourth hypothesis is that this luminance gradient is merely that of the natural daylight sky under these conditions. Inspection of all photos provided by Mr. Williams tends to support this hypothesis even though the range is higher than would be expected (Allard, 1876, Koschmieder, 1924).

CALCULATIONS OF POSSIBLE UAP VELOCITY

If the UAP (1) traveled in a straight line, (2) traveled at a constant velocity, (3) was seen for five or ten seconds total, (4) traveled through the horizontal angles suggested by the witness, and (5) was either one, two, or three miles away from Williams, it would have had to travel at the velocities calculated in Table 2.

It appears that all of these velocities are too large in view of the likelihood that the UAP was travelling at subsonic speed for reasons given above. Either the sighting duration estimate was too short, the distance to the UAP was too large, the angle through which the UAP appeared to pass was in error, or some combination of these factors. Even the 857 mph (boldface) value given above is supersonic. Clearly, a rather large error exists in these estimated parameters. Such perceptual errors are not at all uncommon when there are few if any stable, visual landmarks and/or time ref-

Table 2. Calculated UAP Parameters for These Assumed Parameters

Total Horizontal Angle (deg arc) UAP Traveled in Time "t"	Angular rate of UAP (deg /sec)	Duration (sec) t	Distance (statue mi) from Sailplane D	Total Distance Traveled (statue miles) V	Velocity (mph)
100	20	5	1	2.38	1714
100	20	5	2	4.77	3434
100	10	10	1	2.38	857
100	10	10	2	4.77	1717
100	10	10	3	7.15	2574
110	22	5	1	2.86	2059
110	22	5	2	5.71	4111
110	11	10	1	2.86	1030
110	11	10	2	5.71	2056
110	11	10	3	8.57	3085

erences available within the visual field (Haines, 1980). If the distance to the UAP was reduced to only 0.50 mile it would have had to travel at 428 mph over ten seconds and 100 degrees of arc at 0.75 mile distance it would have had to travel at 644 mph over ten seconds and 100 degrees of arc given the other estimates.

The change in azimuth angle through which the sailplane traveled at 110 kts in a coordinated 20 degree banked turn (no side slip assumed) to the right over five seconds equals about 14 degrees, and 27 degrees over ten seconds.⁸ The sailplane would have traversed about 700 and 1,400 feet during these two durations, respectively. Since the UAP was seen initially on the left-hand side of the sailplane, i.e., on the outside of his right-hand turn, Williams would be turning in a direction to keep it in sight slightly longer than if he were in straight flight by about 2.7 seconds.

A UAP subtending a visual angle of 2 deg 35 min arc at one and two miles distance would measure 238 and 475 feet across, respectively. At 0.25 mile distance it would measure 59.4 feet across.

EVALUATION OF REPORTER CREDIBILITY

John Williams was confirmed to be a licensed pilot (S E L and "Diamond" level soaring pilot with 18 years flying experience) at the time of the event. He did not possess any waivers or limitations. He claimed to have had 400 logged hours with 350 hours in high performance sailplanes "in multiple flight envelopes and conditions." His reported directorship on a prominent California aerospace museum in the 1980s also was confirmed. His clear and detailed knowledge of aeronautics and flight details was found to be accurate in every respect. No evidence of any kind could be found that he ever attempted to capitalize on this photograph in any way.

DISCUSSION

Two primary subjects will be discussed (1) the differences (and possible causes) between what was reportedly seen and what was recorded on the photograph and, (2) the ambiguity of whether or not the negative submitted was original or a copy negative and reasons for accepting it for study

(1) Differences between What Was Seen and Photographed

Williams remarked that the UAP looked to him like a "large reflective sphere almost like a large ball bearing." But this is not what his photo looked like. A quite similar situation exists with the 1956 report by Childerhouse discussed earlier. And, when asked to comment on whether or not he remembered seeing a parallel upper edge to the vapor trail that is visible in his photograph, Williams remarked, "The UAP looked more distinct and spherical than it does in the photo, with an area to the rear several times its diameter that had a vapor quality." This visual description clearly implies the presence of an object with a polished metal surface and not the diffuse white ball with a vapor trail that is seen on the film. He did recall seeing a "tail" behind it.

Several possible explanations exist for these differences in appearance. First, Williams' memory may have changed somewhat over the intervening years. Such examples of memory modification are well documented (e.g., Shepard, 1979). Two, Williams changed the visual description of the UAP for some unknown reason. The likelihood of this seems small in view of the fact that his description of the UAP didn't correspond at all to the photograph he submitted. This argues in support of his honesty and self-assurance in this sighting detail. Or three, the radiation reflected or emitted by the seemingly spherical UAP affected this film differently than it affected his retina and visual system. This last possibility deserves further comment related to both the geometric and the spectral sensitivity aspects of the case.

Geometric aspects. The author has conducted laboratory research on both the perceptual and photographic effects of using ultra-high luminance targets in support of the space program (Haines, 1965, 1966, 1968, 1969, 1971), and has photographed highly polished metal spheres and other surface shapes under full sunlight conditions (e.g., Haines, 1980, p. 40, fig. 39). These studies clearly demonstrate that the normal human eye perceives very bright targets differently than they will appear on film that has been exposed under so-called "normal" conditions. Let us first consider the visual appearance of a polished metal sphere. For prolonged, light adapted viewing of a sunlit sphere one will see its entire outline and "metallic" surface (reflecting sky and other background), with a smaller diameter, reflected, virtual image of the sun that is extremely bright. *But the entire surface of the sphere will not appear homogeneously bright.* Recall that Williams's statement was that the UAP looked like "a large reflective sphere . . . a large ball bearing."

Now consider the visual appearance of a correctly exposed photograph of the same mirror surface target as above. Given the proper shutter speed and aperture much the

same object detail will be seen as described above. On the other hand, if the shutter speed and/or aperture are not adequate to reduce the ultra high optical power coming from the spherical target, what is produced is a much larger diffuse white area—perhaps the same angular size of the entire sphere itself—as is seen in the photograph. Yet the sailplane was properly exposed so the shutter speed and aperture had to be approximately correct for these nominal conditions. The overexposed UAP had to result only from its excessive optical power output. It is likely that this is what occurred in the present case as well as in the earlier Childerhouse case.

Now consider a sunlit sphere in the sky whose surface is not mirror but diffusely reflecting, like white chalk. It will appear both to the naked eye and on a photograph as an almost flat surfaced object, i.e., its third dimension will be significantly reduced. Its round edge will correspond with its angular diameter. Each point on its surface will radiate light toward the eye and camera. The difference between a sunlit mirror surface and a diffuse surface sphere is immediately discernable and will not be confused.

Another possibility in one or both sightings is that the film may have undergone some poorly understood type of direct irradiation effect,⁹ perhaps due to non-visible (near infra-red?) wavelengths from the source. Further research is called for to find out if this is possible.

Spectral sensitivity aspects. Another issue is the degree to which Kodak ASA 100 color film faithfully captures the same target wavelengths as does the normal human visual system. In fact, there is a relatively good correspondence in this regard (see Eastman Kodak, 1997). Indeed, if this were not the case such film would not be sold as consistently as it is. People would not continue to purchase film that did not capture the same hues and contrasts as they see visually. At the shorter wavelength end of the spectrum of Kodak 5026 the yellow-forming layer's spectral sensitivity curve extends down to 400 nm while the normal visual sensitivity falls off to virtually nothing at 395 nm (Prince, 1962). Much the same correspondence is found at the longer wavelength end of the spectrum as well where the cyan-forming layer of the emulsion is sensitive out to 690 nm, which is just under the 730 nm cut-off of the normal eye. Thus, the eye can see slightly farther into the near infrared than can this particular film stock.

What is the possibility that this UAP emitted non-visible radiation that affected the film? There is no known published research on this important matter. Further research should be conducted to evaluate such a possibility, particularly microwave wavelengths in the 1mm to 1cm wavelength range.

(2) *The Issue of Negative Originality*

Of course it is important to study the original negative of an alleged UAP or other claimed anomaly whenever possible (Louange, 1999), unless it has been lost and a high quality copy, unaltered negative has been made. As mentioned earlier, it appears that the negative that the author received was not original but a copy. In addition, of

the three-frame negative strip received, the UAP was imaged on frame 3A with no exposures on frame 4A or 5A. When Williams was asked about this discrepancy (on March 9, 2001), he said he thought it was original "as far as I know." Whether or not this fact seriously impacts the value of the entire case rests on the personal motives and credibility of the primary witness. The only other two people who handled the film were the photographer and the technician at the one-hour film developing shop on Convoy Street in San Diego. Since the photographer did not remove the film from the witness's camera but simply handed it all to Williams upon landing, it removes him from suspicion. It isn't known whether the technician made the copy negative. He had it for a full week according to Williams, who further recalls that he did receive a full roll of negatives back but can't be sure if they were his originals.

Consider the following:

- (1) Williams did nothing with the negative for 1½ years so far as can be determined, other than having two enlargements made—one of which he submitted to the author for study and the other for his office wall.
- (2) It is possible that the photographer had loaded a second roll of film and then stopped taking photos immediately after the UAP passed by. Williams thought that they all headed back to land very soon after the sighting.

(3) When the author visited him in his home-office located northwest of Seattle, Washington, it was noticed that (a) he was a former Naval officer, (b) there was no indication that he had any kind of an interest in UFOs or anything occult, (c) at no time did he become defensive or belligerent about the apparent discrepancy surrounding the copy negative, he merely shrugged it off as something of no great importance. At no time did he contradict himself or give facts that were later found to be in error, and (d) he is well educated, a respected member of the community, and now a salesman of high technology, non-destructive testing hardware and is very precise in his vocabulary and knowledge of flying. All of these facts tend to support the contention that Williams is a trustworthy individual despite the fact that the negative provided probably was not original. Of course, theoretically, overall case reliability is lessened because of this fact.

(3) Other Issues

A check was made to determine whether other UAP reports had been made at this time, date, and location. No reports to the National UFO Reporting Center (Seattle, Washington) were found other than Mr. Williams' own abbreviated report submitted on January 10, 2000.

It may be important to note that Mr. Williams did not include the day of the month of the incident in his report to NUFORC. He had to locate this date in his flight logbook for them later. There also were no sighting reports found in the national database maintained by Hatch (2001). A check was also made with an international astronomical clearing house in Czechoslovakia regarding meteorite and bolide sightings, none were reported by astronomers for this time and location.

PRELIMINARY CONCLUSIONS

A number of tentative conclusions are offered as a result of this investigation

- (1) There is no firm evidence of a double exposure or other deliberate hoax despite the fact that the pilot probably did not submit the original negative
- (2) Whatever the UAP was it was most likely in subsonic flight, as suggested by observed characteristics of turbulence within the tail behind the UAP's head, the lack of a visible bow-wave effect, and the fact that no sonic boom was heard
- (3) If the UAP was moving at subsonic speed then either the estimated sighting duration was too short, the distance to the UAP too great, the angle that the UAP appeared to travel through was in error, or some combination of them all. It isn't possible to determine which of these estimate(s) are in error
- (4) The UAP's visual appearance did not match the appearance of the photograph, a finding that parallels an earlier aerial photographic case. This difference may be because the total optical power of the UAP was so great as to completely saturate the relatively slow film. Indeed, even with extreme computer stretching of the highly exposed area it wasn't possible to locate any significant detail within the central core of the white head
- (5) The diminution of the albedo of the UAP's tail with increased distance behind its leading edge is *not* consistent with sunlight reflected off of water vapor at these angles. It is as if the particles possessed directional reflectivity or some other non-mundane characteristic
- (6) Very fine microstructure details were discovered that extended outward from the head of the UAP. The nature of the UAP has not been identified as of this date

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FOOTNOTES

1 Since this case did not involve aviation safety the author investigated it independently from his duties as chief scientist for NARCAP

2 The Mini-Nimbus/C sail plane has a gross weight of 480 pounds and a glide ratio of about 44 : 1

3 Ryan airport, Hemet, California, is 1,512 feet MSL with a runway length of 4,300 feet and right-hand pattern. It is used extensively by soaring pilots and hosted almost a hundred such aircraft at the time

4 The Mooney 201 was FAA certified in September 1976 and is all-metal construction. It holds four passengers and boasts a 200 hp, flat four cylinder engine. Its high maneuverability and (low wing) visibility make it an ideal candidate as a photographic chase plane. During this flight its flaps were fully extended in order to slow to the same speed as the sail plane (approximately 120 knots)

5 Williams claims to possess these other frames although he could not find all of them as of September 1, 2001

6 It isn't known if the tow plane pilot saw the UAP. No effort was made to find out at the time

7 Is it likely that a copy negative was made at this point? If so, for what purpose? The author received the additional five frames from this roll on August 12, 2001. Since Williams did not take the photos he wasn't sure of their order on the film

8 The radius of turn for these conditions = 2,944 feet given by $R = v^2/(\tan \theta)g$ where R = turn radius," θ = bank angle (degrees), and $g = 32.2 \text{ deg/sec}^2$. Williams estimated (later, on March 9, 2001) his bank angle to be from ten to fifteen degrees.

9 Irradiation refers to a lateral spread of light exposure on the film beyond the edge of the brighter target.

Note Color copies of the photos in this article have been posted on the CUFOS website at www.cufos.org

THE IMPLANT MOTIF IN UFO ABDUCTION LITERATURE

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ABSTRACT The recurring theme of implants in UFO abduction lore is examined. A comprehensive survey of English-language UFO literature uncovered 84 such accounts. This article reviews the views and comments on this topic by UFO researchers, and undertakes an analysis of the limited data available. Suggestions for future research are provided.

One frequently discussed aspect of the UFO abduction phenomenon is the claim that anomalous physical objects have been implanted within the human body by the alien beings behind the abductions. The purpose of this paper is to (a) examine the English-language UFO literature to extract reports of individual abduction accounts where implants are mentioned, (b) document the findings of UFO researchers and abduction experiencers about implant accounts, and (c) analyze the available data from the perspective of implants as a subtheme within UFO abduction accounts.

The amount of information available in individual literature references varies tremendously. There is a mix of firsthand testimony with second- and thirdhand hearsay. In some instances, the only suggestion of the presence of an implant comes from the belief of an individual that one exists in her body. However, even this belief forms part of the abduction motif, for why should someone come to believe that an alien implant is in her body? Accordingly, all references to implants direct or indirect, have been included in this analysis.

For the purposes of this study an implant account is defined as a UFO abduction story where an implant

- is reportedly seen going into or coming out of the human body during an abduction experience or
- is reportedly observed in the human body, e.g., seen or felt under the skin, or said to have been detected on an x-ray, CAT scan or similar image, or
- is reportedly removed/ejected from the human body, or
- is placed in a human body according to the UFO beings themselves, or
- is believed by an abduction experiencer to have been placed in his or her body

Using the above definition, 84 such accounts were located, published between the years 1979 and 2000. No case appears in more than one category. A catalogue of summaries of the portion of these accounts that mentioned implants is included as an appendix to this article. Because of difficulties in trying to date the actual occasion where the individual believed an implant to have been inserted/removed, the date of the published source of the account has been used instead.

THE FIRST CASE

Three cases vie for the title of the earliest published case. Details of all three were published in 1979. For most researchers, the earliest report located, which seems to describe the memory of an implant, albeit the removal of one, is that of Betty Andreasson, reported by Ray Fowler in 1979.

Betty Andreasson and other members of her family were present at home, in South Ashburnham in northern Massachusetts on January 25, 1967, when a bizarre episode occurred. It was not until 10 years later, in 1977, when Betty Andreasson was under hypnotic regression for the ninth time, that she reported recalling this 1967 event. Betty remembered being in a brightly lit room, on a rectangular metal block. During an examination, a long, flexible tube, with a needle at the end, was stuck up her left nostril. When this was removed from the nostril Betty stated:

He's taking that thing out now... Oh! It feels funny (sigh) They took it out, and it looks like, there is some kind of a ball on the end of it—something on the end of it. A little thing, whatever it was, on the end of the needle... It's kind of hard to see what it is. [Fowler, 1979, p. 48]

Under questioning at the debriefing, by Fowler, Betty recalled that it was "a little ball with little prickly things on it." They then had this exchange:

Fowler Was it there before they put it in your nose? Did you notice it?

Betty No

Fowler It wasn't there when they originally put the needle in your nose?

Betty No

Fowler You are fairly certain about that?

Betty Yes [Fowler, 1979, p. 49]

The second candidate for earliest reported account was also presented in Fowler's (1979) book, an interview with an abduction experiencer from an unrelated case:

Witness And they released this little tiny thing, like a buckshot

Investigator What did they release it from?

Witness From the needle

Investigator What was the needle like?

Witness It was sort of like a long needle that was sticking in my side

Investigator Was it a hollow needle, and then ejected through the hollow needle, or attached to the

Witness I didn't see the needle [i.e., when the tiny device was released]

They had my arm up And then they said, "I hope your body doesn't reject it With this implant we're putting in there is going to come better communications and power and we hope your body doesn't reject it If it doesn't reject it, we'll activate it in, uh three or four weeks" [Fowler, 1979, p. 183]

The third case is a little-known Brazilian one, also first published in 1979 (Portuguese translation in Gevaerd & Stevens, 1987) In this instance, during a May 2, 1976, hypnotic regression session recalling an abduction, a woman (Dona Clelia TR) responded to a question by replying, "I put a hand to my ear and he said no, that I would keep the device [inside] now, that I could not take it out by hand, that this was surgery" (Gevaerd & Stevens, 1987, p. 143)

No evidence of any published cases prior to 1979 was found This lack of pre-1979 cases was also commented on by Clark (1998, p. 94), who stated, "In 1977, for example, no one had written of the placing or removing of apparent implants through the nasal cavity"

Whichever published account may claim to be the first, it was the publication of Fowler's 1979 work as described above, which introduced the term "implant" into the abduction literature

1980–1982

In the next three years, there were seven published cases with reference to implants, only two of which involved nasal intrusions These seven were the August 28, 1979, Harry Joe Turner shoulder implant (Whiting, 1980, pp. 3–7), the 1970 Finnish Imjarvi skiers' back and forehead (Liljegren, 1981), Mike Lewis's needle in the nose (Sprinkle, 1981), Barbara Schutte's head implant ("Close encounters," 1982), Renee Elliott's BB-like device on the end of a probe (Willis, 1982, p. 5), Lori Briggs's tuning object in her spine (Druffel & Rogo, 1980, p. 170) and finally a further reference to Betty Andreasson

Betty Andreasson's case provided a report of a new implant procedure During a 1980 regression, she recalled an event at age 13, in 1950 Here an entity removed her right eye from its socket A needle was pushed into the socket The needle "had one of those tiny little glass things on the end of it" (Fowler 1982, p. 168) Earlier, Betty had described seeing two types of glass things, one lot ("peas") were ball-shaped, while the others were shaped like glass shives or needles Although the regression sessions commented on both of these shaped objects, it was the glass-ball shape

which Betty reported seeing going into her eye

1981 was the year Budd Hopkins's first book *Missing Time* was released. In his second work *Intruders* (1987) he stated, "In *Missing Time* I dealt with three separate instances of apparent nasal cavity implants" (Hopkins, 1987, p. 59). However, the word "implant" does not appear in the index of the book, nor could the use of the word be found in the text. What did appear, in the case of Virginia Horton, was an instance of blood on her blouse. "The blood was the result of a probe of some kind inserted into her left nostril to take blood and tissue samples" (Hopkins, 1981, p. 208).

Hopkins here also refers to Betty Andreasson's nasal insert and the Larson case where Larson referred to the inside of her nose being made sore by an instrument of some kind. However, there was no use of the idea in the book that something was either implanted or removed. Indeed Hopkins's explanation was that "Three simple descriptions quoted earlier nicely encapsulate the range of responses to one particular operation—the apparent taking of blood and tissue from inside the nostril" (Hopkins, 1981, p. 214). It would appear that sometime between 1981 and 1987, the story changed somehow and Hopkins concluded that implants had been inserted.

1987–1989. SEARCHING FOR HARD EVIDENCE

While only one account was located for the period 1983–1986, 1987 was a pivotal time which saw the publication of both Budd Hopkins's second work *Intruders* and Whitley Strieber's best seller *Communion*. Both these works had a major influence on the perception of the abduction phenomenon among the mass population. Following their publication, it frequently became the case that an abduction experiencer would commence her account with the statement that she had read either one or both of these books.

As Hopkins's work with abduction experiencers was widely known, what he had to say about implants is of interest:

Of the fifty-eight people I've worked with who have recalled nearly complete abduction experiences, eleven have reported the insertion of what seem to be tiny implants into their bodies. Six have recalled a thin probe of some sort with a tiny ball on the end having been inserted in a nostril, and they feel pain when the probe apparently breaks through at the top of the nasal cavity. Two reported the same type of probe entering the region of the eye socket, and three recall the probe's going through, or behind the ear [Hopkins, 1987, p. 44]

Hopkins notes that "Speculation about the purpose of these possible implants runs to any or all of three unappetizing possibilities:

They could function as "locators" Or they could be monitors of

some sort Or they could have a controlling function [Hopkins 1987, p 59]

As for *Communion*, there are two episodes described by Strieber which others have interpreted as implant insertions. First, during an apparent abduction on December 26, 1985, Strieber wrote that he found himself in a small circular chamber. A box he saw there contained "an extremely shiny, hair-thin needle mounted on a black surface I became aware—I think I was told—that they proposed to insert this into my brain" (1987, p 28). There was a bang sound and a flash and the operation was over, according to Strieber. It should be noted that Strieber himself in *Communion* does not attribute this procedure to the implantation of any device.

The other episode is dated March 21, 1986, when he woke paralyzed. He felt something moving slowly up his left nostril and there was then a "pop like an apple crunching between my eyes" (1987, p 128). Again, however, there is no comment in the book about this being a potential implant. In fact, Strieber talks of these intrusions as a "probe" not an implant (1987, p 130). He records that he did ask Hopkins about his own cases of reported head intrusions. Hopkins indicated he found that the "largest number of intrusions were into the nostril" (1987, p 129).

The year 1987 also saw the publication of Eddie Bullard's excellent presentation of summaries and analyses of more than 300 abduction accounts. Bullard summed up the then-current view on implants by stating, "Implants are tiny objects shaped like beads, perhaps with burlike projections, or elongated and needle-like slivers" (Bullard, 1987, p 87). Although there had been several accounts speaking of "ball" shapes, only the Betty Andreasson recollection of a 1950 event mentioned "slivers" and even here, Betty only actually reported seeing a ball shape going in. As to their purpose, Bullard suggested, "What implants do remains unknown, but the hints we have suggest tracking or control electrodes" (Bullard, 1987, p 88).

English researcher Jenny Randles's (1988) review of over 200 global abduction accounts lists only one with an implant, and this one is from Japan. Despite a large number of abduction accounts from the United Kingdom, no published account includes any mention of the concept of implants, a stark comparison to that of the United States.

THE STORY MOVES ON

Shortly after these anecdotal stories from abduction experiencers and researchers, the first claim of the detection of implants by medical technology is reported. Hopkins, in conversation with Jerry Clark in 1988, reports

I've now heard from four different individuals who have gone in for this imaging-system operation because of some kind of neurological problem, not because of UFO experiences (though all four have had UFO experiences). They've reported that in the printout they have found

little ball-like objects up near the optic nerves [Clark, 1988, p 9]

However, what was missing was the production of these printouts for peer review, or comment by the medical specialists involved. Thus, the implant story remained simply anecdotal.

Strieber also reported on hard evidence in 1989. Two individuals who reported needle intrusions said they had nasal polyps or malformations. Two other needle-intrusion individuals reported a discolored circular area in their pituitary glands. According to Strieber (1989 p 2), "All four people scanned so far have shown anomalies consistent with their own predictions based on their visitor experiences."

From this time on, some researchers appeared to associate nosebleeds with implants being inserted. The earliest reference to this located was in 1989, when Fiore (1989, p 321) suggested that nosebleeds "may be due to insertion of tracking implants."

1990-1991 THE FIRST LABORATORY ANALYSIS?

This period supplied an additional 10 cases. Schuessler (1990a) reported the work of an unnamed Kansas researcher suggesting that implants are for monitoring and communication. He also reported that "A very interesting laboratory analysis of an implant was presented at the Treat II conference. No bizarre claims were made." This was the first mention found of a detailed laboratory analysis of an implant (see Laibow, 1992). However, the analysis report was not widely circulated.

Richard N. Neal, as cited in Fowler's *The Watchers* (1990, p 232) stated the by then widely accepted fact that "Many abductees have described a thin probe with a tiny ball on its end being inserted into the nostril—usually on the right side." Unfortunately, this statement failed to specify the number of such cases, and there is no listing of the cases or references to them in the literature.

Based on his ongoing investigations with Betty Andreasson, Fowler pondered as to whether the object removed from her nose in 1967 was the same one placed behind her eye in 1950. He also suggested the possibility that the eye implant might allow "an alien monitoring device thousands of miles away to actually record all that Betty Luca herself sees!" (Fowler, 1990, p 55)

In a paper presented at the 1991 MUFON UFO Symposium, researcher John Carpenter stated, "At least three such objects have been inspected under electron-scanning microscopes by physicists in reputable institutions . . . the objects remain unidentified by experienced lab personnel" (Carpenter, 1991b, p 166). Again, the researcher making the statement failed to provide details of these analyses, or references to the publications involved.

Abduction experiencers started to give their own opinions as to what purpose implants were for. For example, Christa Tilton mused that "It could have been some sort of implant used for communication and monitoring" (Tilton, 1991, p 52).

1992–1994. IMPLANTS EVERYWHERE

In 1992 David Jacobs published *Secret Life*, based on 300 reported experiences of 60 individuals. His typical abduction event involved, among many other things, the aliens putting a small, round object into the ear, nose or sinus cavity, or the removal of such an object. Jacobs broadened the list of locations where implants were said to have been placed to include near the ovaries and the lower abdomen in a woman, or in the penile shaft of a man. Jacobs admitted, "When asked during hypnosis what the aliens are doing, abductees frequently reply that they 'know' the aliens are placing an implant there. How they know this is not apparent." He added that "The function of this device is unknown" (Jacobs, 1992, p. 95), although he followed the views of earlier researchers to their use as a locator, monitor or communicator.

Further published works by abduction experiencers during 1993 provided other perspectives. Katharina Wilson (1993, p. 129) speculated, "Perhaps the aliens were repairing a small implanted device that is located very close to my heart." Leah Haley not only found an apparent implant but also had it analyzed. Unfortunately, the piece of material protruding from her gum "looked like a flat piece of brass" (Haley, 1993, p. 128) and "In essence the analysis showed that the material was consistent with common brass" (p. 157).

The typical abduction and implant scenario as described by Hopkins, Jacobs, Neal, and others gained further support from investigator Yvonne Smith. In 1994, at a national MUFON UFO Symposium, Smith described part of a typical abduction as involving "a long, thin probe with what appears to be a small, metal-like BB object at the end being placed deep within the nasal cavity" (Smith, 1994, p. 79). Smith also commented that, "In several of my cases, an object can be seen and felt directly under the skin. I am in the process of having x-rays taken. Perhaps, one of these objects will be detected and possibly examined."

Fifteen years after Fowler published details of the Andreasson account, researchers such as Smith were implying that every abduction involved an implant, and provided a very consistent impression of an implant as small, shaped like a BB, and going into the nose. A wider reading of the literature at this time would have revealed to these researchers that there was already a diversity of implanted bodily locations being reported. In addition, at least one other type of implant, the "sliver" had been mentioned (Bullard, 1987, p. 87).

Works published in 1994 brought 20 additional entries to the catalog, and more comments from researchers and abduction reporters.

Experiencer and author Karla Turner (1994, p. 242), describing the accounts of eight female experiencers who she had extensively interviewed, contradicted the previously held position that aliens were focused on gynecological matters. "More of the women report implant procedures and 'head operations' than gynecological activity."

By this time, the general UFO abduction phenomenon spawned claims that the U.S. military was an active participant in the abduction program. By 1994, this claim

had entered the implant arena. One of the abduction experiencers interviewed by Turner provided the first account of a mix of sources for the implants "Angie" was told by men in olive-drab jumpsuits that she had devices implanted by both the aliens and the military.

Psychologist Richard Boylan, after interviewing a number of abduction experiencers, further broadened the range of locations where implants were reported. These locations not only involved the nasal cavity, but were said to include the frontal lobes of the brain, as well as arms and legs. Although he felt that the purpose of implants was uncertain, he expressed the view that, "intuition tells me that an implant serves as a biologically compatible 'computer chip'—a sort of extra brain lobe—to enhance telepathic communication, particularly message reception" (Boylan & Boylan, 1994, p. 25).

The year 1994 also saw the publication of an in-depth work by Harvard psychiatrist John Mack. Interestingly, despite a number of his interviewees describing implants, with some involving analyses, Mack wrote:

There is no evidence that any of the implants recovered are composed of rare elements, or of common ones in unusual combinations. In discussions with a chemical engineer and other experts in materials technology I have been told that it would be extremely difficult to make a positive diagnosis of the nature of any unknown substance without having more information about its origins. [Mack, 1994, p. 42]

The recovery and analysis of reported implants began in 1994. Experiencer Richard Price reported that during an abduction at age eight, an object was implanted in his penis. A doctor observed this object intact in his penis in 1981. After being dislodged in 1989, it was given to David Pritchard, a physicist at MIT in Boston, for analysis. The overall conclusion was that, "All of the results obtained at MIT indicate that the Price artifact . . . is of terrestrial biological origin" (Pritchard, 1994, p. 295).

Debate about the normality/abnormality of medical imaging results emerged in the case of Colette M. Dowell, a reporter of multiple abductions. She wondered if there were an implant in her head, and MRI and CAT scans were undertaken. It is reported that, despite a number of qualified medical specialists examining these records, varied opinions were offered as to the normality or otherwise of a three mm nodule detected near her pituitary gland (Dowell, 1994, pp. 275–279).

However, in the instance of another reporter of multiple abductions, Alice Haggerty, it is reported that the attending physician, after examining the MRI scan, commented that the mass shown near her nose was quite unusual and no explanation was tendered (Marcattilio, 1994, pp. 273–275).

1995–1999: IMPLANTS RECOVERED

During this period, some researchers were led to consider directly removing an implant from the human body for analysis. Just prior to successful attempts to remove one of these items, came an observation from Hopkins. He stated “it appears that the aliens can somehow tell when an implant has been x-rayed and is likely to be removed. It is unlikely that they would ever let us capture such a prize if they could possibly prevent it. Other abduction cases have afforded examples of this pattern, and in fact, situations in which a detected implant is apparently recovered by the aliens are far from rare” (Hopkins 1996, p. 145).

Despite Hopkins’s view, a number of removals were described in the literature. Abduction experiencer Jesse Long maintained that he had an object removed from his leg as far back as May 1989 but couldn’t afford to have it analyzed. The operation was even videotaped (Strieber, 1998, pp. 197–220). Betty Dagenas passed away in 1989 and after death, an object was removed from one of her ears (Strieber, 1998, pp. 177–179). Podiatrist Roger K. Leir of California reported that with a team of associates he had extracted a number of apparent implants from various areas of the body using surgical procedures. Analysis of these three objects was conducted by Los Alamos National Laboratories and by New Mexico Tech. Leir reports that

One object contained a core made of the hardest iron carbide known that was magnetic. The core was covered with a complex cladding of eleven different elements. Independent scientific review has convinced some of our scientific consultants that this object has been manufactured with purpose and precision [Leir, 1998a, p. 3]

A second batch of material was removed on May 18, 1996. According to Leir (1998a, p. 5), “These surgeries resulted in the recovery of one small metallic triangular object covered with a dark grey shiny membrane and two small greyish-white balls, about the size of a BB.” A third surgical retrieval on August 17, 1998, involving “Paul Dering’s” left thumb, located an object shaped like a cantaloupe seed.

Whitley Strieber also underwent surgery in October 1997, and the medical practitioner involved located a white, oval object, part of which was removed (Strieber, 1998, p. 232).

1998–2000

The Threat, a 1998 book by David Jacobs, provided the most recent view on implants by a longtime researcher.

The exact functions of the implants are unclear, but we can make some informal speculations. They are probably complex multifunctional devices, which might monitor or affect hormonal levels for lactation, men-

struation, ovulation or pregnancy. They probably also serve as a means to locate abductees [Jacobs, 1998, p. 72]

Apart from one woman's vaginal discharge of an implant, Jacobs also commented that "To my knowledge, on at least twenty occasions abductees who are unaware of their abduction experiences have either sneezed out an implant or discharged it in another way" (Jacobs, 1998, p. 113). However, he did not provide further details of these accounts.

ANALYSIS AND DISCUSSION

A more quantitative perspective on the implant phenomenon and the claims of investigators is presented in this section. Table 1 provides a breakdown of the catalogued accounts into the five categories of the definition ($n = 84$)

Table 1. Frequency of Implant Category

Category	Frequency
A Seen going in/out of body	8
B Observed/detected in body	12
C Removed/ejected from body	24
D UFO beings mention implant	6
E Experiencer believes implant is in body	34

The highest number of accounts comes from abduction experiencers who believe, for whatever reason, that they have an implant in their body. Less than 10% come from personal observation of something either going into or coming out of the body.

Table 2 provides a breakdown by gender. We see that there is great similarity in the implant categories, except perhaps for categories B and E. However, a statistical analysis found no relationship between implant category and gender ($p = .254$).

Table 2. Implant Category by Gender (in percentages)

Category	Male	Female
A Seen going in/out of body	5.7	12.8
B Observed/detected in body	5.7	19.1
C Removed/ejected from body	31.4	23.4
D UFO beings mention implant	5.7	8.5
E Experiencer believes implant is in body	51.4	36.2
Total N*	35	47

* Numbers add to less than 84 because of missing data.

Note that the overall male/female ratio is 43%/57%. For comparison purposes, the male/female ratio of abduction experiencers according to Hall (1994) was 48%/52% in a sample of 139 Australian, English, Brazilian, and U.S. cases. Conversely, based

on his sample of 309 global accounts Bullard (1987) found the male/female ratio of abduction experiencers to be 64%/36%

Table 3 analyzes category by time period. In checking to see whether categories change over time, three time periods were selected. The periods chosen were 1979–1986, 1987–1993, and 1994–2000. Roughly equal-spaced intervals were chosen to facilitate comparison. In addition, 1986 was chosen as the first cutoff point because the influential Strieber work was published in early 1987.

Table 3. Reported Implant Category by Time Period (in percentages)

Category	1979–1986	1987–1993	1994–2000
A Seen going in/out of body	27.3	5.0	0
B Observed/detected in body	0	13.8	14.3
C Removed/ejected from body	0	13.8	47.6
D UFO beings mention implant	27.3	0	7.1
E Experiencer believes implant is in body	45.5	55.2	31.0
Total N	11	29	42

Perhaps the first point to note is the increase in implant accounts, beginning in the second period following the publication of Strieber's first book and Hopkins's second. The number of published accounts increases by over 250% in the 1987 to 1993 period, and continues to increase, albeit not as rapidly, in the most recent period.

There is very little consistency in the distribution of implant categories from one period to another. Only category E remains reasonably constant across time periods.

In the earliest period, no implants were reportedly observed in the body (category B), but by the second period such claims were being made. Also, initially there were no claims of objects being removed/ejected (category C), but this rapidly increased in the second and third periods, mainly due to the work of Leir and his team.

Category A events, where an implant is actually observed going into or out of the body, have declined with time.

A statistical test found a clear relationship between implant category and period ($p < 0.005$), indicating that types of events reported have changed over time.

Table 4 presents the geographic distribution of implant accounts. Claims of implants have overwhelmingly come from the US, with much smaller numbers from other countries. Because US researchers have documented and published most of the material available on the abduction phenomenon, the majority of implant claims would be expected to come from the US. Also, this study searched for implant accounts in the English-language literature, a factor that would reduce the frequency of reported implant accounts from non-English speaking countries.

Table 5 presents investigator and abduction experiencer interpretations of the purpose of implants. The majority view is that implants are for communications, monitoring, and tracking/locating.

Table 4. Implant Category by Location

Country	Frequency (n = 84)
United States	67
Canada	5
Australia	5
England	2
Finland	1
Brazil	1
Japan	1
Spain	1
Germany	1

**Table 5. Purposes Attributed to Implants
by Abduction Experiencers and Investigators**

Source	Purpose
Fowler, 1979, p 183	Communications Power
Briggs, in Drufel 1980, p 170	A tuning thing
Hopkins, 1987, p 59	Locators Monitors A controlling function
Bullard 1987, p 88	Tracking Control
Fiore 1989, p 204	Control
Fiore, 1989, p 321	Tracking
Fowler, 1990, p 55	To look through the eyes
<i>Ohio UFO Notebook</i> 1991, pp 13-15	Communications
Tilton 1991, p 52	Communication Monitor
Goldfader, 1992, p 22	To relieve pain
Jacobs 1992, p 95	Locator Monitor Communicator
Mack, 1994, p 42	Tracking
Mack, 1994, p 123	Monitoring
Mack 1994, p 300	Tracking
Turner, 1994, p 173	Tracking Monitoring
Spencer 1994, p 211	Tracking
Boylan & Boylan 1994, p 25	To enhance telepathic communication
Jacobs 1998, p 72	Monitor or affect hormonal levels for lactation, menstruation, ovulation or pregnancy Locator

Table 6 presents by gender, locations in the human body where implants have been reported

The total numbers of implants reported somewhere in the head is much greater than for other body locations, and much greater for females (almost double) than for males. Otherwise, for both males and females, implants have been reported for a wide variety of other body locations.

The data in Tables 5 and 6 can be considered in regard to the hypothesized functions of implants. In respect to controlling and/or communications functions, the human head would seem a most likely location, given that the brain controls motor, cognitive, and perceptual processes. So 52 out of 85 locations would fit this line of reasoning. For the purpose of tracking a human being, however, any location within

Table 6. Reported Location of Implant by Gender

Site		Male	Female
Head	Nose	8	11
	Forehead	1	0
	Undefined head	4	7
	Eye	1	3
	Ear	2	6
	Brain	0	4
	Mouth	1	3
	Jaw	1	0
Total head		18*	34
Torso	Shoulder	1	0
	Back	1	0
	Heart	0	1
	Rectum	1	0
	Penis	3	0
	Vagina	0	1
	Chest	0	1
	Side	1	0
	Spine	0	1
	Pancreas	0	1
	Ovary	0	1
	Abdomen	0	1
	Kidney	0	1
	Neck	1	1
Total torso		8	9
Extremities	Legs	3	2
	Thigh	1	0
	Hand	2	2
	Wrist	1	1
	Foot	0	2
	Arm	2	0
Total extremities		9	7

* Totals add to 85 because some accounts describe more than one implant

the body would seem to be as good as any other. The variation in locations reported may be consistent with this. Finally, the focus many investigators ascribe to genetic experimentation in the abduction phenomenon with tales of missing embryos and sexual relations between humans and aliens, might predict implants being reported extensively in human reproductive organs. However, though such reports exist, they are rare.

Table 7 presents the number of implants reported in the head and elsewhere by time period. It can be seen that the number of claims from areas other than the head increased over time. Nevertheless, a statistical analysis shows that there is only a weak relationship between time period and location ($p = .117$).

Table 7. Reported Location of Implants by Time Period

	1979-1986	1987-1993	1994-2000
Head	8	22	21
Elsewhere	4	7	20
Total N	12	29	41

Table 8 presents the number of implants in the nose and elsewhere by time period. A statistical analysis indicates no change in the location of reports by time ($p = .542$)

Table 8. Location of Implants in the Nose by Time Period (percentages)

	1979-1986	1987-1993	1994-2000
Nose	3	9	8
Elsewhere	9	20	33
Total N	12	29	41

Table 9 summarizes 37 descriptions of shape, some rather vague, that could be extracted from the case collection.

Table 9. Implant Descriptions

Investigator	Description
Fowler	1979 A little ball with little prickly things on it 1979 Like a buckshot 1982 Tiny little glass ball 1994 Yellow-white, gelatinous, ovoid mass
Willis	1982 Small BB-like
Hopkins	1996 Cylindrical shaft with two thinner, spiraling extensions Undated Square-shaped
Conway	1989 Little ball
Randle	1989 Small metal sphere 1989 Tiny metal sphere
Basterfield	1990 Straight thin piece
Tilton	1991 A capsule-like device
Haley	1993 Square with a missing corner 0.16cm square, 0.03cm thick
Sims/Leir	1993 Mustard seed-size hollow 0.25-0.5cm by 0.25-0.5cm wide 1996 (1) Dark-gray, triangular 0.5 by 0.5cm (2) dark-gray, shape of cantaloupe seed 2-4mm 1996 2-4mm cantaloupe seed 1998 Tiny, dark-gray, cantaloupe seed 1998 Small, dark-gray triangular 1998 Small, dark-white ball, size of BB 1998 Small, grey-white ball, size of BB 2000 Cantaloupe seed, 6-7 mm long by 4mm wide by 2mm thick
Turner	1994 (1) Flat, circular, small flesh colored & (2) dark cylinder with fine wires 3cm long
Mack	1994 Wiry object twisted fiber 6-12mm long

Table 9. Implant Descriptions (continued)

Investigator	Description
Pritchard	1994 Size of a pencil eraser 1994 Small, silver, pill shape with 4 tiny wires 1996 Kinky, wirelike, pink 25mm long Could be stretched to 75mm
Turner	1994 Cylindrical, 1 by 3mm
Jacobs	1994 Tiny, oblong cylinder 6mm long
Strieber	1994 Yellow, plastic-like 1996 Dark-colored 1mm diameter
Largen	1998 Glass-like, colorless 1.5cm long by 3mm wide by 1-1.5mm thick
Worley	1998 White oval 1999 Circular, 6mm across and 2mm thick
	1998 Crystalline-like 1998 Wafer-thin round, blue-grey, hard

There is no single, unifying description to be found. However, it is of note that the perception of researchers in the period 1987-1994 was clearly that implants were tiny and ball-like, as exemplified by these descriptions

- tiny objects shaped like beads (Bullard, 1987, p. 87)
- tiny balls (Hopkins 1987, p. 44)
- tiny balls (Neal, in Fowler, 1990, p. 232)
- small, round objects (Jacobs, 1992, p. 95)
- small, BB (Smith, 1994, p. 79)

Nevertheless, there is considerable variation in regard to implant shape, and also to implant size

Table 10. Results of Recovered Implant Composition Analyses

Case	Outcome of analysis
1993, Leah Haley	Common brass
1993 USA	High molecular weight organic compound-Polymers (plastics)
1993, Australia	Terrestrial
1994, Australia	Carbon isotopic analysis was not remarkable Could be a manufactured fiber
1994 USA-Price	Terrestrial biological origin
1994, USA-Luca	No evidence of foreign material
1994, USA-Jerry I	Pathology lab reports nothing remarkable
1994 USA-Dowell	Varied opinions as to nodule in head
1994, USA-Haggerty	No explanation for white area in nose
1995, USA	Calcified, damaged tissue of terrestrial and human origin
1996, USA	Carbon fiber filament of unknown origin
1996, USA-Long	99.3% silicon, 0.02% potassium, 0.27% calcium, 0.03% iron Electrically conductive
1996, USA-Dagenas	Composed mainly of aluminum, titanium & silicon
1996, USA-Connely	T shaped object-composed of two small metallic rods. Horizontal portion contains an iron core. This rod is magnetic. Iron core covered by a complex layer of elements

Table 10. Results of Recovered Implant Composition Analyses (continued)

Case	Outcome of analysis
1996 USA-Pat Parrinello	Extraterrestrial, according to Leir (1998b, p. 164)
1998, USA-Paul Dering	Extraterrestrial, according to Leir (1998b, p. 164)
1998, USA-Male	Extraterrestrial, according to Leir (1998b, p. 164)
1998, USA-O'Hara	Extraterrestrial according to Leir (1998b, p. 164)
1998 USA-Alice Leavy	Extraterrestrial, according to Leir (1998b, p. 164)
1998, UK	Hydrocarbon Not magnetic
1998, USA-Strieber	Collagen Contained crystals of calcium carbonate or possibly calcium phosphate

Table 10 looks at implant composition from recovered implants. Twenty-one accounts of published analyses were located in the literature. The material recovered by Leir and associates provides the only analyses interpreted by its investigators as suggesting an extraterrestrial origin (an interpretation not subject to peer review). Otherwise, all other reputed implants subjected to analyses have suggested nothing beyond common terrestrial materials and composition.

CONCLUSIONS

1 The published history of reported implants associated with the UFO abduction phenomenon begins in 1979. This literature references abduction accounts claimed to have taken place as early as 1950.

2 The highest number of accounts comes from persons who believe they have an implant in their bodies, without any physical supporting evidence. Cases in which the experiencer reports seeing an object implanted or extracted (category A) and cases in which the experiencer reports being informed of an implantation by his or her abductors (category D) have all but disappeared in the literature.

3 Claims of implants have come overwhelmingly from the United States. However, so have the bulk of abduction accounts.

4 The claimed body location for implants may have changed somewhat over time, from mainly in the head, to both the head and elsewhere in the body.

5 Analysis of descriptions of implants reveals a considerable range in both size, and physical descriptions. There is little consistency in these details.

6 Little peer-reviewed literature exists on reported analyses of implants. With one exception, analyses have revealed mundane terrestrial sources.

7 It would be invaluable for the vast non-English language literature to be examined for implant cases. Any findings could then be compared to the dominant US events.

8 Additional effort should be made to locate a case prior to Dona Clelia T. R. and Betty Andreasson.

9 Effort should be made to retrieve and analyze reputed implants, and subject existing analyses to peer review.

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APPENDIX

1. 1979, Brazil. Dona Cleia T.R. A woman recalled an abduction, at age 22, on September 10, 1956, following a broad daylight observation of a large, luminous object at low level. During a May 2, 1976, hypnotic regression session, the woman responded to a question by replying, "I put a hand to my ear and he said no, that I would keep the device [inside] now that I could not take it out by hand, that this was surgery" (p. 143) Communicating with the being, the witness was concerned that they did not have her residential address, but the being replied, "To find you in any place is no problem for us" (p. 130)

Source Gevaerd & Stevens (1987, pp. 126-156)

2. 1979, United States. Ray Fowler reports on a case not investigated by him

Witness And they released this little tiny thing, like a buckshot

Investigator What did they release it from?

Witness From the needle

Investigator What was the needle like?

Witness It was sort of like a long needle that was sticking in my side

Investigator Was it a hollow needle, and then ejected through a hollow needle, or attached to the—

Witness I didn't see the needle [i.e., when the tiny device was released] They had my arm up over my head, like that, so I couldn't see what they were doing here. And then they said, "I hope your body doesn't reject it. With this implant we're putting in there is going to come better communications and power, and we hope your body doesn't reject it. If this doesn't reject it, we'll activate it in, uh, three or four weeks."

Source Fowler (1979, p. 183)

3. 1979, United States. Betty Andreasson. On June 18, 1977, Betty Andreasson, under regression, recalled a 1967 abduction event during which a long, flexible tube, with a needle at the end, was stuck up her left nostril. When this was removed it had "a little ball with little prickly things on it" on the end of the needle. Betty was fairly certain it had not been on the needle when it was inserted

Source Fowler (1979, pp. 45, 48-49)

4. 1980, United States. Harry Joe Turner. Turner, a truck driver, recounted an abduction event that occurred on August 28, 1979, while driving. He believed an object was implanted in his shoulder. However, no abnormality showed up on x-rays

Source Whiting (1980)

5. 1980, United States. Lori Briggs. Briggs, 16 awoke paralyzed. A force turned her around and she saw a figure in her room. Lori explained, "There's a tuning thing in me . . . I think it's in my spine . . . "

Source Druffel & Rogo (1980, p. 170)

6. 1981, Finland. Aarno Heinonen and Esko Viljo. On January 7, 1970, Heinonen and Viljo reported a close encounter at Imjarvi, Finland " . . . in 1972 he met a strange but beautiful woman . . . She announced herself as an extraterrestrial . . . During his 1970 encounter, she said, an alien device was implanted in his back and another in his friend's forehead "

Source Liljegren (1981), cited in Bullard (1987, pp. C-194-195)

7. 1981, United States. Mike Lewis. "The witness had a recurring dream about an experience when he was 5-years-old, and under hypnosis recalled an abduction and examination in which a needle inserted or withdrew something from his nose "

Source Sprinkle (1981), cited in Bullard (1987, p. C-196)

8. 1982, United States. Barbara Schutte. During a series of abductions, from age 8 to 30, "The beings examined her, implanted something into her head, and told her by telepathy that she had important work to do for them "

Source "Close encounters" (1982), cited in Bullard (1987, p. C-150)

9. 1982, United States. Renee Elliott. Abducted from their motor vehicle on August 21, 1980, Megan Elliott and daughter Renee found themselves examined in a circular, brightly lit room. A probe device moved around their bodies. "[It] was at one time seen to enter Renee's nose with a pair of small 'bee-bee'-like devices on the end and again seen to enter Renee's naval with a 'needle-like' device. When Megan saw this happening she said, ' . . . don't hurt my baby, she's been sick', and they replied 'She's not any more'"

According to Hopkins, there was a little ball at the end of the probe, the ball's size was smaller than a BB. *Question* "When the probe was extracted was the BB still there on the end of the probe?" *Answer* "I didn't see it come out."

Sources Willis (1982). Hopkins (1987, p. 59)

10. 1982, United States. Betty Andreasson. During a 1980 regression session, Andreasson recalled an event in 1950 when she was 13. An entity removed her right eye from its socket. Then a flexible, "bright white light" needle connected to a long, silvery tube was pushed deep into the back of the eye socket. The needle "had one of those tiny little glass things on the end of it." She felt "a tiny jolt," the needle was withdrawn, re-angled and pushed elsewhere in her head. Again a jolt was felt "as if something had been shot or released inside of me." The needle light was removed

and her eye replaced. There is no mention of whether or not the ball at the end of the needle was still present.

Source Fowler (1982, pp. 168-170)

11. 1984, Canada. Jack T. & "Ken Johnson." Investigators documented a series of events recalled by a 29-year-old male, between 1957 (age 2) and 1976 (age 21). During an event recalled from 1969 (age 14), Jack and Ken were abducted. Ken was observed on an operating table by Jack. Blood was coming from Ken's left ear and temple. Jack felt that "some sort of implant" was put into Ken's head. Jack felt that he too may have had an implant given him.

Source Fenwick, Tokarz, & Muskat (1984)

12. 1987, United States. "Ed Duvall." During a regression concerning an episode in 1939 (then aged 5), a man, referring to his nose, stated "They stuck something in there when I was little."

Source Hopkins (1987, p. 143)

13. 1988, Japan. Hideichi Amano. A 29-year-old male noted the interior of his car glowed. He recalled a metal object against his right temple, and saw an entity. Returning home, he recalled "that the aliens have planted something into him which will 'vibrate' when they need him again."

Source Randles (1988, pp. 159-160)

14. 1988, United States. Dorothy Wallis. A woman related that as an 8-year-old she was invited into a huge craft. She found herself paralyzed on a table. The beings aboard, among other things, inserted an instrument "with a 2 cm metallic burr up into the nostril." At age 15, during a daytime encounter she was again examined and, "They checked the thing in the nostril" that had allegedly been implanted there seven years earlier."

Source Klass (1988, pp. 122-123)

15. 1988, Spain. Prospera Muñoz. Muñoz recalled a July 1946 event "A 42-year-old telephonist [is] reading a UFO book and starts to recall an abduction she suffered when she was 7 or 8 years old. She was abducted by two beings of her own stature and received a deep medical examination." She believes a metallic device was implanted in her brain." The source suggests the case arose from "A mixture of hoax and psychotic elements from an unstable personality."

Source Ballester Olmos & Fernández (1988, p. 13)

16. 1989, United States. Victoria During regression, a woman in her mid-50s described three abductions. Referring to her body, she said, "They put thing in it, they put something in — that's how they control me."

Source Fiore (1989, p. 204)

17. 1989, United States. Tom. A male patient reported a hard, bony hemispherical lump on the inside of his right nostril, which had appeared overnight in late 1976 or early 1977. An ENT specialist checked on it while seeing Tom for an ear operation but didn't say anything to Tom about the results of his exam. Regression hypnosis then revealed a series of abductions.

Source Fiore (1989, p. 69)

18. 1989, United States. "One of my patients reported that she had a little extra 'cartilage' at the base of her nose almost between her eyebrows. Medical tests could not determine what it was. She suspected it was some kind of tracking device that had been inserted by the visitors."

Source Fiore (1989, p. 321)

19. 1989, United States. Myrna Hansen. In 1980, UFO researcher Paul Bennewitz was investigating an abduction case on behalf of APRO involving a woman and her son, which had occurred near Cimarron, New Mexico on May 5, 1980. They were regressed by Dr Leo Sprinkle. The woman recalled a memory of a "steel plate" which had been put into her left brain for "their protection."

Sources Howe, (1989, pp. 112-116, 355), Clark (1998, p. 109)

20. 1989, Canada. During an interview a male abductee stated, "I have this little ball by my left eye, near the bridge of my nose. With that he pushed gently on the skin and the resulting white mark showed a small ball clearly delineated. When I asked him how long he had had this ball, he replied, 'About three months before, it was down in my cheek alongside my right nostril'"

Source Conway (1989)

21. 1989, Canada. A female abductee who listened to part of another abductee's implant account said, "I've got one too—right here. I always wondered what it was." With that, she pressed on the indentation at the top of the bridge of her nose, and it reappeared also on her, though less than in the case of the man quoted above.

Source Conway (1989)

22. 1989, United States. "A Naval officer claimed that a small metal sphere was recovered from his leg and taken away by Navy doctors"

Source Randle (1989, p. 203)

23. 1989, United States. Susan Ramstead. Multiple abductee Ramstead reported that on one occasion, "a tiny metal object had been removed from her nose that had been there for a long time. Suddenly she felt better, her head was no longer stuffed. They took the sphere, dropped it into a metal tray and then got her ready to return to the house. It was as if the metal object in her nose had caused her headaches."

Source Randle (1989, p. 202)

24. 1990, United States. John Schuessler reported attending the 1990 MUFON Symposium at which he met an individual who shared with him the results of an analysis of an object from a man's nose

Source Schuessler (1990b)

25. 1990, South Australia. "Susan." During a lengthy investigation into a complex of life-long abductions, a woman told of implants in her upper mouth. She visited a dentist for an x-ray. The dentist confirmed the x-ray showed two unusual objects—like straight pieces of metal—embedded in the upper gum, or bone, beneath her nostrils. He was unable to explain them. However, a full-face x-ray undertaken shortly afterwards revealed nothing unusual. An independent, very experienced dentist and his radiographer concluded the implants were an artifact of the x-ray process.

Source Basterfield, (1997, pp. 109-114)

26. 1990, United States. "Another male abduction victim, barely 12 years old, claimed that a small creature took him from his bed, stuck a needle into his upper arm, and then opened a square patch of skin in the left side of his head. His parents were warned that he might have received an implant of some type."

Source Schuessler (1990a)

27. 1990, United States. "A male UFO abduction victim living in Houston is puzzled and worried about the possibility that a device of some type was implanted somewhere in the side of his head by his abductors. He claims he can feel the effect of the implant at certain times. Sounds seem to be transmitted into his head via the implant."

Source Schuessler (1990a)

28. 1990, United States. "An opalescent implant was observed within the ear canal of an abductee."

Source Cannon (1990)

29. 1991, United States. Lisa. On July 29, 1990, a woman woke from sleep to find herself paralyzed in bed. She then felt someone in bed with her, and during the subsequent moments believed "that a hole was drilled in the tooth and something inserted in the hole." Under regression, responding to the question, "Is there something in your mouth behind your teeth?" she replied, "It's _____ for communication."

Source: Ohio UFO Notebook (1991)

30. 1991, Canada. Lorne Goldfader. Goldfader, director of the UFO Research Institute of Canada, reported that he was "implanted." He noted an itching/burning sensation in his right thigh. This was followed by what seemed to be electrical pulsations. Neither an x-ray nor an ultrasound examination revealed any abnormality.

Source Goldfader (1991)

31. 1991, United States. Christa Tilton. Under regression hypnosis Tilton recalled a lifetime of abductions. On one occasion when she was medically examined by aliens, a capsule-like device was inserted into her abdomen and a sharp ‘something’ was placed in her left ear.

Source Tilton (1991)

32. 1991, United States. “Susan” and “Jennifer.” During hypnosis following a double abduction, Susan and Jennifer gave details “Susan clearly observes the implantation of a tiny object up Jennifer’s nostril with a dental pick-like instrument. Jennifer reports severe nosebleeds afterwards” (p. 107). Susan’s words were “She’s real quiet . . . some kind of operation . . . They have some type of implant thing put it in the left side of her nose . . . looks like one of those things a dentist uses—a pick or something” (pp. 112–113).

Source Carpenter (1991a)

33. 1991, United States. John Schuessler noted a case where a man had an x-ray of a suspected implant in his nasal passage. However, it turned out to be a “marker” used in the x-ray process.

Source Schuessler (1991)

34. 1992, Canada. Alvina Scott. In 1985, Scott was abducted and eggs removed from her body. The aliens performed an operation on her kidney, which she was having problems with. “An implant was left inside to ease the pain, which later showed on ultrasound to the astonishment of the medical technician. It later flushed out through the urinary tract and was lost in the toilet.”

Source Goldfader (1992)

35. 1992, United States. “Richard.” Describing under hypnosis an occasion when she and her teenage son Richard were placed on tables during an abduction, a woman stated, “They put something in his nose.” Jacobs stated, “They inserted something.” To which the woman replied, “Or they took something out.” “I always knew there was something there, he used to get nosebleeds.”

Source Jacobs (1992, p. 113)

36. 1993, United States. Katharina Wilson. On August 7, 1989, Katharina Wilson recalled an abduction during which “The Aliens have a black square cut into my chest . . . Somehow I believed the aliens were repairing the damage the high voltage of the lightning had done to my heart . . . I then considered another possibility. Perhaps the aliens were repairing a small implanted device that is located very close to my heart.”

Source Wilson (1993, p. 129)

37. 1993, United States. Leah Haley. In the middle of a range of experiences,

after brushing her teeth in September 1991, Haley felt an object protruding from her gum. Using her fingernail, she extracted an object that "looked like a flat piece of brass, square except for one small corner missing." It was sent to John Carpenter for analysis. "Analysis of the object that emerged from my gum . . . was completed in May 1992. Photographs were taken using a scanning electron microscope. An energy dispersive spectroscopy scan was also done. The data suggested that the material was approximately 80% copper and 20% zinc with small traces of aluminium and silica. The object weighed approximately 6 milligrams. It was roughly 0.16 cm square and 0.03 cm thick. It did not react to a magnetic field and showed no radioactivity. In essence the analysis showed that the material was consistent with common brass."

Source Haley (1993, pp. 128, 157)

38. 1993, Queensland, Australia. "Peter." Following a life-long series of experiences, in 1993 Peter came to the conclusion that he had four small objects in one of his legs. These objects moved around inside his leg.

Source Australian UFO Abduction Study Centre Newsletter (1993)

39. 1993, United States. A woman who is said to have been part of a "mass abduction" incident reported an implant behind her eye during a December 8, 1992, event. The particle, mustard-seed size, was given to Derrel Sims. Analysis of the 1–1.5 mm long, 0.25–0.5 mm high, 0.25–0.5 mm wide object indicated it was hollow. Primary constituents were carbon and oxygen. Silicon, barium, and titanium were present followed by traces of beryllium, sulphur, and aluminium. The material was electrically nonconductive and shown not to be biological. "The substance is most likely a high molecular weight organic compound. Polymers (plastics) are the most likely compound to fit the elemental profile."

Source Lewis (1993)

40. 1993, Australia. "Ron's" son On March 4, 1992, Ron woke to see his 10-year-old son being floated past his bedroom door, guided by a misty alien form. Later, at breakfast, his son coughed up a piece of "metal" a centimeter in length. Analysed at Curtin University, it was found to be a very unusual combination of nickel, silver, zinc, copper, cobalt, and ytterbium. The conclusion, however, was that the object was terrestrial, perhaps part of an electronic probe manufactured in Sweden.

Sources Basterfield (1993a, 1993b)

41. 1994, United States. Joe. A man recalled that in about 1972, as a 14 or 15-year-old, he saw a UFO land and a being approach him. They both entered the UFO where Joe lay on a table surrounded by 8–10 beings. A large needle was inserted into the left side of Joe's neck. Joe felt "they're putting something in that will make it easier to follow me." He stated, "They're putting a picture in my mind of a small silver, pill-shaped object that they're leaving there which has four tiny, tiny tiny,

little wires coming off it ”

Source Mack (1994, p 42)

42. 1994, United States. “Pat.” In 1954 , aged 11, Pat was abducted along with other members of the family Sitting on a table, “Pat knew that the needle was about to be inserted up into her right nostril ” (p 17) Turner, in a table, shows Pat as having had a “nose implant ”

Source Turner (1994)

43. 1994, United States. Richard Boylan. In 1992, during an encounter in which he found himself inside an object, Boylan “experienced a sense of pressure in my nose, as if a small object was being inserted into my nasal passage or even a little higher ”

Source Boylan & Boylan (1994, p 140)

44. 1994, United States. Ron. At age 5, in 1952, after going to bed following a UFO sighting, Ron was visited by entities He was taken up to a “ship” and eventually placed on a table A male being placed a small device up his nose

Source Boylan & Boylan (1994, p 93)

45. 1994, United States. Jane. A December 31, 1992, “dream” included a segment where an object clamped over her ear Something was then inserted into the ear “The implant looks like a very tiny oblong cylinder about a quarter-inch long or smaller, made of non-metal stuff ”

Source Turner (1994, p 147)

46. 1994, United States. “Angie.” During an abduction by “men in olive-drab jumpsuits.” Angie asked if they were doing something with the implant in her hand and was told “that there was more than one implant device in there, that two were the aliens’ products and one came from here ” She said the military groups’ implants “monitor how many times ‘implanted abductees’ came into contact with alien beings as well as recording the appropriate location of a pick-up ”

Source Turner (1994, pp 173–174)

47. 1994, United States. “Amy.” Amy had a dream in November 1992 where an alien in the company of “ex-pilots, military officials and other professionals” told her about implants “She put a thin, pencil-like metal instrument in my right ear She pulled out the instrument, and on one end was a flat, circular, small, flesh-colored thing It was reddish colored but sort of transparent If I looked closely I could see something inside the thing ” The alien removed a second implant from Amy’s neck It was a “dark, cylindrical” object about “three centimetres long” with “something sticking on the end of it like very fine wires ”

Source Turner (1994, p 183)

48. 1994, United States. "I have myself studied a 1/2-to-1/4-inch thin, wiry object that was given to me by one of my clients, a twenty-four-year-old woman, after it came out of her nose following an abduction experience. Elemental analysis and electron microscope photographs revealed an interestingly twisted fiber consisting of carbon, silicon, oxygen, no nitrogen, and traces of other elements. A carbon isotopic analysis was not remarkable. A nuclear biologist colleague said the 'specimen was not a naturally occurring biological object but could be a manufactured fiber of some sort.'"

Source Mack (1994, p. 42)

49. 1994, United States. "Carlos" A series of life-long mystical episodes and encounters led Carlos to suspect that his health problems, including his allergies and respiratory illness, are related to probes and implants from his abductions."

Source Mack (1994, p. 346)

50. 1994, U.S. Virgin Islands. "Peter." Recalling multiple abductions under regression, one specific episode in February or March 1988 happened to Peter "The tube was passed deeper into his rectum and Peter felt that they left 'an implant' or 'an information chip' inside of him. I'm tracked now."

After a 1992 experience in Connecticut, "There's a thing inside of me that they put in to see what's going on and to track your memory — that somehow records everything in the mind — this notion was that there was a 'little black chip' in his brain, perhaps from a previous abduction and that the flexible instrument which looked metallic, long and thin, 'retrieves the object'."

Source Mack (1994, pp. 300, 303)

51. 1994, United States. "Beverley." In 1983, "When Beverley was about 8, Sheila took her to the pediatrician for a possible ear infection. The doctor removed an object about the size of a pencil eraser with 'junk all over it' and discarded it."

Source Mack (1994, p. 78)

52. 1994, United States. Charles Hickson. Charles Hickson and Calvin Parker reported an abduction event in October 1973. Hickson later said "Yes, I don't know how to say this but these things know where I am and what I'm doing at all times. They keep track of me. Evidently they must have implanted something on me or in me wherever I was first carried aboard that craft."

Source Spencer (1994, pp. 211-212)

53. 1994, United Kingdom. "Eva." "Eva believes that the aliens 'have a tracking mechanism,' and relates an experience when she was about nine and still in England to a possible implant. She was doing somersaults on horizontal bars, missed one, fell, and bumped her head 'really hard.' She says she felt that 'something moved' in her head, "Something they could keep track of me" (p. 244). "[She] recalled the incident

from age nine described earlier in which they seemed to have 'corrected' an implant that was dislodged during a fall " (p 249)

Source. Mack (1994)

54. 1994, United States. Richard Price. Price recalls an abduction at age 8, when lying on a table an object was implanted in his penis. A doctor observed it in his penis in 1981. In 1989 it dislodged and was given to David Pritchard. Laboratory examinations of the 1-by-3-mm object were conducted. The overall conclusion was that "All of the results obtained at MIT indicate that the Price artifact is of terrestrial biological origin "

Sources Omni (1995), Pritchard (1994)

55. 1994, United States. Bob Luca. Raymond Fowler forwarded an object which came from the ear of Bob Luca, a lifelong abductee. There was no recollection of its presence except for when it was found and removed (p 290) "On gross examination [it] consisted of a yellow-white gelatinous ovoid mass. There was no evidence of foreign material, material unusual in the ear, nor unusual reactions " (pp 294–295)

Source Pritchard (1994)

56. 1994, United States. "Jerry 1." "Jerry who felt strongly that two small nodules that appeared on her wrist following an abduction experience had not been there before. She agreed to have these removed by a surgeon colleague of mine, but the pathology laboratory found nothing remarkable about the tissue "

Source Mack (1994, p 42)

57. 1994, United States. "Jerry 2." In June 1992, Jerry recounted a series of abductions back to age 7 in 1969. On August 11, 1992 during regression of an episode in Missouri at age 7 she recalled "an extremely agonizing procedure involving the insertion of 'something sharp' like a 'needle' into the side of her head. Jerry recalled that she was told that some sort of tiny object was left inside of her at that time." It was "to monitor me" with no explanation other than, "We just have to do what we have to do "

Source Mack (1994, pp 123–124)

58. 1994, United States. Colette M. Dowell. Dowell, a multiple abductee, felt a "jolt" which preceded her abduction and "I wondered if there were an 'implant' in my head." In 1989, an MRI was undertaken showing a 3-mm nodule located near her pituitary gland. 1986 CAT scan and 1989 MRI scan images are shown in *Alien discussions*. Varied opinions have been offered as to the normality/abnormality of this nodule.

Sources Dowell (1994), Strieber (1998, pp 166–170)

59. 1994, United States. Alice Haggerty. A multiple abductee Alice Haggerty, (known as "Lynn Miller" in David Jacobs's *Secret Life*) noted an odd sensation from her left nostril/between her eyes. An MRI scan "shows a large white area next to the main bone of the nose structure. The physician marked the film output with an arrow pointing to that mass and commented that it was quite unusual and had apparently been in place for many years. He had no explanation for the structure." MRI image shown shown in *Alien discussions*

Source Marcattilio (1994)

60 1994, United States. "One woman who I talked with discharged an item vaginally. It was not supposed to be there, it was extremely frightening to see this thing of plastic or metallic material. She wasn't sure what it was but she knew she had to take it and flush it down the toilet, and she did" (*Alien discussions*)

"A young woman discharged a two-inch yellow plastic-like object vaginally" (*The threat*)

Sources Jacobs (1994), Jacobs (1998, p. 113)

61. 1995, United States. "Pritchard knows of one other penile implant case, upon examination, that implant too, turned out to be calcified, damaged tissue of terrestrial, and human origin."

Source Omni (1995)

62. 1996, New South Wales, Australia. A female multiple abductee recalls a recent episode "It felt as if there was an object the size and shape of a bullet between the ribs. The next morning, the object had moved to the outside of the rib, just under the skin. Three months later she remembers 'passing' the object. She did not look to check but knew what had happened."

Source Personal investigation by Barry Taylor. A full story was posted by Barry Taylor on his Web site at www.nor.com.au/users/stingray/abfd4.htm. My copy dated September 23, 1996

63. 1996, United States. Linda Cortile. The Cortile abduction of November 30, 1989, has been well documented and debated. In November 1991, Linda's niece, Lisa Bayer, took a head x-ray. "The picture clearly shows the presence of a complex, radio-opaque, metallic object in Linda's nasal cavity." However, Hopkins goes on to relate that a later x-ray and examination showed the object had gone. Hopkins's reasoning was that "it appears that the aliens can somehow tell when an implant has been x-rayed and is likely to be removed."

Source Hopkins (1996)

64. 1996, United States. "Expelled from an abductee's nose, it is described as an organic, plastic-like, three-lobed fiber with an internal structure organised into intricate layers in a seemingly irregular manner. The specimen was a 'tough,' pink-col-

ored, one-inch long, kinky, wire-like object. A pathologist found it to be about twenty to thirty microns in thickness, and it could be stretched out more than three inches. It was reported to have a gelatinous sheath with bumpy outcroppings, it was clearly not a hair. A radiologist found it to be radiolucent, thus not metallic. Neither the pathologist nor the radiologist was able to identify the object so further tests were done. Using the scanning electron microscope for energy dispersive spectroscopy showed the specimen to consist primarily of carbon and oxygen, with carbon being the dominant element. It was, in short, a carbon fiber filament filled with a hollow area."

Sources Strieber (1998, p. 236) Originally at www.strieber.com/Implant-research.html#betty My copy dated November 6, 1996 Link no longer valid

65. 1996, United States. Jesse Long. In 1957, Long and his brother encountered a man, a "little round house" and a "praying mantis" being. In 1996, Whitley Strieber contacted Long who it turned out had an object removed from his leg in May 1989. The removal was videotaped and photographed.

Examination of the object by Dr. William Mallow of the Mind-Science Foundation showed it to be a "glass-like fragment resembling the shard of a broken bottle, about 1.5 cm long, 3 mm wide tapering to 1 mm at the tip, and 1 to 1.5 mm thick, colorless and slightly clouded."

Analysis revealed "The exact formula for the implant is silicon, 99.3 percent, potassium, 0.02 percent, calcium 0.27 percent, and iron, 0.03 percent." In summary, "So it was now strange on three levels (1) it wasn't Bioglass, but it had not been rejected by the body, (2) it was an unusual formula with a very high amorphous silica content and strange surface features, and (3) it was electrically conductive which should have been impossible."

Source Strieber (1998, pp. 197-220)

66. 1996, United States. Betty Dagenais. "In 1989 an object was removed from the ear of the body of a close encounter witness. She had been aware of the object, but did not want it removed from her body while she was alive. Betty reported tones in her ear where the object was placed, and had numerous close encounter experiences. On January 6, 1995, Mrs. Dagenais's dark, 1 mm diameter implant was subjected to electromicroscopic analysis by engineer George Hathaway and found to be made of aluminium, titanium, silicon and traces of other minerals. He commented, 'titanium could be used in a transmitter or receiver, as could aluminium.' A quality control technician with Mitsubishi Electric of Canada was also questioned about what a device consisting primarily of those elements might be used for. He replied that it 'would be a transducer and can be used to transmit signals'."

Sources Strieber (1998, pp. 177-179) Originally at www.strieber.com/Implant-research.html#betty My copy dated November 6, 1996 Link no longer valid

67. 1996, Australia. Carol Nagle. Nagle reported a lifelong set of alien abduction experiences. Under regression she recalled being taken into a spacecraft. X-rays taken

reportedly revealed three implants. One was in the left thumb, one in the pancreas, and one in the pituitary gland.

Sources: Personal interview by the author at the 1996 Australian International UFO Symposium, held October 11–13, 1996. A full story and the x-ray images were posted by Barry Taylor at www.nor.com.au/users/stingray/carol.htm. My copy dated September 23, 1996.

68. 1996, United States. "Patricia Connely." A surgical examination on August 19, 1995, of Connely's left foot revealed a small, dark grayish object. "It appeared to be triangular or star shaped." Approximately 1/2-by-1/2 cm in size. A second object was removed from the same big toe, with the shape of "a small cantaloupe seed and covered with the same dark gray, dense membrane." Size 2–4 mm. Both objects fluoresced a bright green under an ultraviolet light. They appeared to be metallic. She was abducted about 27 years ago and only recently became aware of the implant.

Metallurgical analysis was undertaken by Los Alamos National Laboratories. Further tests were conducted at New Mexico Tech. "The T-shaped object is composed of two small metallic rods. The horizontal portion contains an iron core that is harder than the finest carbide steel. This rod is magnetic. The iron core is covered by a complex layer of elements which forms a cladding. One portion of the cladding has a crystalline band which encircles the rod. It would seem these are structural objects which serve a purpose."

Sources: Leir (1996), originally at "Implants," www.anw.com/saber/medical.htm. My copy dated January 10, 1997. Link no longer valid. Also Leir (1998a).

69. 1996, United States. Pat Parrinello. A surgical procedure on August 19, 1995, of a male (Pat) abductee's left hand located a small cantaloupe seed-sized object 2–4 mm in size. It fluoresced a bright green under a UV light and appeared to be metallic. "at the age of six, [Pat] walked out of his house in a field, and saw a UFO, a round object the size of a basketball approached him. As he turned to move away from it, the object exploded and embedded a piece of metal into his left hand."

Metallurgical analysis was undertaken by Los Alamos National Laboratories. Further tests were conducted at New Mexico Tech. Details of the results published so far in the sources below are confused.

Sources: Leir (1996) originally at "Implants," www.anw.com/saber/medical.htm. My copy dated January 10, 1997. Link no longer valid. Also Leir (1998a). Leir (1998b, p. 164).

70. 1998, United States. Joel Parker. In June 1974 Joel's father reported seeing a large object take off from his farm. Next day Joel found his bed socks wet and dirty. Shortly afterwards a small hard knot was found on the underside of his penis. In 1986 a water-thin, round, blue-gray, hard object emerged from a festering spot near the knot on his penis. He threw it away.

Source: Worley (1998)

71. 1998, United States. Lucia Davidson. "Lucia Davidson, who has had numerous UFO and alien encounters had a rare, crystalline-like object removed from her foot in January of 1997 "

Source Lorgen (1998)

72. 1998, United States. "Patti Layne." A female abductee interviewed by David Jacobs told him that she had some knowledge which she could not relate to Jacobs. It had to do with a possible implant "Something to do with what he put in me. He said it would be there, something about in time this will serve a purpose. It will tell me what to do when it's time "

Source Jacobs (1998, p 239)

73. 1998, United States. "Paul Dering." An implant was medically extracted on August 17, 1998 "The object was discovered when he had his wrist x-rayed as a result of a skiing accident in 1990 which revealed a tiny opaque object in his left thumb " No abduction known "Resembling a cantaloupe seed, the tiny object was covered with a dark, grey shiny membranous tissue "

Sources Carlson (1998), Leir (1998b, p 164) ("Pablo")

74. 1998, United States. An implant was medically extracted on May 18, 1996 "The male had what appeared to be a metallic foreign body in his left lower jaw that was demonstrable in an x-ray " "One small metallic triangular object covered with a dark grey shiny membrane " " he said, the object might have been installed under his jaw during dental surgery several years ago "

Sources Leir (1998a), "More implant removals reported in California" (1998), Strieber (1998, p 191), Leir (1998b, p 164) ("Don")

75. 1998, United States. Dorothy O'Hara. An implant was medically extracted from a female on May 18, 1996 "The two females demonstrated a small radio-opaque object in each leg They also had small skin defects which had become apparent the morning following an alleged abduction A small grey-white ball about the size of a BB "

Sources Leir (1998a), Strieber (1998, pp 190-191), Leir (1998b, p 164) ("Doris")

76. 1998, United States. Alice Leavy? An implant was medically extracted from a female on May 18, 1996 "The two females demonstrated a small radio-opaque object in each leg They also had small skin defects which had become apparent the morning following an alleged abduction A small grey-white ball about the size of a BB " " each one had a similar object removed from the calf of her left leg These objects were very close to the surface with their surrounding tissues were approximately cylindrical and measure about 1 centimeter long by one-half centimeter wide she said she first suspected the presence of an implant after she discovered

an unexplained 'scoop mark' on her left calf about one year ago "

Sources Leir (1998a) Strieber (1998, pp 190-191), Leir (1998b, p 164) ("Annie")

77. 1998, United Kingdom. "We ourselves have actually come into possession of an 'object' that was ejected from the nasal cavity of a woman personally known to us, which was examined under the scanning electron microscope - it was certainly unusual for a fragment of 'hydrocarbon plastic' to look like what the photos showed - was analysed at Manchester University and found to be hydrocarbon, no bigger than this—not magnetic, but when scanned appears as this shape pointed perfect on the one end with a 'hook on the other'"

Source Hanson (1998)

78. 1998, United States Whitley Strieber. Following an episode on May 24, 1995, involving a visitation by two entities, Strieber noted his "left ear began to hurt." He suspected an implant and surgery was conducted on October 9, 1997, and showed "a discrete white oval shape." Analysis was conducted on what was believed to be a piece of the mass. It "appeared to be collagen - it contained crystals of calcium carbonate or possibly calcium phosphate."

Source Strieber (1998, pp 226-232)

79. 1998, United States. "Melissa Backnell." In March 1987, severe gynecological pain led Melissa to believe an implant had been put into her. A gynecologist using ultrasound located a mass near her right ovary. A pregnancy test proved negative. Melissa decided she did not wish to have this mass removed. One month later, ultrasound showed the mass had gone.

Source Jacobs (1998, pp 64-65)

80. 1998, United States. Claudia Negron. During a 1983 event, a needle-like instrument was placed in her ear and put a tiny something into her brain.

Source Jacobs (1998 pp 71-72)

81. 1999, United States. Steve Neill. Neill, a special-effects artist and abductee, had a circular object located in the right forearm. Approximately 6 mm across and less than 2 mm thick. The object gave only a "faint x-ray return and thus probably is not metal."

Source www.strieber.com/news-018.html, accessed January 1999

82. 2000, United States Tim Cullen. A 48-year-old cement contractor was the ninth person to have an implant removed by the Leir team. Cullen had a history of UFO encounters. A 1998 x-ray revealed an object in his left arm just above the wrist. This was removed in surgery. Leir noted a gauss meter prior to surgery had registered a 3 milligauss field apparently coming from the object. The object was described as

shaped like a small cantaloupe seed, it was 6–7 mm long, by 4 mm wide by 2 mm thick

Source Robertson (2000)

83. Undated, United States. Helen Charbonneau. Sometime in 1975 after a diagnosis of cancer was made, Helen woke to hear a voice directing her to a meeting where she was taken on board an object. A being conducted a session which Helen believed cured her cancer. Later on returning home she underwent a scan of her brain and head “At the base of my skull, they found a metallic bead”

Source Edwards, Aileen (undated), On the (UFO) road again Case histories of close encounters of the third kind Seattle UFO Contact Center International (p 50)

84. Undated, Germany. A 5-year-old girl reported symptoms of a possible abduction. In Italy, following an accident, a skull x-ray showed “a somewhat square metallic object deep in her brain. Returning to Germany another x-ray showed no anomaly”

Source Hopkins (1996, p 396)

FALSE MEMORIES AND UFO ABDUCTIONS

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ABSTRACT Most psychological research identifies abduction experiencers as mentally normal people, yet mainstream psychologists typically dismiss abduction accounts as false memories of impossible events. This conclusion grows out of a heated 20-year controversy over recovered memories of child sexual abuse and satanic ritual abuse, where proponents argue that the mind represses memories of events too terrible to recall while opponents see fantasies created by the suggestions of therapists. A review of the recovered memory debate and research findings about the malleable, reconstructive nature of memory enable the ufologist to understand that abductions—and investigative methods used to recover them—really are similar in many respects to memories of abuse and their recovery. A verdict is inescapable that true and false memories are indistinguishable by content alone. Some people readily create memories for an imagined event or even a fictitious life history, and charge those memories with full emotional conviction. Yet the apparent close parallels between memories of abduction and recovered memories of abuse diverge when alleged abuse survivors manifest psychological abnormalities that abduction experiencers do not share. Elaborate accounts of satanic rituals also fail to exhibit the consistency of unexpected content and sequence that characterizes abduction reports. Although there is no denying the human capacity to create false memories of abduction, some differences suggest that recovered memories of abuse originate in the false memory process while abduction memories remain independent of it.

The subject of UFO abduction keeps bad company these days. Once the sole province of ufologists and skeptics and reserved for their polarized disputes, abduction has lost its private status as other interests have crashed the club. Foremost among these invaders are psychologists, who bypass the familiar topics of spaceships and aliens to discuss fantasy proneness, hypnotic suggestibility, schizoid tendencies, temporal lobe lability, and dissociation. If these associations and their intimations of reductionism are not unwelcome enough, the subject has become entangled in a modern-day witch hunt, the vociferous and acrimonious dispute between clinicians who find repressed memories of sexual abuse rampant in America, and experimental psychologists who see an epidemic of false memories created by ideologically motivated therapists. The parallel between recovered memories of abuse and hypnotic recovery of abduction memories lies so close that the connection was inevitable and abduction now features as a frequent visitor in the pages of scholarly books and journal articles. Acceptance is nowhere near at hand, and in this literature psychologists often speak of abduction in the same breath with child molestation and satanic rituals, real or imagined—bad company indeed, if the relationships are genuine. Whether they are or not deserves a careful look.

The subject of false memory or false memory syndrome has attracted much notoriety since the 1980s as an outgrowth of certain accusations of child sexual abuse and satanic ritual abuse, where expectation and suggestion create convincing memories of implausible events. Many psychologists lump abduction together with recovered memories of abuse, reasoning that since the claims are all bizarre and surface through a similar manner of investigation, they must share the same cause and be equally unreal (Baker, 1997b, p. 249; Loftus & Ketcham, 1994, pp. 165–166; Ofshe & Watters, 1994, p. 145; Showalter, 1997, pp. 5–6; Spanos, 1996, p. 117–129; Eichenbaum & Bodkin, 1999, p. 200; Eisner, 2000, pp. 196–201). False memory has inspired warnings from favorably disposed ufologists (Gottlieb, 1993) and fired a sense of conviction among skeptical ufologists (Brookesmith, 1998; McClure, 1996). A recent book by Randle, Estes, and Cone, *The Abduction Enigma* (1999), takes a hard look at an array of contributing causes that might create fictitious abduction stories, and identifies false memory and related phenomena as key ingredients. More and more critics point toward false memory as the solution most likely to prevail.

Nevertheless, false memory has the explanatory value of a truism rather than a proven cause. Little direct evidence or research backs the false memory explanation, and among skeptics it often passes for too self-evident to need investigation. Ufologists aware of the varied paths by which abduction reports reach the light will not buy this solution, at least not as an all-encompassing blanket. A reflective reader of abduction literature nevertheless senses that the advocates may be on to something. The history of the abuse controversy mirrors the history of abduction with enough fidelity to give ufologists a queasy sense of *déjà vu*, as though they are witnessing familiar sights rerun in an unpleasant caricature. With the abduction evidence overwhelmingly anecdotal, issues of the nature and limits of memory become crucial. Even if abduction proves to originate in some sort of experience, the fact remains that experience itself is anything but straightforward, and complications of perception, conception, and memory widen the no man's land of uncertainty between objective and subjective, outer and inner, reality and illusion.

How viable then is false memory as an answer to the abduction enigma? Do the phenomena of false memory syndrome, as revealed in the abuse controversies of the past 20 years, circumscribe the phenomena of abduction thoroughly enough to provide a sufficient solution, or is there something left over, some hints that point to a source in experience? These questions will occupy the rest of this paper.

THE TROUBLE WITH ABDUCTION

The abduction phenomenon sprang full-grown into public awareness when John Fuller published *The Interrupted Journey* (1966), an account of a UFO encounter—and something more—that frightened Barney and Betty Hill on the night of September 19–20, 1961. The Hills watched a UFO follow them as they drove along a remote road in the mountains of New Hampshire. The object gradually drew close enough to fill the field of view as it hovered in front of the car, a classic flying saucer with

entities looking at Barney through the window while he looked back at them with binoculars. As the Hills attempted to escape, one series of beeps sounded followed by a second, then the object was gone. The Hills drove home troubled with uneasiness too vague to specify, and realized later that they arrived two hours late. Betty experienced nightmares, while a flare-up of ulcers led Barney to seek medical attention, and in 1964 a psychiatrist, Dr. Benjamin Simon, placed the Hills under hypnosis to explore the two lost hours of that night in 1961. The Hills described how short, humanoid beings stopped the car and led the two humans inside the landed UFO for a medical examination, then returned them to the car. Once the ship took off, the Hills resumed their drive while their conscious memories of captivity faded away.

Abduction reports remained scarce for the next 10 years after Fuller's book, though the reports of Charles Hickson and Calvin Parker from Pascagoula, Mississippi, in 1973 and Travis Walton from Arizona in 1975 basked in national media attention. The trickle of reports increased to a torrent in the 1980s as hypnosis became a standard procedure to unlock the secrets of the time lapse. Instead of recalling a well-defined UFO encounter, a new class of abduction experiencer brought only feelings, a vague apprehension, as the link with a possible experience. In a typical case, Hopkins (1981, pp. 52) writes of Steven Kilburn approaching him to say, "There's probably nothing to it . . . but something may have happened to me when I was in college. I can't remember anything specific, but something has always bothered me about a certain stretch of road." Kilburn thought that hypnosis might help, and in fact it revealed a full abduction as the source of his long-standing anxieties. Investigators increasingly found an odd but trivial memory or a period of missing time as the sole conscious marker leading to an extraordinary onboard scenario.

As hypnosis opened the door on a phenomenon far more extensive than anyone suspected, bedrooms and households outstripped highways as the favored sites for visitation. Another change emerged as the once-in-a-lifetime abduction proved to be the exception rather than the rule. More and more experiencers described recurrent abductions, often a lifetime string of them stretching back to childhood, sometimes with a frequency as often as three times a week.

The literature contained about 300 cases by 1985 but added 500 more by 1992. Published accounts represent only a fraction of the cases in investigator files and the numbers swell to thousands or tens of thousands in informal surveys, while extrapolations from a 1992 Roper Poll suggest that abduction experiencers comprise some 2% of the U.S. population (Hopkins, Jacobs, & Westrum, 1992, p. 15). A more recent polling by the Roper organization indicates a much smaller percentage, but still a figure that would extrapolate to nearly one million Americans. When novelist Whitley Strieber told his personal history of abduction in the best-selling *Communion* (1987), the subject broke loose from the narrow confines of ufology to create a national and international sensation. Popular TV series such as *The X-Files*, movies, tabloids, advertising, cartoons, and an endless series of books have further popularized the phenomenon until abduction ideas and images sail the mainstream, now a ubiquitous part and parcel of common knowledge.

Narrative consistency. Notwithstanding this media onslaught, by displaying a notable consistency (Bullard, 1987, 1995, 1999) abduction reports contradict the assumption that they are products of creative imagination. A recurrent phenomenology of abduction quickly settled into place as early investigators noted striking similarities of content, even with only a few cases in hand. From earliest to latest reports, the same sequence of events and similar descriptions of sights and sensations appear in one account after another, seemingly irrespective of time, place, investigator, or means of investigation.

Table 1 details the sequence of events as it usually unfolds, as well as typical descriptions of the entities and the craft. Boldface print identifies the most common features. The numbers in the right-hand columns represent percentages of reports that include a given feature. These numbers represent three periods in the history of the phenomenon. Column A shows the proportions for 52 reports published from the 1960s until late 1977, the release date for the movie *Close Encounters of the Third Kind*. Column B covers 131 reports from 1978 until early 1987 when two influential books appeared, Strieber's *Communion* and Hopkins's *Intruders*. The basis for Column C is 254 reports from the literature of 1987 until the late 1990s. All reports used in this comparison meet two criteria. They contain a useful amount of information, and they have received a minimal investigation at least enough to convince a reputable investigator that the informant was not hoaxing or mentally disturbed.

Few reports contain all possible elements. An examination may be the only onboard experience, and many possible incidents or sights may not appear in any one report. If an episode appears, it usually appears in the same position relative to other episodes and seldom wanders despite the fact that the story would make just as much sense if, for example, the conference preceded the examination. Also noteworthy is constancy in the proportion of elements over time. For example, the percentage of entities described as humanoids stays the same over the years, and most descriptive characteristics hold steady irrespective of any apparent influence that *Close Encounters* or *Communion* might have on popular expectations.

Table 1
Principal Abduction Events and Descriptions

Sequence of Events in UFO Abductions	(%)	A	B	C
I. Capture—Highway		49	35	17
Outdoor	33	31	24	
Bedroom	18	34	59	
Premonition, summons	17	15	13	
UFO, luminous object, or light appears	78	58	41	
Light shines into bedroom				
Surreal atmosphere envelopes scene (silence, stillness)	17	12	8	
Subject behaves in an uncharacteristic or inappropriate way	15	14	11	
Subject hears drone, humming, or musical sound	24	21	13	
Paralysis overcomes subject	35	30	33	
Onset of time lapse effect	75	71	74	
*Entities appear	59	55	60	

Table 1 (continued)
Principal Abduction Events and Descriptions

Sequence of Events in UFO Abductions	(%)	A	B	C
Pacification effect (subject loses will, entities take control)				
Passage of through wall, closed door, or window				
Flotation or floating sensation as entities escort subject	47	41	42	
Ascent up beam of light				
Sudden entry	31	31	18	
Awareness of entry	40	31	40	
II. Examination	71	71	76	
Subject instructed to undress, or entities undress subject				
Abductee lies on examination table				
Manual procedures ("doctor" feels and pokes subject)	11	11	11	
Instrumental procedures (hand-held tools, machinery)	41	35	39	
Scanning device (eyelike object passes over subject)	44	32 ^a	37 ^a	
Implant (tiny object inserted into or removed from body)	19	23	29	
Sample-taking (non-reproductive—blood, saliva, rectal probe)	19	19	18	
Reproductive procedures (genital inspection, eggs taken, etc.)	25	26	41	
Mental/behavioral tests				
*Entity stares into eyes of abductee				
III. Conference (meeting, lecture, or teaching session)	35	36	31	
Subject assigned an uncertain task or mission	21	25	45	
Warning of coming cataclysm, apocalyptic prophecy	21	21	27	
*Instructions to forget	48	48	55	
IV Tour of ship (view of engine room, control room)	17	11	18	
Visit to incubatorium or nursery, hybrid child interaction	8	5	12	
V Otherworldly Journey				
Sight of devastated landscape, subterranean environment	23	24	16	
VI Theophany (sight or events of spiritual experience)				
VII. Return (normal activities resume)				
Clothes rearranged, in wrong bed				
VIII. Aftermath	81	73	80	
Immediate aftereffects (primarily physical)				
Feeling of dirtiness, contamination				
Extreme thirst, exhaustion				
Nausea, sickness	19	15	7	
Eye/skin irritation, soreness	26	17	9	
*Scars, punctures, skin markings	19	20	21	
Intermediate aftereffects (psychological, delayed reaction)				
Nightmares, flashbacks of missing time period	33	31	33	
Anxieties, fears, phobias (of doctor's office, animals, etc.)	24	15	16	
"Screen memories" (e.g., two spiders in web for alien face)				
Long-term aftereffects (emerge after months or years)				
Increased spiritual concerns				
ESP, paranormal experiences	33	17	9	
Change in habits, lifestyle, beliefs	14	13	13	
Sense of alienation from earth, belonging to alien planet				
Repeated encounters	48	59	76	
n =	52	131	254	

Table 1 (continued)
Principal Abduction Events and Descriptions

Descriptions of Entities	(%)	A	B	C
Types of Entities				
Humanoids (human in form but distinct from human norm)	84	83	84	
Standard humanoid (short, gray, hairless, large head and eyes, small nose, mouth, and ears)	65	64	71	
Short humanoid (less than average human height)	63	59	62	
Tall humanoids (taller than short humanoids in crew)	24	24	23	
Nordic and human types	22	23	19	
Hybrids (combine features of humanoids and normal humans)				
Robots	9	4	2	
Reptilian beings	2	0	2	
Insect or mantis-like beings, monsters, hairy Bigfoot creatures				
Crew with mixed types (e.g., humanoids and Nordics)	22	19	19	
Descriptive Characteristics of Humanoids				
Large, elongated, or wraparound eyes	86	90	94	
Eyes dark or iris large	17	48	71	
Eyes normal, small, slitlike, or nonexistent, small normal, or catlike iris				
Slit mouth (small, lipless, vestigial)	96	95	96	
Vestigial nose (small, holes only, a bump, nonexistent)	92	90	96	
Vestigial ears (small, nonexistent, holes)	74	85	95	
Enlarged cranium (head like inverted pear)	88	96	95	
Hairlessness (bald)	82	84	94	
Gray skin (pallid, chalky, white, sunless, fungal)	87	81	86	
Sexless or sex differences not apparent from physical signs				
Skinny, thin, frail build				
Robust dwarfs				
Hands have less than five digits				
Stiff or clumsy when walking				
Move by floating or gliding (quick, as if in lockstep)				
Clothing is skin-tight, entities seem nude				
Tight-fitting uniform or jumpsuit				
Robe or cape, loose-fitting garment				
Behavior and Social Organization of Entities				
Humanoids are businesslike, efficient, uncaring, emotionless				
Nordics are warm and friendly				
Humanoids do not like having captives look at them				
Telepathic communication with captives	73	68	91	
One entity acts as liaison (sometimes a taller humanoid)	27	23	23	
Familiar entity (the liaison seems familiar to captive)				
n =	52	131	254	
Descriptions of the Craft	(%)	A	B	C
Exterior				
Disk or flying saucer shape	71	75	65	
Sphere, rectangular, triangular or boomerang				
Doors open and close seamlessly				

Table 1 (continued)
Principal Abduction Events and Descriptions

Descriptions of the Craft	(%)	A	B	C
Interior				
Antechamber or circular hallway				
Examination room	89	85	92	
Round (circular, domed ceiling, no corners or edges)	83	81	94	
Pie-slice shape square				
Cool temperature (cold, chilly, clammy, misty)	88	93	92	
Indirect lighting (no visible source, fluorescent, glowing walls or ceiling)	63	69	63	
Room sterile, barren				
Examination table	89	93	95	
Conference room				
Incubatorium (tanks with fetuses or body parts)				
Engine room or control room				
Life Cycle of Abduction	(%)	A	B	C
Childhood				
Very young children meet with friendly aliens, talk and play, cut (sample taken)				
Pre-pubescent children given physical examination, implants, teachings				
Adolescence (abductions less frequent than in childhood)				
Emphasis on examination, especially of reproductive system				
Young adulthood (age 19-25)				
Intensification of activity, genital examination, extraction of eggs and sperm, impregnation and missing fetuses, onset of a sense of mission				
Mature adulthood (age 26-39)				
Reproductive interests continue but with less intensity, meet with hybrids, abductees become more aware of their experiences and sense of mission				
Few people experience a first abduction after the age of 35				
Middle and old age (40+)				
Diminishing activity, less emphasis on examination and reproduction, even rejection as too old, abductees find increased paranormal powers and act to help others save the environment or fulfill some other purpose				
Innovations in the Abduction Story	(%)	A	B	C
Humanoid necks become thin and long				
Humanoid eyes become completely dark				
Humanoid descriptions standardize				
"Insectoids" (bug-like humanoids) are reported		0	0	5
Reptilians, squat blue beings reported				
Missing fetus cases proliferate				
Interactions with hybrids evolve into an extended episode				
Abductees describe military personnel working with aliens in military base as setting				
Split between abductees regarding encounter as intrusive and those who see it as a positive, spiritual experience				
Growth of messages relating to ecological disaster				
Elaboration of interactions between humans and aliens, with aliens or hybrids entering into romantic relationships with humans				
n =		52	131	254

Still, some variation does appear in the abduction story. Table I includes a list of differences that appear to follow the life cycle where, for example, a young adult often experiences a physical and reproductive examination, whereas these procedures are less common for children.

A few elements, marked with an asterisk*, seem prone to wander through the sequence of events, such as the Mindscan, where an entity stares closely into the abduction experiencer's eyes, an experience that may happen early or late during the examination. Capture events also vary according to whether the abduction experiencer is driving and sees the UFO approach or awakes in bed to find a party of entities already in the room. The list of innovations is not complete but identifies some story elements absent in early reports but increasing in frequency and distinctiveness as time goes on. Some parts of the hybrid/incubatorium scenario appear quite early in the literature, but only subsequent to *Intruders* has this aspect blossomed into an extended episode of the story. Thin-necked aliens became the norm only after *Close Encounters* depicted such a form, while seeming collaboration between aliens and military personnel, or a contactee-like enlargement of the interpersonal relationships between experiencer and alien, represent late additions to the story.

A few elements seem to have dropped out as well. The wedge-shaped examination room mentioned by the Hills and Travis Walton seldom recurs nowadays, and humanoids of robust build seem to have standardized into flimsier models. The needle in the navel also seems to have diminished as the overall gynecological examination has elaborated.

Despite these few changes with their suggestion of creativity, and the occasional idiosyncratic episodes some narrators add, the overall picture of abduction reports is one of remarkably limited variation. The core events recur as stable fixtures without the supple variation of urban legends or other fantastic folk narratives, and without the personal touch characteristic of fantasies. The story owes much of its strangeness to the seemingly real and unreal elements that mingle side by side. On one hand, the UFO itself seems metallic and solid enough to kick, but it keeps company with motifs like flotation or loss of volition that belong to the intangible world of mental phenomena. These descriptions flag the wary researcher with a warning that something dreamlike and surrealistic is underway. They almost beg for a psychological reading, and skeptics are happy to oblige. On their behalf, proponents agree that the abduction story is fantastic by all standards, but its combination of real and surreal elements promises trouble for literal and psychological explanations alike.

The most flexible and plausible skeptical position regarding the alien abduction experience invokes three interacting causes (best spelled out by Randle, Estes, & Cohn, 1999).

1 People who become abduction experiencers have a predisposition to imagination and fantasy or a susceptibility to suggestion and role-playing that hypnosis magnifies.

2 The raw material for abduction reports swirls around in folk, mass, and popular culture, all the more so now that the abduction phenomenon itself has become com-

mon knowledge, so that everyone has a head full of abduction images and themes

3 Abduction investigators bring an agenda to their relationship with claimants, and guide subjects made pliant by hypnosis to imagine the story these investigators want to hear

Lynn and Kirsch (1996, p. 152) refine these causes by adding that the subject is predisposed to believe in abductions and seeks out a receptive investigator. The investigator frames any puzzling experiences the subject brings forward in terms of abduction to the exclusion of alternative explanations. As abduction makes sense out of the subject's puzzlement, the subject benefits from anxiety reduction and becomes committed to this solution, a move reinforced by the investigator and the subject's acceptance of the abductee role. Abduction is thus a false memory with the feel of a genuine experience, created by confabulation between willing subjects and overzealous investigators from familiar beliefs and contents in widespread circulation, supported by vague sensations or unusual experiences like sleep paralysis reinterpreted in terms of the abduction myth and all ordered into a consistent whole by expectations that investigators suggest to their receptive subjects.

Fantasy proneness. Early efforts to explain abduction resorted to psychopathology or social marginality of the experiencers as the likely cause (e.g., Grinspoon & Persky, 1972, Warren, 1970), but subsequent evidence has stacked almost entirely against these solutions (Appelle, 1995/1996). If abduction experiencers are neither sick nor marginal, they may yet possess the psychological distinction of a special talent for fantasy that allows them to create elaborate abduction tales. Wilson and Barber (1983) identified "a small group of individuals (possibly 4% of the population) who fantasize a large part of the time, who typically 'see,' 'hear,' 'smell,' 'touch,' and fully experience what they fantasize, and who can be labeled *fantasy-prone personalities*" (p. 340).

Such people are excellent hypnotic subjects, hallucinate voluntarily, have vivid memories even from early childhood and report paranormal phenomena like ESP, apparitions and out-of-body experiences. As children, they regarded their toys as alive and had vivid relationships with imaginary companions, sometimes to escape lonely or unhappy situations. As adults, they maintain an ability to lose themselves in fantasy for hours at a time and report an unusual number of false pregnancies, though these individuals usually function well in society.

Combining a fantasy-prone personality with suitable prior beliefs might prepare the ideal mental setting for subjective abduction experiences, since

individuals who believe in the possibility of extraterrestrial visitation are relatively likely to interpret ambiguous sensory information in terms of this belief. When such individuals are also fantasy prone, they tend to elaborate on the ambiguous information by weaving fantasies, internally generated sensations, and ambiguous external information into a UFO experience that is congruent with their expectations [Spanos, Cross, Dickson, & DuBreuil, 1993, p. 625]

The characteristics of people with fantasy-prone personalities bear a striking similarity to important aspects of abduction—missing time, missing fetuses, paranormal and visionary experiences, to name a few. Bartholomew, Basterfield, and Howard (1991, p. 217) applied the fantasy-prone profile to 152 abduction experiencers and contactees to find that 87% matched at least one major trait. Life history data for author/experiencer Whitley Strieber (Baker, 1997a, p. 217) and the subjects of John Mack's 1994 book *Abduction* also assemble a strong lineup of fantasy-prone characteristics (Nickell, 1997).

A kindred theory derives from studies that identify nightmare sufferers as boundary-deficit, lacking normal abilities to distinguish self from nonself, imagination from reality, sleep experiences from waking experiences. Missing time and the dreamlike character of abduction fit readily if abduction experiencers share in a boundary-deficit personality (Kottmeyer, 1988). A study by Keul and Phillips (1988, p. 37) lends support by finding more dream recall and flying dreams among close-encounter experiencers which the authors interpret to mean "a low threshold between dreams and waking states as well as some congruence between [a close UFO event] and the contents of [the subject's] unconscious."

A third solution along these lines sides with the oft-repeated assumption that hypnotic confabulation is responsible for the abduction story. Discoveries that individuals vary over a wide spectrum in their susceptibility to hypnosis (Hilgard, 1965, pp. 75, 80) and that the most fluent individuals share certain personality traits (Spiegel, 1974) point to the likelihood that abduction experiencers will prove to be easily hypnotized, capable of deep absorption and pliant under the hypnotist's suggestions. Sprinkle (1999, p. 137) gives an informal description of the people who attended his 1980 Contactee Conference as "highly susceptible to hypnotic suggestion." Other investigators have also identified individual abduction experiencers as good hypnotic subjects (e.g., Fuller, 1966, p. 90; Nash, 1998, p. 99).

The virtue of testability blesses these three proposals, but once again reality spoils expectations. Fantasy-proneness has suffered a setback in four direct tests (Ring & Rosing, 1990, p. 70; Rodeghier, Goodpaster, & Blatterbauer, 1991, p. 70; McLeod, O'Connell, Colasanti, & Mack, n.d., p. 38), with the negative finding most embarrassing for skeptics coming from the skeptics themselves (Spanos, Cross, Dickson, & DuBreuil, 1993, p. 629). Both the Spanos and Rodeghier studies also exonerated experiencers from charges of being more susceptible to hypnosis than mere UFO witnesses or controls. The experiencers in Day's study (1998, p. 103) had rich fantasy lives but only average susceptibility to hypnosis. He recorded conscious recollections from his 11 abduction experiencers, then recovered supposed memories through hypnosis, with the following results:

Only two participants produced entirely new episodes of abduction during hypnosis, seven elaborated on those episodes already described on interview, and only two participants produced no new information at all during hypnosis [Day, 1998, p. 119]

The amount of additional material varied from little to much, further demonstrating that abduction experiencers respond in diverse ways to hypnosis, and that it bears more than a simple one-to-one relationship with abduction memories or fantasies.

No one has carried out explicit tests of the boundary-deficit hypothesis, with the possible exception of Ritchey (1994, p. 13). He found strong scores suggestive of thin boundaries (also dissociation and other indicators of psychological sensitivity) in a sample of 14 subjects. The problem is we never find out for certain what sort of experiences these subjects describe, and their identity as abduction experiencers remains an unconfirmed supposition. On the negative side, Johnson (1994, p. 316) infers from tests by Parnell and Sprinkle that a hallmark of the boundary-deficit personality, a tendency to self-absorbed imaginativeness, fails to appear among abduction experiencers.

A majority of studies uncover no enhanced talent for imagination among abductees, but the verdict is not unanimous. One investigator finds that the intensity of UFO experiences increases hand in hand with capacity for creative fantasy (Cross, 1992, pp. 38-39).

A new study by Australian investigators (Gow et al., 2001, pp. 45-52) reports tests on 155 controls, 19 UFO sightsees, 12 contactees, and 12 abduction experiencers with several instruments, among them the Inventory of Childhood Memories and Imaginings (ICMI), the most common test for fantasy-proneness. High fantasizers score above 35 on this 52-item questionnaire and low fantasizers below 11. The means for the controls and the three UFO experience groups fall into the medium range, but counter to previous indicators, all UFO groups score higher than the controls—sightsees tallying a mean of 27, contactees 31, and experiencers 30, against the controls' mean of 22. Most people fall within this medium range and experiencers do not qualify as that small percentage of the population defined as fantasy-prone, but for once they significantly outscore both a non-experiencer comparison group and subjects with less intensive UFO experiences. Some reservations come to mind—the experiencer sample is small enough that one or two individuals could make a sizable difference in the mean scores, and the investigators recruited their sample by door-to-door requests and advertisements to a UFO group. Given the reluctance of most experiencers to confide their experiences to strangers, there is a possibility that the participating volunteers may not be representative of typical experiencer psychology. Still, here is a careful study using standard tests to uncover evidence that abduction experiencers—and all UFO experiencers—manifest heightened tendencies toward fantasy. Just when one issue seemed nailed down for good, new findings break it loose once again.

Culture. Related to these hypotheses, several studies implicate cultural elements for lodging in the thoughts and worldview of subjects, perhaps as images to recycle in dreams and fantasies, perhaps as cryptomnesic memories to resurface under hypnosis, perhaps as a credible hypothesis to reach for when grappling with odd occurrences. O'Gorman and Persinger (1998) find that subjects incorporate innuendos unrelated to a story into later retellings, and propose that a story with emotionally

provocative themes of sexual abuse or alien abduction activates areas of the brain that enhance errors

Experiments with hypnotized non-experiencers seem to confirm a cultural or psychological basis for abduction stories, since without benefit of experience, accounts from these subjects match "real" reports in many elements of content (Lawson, 1977)

Similar experiments by Day (1998 pp 144, 149–150) exposed one group of non-experiencers to contents concerning medical examination and a second group to suggestions about messages, while a third group served as a control. These subjects imagined an abduction while under hypnosis, and the group exposed to medical expectations described significantly more medical or experimental events. The message suggestions resulted in far fewer results. These subjects did not believe in the reality of their imaginary tales, but some found the hypnotic dreams frightening and surprisingly vivid. Three-fourths of the experimental subjects created detailed and logical narratives, and in a second experiment a group of evaluators were unable to distinguish these fictitious reports from accounts by real abduction reporters. Day (1998, p 161) concluded that confabulation and familiar content play an important part in the creation of abduction reports.

Lynn, Pintar, Stafford, Marmelstein, & Lock (1998, pp 129–130) confirm that suggestive interviews prompt experimental subjects to interpret lights as UFOs and construct abduction stories, often quite convincing ones, based on a fund of cultural knowledge (see also Appelle, Lynn & Newman, 2000, pp 258–260)

People claiming close encounters also report reading UFO literature (Keul & Phillips, 1988, p 41). Stone-Carmen (1994, pp 310–311) asked her subjects how they came to connect their unusual experiences or sensations with UFOs, and besides conscious experience, they implicated suggestion and popular culture in answers that included reading books or viewing TV shows with UFO themes, having dreams about UFOs and aliens, and hearing comments from friends and relatives.

With abduction experiencers neither mentally disturbed nor fantasy-prone, skeptics have seized on the consolation prize that these same people "are predisposed toward esoteric beliefs in general and alien beliefs in particular and ... interpret unusual sensory and imaginal experiences in terms of the alien hypothesis" (Spanos, Cross, Dickson, & DuBreuil, 1993, p 631). In this view, prior belief or expectation provides the mold that shapes abduction out of innocuous sensations. Clinicians in fact report elements of popular culture with abduction and *Star Trek* themes infiltrating the fantasies of some troubled children and adolescents (Fisman & Fisman, 1999). A suspicious explosion of reports claiming multiple personality disorder, satanic ritual abuse, and alien abduction has followed close on the heels of publicity about these conditions, suggesting that individuals with psychological tendencies to self-victimization and dissociation may adopt the current cultural fashion and shape a disorder around this borrowed content (Schnabel, 1994, p 57).

Cultural influences have an undeniable place in creation of the abduction story. Kottmeyer argues a convincing case that thin-necked aliens proliferated in abduction reports only after the movie *Close Encounters of the Third Kind* set the example.

(1993), and that Barney Hill's description of wraparound, "speaking" eyes originated in an episode of a TV series, *The Outer Limits*, that aired less than two weeks before he began hypnosis sessions with Dr Simon (1998). Day's point that abduction ideas saturate popular culture and that anyone can now tell a convincing story is certainly true, and his success in enriching the medical content of the accounts by suggestion demonstrates the potential for confabulation. At the same time, his experiments prove that people are not simply tape recorders repeating everything they hear, since the subjects were largely unreceptive to suggestions about messages.

A conclusive role for influence falters on the variety of cultural images and plots that could reshape abduction tales but do not. The same events and descriptions recur in spite of the many alternatives Hollywood has presented. A case in point lies in Lawson's experiments with hypnotized non-experiencers, since each participant described a different type of alien, whereas "genuine" abduction reporters overwhelmingly favor short gray humanoids.

A popular skeptical argument alleges that these standard humanoids originated with *Close Encounters* (Peebles, 1994, p. 234), but in fact many examples of this form entered the record prior to release of the movie in late 1977. Kottmeyer argues (1990) that the consistent sequence of the abduction plot reflects simply the "right way to tell a story," but the standard pattern of story construction does not require the same content to serve the same dramatic function in telling after telling. Yet this unexpected rigidity characterizes abduction reports, where episodes that could trade places without upsetting the logic of the story nevertheless cling to the same positions time after time. Though abduction experiencers are more likely to endorse experiences of an unusual sort, the nature of those experiences is also noteworthy in its limitations. They report the strange experiences that characterize the abduction phenomenon rather than a wide range of happenings and sensations (McLeod, O'Connell, Colasanti, & Mack, n.d., p. 41). All this discrimination seems unlikely for a fantasy based on cultural influences or psychological preconditions.

Trauma. Alternatively, the intense but seemingly unmotivated fears and behavioral quirks of abduction experiencers have attracted considerable attention. Betty Hill's recurrent nightmares and panic reaction to a roadblock, Barney's reluctance to talk about the events and his eventual ulcer flare-up dangled as unaccountable loose ends until recollection of the abduction placed each event in a meaningful context.

Hopkins came to recognize irrational fears and anxieties in conjunction with missing time as handy diagnostics for abduction. Hopkins and Jacobs delivered landmark papers at the 1988 MUFON Symposium that focused on the emotional consequences of abduction. Hopkins identified them as the "skeleton key" that unlocked a variety of seemingly unrelated and inexplicable behaviors. "Though conventional psychological theory cannot explain UFO abduction experiences, UFO abduction experiences can explain unconventional psychological behavior in the abductee" (1988, p. 104). Fragmentary memories, phobias, anxieties, and hatreds of long standing but confused origin made sense in light of abduction, like a man who resolved his childhood fear of two black spiders in a white web once he recognized the appearance as

dark eyes in a gray alien face

Jacobs (1988) presented a systematic description of "post-abduction syndrome," a complex of disturbances that overshadows many abduction experiencers. The pattern includes fear of sleep and abduction dreams, fears of certain places and phobic attacks in situations like a medical examination, obsessive interest in or rejection of UFOs and disproportionate reaction to an illustration of an alien, sensations of out-of-body experiences or missing time, negative reaction to children or psychosexual problems like avoidance of intimacy and preoccupation with control. According to this line of reasoning, individuals unaware of actual abductions may turn to psychologists or to traditional and New Age religion in search of resolution, but meet with little success because the root cause of the problems remains untouched. For those who have abduction experiences, awareness of abduction solves a lifetime of puzzlement and pain like nothing else, and underscores the traumatic effect of abduction on its victims.

A long history of studies ties a similar pattern of reactions to horrific experiences in combat. The "shook over hell" feeling of Civil War soldiers, shell shock in World War I, and battle fatigue in World War II served as ancestors for Post-Traumatic Stress Disorder (PTSD), a condition common among Vietnam veterans and sanctioned as a clinical entity by the American Psychiatric Association beginning with the 1980 edition of the *Diagnostic and Statistical Manual of Mental Disorders DSM-III* (pp. 236-238). Psychologists have broadened the concept beyond its combat origins and now recognize PTSD as a potential consequence of other life-threatening, uncontrollable experiences such as accidents, crime, natural disasters, interpersonal violence, and sexual abuse (Trimble, 1985). A table of PTSD characteristics reads like a summary of abduction aftereffects, with prominence in both lists for dreams, flashbacks, amnesia, hypervigilance, interpersonal difficulties, and avoidance of situations similar to the traumatic event (Wilson, 1990, pp. 2, 6).

Beyond anecdotal evidence and case studies, psychometric tests confirm that the abduction experiencer population harbors more than a normative share of PTSD and its frequent companion, dissociation. Ring and Rosing (1990, pp. 73-74) find that abduction experiencers score somewhat higher than controls for dissociative tendencies, an ability to separate consciousness from ongoing events that, in mild form, manifests in "spacing out," losing track of time, or susceptibility to hypnosis, while in extreme cases appears as multiple personality disorder.

Powers (1994a, pp. 47-48) identifies 45% of 20 experiencers reaching the test threshold for PTSD compared with 0% of people reporting only UFO sightings and 70% of sexually abused subjects. Dissociative symptoms appear among 70% of abduction experiencers, 10% of sighters, and 100% of the sexually abused subjects.

Rodeghier, Goodpaster, and Blatterbauer (1991, pp. 81-84) see noteworthy personality distinctions between their Cluster I subjects, who show little or no indication of PTSD, and Cluster II subjects whose responses suggest this disorder.

Stone-Carmen (1994, p. 313) identifies about half of her subjects as candidates for a diagnosis of PTSD. She also points out that somatic symptoms, social withdrawal,

distrust, and suicide attempts characterize posttraumatic decline, a consequence of the inability to process a trauma. All in all the findings are suggestive but ambiguous, and lend no preference to any theory of origin. They also are a reminder that whatever the nature of abduction, people remain individualistic in their responses. Some combat veterans and rape victims react badly to the trauma, others cope with little long-term consequence. The same will likely hold true of abduction experiencers.

What PTSD brought to the abduction dispute seemed like nothing less than proof of an external event. In the early 1990s, psychological evidence implied that PTSD originated in experience and no other way. For combat veterans or accident victims the source of PTSD is clear, for abduction experiencers the source remains a mystery, if not in the eyes of the victims then in their ability to adapt to their troubles amid an unbelieving society.

Abduction poses an inescapable, unpredictable, uncontrollable event in the lives of experiencers. “[T]he result is the creation of a state of chronic threat and uncertainty which affects the adaptational dilemma and the individual's belief system” (Wilson, 1990, p. 12). The core adaptational dilemma for abduction experiencers is an experience that, by its nature, does not allow for mastery or escape. Unable to handle or defend against the stressor, victims dissociate or manifest PTSD, undergo changes in personality, or create non-empirical belief systems (Wilson, 1990, p. 13). For abduction experiencers, the stressor takes on an added dimension—it is hidden, unacknowledged, ridiculed. They display the apparent consequences of traumatic experience without any conventionally traumatic experience befalling them.

Designated “Experienced Anomalous Trauma” to avoid presuppositions about the nature of the phenomenon, the situation of abduction experiencers manifesting PTSD in the absence of psychopathology frames a theoretical dilemma—either established observations that PTSD always has an external origin are wrong, or experience provokes the PTSD of abduction experiencers (Laibow & Laue, 1993, p. 93). This line of reasoning pays off in a striking way for ufologists—psychology appears to confirm that abduction has its origin in an anomalous event. Other psychological disorders fail to suit the evidence. One by one they fall away to leave literal claims as the only viable source for experiencing trauma (Laibow, 1992).

Once found, this Holy Grail of evidence evaporated into a mirage. Other researchers agreed that the PTSD and dissociation of abduction experiencers stemmed from genuine trauma, but traced it to a cause close to home and family. Various empirical studies link paranormal belief to childhood trauma, and offer the explanation that magical thinking promotes coping with a chaotic environment (Irwin, 1994, pp. 108, 110).

Ring and Rosing (1990, pp. 71–73) discover self-reports of a stressful childhood among their experiencer subjects, with five indicators for physical, psychological, and sexual abuse, neglect, and a negative home atmosphere that set a repeated pattern of elevated scores. This pattern cannot be strictly a consequence of lifelong abduction because near-death experiencers show similar elevations. Ring (1992, pp. 144–146) sees unhappy childhood experiences promoting a developmental life course

that favors sensitivity to extraordinary encounters among his subjects. Buffeted by human abuse, trauma and unhappiness, these children grow up cultivating dissociative skills as a defense mechanism, becoming adept at separating themselves mentally from their physical situation. An ability to block out unpleasant realities and a talent for psychological absorption enhance access to alternate realities and psychic sensitivity. The hardships of this world open the door to other worlds for the people who become encounter-prone. Ring does not deny some sort of reality for abductions (p. 146).

When in later life, such persons undergo the trauma or shock of either a near-death incident or one involving a UFO, they are more likely than others, because of their history of familiarity with these nonordinary realities, spontaneously to "flip" into that state of consciousness which, like a special lens, affords a glimpse of these remarkable occurrences. As a result, they are likely to "see" and register what other persons may remain oblivious to.

In effect, people with encounter-prone personalities have an advantage over everyone else in perceiving and recalling any abduction, near-death, or other alternate-reality experience. Abduction experiencers may display the personality profile of encounter-proneness because they belong to a special club, not because they have been abducted, since those ranks may be legion, but because they are able to access those memories while the majority of people abducted cannot.

This non-reductionist explanation treats child abuse as an agent that facilitates recall rather than the root cause of abduction reports. They retain the possibility of independence. Other researchers take a further step and treat childhood trauma as the central issue, with abductions no more than screen memories veiling genuine—but conventional—abuse. The telltale clues lie in common abduction themes of being chosen, physical intrusion, and missing time—features that also characterize clinical accounts of sexual assault (Powers, 1994a, pp. 43–52).

Two common mechanisms for coping with abuse are amnesia to block painful memories and creation of a fantasy reality, found among abduction experiencers in their accounts of missing time and encounters with aliens (Powers, 1991, pp. 47–48). A simple translation becomes possible with sexual abuse as the code. Claims that children of experiencers become experiencers themselves are family traditions to hide intergenerational incest. Belief in being chosen elevates and gives purpose to the trauma of abuse. Hybrids occupy the fantasies of women whose incestuous sexual activity leaves them feeling that they are forbidden to bear children, and the sense of being a specimen in a lab reflects with transparent clarity the self-image of a child victim.

Once decoded into its true meanings, the abduction story reveals itself as one of Wilson's (1990, p. 13) non-empirical belief systems for coping with trauma. Powers argues that individuals subjected to traumatic sexual abuse in childhood dissociate

these memories and cannot retrieve them in normal states of consciousness. Hypnosis during abduction investigation returns the subject to a similar dissociative state and permits recall, but not necessarily recall of the original event with its full burden of horror. What fills the amnesia gap may be a disturbing but tolerable substitute, a protective fantasy of being sexually overpowered by aliens—"an alternative reality to take the place of trauma so severe that it threatens to fragment the personality" (Powers, 1991, p. 52). Children depend on their parents for love and support even when parents become abusers. To break this unbearable conflict between dependency and betrayal, the fact begets a fiction about external villains, casting the blame onto nonexistent aliens whose harmful behavior is easier to endure than abuse by primary caregivers.

Leaving aside for now the merits or weaknesses of this argument, a pause to acknowledge its importance is in order. Whether or not abduction has any affinities with child abuse, the mere appearance of ontological kinship steers abduction into the psychological mainstream—recognition at last, but the price has been high. Most psychologists deny the individuality of the phenomenon and lump it together with other recurrent claims of fantastic events or exotic symptoms. The list encompasses multiple personality, satanic ritual abuse, past life memories, future life memories, spiritualism, and channeling, a group of "related dissociative syndromes for which no exogenous trauma can be identified" (Ganaway, 1989, p. 207).

A four-factor explanation for the genesis of multiple personality disorder can stand in for the rest. The disorder requires predisposing personal traits, like a capacity to dissociate and a facility to fantasize, triggering life experiences, for example, trauma that overwhelms conventional defenses, shaping influences, the cultural content that gives form to dissociative defenses, and perpetuating conditions, such as an absence of restorative measures for the traumatized child (Kluft, 1984, pp. 14–15). This scheme depends on life experiences to precipitate the process. Something severe happens to the subject, only the defensive response differs. Some people cope with trauma through a new, dissociated personality, others transform reality into fantasy by drawing on cultural ideas like alien abduction (Takhar & Fisman, 1995).

Even as theories converge on hidden trauma as the wellspring of fantastic claims, theorists diverge over whether the trauma resides in narrative truth or historical truth. Abuse may drive victims to seek mastery and restitution in exotic fantasies, but this straightforward cause-and-effect relationship represents one option out of many. The shocking event need not be inevitable. "[M]emories of the . . . trauma thought to activate the dissociative defense sometimes may represent illusion, hallucination, or pure fantasy" (Ganaway, 1989, p. 209).

Other mechanisms besides trauma, like fantasy proneness, reinforced role playing, and faulty interview techniques, pose equal risk for creating exotic stories. Psychoanalytic theory takes for granted that fantastic memories bear little similarity to their cause. Trauma in the subject's life stems from "primitive or psychotic anxieties, left over from the first months of life" rather than deliberate abuse by the parents. These memories are condensed, abstracted, symbolized, and expressed in the form of mythic

themes, of which abduction is one (Hedges, 1994, pp. 4, 65, 69). The motive for abduction fantasies may be a need to assume the role of victim (Schnabel, 1994, p. 57) or to escape the excessive modern demands of selfhood through masochistic fantasies (Newman & Baumeister, 1996, p. 100). A literal reading of the abduction story represents a possibility too remote—no surprise—for most psychologists to consider.

The truth in memory grows ever more elusive. Where the truth lies in personal narratives—or how much is truth and how much lie—comprises a center stage and vehement ongoing controversy in psychology today. Apparent affinities with abuse have embroiled abduction in this dispute and diminished the subject in the process. Abduction in the psychological literature holds the status of a sideshow, no longer an independent phenomenon but a construct of fantasy, media influence, a susceptible personality, psychological needs, and the like, always derived from some broader class of psychological cause. Never mind that abduction experiencers as a group lack qualifications like high hypnotizability and fantasy proneness that are conducive to multiple personality, or that abduction memories spread across a wide variety of personality types. Psychologists show a familiar tunnel-vision syndrome, a willingness to pick individuals that conform to the theory of choice and ignore the rest. Like it or not, abduction no longer belongs to ufologists alone. They must share it with psychologists and understand it in a broader context of scholarship, one that encompasses the consequences of child sexual abuse and trauma, the distortions of hypnosis, and the controversy over recovered memories, the nature of memory, and to what extent its truth is historical or narrative, true memory or false.

THE RECOVERED MEMORY/FALSE MEMORY DEBATE

Abduction no longer stands alone. Its mention in polite scholarly company most often follows discussions about recovered memories of sexual abuse—a subject seemingly remote and unrelated, yet one that raises a mirror to reflect the abduction issue in enlightening perspective. The recognition of child sexual abuse and incest as a social problem in the late 1970s soon escalated into a national panic over supposed child molestation in day-care facilities during the 1980s. Rumors circulating about the McMartin Preschool in Manhattan Beach, California, in 1983 led to a media circus and coercive questioning of small children until they confirmed every sort of perversion the interrogation team asked them to confirm, even the most fantastic claims of satanic rituals. What followed was the longest and most expensive trial in U.S. history, and it ended with no convictions. But the panic spread across the country and sent some 50 people to jail on the basis of unlikely tales that overzealous interrogators badgered out of children.

By the late 1980s, a new sexual-abuse panic took shape within the context of a recovery movement for victims of incest. A popular grass-roots movement grew up around self-help manuals such as *The Courage to Heal* (Bass & Davis, 1988), where the authors suggested that not every woman retained conscious memory of her abuse

"If you are unable to remember any specific instances . . . but still have a feeling that something abusive happened to you, it probably did" (p. 21) Therapists applied hypnosis and encouragement to their patients, with the result that many adult, even middle-aged women began to recall childhood sexual abuse and take their aged parents to court for damages. The argument that the trauma of abuse led to repression of the memories until therapy released them sounded convincing at first, but memory experts challenged the claims and blamed therapists for creating false memories instead. The debate has raged down to the present. Clinicians claim that therapy lifts the amnesia hiding intolerable memories of genuine victims, while experimental psychologists see no genuine memories recovered, only fantasy and confabulation as clinicians apply faulty techniques to convince individuals with minor psychological complaints that they are victims (For overviews of this dispute, see Loftus & Ketcham, 1994, Ofshe & Watters, 1994, Nathan & Snedeker, 1995, Pendergrast, 1995.)

The histories of abduction and childhood sexual abuse unfold in disquieting parallel. Both subjects begin as "hidden" phenomena and enter the spotlight of public awareness at about the same time. Both play out the classic sociological pattern for hidden events (Westrum, 1994, pp. 532-533), where isolated observations congeal into a widely recognized social problem, and the social construction of this problem evolves as debate drives the loose formulations of the early days into tighter, more sophisticated arguments.

The kinship between abduction and the controversy over abuse bears closer kinship than this general pattern implies. Both claims allege a traumatic experience lost to conscious recall and recovered through hypnosis, both have grown to epidemic proportions in the hands of zealous investigators and have become popular fodder for the mass media. Readers soon recognize numerous points of similarity between abuse and abduction claims. Where they differ is in the amount of scholarly attention directed each way. Extensive efforts have geared up to understand the social and scientific issues surrounding abuse while abduction remains an afterthought, a fringe subject dismissed as unworthy of serious consideration. Yet thanks to the likeness of the two phenomena, the scholarship of the abuse controversy illuminates abduction with almost equal wattage and compensates somewhat for academic neglect. With two subjects so comparable in claims and means of recovery, issues of truth or falsity in the abuse debate must necessarily apply to abductions as well, if not word for word then at least in broad sentences.

An argument for the literal reality of abuse memories draws UFO abductions into the controversy. If proponents of recovered memories of abuse accept them as true without physical evidence, and continue to believe them even when the claims ratchet upward into fantastic satanic conspiracies, how can they reject other memories recovered by similar methods? The critics chided therapists with abduction accounts and past-life memories as further examples of false memories. Since such claims were patently false, recovered memories of abuse must be false as well, and proponents' willingness to ignore these poor relations embarrassed the recovered-memory movement with proof of its intellectual bankruptcy.

The starting point for the delayed memory debate is a profusion of claims. They allege sexual abuse, satanic ritual abuse, past-life memories, and UFO abduction, emerge in a therapeutic or investigative situation, and supposedly depict the initial event with considerable fidelity despite the passage of years or decades. No one denies the existence of the claims or the reality of child sexual abuse and its potential for serious psychological harm. Where the buzz of controversy grows loud is over the status of particular cases, especially those recovered in situations fraught with suggestion, whether the source is hypnosis, peer pressure, or an authoritative interrogator. These claims remain creatures of memory, the evidence testimonial rather than physical and the argument a question of psychology rather than physics or forensics. The question is whether these memories reflect true events or imaginary creations. An understanding of memory processes speaks to every aspect of the dispute as its universal language, necessary at every turn.

Whether the subject is abuse or abduction, the science at issue concerns three general propositions. They comprise the clinicians' answer for memories of abuse recovered in the process of therapy. This explanation takes for granted that the mind represses traumatic memories, that those memories lie dormant and out of touch with consciousness for years, and that those memories spring back to life complete and unaltered as a result of therapy or some triggering experience.

Critics regard these assumptions as a tall order, largely unsubstantiated by research and in fact largely refuted by it. The critics doubt repression, long-term dormancy, and pristine resurrection. They explain the reappearance of long-lost memories by trimming back their supposed historical lineage to identify them as recent creations, false memories of fictitious events, products of an unholy alliance of suggestion, belief, and confabulation that nevertheless bear the emotional stamp and subjective texture of autobiographical reality. Here then are grounds for an epic scientific controversy on top of an already heated social dispute.

The truth in memory A mistaken concept of memory has misled recovered-memory therapists and abduction investigators since the onset of the controversy. They share a naive view that memory records everything like a video camera and preserves those recordings as if on tape throughout a lifetime, stored intact for retrieval and replay in pristine form.

Experimental psychologists have long since developed a contrasting picture. They find memory plastic and mutable, its processes relying not on retrieval or replay but on reconstruction. The rote memorization of a schoolboy learning the Gettysburg Address or any other form of verbatim remembrance represents only a remote corner in the memory process. Bartlett (1932, p. 213) characterizes the mainstream processes of memory, concluding that

Remembering is not the re-excitation of innumerable fixed, lifeless and fragmentary traces. It is an imaginative reconstruction, or construction, built out of the relation of our attitude towards a whole active mass of organized past reactions or experience and to a little outstanding detail.

which commonly appears in image or in language form. It is thus hardly ever really exact.

Most memory proves to be selective, a process of assimilation biased toward the subject's preexisting schemata of knowledge. With these schemata as their guides, Bartlett's experimental subjects shortened and simplified the text of a story they heard, rationalized and stereotyped the content until the story accorded with their cultural norms and expectations. Unfamiliar and uncongenial elements dropped out or underwent revision into familiar form. The story gained in meaningfulness for the hearers but lost individuality so that the remembered version bore little resemblance to the original. Memory put on a new face as an active, structuring agent and anything but a mere reflector of reality point for point.

The obverse side of remembrance is its failure. We forget for a variety of reasons. Most of the passing show of stimuli comes and goes without ever crossing from sensation into long-term storage; many traces leave only a weak impression and quickly decay, while even traces well encoded in long-term memory may erode with time. A major cause of forgetting is interference, where the clutter of new memories blocks or obliterates the old. A well-known experience is failure to recall familiar identities, for example in the annoying "tip of the tongue" phenomenon, where two bits of information such as a face and a name fail to connect. A clue may break the impasse, or little by little, piece by piece, the lost memory may fill out again, but for the moment we draw only a blank even though the information lies close to hand. Some forgetting is motivated—we may shut out what is painful to remember, or remember only what suits personal needs. An event often enters memory paired with the cues to its recovery and only reference to those cues can resurrect the memory. As time passes and ever more memories interfere with recall, the many cues once able to trigger a particular memory may narrow to a few. Some memories are state-dependent, learned during a distinct state of consciousness like drunkenness or hypnosis, and retrievable only when the subject returns to that state (Loftus, 1980, pp. 66–76; Schacter, 1996, pp. 60–63, 76–79).

The most dramatic form of forgetting is amnesia. Wholesale loss of personal history and identity sometimes results from organic insult like disease or injury, though less comprehensive forms of systematic forgetting befall everyone as routine processes. One general failure of memory is infantile amnesia, the loss of all or nearly all memories from the first few years of life. Another is source amnesia, where we remember information but forget its origin and context. Not all memory processes lead downhill toward dissolution. Some memories of importance see a great deal of re-thinking and rehearsal until they link with numerous other memories in an intricate, indestructible fabric. This consolidation creates a state of hypermnesia for these memories—they strengthen rather than decay, and maintain ready access over the years (Schacter, 1996, pp. 81–84, 114–116).

The untruth in memory. Memory not only draws blanks, it can also draw misrepresentative pictures of the past. Distortions of memory occur with a frequency that is

surprising even though their inevitability is not, given the nature of memory processes. Barney Hill's alien with speaking wraparound eyes may have originated in a forgotten TV show, but this unrelated image blended into his UFO story with the emotion and conviction of real experience and became part of his narrative truth. If so, his comparison of the afterimage of the alien eyes to the eyes of the Cheshire Cat, still visible after the rest of the cat disappeared, was far more apt than he imagined.

False memory. Failings of memory for the occasional detail are one thing, but the whole-cloth fabrication of memories for a life event out of suggestion and misinformation seems a far less certain prospect—fantastic and improbable if not impossible. Yet experiments have accomplished just this feat. The vulnerability of young children to false memory formation provokes the least surprise. Their boundaries separating truth from fiction or experience from imagination have not yet solidified. They borrow their sense of truth from grown-ups and acquiesce to leading questions of the sort so abundant during the nursery-school interrogations of the 1980s.

In one experiment, some 20–40% of preschoolers questioned repeatedly about getting a hand caught in a mousetrap eventually agreed that the event happened. When told time and again about falling off a bicycle and getting stitches, 40–60% of a group of preschoolers came to ‘remember’ the fictitious event (Ornstein, Ceci, & Loftus, 1998b, pp. 1042–1043). Children readily forget the source of their information and confuse what they have seen with what someone tells them. Suggestion reinforced with repetition builds a false memory that children believe and defend as a true event (Schacter, 1996, pp. 124–129).

Suggestion works wonders in redefining the past for adults as well. Five subjects in the most famous false memory experiment came to believe, with the help of suggestion and reinforcement from trusted family members, that they had been lost at a shopping mall as children. With subsequent rethinking, the subjects filled out the false memories with details and felt confident that the memories were true. A larger study with 24 subjects resulted in 25% of the participants developing a full or partial false memory of being lost. Another experiment planted the suggestion in college students that they had been hospitalized with an ear infection as children. None of them recalled the fictitious incident in an initial interview, but in a second interview 20% began to recall the “event.” Other experiments have succeeded in planting memories of a significant and unusual occurrence like overturning a punch bowl at a wedding (Loftus & Ketcham, 1994, pp. 94–100; Loftus, Feldman, & Dashiell, 1995, pp. 62–65). The verdict is clear—no birthday sets a limit on susceptibility to autobiographical false memories.

Some memories are special. An understanding of the normal processes of remembering and forgetting establishes a baseline for what memory can and cannot do. The scorecard thus far weighs against all the proponents’ assumptions—assuming, of course, that the usual norms truly apply. One of the most persuasive arguments of proponents lies in the qualitative distinction they draw between memories. Run-of-the-mill examples fall prey to distortion and forgetting, but emotionally charged memories obey a law unto themselves, proponents say, with unique properties that

account for the clinical phenomena observed in abuse victims—including imperviousness to change and proneness to amnesia. Most people can draw on personal experience to vouch for the special vividness of memories with high emotional voltage. Events like the assassination of President Kennedy or the explosion of the space shuttle *Challenger* burn themselves so deeply into remembrance that they persist as rich, three-dimensional memories, and we recall them down to private details like where we were and what we were doing when we heard the news. These “flashbulb memories” appear to last a lifetime and remain invincible against the usual processes of memory change and distortion.

Charged with even higher emotional potential is trauma, “an emotional state of discomfort and stress resulting from memories of an extraordinary, catastrophic experience which shattered the survivor’s sense of invulnerability to harm” (Figley, 1985, p. xviii). The worst happenings a human being can endure—disaster, combat, torture, kidnapping, violence, rape, abuse—leave the most vivid and horrific memories. A stressful situation escalates into a traumatic situation when typical human solutions of fight or flight cease to be viable options, leaving the subject powerless and trapped, with all personal or social systems of control and meaning overwhelmed. Victims of trauma bear a psychic scar that has the distinctive pattern of a signature—they overreact and stay on guard, experience intrusive and fearful memories, manifest emotional constriction and dissociative responses (Herman, 1992, pp. 33–50). A common long-term response to traumatic experience is Post-Traumatic Stress Disorder where the victim reexperiences the trauma in vivid recollections or dreams, undergoes emotional numbing and detachment, and may suffer sleep disturbances, survivor guilt, exaggerated startle responses, and a desire to avoid situations similar to the original traumatic situation.

Two areas of the brain seem implicated in traumatic memory—the amygdala, a structure that evaluates the emotional significance of memories entering storage, and the hippocampus, a part that organizes new information and integrates it with previous memories. The interaction of these two contributors to memory formation strikes a balance under ordinary circumstances. Emotional and hormonal signals from the amygdala vary in strength, with the stronger signal prompting the hippocampus to retain the associated memory in stronger form. The emotional and sensory impressions combine so that the emotions have experiential reasons and experiences have normative emotional charges. Traumatic experience upsets this balance because

very high levels of emotional arousal may prevent the proper evaluation and categorization of experience by interfering with hippocampal function. [B]ecause the hippocampus is prevented from fulfilling its integrative function, these various imprints are not organized into a unified whole. The experience is laid down, and later retrieved, as isolated images, bodily sensations, smells, and sounds that feel alien and separate from other life experiences. Traumatic memories are timeless and ego-alien [van der Kolk 1996, p. 295]

Trauma is emotionally amplified experience. It releases a flood of stress hormones that can lead to the laying down of strong emotional memories, and strong memories once reactivated create a powerful visceral response by releasing the same hormones. Shut out of this loop is any verbal or conceptual awareness. Traumatic memory rages with feelings and sensations while leaving the victim baffled for any organized understanding of their cause or meaning (van der Kolk, 1996, pp. 291–295). A long-term consequence of frequent exposure to strong doses of stress hormones is brain damage, with the hippocampus being especially vulnerable to a reduction in volume. The hippocampus serves as a key player in the formation of explicit memory. Any damage to this structure from prolonged stress holds the potential to contribute to abnormalities of memory (Schacter, 1996, pp. 242–246).

Proponents of delayed memory have welcomed the apparent support that neurophysiological research lends to their cause. These findings that trauma has brain-altering consequences remove the taint of subjectivity and seem to confirm that traumatic memories are in fact a breed apart. The therapists who search for “body memories” of abuse and find fragmentary, nonverbal clues rather than detailed recall can take heart that science supports these inarticulate guises as the typical form of traumatic memories. An extensive loss of memory for seemingly unforgettable events also makes sense if the emotions provoked by trauma interfere with memory storage. The atypical encoding of traumatic memories deprives them of narrative organization and separates them from an individual’s integrated life history, abandoned to hover as alienated emotions and feelings, and seldom recalled because they are accessible only when the subject reenters the highly emotional state that created these memories. The emotions surrounding traumatic memories may corrode the very brain areas that store memory and thereby facilitate forgetting.

Traumatic amnesia has been a defining concept throughout the delayed memory debate. Freud recognized among his patients a capacity to forget disturbing sexual experiences. Sometimes he took this repression for a deliberate effort to suppress unpleasant memories, sometimes he treated the process as unconscious, an automatic defense for shutting painful thoughts out of mind. The therapist often recognizes a case of repressed abuse by noting inexplicable feelings and behaviors, breakthroughs of hidden memories in flashbacks or dreams, feelings of unreality and detachment, and loss of memory for periods of time (Frederickson, 1992, pp. 40–47). To account for this recurrent pattern, therapists of the delayed-memory era borrowed Freudian theory wholesale, adopting the prospect of widespread child sexual abuse that he first advocated then abandoned, accepting his explanatory scheme of intolerable memories forced into the unconscious and his cure of venting repressed memories by lifting the anxiety that bottles them up.

However, 60 years of laboratory experiments uncover no evidence for repression that is free of alternative interpretations (Holmes, 1995), and the only justification for a supposed robust form of repression comes from therapists’ need to rationalize their success in drawing unsuspected life histories from their clients. “Absent the robust repression hypothesis, these therapists would be obliged to seriously consider

the possibility that what they do with their patients has little or nothing to do with the patient's actual life history and everything to do with the therapist's procedures" (Ofshe & Watters, 1994, p. 404)

Dissociation. Over the last decade, proponents have gradually abandoned repression and climbed aboard dissociation as a better vehicle to explain forgotten and recovered memories. The Freudian concept of repression has long overshadowed Pierre Janet's idea of divided consciousness, but repression suffers as a vague and insubstantial concept ripe for criticism. The principle of dissociation—that thoughts, behaviors, and memories coexist with little or no interaction, integration, or conscious awareness—has problems of its own but enjoys considerable acceptance as a definable, empirically supported concept. As Schacter describes it (1996, p. 233)

Dissociation does not erase a person's memories. Instead, stress or trauma somehow severs the link among memory systems so that large sectors of the past or periods of ongoing experience become detached from a patient's conscious awareness.

Abuse survivors often report a sense of separation from self, out-of-body experience, or becoming an observer of their own fate (e.g., Cameron, 2000, p. 106), while abuse victims typically score higher in tests for dissociation (Zelikovsky & Lynn, 1994, pp. 203–204). Ring found both enhanced dissociative skills and increased reports of negative childhood experiences among abduction experiencers and near-death experiencers, adding one more brick to a sizable structure of research linking dissociation with trauma, abuse, or chronic unhappiness in childhood. Partial or total amnesia often accompanies dissociative disorders originating in trauma. In fact, such failures of memory were among the earliest recognized consequences of trauma, and continue as well-documented reactions to traumatic experience as well as a cornerstone aspect of PTSD (Spiegel & Cardeña, 1991, pp. 370, 372).

However, for critics, dissociation amounts to little more than repression by another name. The exchange may serve fashion, but it brings nothing persuasive into play. The question of whether traumatic memories hide from consciousness later to reappear intact still stands unanswered. Dissociation may offer an appealing mechanism, but the evidence consists of an increase in dissociative symptoms among people who experience traumatic events. The findings may be true enough, but to connect the mere presence of dissociative traits in subjects with a conclusion that they split off and recover traumatic memories on a large scale requires an unwarranted leap of faith (Ornstein, Ceci, & Loftus, 1998a, p. 999).

The direction of causality also remains in doubt. People reporting traumatic experiences often manifest elevated scores on some MMPI scales, but these deviant personality profiles could reflect a predisposition in place before the trauma just as easily as changes in consequence of trauma. To sharpen the question still further, do people dissociate as a result of trauma, or do people with dissociative skills create stories of traumatic events? Fantasy-prone individuals often display dissociative symp-

toms without traumatic experience and also have the skills to assume the role of a trauma victim, while at least in one instance, a supposed Vietnam veteran with all the characteristics of PTSD turned out never to have served in Vietnam (Brenneis, 1997, pp. 36-37. Yapko, 1994, p. 15) Dissociative skills may characterize individuals who report trauma and some personality configurations may react more severely to trauma than others, but a muddled picture of causation leaves no convincing evidence that dissociation is responsible for delayed memory

The prevalence of psychogenic amnesia. Aside from questions about mechanisms, proponents of delayed memories have no leg to stand on unless they can base their argument on one cornerstone of evidence—that trauma victims do in fact forget important autobiographical events for periods of time. Here the dispute between clinicians and experimentalists burns hottest, and divided opinions about amnesia echo Samuel Johnson's comment on the existence of ghosts, "All argument is against it, but all belief is for it." The clinical reality of abuse memories recovered in therapy convinces the therapists but leaves the scientists unmoved. To critics, such memories could be narrative truth and false history, by themselves they prove nothing. Aware of this weak link, proponents have undertaken studies to confirm that victims routinely forget and later recall severe real-life sexual abuse

The critics have heard this evidence and found it wanting. Two requirements are necessary for a study to build its case for traumatic amnesia—that something genuinely traumatic happens to the subjects, and that amnesia for these events amounts to more than ordinary forgetting, deliberate avoidance of an unpleasant memory, or organic injury (Pope & Hudson, 1995, pp. 121-122) One loophole or more undercuts the argument in all studies so far on record

Numerous studies and well-documented individual cases confirm the tendency of some abuse victims to forget. Cheit (1998) collected 35 examples of corroborated abuse that the victim forgot for a time, including his own experience of being molested by a choirmaster who later confessed to the crime. Even Loftus, who cannot be accused of bias in favor of recovered memory, participated in a study that found memory loss in about one-fifth of the subjects (Loftus, Polonsky, & Fullilove, 1994). Not the forgetting itself, but its cause and nature remain legitimate subjects of dispute

Proponents see repression, dissociation, motivated forgetting, traumatic amnesia, or some other extraordinary process at work, where critics recognize a memory that fades because it lacked significance at the time, or perishes a victim of infantile amnesia, or returns because of a particular cue or state like other long-forgotten memories. Those findings that the youngest children are more likely to forget abuse than older children squares too well with the conventional process of infantile amnesia to require an assumption of traumatic forgetting, to give one example of proponents favoring a complex answer when a simpler one will do. The explanatory power of ordinary forgetting leaves only paltry leftovers for the advocates of exceptional mechanisms. Even proponents admit that full memory of traumatic abuse is the common response, and even if a third of the subjects in studies report memory loss, most of the

forgetting belongs to the everyday variety. If the number of traumatically suppressed abuse memories is more than zero, the number seems small, so small against the huge volume of memories recovered in therapy that the contrast provokes a crisis of confidence in the importance of this supposed mechanism.

How the critics explain recovered memories. Many people still recall abuse while in therapy. Where then do those elaborate and vivid memories originate? Critics zero in on the recovery process as a creative workshop where persuasive fictions take shape, an occasion for constructing false memories rather than freeing a repressed record of the past. Therapy is typically a search for the etiology of a problem, on the assumption that every condition follows from unambiguous and identifiable causes. This dubious belief with Freudian roots leads to an "effort after meaning" as the therapist plies through the life of the patient in search of causes, but rather than realize that an eating problem or low self-esteem has potential origins other than incest, the recovered-memory therapist takes a narrow view and pursues a course of causation already mapped out in personal expectations. The therapist imposes abuse as the organizing principle that ties together all the particulars of a life and gives them meaning. Together the therapist and patient build up the patient's "narrative" or "story" truth, assembling it from facts, beliefs, wishes, dreams, and fantasies to create an account that is part truth and part fiction and therapeutically satisfying for the patient. This truth does not reflect "historical" or "happening" truth in any accurate way, but for therapeutic purposes it need not. Only participants in the recovered-memory movement forget this distinction and mistake narrative truth for historical truth, and there the trouble begins (Olshe & Watters, 1994, pp. 45-63).

Recovered memories of abuse originate not in real events but in the expectations, suggestions, guidance, and reinforcement that accompany the therapeutic process. A patient enters therapy with some expectations already in place, often fed by checklists in recovery manuals, since everyone can identify with some of these broad and general "warning symptoms." The therapist suggests abuse whether the patient accepts it or not, then in the long course of therapy (often months or years) repeats this suggestion as the solution to the patient's problems until it acquires the feeling of reality.

A personal evaluation. An unequivocal and persuasive scientific consensus would close this dispute with an ideal outcome, but no such resolution lies anywhere on the horizon. The controversy lives on, very much alive, invigorated by partisan belief and sustained by legitimate ambiguity in the scientific evidence. All in all, the critics seem to have built the more convincing case. Their arguments leave the proponents swimming against the tide of prevailing research, struggling to establish large-scale amnesia for significant life events and the delayed return of those memories in pristine form after years of forgetting. The experimental evidence says otherwise and the clinical evidence leaves too much open to interpretation. The proponents' well-scripted case has the lilt of an appealing story, but failure to establish basic claims with compelling persuasiveness exiles recovered memory to the realm of ideology, where special pleading serves to save the faith rather than to shake out the truth.

Although too many instances of amnesia exist for other traumatic experiences to dismiss out of hand that some victims of sexual abuse might also forget, where can we draw the line? Many researchers caution that no inherent quality of the memory—how vivid it appears, how genuine it feels, how emotional its effects—can serve as a touchstone to distinguish the true from the false, the lived from the imagined (e.g., Lindsay & Read, 1994, p. 325, Schaeter, 1996, p. 272, Nash, 1998, p. 94).

Some recovered memories may well be real, but some are just as surely false and a look back at the accusations, trials, convictions, lawsuits, broken families, and ruined lives that litter the history of the recovered-memory movement leaves a sense of sadness for a great injustice committed in our time. It makes no difference if only 25% of the population is likely to create pseudomemories, not if those individuals are the ones to step forward with accusations. We do not know if every individual who recovers memories is susceptible or not, only that some people are, and some have created memories for things that never happened. Some of those memories may be real but only some at best, and too few to sustain the grand claims of proponents that abuse is everywhere and vast armies of traumatized women wait like time bombs for hidden memories to explode.

The implications for abduction research are as inescapable as they are disturbing. Whatever recovered-memory therapists do wrong, so do abduction investigators. Suggestion, agendas, hypnosis, media influence, demands by peers and investigators—in other words, all the faults that promote false-memory creation—hang both efforts by the same rope. Can we condemn recovered memories of abuse as fictions and still think abduction stories are something better? The foremost evidence that abductions occur comes from the mouth—and the memory—of the abduction experiencer. Give the possibility of false memory its due and the evidential value of that testimony evaporates like the morning dew. Abduction becomes just one more fantastic claim among many a story full of elaborate memories and rich with emotional content but unexceptional in its peer group where similar characteristics prevail. Each of these stories falls within the realm of possibility for false-memory creation.

Any special status for abduction memories also falters in consequence of memory research. Utologists can bid farewell to the argument that abductions must be real because abduction experiencers are traumatized. That hopeful new line of evidence proves anything but airtight, since traumatic symptoms can accompany false memories. Any attempt to explain missing time as traumatic amnesia meets its doom twice over, first from the limited number of people who respond to any sort of trauma with amnesia, and next by the variety of abduction experiencer reactions. Many experiencers lose the memory of their onboard experiences but few feel overwhelmed by terror or shock raising doubts about whether they are really traumatized. Memory lapse among experiencers owes its existence to some other cause. Literalists can blame exotic alien technology, critics will opt for false memories of an experience that never happened but in any case the supposed ironclad link between genuine traumatic experience and seemingly traumatized behavior offers no guarantee of a literal abduction after all.

Another casualty is any faith that recovered memories of abduction, traumatic or not, revive fresh and unaltered after years of entombment. In abductions as in abuse, old memories should be distorted memories. Loss, alteration, and reformulation to harmonize with subsequent information and personal belief should afflict memories of abduction as readily as any other memories. If abductions represent real experiences, memory research holds out hope that the basic event endures approximately intact, even if many details appear much the worse for wear. But before ufologists can take comfort in that finding, they have to reckon with the "if" that precedes it, and without good reason to pare off abduction memories from false memories, we have to suspect that investigators create these stories rather than resurrect them.

Above all else, the abuse saga teaches one clear lesson—memory can be treacherous and deceive us with falsehoods so good they seem true. No convincing physical evidence backs abduction claims, true memories are indistinguishable from false on internal grounds, the abduction evidence lies in reports and they offer little evidential value. Something else will have to settle the argument. For proponents only some additional clues within this welter of studies and arguments can defend a literal interpretation of abduction. Only a sharp divide, some difference more significant than aliens replacing incestuous parents in the stories, a uniqueness in abduction reports or the abduction experiencers themselves, holds a hope of setting abductions apart from abuse and the stigma of false memories.

RUMORS OF SATAN

A proper subject to line up for comparison with abductions comes from an outlandish subset of recovered memories describing satanic ritual abuse. These reports have grown and proliferated alongside the more garden-variety abuse account and gained acceptance with some recovered-memory proponents as simply one more facet of the overall problem, but in fact they elevate the horror to a new level of disgust—and of incredibility.

According to these stories, sexual abuse of children is not always the work of sick individuals within the family or everyday pederasts preying on the innocent in day care. Rather a sinister, extensive, and well-organized cabal of Satan-worshippers exists in the world today and the rituals of these Satanists are responsible for the repressed memories of the most troubled patients entering into therapy.

Satanists use children in rituals of the most revolting sort. These rites involve rape, sodomy, drugs, torture, cannibalism, mutilation, scatological acts, and animal and human sacrifice. Parents who belong to the cult commit their children to it, initiating the youngsters into satanic practices at an early age and later using teenage daughters as breeders for sacrificial babies. The cult also kidnaps children to meet sacrificial quotas estimated as high as 50–60,000 children per year. So completely brainwashed are the children raised in this cult that the victims always forget, so complicitous are legal, medical, and governmental officials that the secrets of this hidden satanic underground never escape from the active membership. This all but perfect conspiracy

spreads its web over every town and neighborhood, any friend, relative, or neighbor could be a member (see Bromley, 1991, Nathan & Snedeker, 1995, pp. 1-50)

The critics distinguish recovered memories that have at least a superficial plausibility from those that do not. Child sexual abuse and incest happen and can happen, the only question is whether the particular claims represent true memories or false. Other reports recovered by similar techniques and often delivered with equal conviction tell of events beyond the bounds of plausibility—past lives, prenatal or infancy experiences, alien abduction, and satanic ritual abuse. For the critics, these accounts belong to the class of bizarre memories (Hyman & Loftus, 1997, p. 14) and the question is how such strange beliefs can take hold in the first place. All evidence and reason deny their reality, hence they raise a red flag that people have the capability to create extended fictions and come to remember them as real events.

Another evaluation of bizarre reports identifies them as complex false memories. They do not spring up from simple suggestion alone but grow from diverse tributary sources, among them prior beliefs, media influences, recycled dreams, and genuine unusual experiences like sleep paralysis. A complex false memory amounts to more than mere confusions about details. It constructs an elaborate scenario, even an entire life history, rich in details and full of emotion. Arguments in favor of the reality of these memories point out that the claimants manifest body memories tied to an experience, for instance, a sensation of pain that precedes recollection of a corresponding form of torture. The subjects also recall their horrific past with difficulty and anguish, and the emerging stories are both coherent and similar (Spanos, 1996, pp. 105-129, DuBreuil, Garry, & Loftus, 1998, pp. 144-145). In this view, abduction is a false memory that people use to explain odd sensations and dreamlike experiences, built from cultural borrowings like exposure to Strieber's *Communion* and helped along by hypnosis and the suggestions of an abduction investigator, aided as well by the subject's fantasy-proneness and will to believe (Newman & Baumeister, 1996, pp. 104-111). A similar litany of causes applies to satanic ritual abuse.

The qualities of ritual abuse make it a good match for comparison with abduction. Both claims involve fantastic beliefs, both tell elaborate stories of secretive experiences forgotten and recovered, both come from people seemingly sincere and tormented by the memories. As an exercise in comparison, if no significant distinctions separate abduction from ritual abuse, or abduction experience from abuse victims, then the likelihood is strong that the two claims have a common cause, and false memory is the probable solution.

An extensive literature of personal confessions, scholarly works, and therapy manuals has grown up around satanic ritual abuse. In 1980 a young Canadian woman, Michelle Smith, and her therapist, Lawrence Pazder, published *Michelle Remembers*, a book that placed the idea of satanic captives squarely on the map as a bridge linking two social problems, child abuse and dangerous cults. Michelle Smith set a pattern for a host of subsequent accounts when she consulted a psychotherapist for seemingly minor problems, then under hypnosis recalled an entire childhood history of obscene and degrading experiences as her mother gave her over to an extensive

but clandestine cult. Michelle said that she was kept in a cage with snakes and spiders, participated in human sacrifices, had horns attached surgically to her head, and had a climactic encounter at one ritual with Satan himself. The Catholic Church took an interest in this story, but its impact was delayed outside of religious circles until tales of Satanism in day care brought seeming confirmation a few years later.

In dubious battle. Of course, such a sensational subject rode a collision course with controversy. The crash was almost immediate, and the same polarities of the recovered-memory debate settled with prefabricated readiness into discussions of ritual abuse (Kluft, 1997, and Ross, 1995, pp. 90–99 summarize the whole range of explanations). Such extreme claims as an organized conspiracy of Satanists and widespread human sacrifice were harder to defend than the undeniable reality of child sexual abuse, but the momentum of arguments from earlier disputes persuaded some proponents that ritual abuse fit the same dark pattern as conventional mistreatment of women and children, a problem long-running yet denied by society. A committed party of advocates stood up for satanic ritual abuse as both a clinical and a literal reality.

According to the proponents' argument, given the human capacity for inhuman cruelty, there is nothing inherently impossible about ritual abuse. Occult ritual has a long history and forms a part of many cultures. Western secret societies have practiced something akin to the satanic rituals reported today, and the current outbreak could represent nothing more startling than a continuation of this tradition (see Noblitt & Perskin, 1995, pp. 59–127).

Other arguments in favor of taking the accounts literally are a violent emotional reaction of patients during therapy followed by abatement of debilitating symptoms, indicating real rather than imagined trauma, detailed and consistent accounts that lack the idiosyncratic qualities of fantasy, suggesting historical rather than narrative truth, body memories so acute that they include psychosomatic reactions like stigmatic bleeding, further attesting to the traumatic severity of ritual abuse, and independent reports from adults and even young children that describe identical experiences, pointing to experience rather than contamination or fabrication as the source (Mulhern, 1991, p. 155, Shaffer & Cozolino, 1992, pp. 188–189). Other support comes from assertions that people have nothing to gain by claiming such fantastic experiences, and that disbelief revictimizes the victims (Smith, 1993, p. 13).

Proponents tally alternative answers offered by critics and conclude that all are inadequate to explain the reports. The list includes internalization, where the subject forgets the source of information and incorporates it as personal memory, screen memories, where ritual abuse serves as a fantasy to hide some other trauma, urban legends, where fictitious stories told for fun grow into panic beliefs taken for true, rumor propagation, where many people come to believe and act on a rumor, contamination, where a subject picks up ideas from therapists or others and incorporates them as memories of experience, contagion, where one patient copies the words or actions of another for the sake of attention, and personal myth, where people express underlying truths of their lives in allegorical forms that become truths as real as

experience. A close look at the facts refutes these solutions, say proponents. Critics fail to identify any persuasive source for the particulars of many abuse reports, rather the stories represent a synthesis of various occult sources such as a group might adopt as its creed. Ritual abuse makes a poor screen memory because the victim suffered at home as well as within the cult, leaving nothing to screen. The stories cannot be urban legends because abuse narratives are lengthy first-person accounts told with intense emotion and no sense of delight, and sometimes backed with proof like body scars. Some patients do indeed incorporate any abuse information they hear, yet many others resist contamination and maintain a clear sense of what belongs to their own experience and what does not. Many people describe rites similar in form and content, therefore ritual abuse is an impersonal group product (Greaves, 1992, pp. 58–62, 64–65).

In satanic ritual abuse the critics see all the errors and irrationalities of the recovered-memory dispute writ large. “The accounts of satanic-cult abuse are the Achilles’ heel of the recovered memory movement. With no supporting evidence, most reasonable people will eventually question the validity of satanic-abuse stories” (Ofshe & Watters, 1994, p. 194).

Physical proof remains most striking by its absence. Human sacrifice is messy and bodies hard to dispose of, while Satanists supposedly repeat their crimes on a grand scale. Such practices ought to leave a great deal of evidence in the form of bodies, bones, blood, and ritual sites, but no shred of persuasive confirmation ever comes to light despite intensive efforts to find it. From the perspective of law enforcement, the idea that even the best-connected and well-organized Satanists could hide all traces of murder from the sophisticated detective capability of forensic science belongs with tales that Satan attends the rituals as one more supernatural fantasy. Any understanding of missing-children statistics unmasks the claims that thousands of these children become sacrificial victims each year as nothing more than scare tactics, a rank misuse of the data to exaggerate and mislead.

History demonstrates that not even a “band of brothers” like the Mafia can keep its secrets. How likely then is it that thousands of Satanists are loyal and single-minded enough to hide their conspiracy for decades (Lanning, 1992, pp. 130–132)? Claims about the scale of satanic activities offer another reason to doubt. A “Feast of the Beast” ritual supposedly enacted in the mid-1950s was accompanied by extensive sacrifices and all sorts of satanic activity, according to claimants, yet a check of newspapers nationwide show no mention of an increase in the disappearance or murder of children, no hint of growth in church desecration or reports of devil worship (Jenkins & Maier-Katkin, 1991, p. 136).

Despite the unreliability of many ritual abuse claimants, some therapists believe that the stories have a factual basis after all. It lies in genuine conventional abuse and the conflicts it creates. Though the literal satanic conspiracy is a fantasy, tales based on this belief help accommodate the reality of child sexual abuse by developing a metaphor or myth to satisfy the need for personal truth. The story succeeds in that context though at the expense of transforming historical truth into fiction.

The structuralization of the fantasy into a satanic ritual abuse scenario with a clear-cut good versus evil distinction would provide the needed logical explanation for confusing experiences, as well as serving a restorative function by allowing the child to experience the grandiose belief that she is enduring the suffering not because she simply is bad or defective, but because she is special—perhaps being groomed to become a high priestess some day. Regardless of how heinous the confabulated ritual abuse experiences may be, they are more tolerable to the patient than having his or her fact-based experiences go frustratingly unexplained [Ganaway, 1989, p. 215].

In this view, people tell ritual abuse stories because they serve an important personal function, though the question of how the stories originate still remains.

A more radical scholarly perspective challenges the key assumptions of the recovered-memory movement by denying that trauma and dissociation are necessary antecedents of multiple personality disorder (MPD). In the view of cognitive psychology, MPD is a role that patients learn to enact. It is based on expectations set up by influences such as media accounts and therapist demands and does not represent a deliberate hoax so much as conformity to role expectations. The interaction between a therapist looking for MPD symptoms and a patient eager for approval leads to construction of a mutual understanding, wherein the patient interprets feelings, behaviors, and fantasies as manifestations of MPD, and the therapist reinforces this interpretation by encouraging and concurring with it. As the two of them act their parts, the everyday sense of various personality facets as separate individuals passes from metaphor to mutually accepted literalism. Ritual abuse serves as one script for this play—and a popular one promoted by the media and therapists (Spanos 1996, pp. 231–285). This explanation bypasses the usual assumption that abuse begets dissociation and extreme abuse begets the extremes of MPD. People who have never suffered abuse may still be capable of the emotional and histrionic intricacies of the MPD patient, and the ritual abuse claimant stands not at the end of a chain of traumatic events, but at the beginning of a chain of fantasies.

Whatever the ultimate nature of MPD and ritual abuse, critics agree on the importance of therapists, needy patients, and cultural influences. Proponents allege that patients testify as independent witnesses, but in fact they draw abundant information through conduits such as TV, reading, and other claimants. A religious culture perpetuated satanic beliefs long before the current scare began. The literature about cults and occult crime reached many readers even before specific satanic abuse narratives became popular. Psychiatric hospitals are open markets for the exchange of rumors and stories as patients trade tales in group therapy or informally among themselves. Clinicians note the hothouse of rumors that hospital wards may become, and in one case a woman with Munchausen's syndrome traveled from hospital to hospital spreading tales of satanic abuse. Support groups may lead to members overwhelming one another with stories and personal needs, while networks of victims appear quite

successful in vectoring news and beliefs to willing hearers (Jenkins & Maier-Katkin, 1991, p. 140, Ofshe & Watters, 1994, p. 186, Kluft, 1997, p. 43, Coons, 1997, pp. 108–109). Rumor contagion has demonstrated its remarkable versatility in disseminating beliefs to vast numbers of people, children as well as adults, who never meet face to face (Putnam, 1991, p. 177).

Again critics round up therapists as the usual suspects for suggesting, shaping, and co-creating a fictitious narrative. Many therapists learn about satanic ritual abuse amid conferences that call on them to believe. These therapists already accept the reality of the cult before they listen to a patient (Mulhern, 1991, p. 159). They build a belief world when they construe assorted behaviors and feelings as symptoms of ritual abuse and nothing else, when in fact these same manifestations could result from many forms of trauma or stress (Putnam, 1991, p. 176). Therapists are the common denominator in most accounts, since “patients rarely if ever walk into therapy with the belief that they were abused at the hands of a satanic cult. It is only *during therapy* that these stories are painstakingly pulled out of the clients” (Ofshe & Watters, 1994, p. 181).

This therapy is typically long-term and treats highly disturbed individuals with exceptional talents for fantasy and picking up suggestions. In the one-sided world of belief silence means not the absence of ritual abuse but proof that the patient obeys mind-control instructions learned from the cult. Satanic elements usually begin with simple elements like a bonfire or a robed figure, but the therapist helps enlarge these small beginnings into an elaborate and coherent story. The story belongs only in part to the patient, whose input may amount to nothing more than finger signals in response to the therapist’s questions (Mulhern 1991, p. 157). All too often the patient says nothing while the therapist articulates the entire story, creating a history of ritual abuse while the patient merely agrees. Use of hypnosis and lists of symptoms only repeat the suggestive errors commonplace throughout the recovered-memory movement, only with greater potential for harm given the increased receptiveness of ritual abuse patients.

The reason most often cited for accepting the claims of ritual abuse is the close similarity of the accounts (e.g., Shaffer & Cozolino, 1992, p. 188). Subjects report similar experiences despite coming from different areas, receiving treatment under different therapists, and having little or no contact with one another (Young, Sachs, Braun, & Watkins 1991, p. 185). Children victimized in day care relate rich and similar details (Jonker & Jonker-Bakker, 1991, p. 192, Smith, 1993, pp. 8–9), despite little knowledge of Satanism among young children (Goodman et al., 1997, p. 1124).

The pattern of ritual events holds true over geographically diverse regions (Hudson 1990, p. 39), and victims share a similar specialized vocabulary as well as recognition of key—but not widely known—Satanic holidays (Greaves, 1992, p. 67). Patients having little chance for interpersonal contact describe related symbols, techniques, and settings or report small details even though none of these motifs have

received attention in the mass media (Ross, 1995, pp. 95, 117) Alternative explanations for the similarities include such improbabilities as the collective unconscious and communication by ESP More plausible is the idea of a "Chinese menu" containing familiar satanic elements that patients recombine, but who established the recipes remains in question when accounts like the "First Marriage to the Beast" always contain the same elements (Greaves, 1992, pp. 62-64) As in the case of abductions, so much similarity in the reports sounds like the effort of people struggling to describe a real experience rather than imagination at work

For critics, these proofs prove nothing If reports are similar, therapists and media dissemination of stereotypical ideas are responsible

While stories told by patients of a given therapist are often strikingly similar, the accounts of satanism across the country appear to be idiosyncratic and share only obvious details, such as cult members who wear robes, the practice of ritual sacrifice, and the use of props, such as candles, daggers, and pentagrams [Ofshe & Watters, 1994, p. 185]

The credulous atmosphere that surrounds much ritual-abuse therapy creates a self-sustaining paranoia Therapists ask a question loaded with the answer they expect to hear, then take that answer as a truth straight from the experiences of the patient

In paranoid interpretation, the context of disclosure vanishes Fortuitous illusory similarities are made to appear relevant because they are viewed through a preexisting belief filter that overestimates coincidences that can be explained in other ways *[T]he alleged victims of satanic cults are not so much saying the same things as they are being heard the same way* [Mulhern, 1991, p. 158]

Both sides beat the drum with continuing arguments pro and con, but the case for literal satanic ritual abuse is precarious The absence of persuasive physical evidence along with cultural influences, the practices of therapists, and the receptive psychology of claimants combine to offer a conventional explanation that is, if not airtight, certainly close enough to give credulity little room to breathe

Readers can hardly help but notice how closely ritual abuse parallels UFO abductions The advanced technology of aliens lets them get away with feats that only believers in the supernatural can allow to Satanists, but this added slack affords little favor to abductions Both claims assert fantastic experiences based on testimony revealed under suggestive therapeutic circumstances, and the faults that latter to shreds the argument for ritual abuse trouble abduction with equal ruthlessness What remains to be seen is whether abduction and abuse reports are of comparable consistency, and whether abduction experiencers and abuse victims share a similar psychological profile

THE STORIES THEY TELL

One of the enduring arguments in favor of a unique and independent abduction phenomenon is the similarity of accounts, no matter who investigates them or where and when abduction experiencers tell their story. A rival has now appeared. This same argument has become a mainstay to support the reality of ritual abuse. If these assertions bear up, two claims of striking similarity dash any hope to save one by dismissing the other as false memory.

A reckoning with the case for similarity has taken two forms. Some researchers have cited extensive parallels between reports of abduction and reports of ritual abuse as good reason to doubt the literal reality of both claims, good reason to look for the underlying cause in a thematically related but conventional phenomenon like child abuse. A second argument questions how alike the accounts of ritual abuse really are and places most responsibility for the appearance of consistency on the assertions of proponents rather than on the accounts themselves. This same criticism could apply to the supposed likeness of abduction reports, leaving a need to establish just how similar the similarities really are among both classes of reports.

Similarities between abduction reports and accounts of satanic ritual abuse. Despite vast differences in the alleged nature of the experiences, abduction and ritual abuse resemble one another across a surprisingly long list of traits. Set them side by side and the likenesses strike a lasting impression, both for their number and for the unexpected closeness of parallel in their story function. Powers (1997, p. 207) emphasizes amnesia, bodily intrusion, and being chosen as three themes shared in both stories. Paley (1997, pp. 59–60) points out similarities in the experience and its aftermath as well as in contextual matters like method of memory retrieval and characteristics of the perpetrators. Dean (1994, pp. 357–363) spells out the parallels motif by motif, noting comparable settings, messages, locations, beliefs, violations, psychological sequelae, and personal histories among victims.

Table 2 draws together a selection of similar descriptions, events, and themes to show that the analogies are indeed extensive and require little stretch of meaning to achieve a fit.

This impressive list of comparisons ranges from the general approximation of human sacrifice and painful examination to specifics like a round examination room and a round ritual chamber or the hypnotic eyes of the aliens and the evil, controlling eyes of the Satanists. Of course, important differences distinguish the two stories—no killings occur in abductions, and any tortures seem incidental rather than intentional. MPD—so common among ritual abuse victims—seems quite rare among abduction experiencers. Orgies, pornography, degradation, cannibalism, snakes, corpses, graveyards, missing fingers, consumption of excrement, marriage and rebirth rituals have no analogy in abductions, while UFOs, beams of light, scanning devices, save-the-world messages, and alien otherworlds have no place in ritual abuse stories. Some parallels are only general, like the implants and the unnatural appearance of the respective perpetrators. Yet a pattern of similarity remains impressive even in the face

Table 2
Parallels between Abduction Reports and Satanic Ritual Abuse Accounts

Abductions	Satanic Ritual Abuse
Descriptive Content	
Examination table	Altar
Round examination room	Round ceremonial room (some)
Diffuse lighting	Lighting by candles
Serpentine symbols (rare)	Snakes, serpentine knives
Star map (rare)	Stars, pentagrams
Abductee lies naked on table	Victim lies naked on altar
Use of probes, handheld examination instruments	Use of knives, needles, rods
Abductee wired to machines	Victim wired to electroshock machine
Entities have alien appearance	Presence of Satan or man in horned headdress
Aliens have large, compelling hypnotic eyes	Eye of Satan, crazy eyes staring eyes
Aliens wear cloaks, hoods (rare)	Dress in hooded cloaks
Aliens communicate by hums, mumbles (rare)	Satanists chant, speak in unknown language
Leader or examiner directs other aliens	High priest or Satanic figure leads rituals
Human works with aliens (rare)	Doctor works with cult
Events and Themes	
Capture and unwilling removal, often at night	Reluctant or coerced removal often at night
Examination	Sacrifice
Painful examination procedures	Torture
Enter head or body cavity	Dismemberment, cut open body
Take samples of blood skin, hair, nails	Take blood or skin for consumption
Prepare by rubbing body with liquid	Anoint, purify (or foul) body before ritual
Aliens cold, businesslike	Satanists sadistic
Creation of hybrids	Creation of bride/servant of Satan
Implantation and removal of fetus	Women breed sacrificial babies
Genital exams, sex, removal of eggs and sperm	Sexual molestation rape, perversion
Programmed mating, breeding	Marriage to Satan, ritual impregnation
Rectal probe	Anal sex/enemas/consumption of excrement
Animal mutilation (very rare)	Animal sacrifice, mutilation
Abductions begin in childhood	Children an important focus of rituals
Implant tiny device (tracking, monitoring?)	Implant eyes bombs into body
Aliens float, pass through closed doors	Supernatural events (levitation head spins)
Aliens mysteriously conceal activities	Cult leaves no traces raises no suspicions
Advised directed not to tell about abduction	Threatened with death punishment for revealing
Aliens deceitful	Satanists tell lies
Abductee said to be chosen to have a mission	Chosen one, princess, special
Will know that mission when the time is right	Programmed to commit criminal or violent acts
Images of dying planet, coming catastrophe	Visions of hell coming apocalypse
Effects, Sensations and Aftereffects	
Missing time	Amnesia, programmed for dissociative forgetting
Aliens hold hypnotic control over abductee	Drugged, helpless state
Inappropriate cooperation	Desire to please co-optation
Sense of betrayal reluctance to reveal	Denial mental block against revealing cult
PTSD symptoms (nightmares, flashbacks, suicidal)	PTSD symptoms (nightmares, flashbacks, suicidal)
Scars, scoop marks, incisions	Scars cuts, burns tattoos
Men in Black	Harassment by cult agents
Repeated abductions	Recurrent cult involvement
Family and friends abducted	Transgenerational widespread cult
Life cycle with busy and quiescent periods	Periods of greater and lesser cult involvement

of differences, and several writers have taken up the challenge of explaining why two distinct stories have so much in common.

For Ganaway (1989, pp. 209, 210–214), Powers (1994a, p. 49, 1994b, pp. 36, 46, 51), and Noll (quoted in Powers 1997, p. 208), abduction and ritual abuse share a psychological coping function. They serve as screen memories for genuine but mundane sexual abuse, expressing the horror in drastic fantasies of torture and helplessness that embody the emotional trauma of abuse, but replace the literal terms of historical truth with the exaggerated metaphors of narrative truth. A sense of being chosen may restore a sense of dignity to the victim aware of the shame of abuse, while aliens of overwhelming power and unemotional demeanor reflect the child's experience of abusing adults. Cultural influences, suggestion by therapists, and the victim conduit distribute the story contents. This popular explanation has met with criticism on the grounds that victims ought to create a fantasy to screen and detoxify hidden memories of conventional abuse, yet abduction experiencers confound this order by remembering the conventional abuse before they recall the abduction. Instead of the abduction screening the abuse, conventional abuse seems to screen the abduction (Latbow 1989, pp. 4–5), a reversal that hangs the screen memory argument on the gallows of its own logic.

The similarities of abduction and ritual abuse may lose their evidential value to a simpler explanation. These analogies may be nothing more than coincidental appearances connected by diligent researchers and devoid of any common cause. How readily the significance of these parallels may evaporate can be judged by comparison of abduction and ritual abuse to familiar motifs associated with Christmas. Beginning with ritual abuse, its emphasis on children matches Christmas preoccupations with the nativity of Christ and a time for toys and childhood fantasies. Ritual tortures of children find remote parallel in the agonies of children waiting for Christmas. Satanic rituals follow a calendar. Christmas is a calendar holiday. Starlike figures and candles figure prominently in satanic rituals as well as in Christmas decoration. Satanists chant while Christmas carolers sing. Santa Claus and his red suit belong to Christmas while red-robed Satanists and abusers dressed in Santa suits appear in rituals.

Turning to abduction here too children are important. The Star of Bethlehem has appeared in UFO lore as a possible UFO and the miraculous birth of Jesus as a possible example of alien intervention. A mysterious flying sleigh brings to mind a UFO, and a short, elfish entity dressed in a suit and capable of intruding into houses at night by levitating down a chimney sounds like an approximate description of abducting aliens. "Not a creature was stirring" on Christmas Eve reflects the Oz Factor silence and stillness at the onset of an abduction. The time lapse is one of the most familiar abduction motifs, but how can Santa Claus deliver presents all over the world unless—as every child knows—time slows down or stops on Christmas Eve?

No one has suggested that Christmas imagery serves as a screen memory for anything, yet the analogies multiply with only a little thought. So many ready comparisons reduce to absurdity any argument that the parallels between abduction and ritual

abuse must have a causal or genetic relationship. They may imply nothing significant, only that two complexes of motifs and associations, real or imaginary, bear a number of analogous appearances for observant examiners to discover. A case for screen memories or particular explanations based on similarities in imagery sets its footing on the weakest of foundations.

Similarities in accounts of satanic ritual abuse. An oft-repeated assertion that ritual abuse survivors describe the same trappings, rituals, and atrocities finds confirmation among several studies drawing on direct reports from survivors or from questionnaires directed at therapists who have treated survivors (see references at foot of Table 3). Whether results from various investigators compare so favorably is one question to consider here. Another is how well these findings square with reports in the literature, where a simple count of survivor descriptions provides a check against researcher assertions.

Table 3 presents a list of common sights and activities in ritual abuse reports. The following columns present percentages of reports that include these elements, starting with 23 high-detail accounts from the literature and next with percentages for all 61 published reports. The ten subsequent columns show percentages from various studies of ritual abuse. Hudson's study, in the final column, presents some percentages from children rather than adult survivors. The bottom row gives the number of subjects in each study, while the therapists responding to the Bottoms, Shaver, and Goodman questionnaire based their responses on a collective total of 179 adult survivors.

A necessary admission of limitations must cushion any effort to compare these

Table 3
Principal Descriptions and Events Associated with Satanic Ritual Abuse

Common Story Elements (%)	Hr	All	Slb	Cr	Sm	Yg	Wr	Sc	Kav	B S	Kel	Hud
Location												
House	26	16	90	72			64					
Church	30	13	20	50	50		47					
Basement	35	16	45									
Woods, field	13	15	75	67	65							
Cemetery, mortuary	26	11	60	44	25							
Paraphernalia												
Altar, table	78	67										
Candles	74	36	30									
Cup, bowl, goblet, chalice	57	28	10				47					
Pentagram, star	48	26	50									
Inverted cross	35	23										
Roles												
Priest, priestess, master	57	28										
Princess, chosen one, priestess-to-be	43	20										
Breeder (bears baby for cult)	61	41		56	36	60			33	11	10	
Doctor	35	16										
n =	23	61	20	18	52	37	37	36	9	179	35	11

Table 3 (continued)
Principal Descriptions and Events Associated with Satanic Ritual Abuse

Common Story Elements (%)	Hi	All	Sh	Cr	Sm	Yg	Wr	Su	Kav	B.S	Kel	Hud
Distinct Ritual Types												
Initiation	43	21										
Rebirth	21	15	10 ²									
Marriage to Satan	57	28	10				78					10
Feast of the Beast	9	3										55
Punishment	39	18										
Attire												
Robe hooded robe	78	56										
Black	61	24	75									
White	39	25	35									100
Mask	35	16										
Goathead, horned headdress	48	21	25									
Ritual Activities—Preliminary												
Chant	65	39	80									
Pointing, alignment of site or victim	22	8										
Preparation (anoint, paint body)	57	34										
Ritual Activities—Sacrifice												
Animals tortured, killed	61	48		78	90	100			64			91
Humans killed (all ages)	96	84	(90)	83	88	97	84	94	77	50		
Baby, fetus killed	78	56										82
Stabbing, use of knife to kill	57	30										
Dismember, mutilate, skin	74	43				12 ²						
Heart cut out	39	20										
Cannibalism (eat flesh)	78	43	60	83	82	81				11	15	
Drink blood	74	38	80									
Ritual Activities—Sexual Acts												
Abuse, molestation, rape, incest	96	77	90+	94	100	100	89	97				71+
Sodomy	30	20	75 ²	78	88							66
Bestiality	30	13	60		17							
Orgy, group sex	52	26		83	96							
Supernatural Elements												
Satan demons appear	48	23										
Jesus, Mary sacred light appears	13	5										
Control—Confinement												
In cage, box, coffin	74	33	85						53			
With snakes, spiders, insects	57	31	65						11			91
Buried alive, lowered into grave	43	26										
Control—Torture												
Beaten, whipped	87	59		89	94	100			69	55	44	91
Electroshock	30	16				13						
Cut for blood, skin	30	16	10									
Suspended, crucified, spun, racked	43	25	10 ²		10					11		64
Stuck with knives, needles, rods	52	21										
Enema	17	8										
Drowning	17	8	5 ²									64
n =	23	61	20	18	52	37	37	36	9	179	35	11

Table 3 (continued)

Principal Descriptions and Events Associated with Satanic Ritual Abuse

Common Story Elements (%)	Ht	All	Sh	Cr	Sm	Yg	Wr	Sc	Kay	B.S	Kel	Hud
Control—Degradation, Intimidation												
Smeared with blood, excrement, body parts	74	39	80						75 ^a	33		91 ^b
Consume excrement	48	18										91 ^b
Pets killed	26	15			4							
See/participate in porno/snuff films	30	20	60	61	57			36	44			100
Told you are unloved, worthless, evil, the devil's own	30	16										
Threats of death for revealing cult	43	28				100	58					100
Eyes watch, implanted, magical knowing	43	25										55 ^b
Drugged	78	48	90	89	88	100	78	44			74	91
Aftereffects												
MPD, dissociation	43	31	50			100			100			
Amnesia	26	20										
Suicidal tendencies	26	18										
Nightmares, flashbacks	22	15										
Phobias, unusual fears	17	13				91						
Self-mutilation	26	13				83						
n =	23	61	20	18	52	37	37	36	9	179	35	11

^a = questionable whether subjects of comparison are identical^b = total percentage for the category is probably higher than the given percentage

Ht = high-detail accounts of satanic ritual abuse taken from the literature

All = total accounts of satanic ritual abuse taken from the literature

Sh = Shaffer, 1991, pp. 74–94

Cr = Cruppen, 1992, pp. 45–46

Sm = Smith 1993, pp. 77, 148

Yg = Young, Sachs, Braun, & Watkins 1991, p. 183

Wr = Wright in Smith 1993, 11–12

Sc = Scott, 2001, p. 196

B.S = Bottoms Shaver, & Goodman, in Kay, 1994, pp. 15–16

Kay = Kay, 1994, pp. 68–73

Kel = Kelley, in Shaffer 1991, pp. 40–41

Hu = Hudson 1990, pp. 30–38

Sources for cases from the literature

High-detail cases (23)

Smith & Pazder 1980 Stratford 1991, Spencer 1989 1997, Feldman 1993, Beckylane, 1995 Jadellinn, 1995, Richardson, 1997, Daymore, 2001, Mayer, 1991, pp. 17–44, 58–92, 119–132 157–186 (3 cases), Lorena & Levy, 1998, pp. 82–91 157–159 (2 cases), Fraser 1990, pp. 59–63, Fraser, 1997 Rose 1993, DeCamp, 1996, pp. 23–24 Boyd, 1991, pp. 321–373 (3 cases), Scott, 2001, pp. 70–181, Young, Sachs, Braun, & Watkins, 1991, p. 184

Low-detail cases (38)

Scott 2001, pp. 67–181 (6 cases) Mayer 1991, pp. 106–118 133–146, 187–203 (3 cases) Lorena & Levy 1998, pp. 46–50 66–67 74–77 103–112, 116–120, 134–142, 181–183, 224–235 (9 cases), Colver, 1994, pp. 131–135, Mollon 1994 pp. 136–147 (2 cases), Wong & McKeen, 1990 Fraser 1990, Friesen, 1992, pp. 73–100 (2 cases) Hicks, 1991, pp. 174–176, Ryder, 1992, pp. 212–255 (6 cases) Young, Sachs, Braun, & Watkins, 1991, pp. 184–185 Marmer, 1997 pp. 6–13 (3 cases), Bromley 1991 p. 55, Boyd, 1991 pp. 374–378

various sources. Reports in the literature often come from survivors in therapy who wish to set their history of abuse behind them and emphasize the mental process of healing rather than specifics of the abuse. Some accounts appear in fragmentary form, broken up to illustrate a researcher's point rather than to tell the subject's story entire. Comparisons across studies run afoul of uncertain or inconsistent definitions. So many forms of mistreatment appear in satanic ritual abuse that no two commentators may count the possibilities in the same way. For example, one researcher may classify a deviant sex act as a form of torture, while a second might identify the same act as part of a ritual, with consequences for the final tally of percentages. If the stories are literally true, they represent memories from childhood related by adults and clouded not only by time but also by terror, dissociation, deception, and drugs. Unanimous agreement will remain an unattainable and unrealistic goal.

Despite so much potential for confusion, a comparison by the numbers shows notable similarities among ritual abuse accounts. A strong majority of the reports contains altars, candles, black robes, and chanting. Animals and humans meet with torture and sacrificial death, while Satanists commonly sacrifice babies then eat them and drink their blood. Children almost invariably experience rape and sexual molestation and frequently take part in a marriage to Satan ceremony before becoming breeders for the cult. The life of a child in the cult is a long litany of torture, terror, and degradation in an apparent process of conditioning for absolute subjection. Confinement, physical pain, and contact with excrement, blood, body parts, and snakes or insects comprise a relentless theme in these reports, while drugs and threats always seem close at hand. The typical survivor displays multiple personalities, dissociative tendencies, and many aspects of post-traumatic stress disorder.

The pattern set out in published accounts repeats itself throughout most of the comparative studies, where contours of heightened incidence correspond even if the exact percentages differ. Researchers confirm that human and animal sacrifice, cannibalism, confinement, torture, perversion, and sexual abuse are commonplace, often nearly universal among reports of satanic ritual. Drug use, multiple personality, forced participation in pornographic movies, and breeding babies for the cult also recur with elevated frequency. The percentages point to a ritual abuse story of considerable similarity and comparable in content stability to abduction reports.

However, critic Showalter (1997, p. 180) declares that "SRA advocates defend the consistency of the narratives but seem not to understand the power of literary conventions, the morphology of folk tales, the repetition of rumors, and above all the way that suggestion works to produce confabulation." In fact this solution may spell overkill. Take a simpler answer—that most of us have all the raw materials of content and plot already in mind, that given an opportunity to imagine the extremes of depravity, we can create a tale of satanic ritual abuse gruesome enough to stand in harrowing company with the best. Whether borrowed or the product of independent creation, these stories cannot help but be revolting in similar ways.

On the other hand, another answer to Showalter's conclusion is that ritual abuse stories are really not very much alike, at least not in any surprising and significant

sense. The content that catches the eye as recurrent belongs to two classes. In one cluster are the particulars like candles, altars, chanting, and robes, the trappings made popular in *Rosemary's Baby* and standbys in depictions of Satanism from pulp magazines of the 1920s and 1930s to popular horror fiction today. These stock features carry the weight of expectation and appear with no more surprise in their satanic context than UFOs shaped like saucers or aliens with large hairless heads in the context of abduction.

A second category rises above the particular to generalize satanic activities in broad terms like "sacrifice," "torture," and "sexual abuse." Such terms blanket a variety of specific practices and guarantee that in every account the comparativist will identify some activity to check off as an example of the category. The unity of percentages shown in Table 3 applies only to familiar specifics and broad categories. Once past these standbys and into less familiar territory, the consensus breaks down as scholars see the story content scatter in individualistic directions. Perhaps incompatible definitions are at fault, but a reading of the accounts suggests that the differences originate in the stories themselves.

The sketchy descriptions of individual rituals follow much of the typical outline of a church service. Its course consists of preparation (anoint and dress), entrance, invocation (chant, summon Satan), worship and celebration (sacrifice, ritual sex) communion (cannibalism/blood drinking), and, as after-service social activity, an orgy. Considerable variety of particulars fits within this pattern—who participates, who or what will be sacrificed, sex or no sex, torture or no torture, cannibalism or no cannibalism, when, where, and how these events take place. Rituals differ in their elaborateness from narrator to narrator and from occasion to occasion for a single narrator, depending on whether the purpose is an initiation, a marriage to Satan, or a calendar event, depending also on how theatrical the group wants to be in portraying supernatural intervention.

The fact remains that accounts in the literature realize just about every permutation the basic story elements make possible. The satanic ritual abuse narrator is like a dealer with a deck of cards. Each deck holds a finite variety of cards and the same cards reappear in every deck so that all players share the basic elements of the game, but each dealer shuffles and deals a distinctive run of hands unlike any other. Necessities and conventions circumscribe the variety of ritual abuse narratives, but they also exhibit an independence that might result from variations in cult practices, yet might just as well owe its existence to imaginative creation. Too much ambiguity taints the likeness in ritual abuse narratives to justify any conclusion that their similarities support their literal truth.

Are abduction reports really similar? If the supposedly monolithic ritual abuse story fragments into a multiplicity of stories, do abduction reports fare any better under equally stringent inspection? Here too what looks like impressive unity in an abstract tally has the potential to scatter in disarray when read in context. Abduction reports are undeniably similar, but whether their likeness is distinctive enough to distance them from their rivals requires close attention story by story.

Table 4 gathers 11 accounts into a synoptic reading of incidents, descriptions, and sequence. The 11 cases represent well-known, well-investigated reports from the 1970s or earlier, with the abduction experiencers telling their story before abduction became a commonplace idea and (with one exception) before the release of *Close Encounters of the Third Kind* in late 1977. This sample includes five highway captures—the 1961 “interrupted journey” of Barney and Betty Hill, investigated primarily in 1964, the 1975 cases of Sandra Larson and David Stephens, both investigated soon after the event, the 1974 Aveley abduction of John and Sue Day, a British case investigated in 1977, and the 1973 encounter of Steven Kilburn, investigated by Hopkins in 1978. Three open-air captures include the 1957 kidnap of Brazilian farmer Antonio Villas Boas, who reported the incident in 1958, and two well-publicized cases investigated immediately after they occurred, the 1973 Pascagoula, Mississippi, abduction of Charles Hickson and Calvin Parker, and the 1975 disappearance and abduction of Travis Walton in Arizona. On the home front, three cases concern women taken from their houses—Patty Roach in 1973, Sara Shaw in 1953, and Betty Andreasson in 1967 (see Bullard, 1987, vol. 2, pp. C39–40, 66–68, 79–93, 95–97, 120–122, 125–129, 141–146, 154–157, 159–160, 171–175, 177–180). Investigations took place between 1975 and 1978 in all three cases. Other individuals participated in several of these encounters, but the names listed here represent the testifying witnesses. Hypnosis recovered many or most of the abduction memories in eight

Table 4
Comparison of 11 UFO Abduction Reports

Highway	H = Barney and Betty Hill September 19–20 1961 (1964/1966) L = Sandra Larson (with daughter and male friend) August 26, 1975 (1975/1976) S = David Stephens (and Glen) October 27 1975 (1975–76/1976) D = John and Sue Day (and three children), October 27, 1974 (1977/1978) K = Steven Kilburn 1973 (1978/1981)
Outdoor	V = Antonio Villas Boas October 15 1957 (1958/1966–68) P = Pascagoula—Charles Hickson and Calvin Parker, October 11, 1973 (1973/1973) W = Travis Walton November 5 1975 (1975/1975 1978)
Household	R = Patty Roach (and several children), October 16, 1973 (1975/1976) T = Tujunga Canyon—Sara Shaw, Jan Whitley, March 22, 1953 (1975–78/80) A = Betty Andreasson (and father, daughter), January 25 1967 (1977/1979)

I Capture

	Highway	Outdoor	Household
HLS/DK	Driving at night on a road with no traffic	VPW	Time lapse sets in Awakening at night
S	Car turns by itself cows look dazed		All sounds have ceased
HLS/DK	Light object passes over or follows car	VPW	Light shines through window on witness
D	Silence ensfolds drive into fog bank	P	
L? DK	Time lapse sets in See beings in craft and flee		Confusion time lapse
H			

Table 4 (continued)
Comparison of 11 UFO Abduction Reports

I Capture (continued)

			Highway	Outdoor	Household
K	Forboding against stopping lights land		W	He approaches object	
HLS	Object overhead	P	Object descends / hovers		
S	Shines beam	V W	Object overhead		
D	Lifts car in beam	V	Shines beam / strikes		
H	Beeps time lapse	W	witness with beam		
HLS K	Lose control of car				
HLS	Roadblock/car stops	V	Tractor stops		
L'S	Time lapse unconscious	W	Knocked unconscious		
D	See selves (OBE)		companions flee		
K	Leathery sound				
H DK	Beings approach	VP	Beings approach	RTA	Beings in/approach house
		V		TA	pass through closed
		P	seize V he struggles	T	window door
			H unable to move		Jan struggles
K	Unable to move held by clamp Crew digs				
H K	Close eyes feel calm			A	Trades bible for alien
	Betty opens eyes			RIA	book accompanies alien
H DK	Beings escort to craft	V	Beings carry him inside	RIA	against will/tranquilized
HLS	Float	P	Float Hickson inside	IA	Beings escort
				A	Float on light beam or
					through closed door
H K	Walk up ramp				Shown crystal engine of
LSD	Others unconscious in car outside	P	Parker loses consciousness	T	craft floats inside
				A	Jan unconscious
					Family left unconscious

II Examination

H SD	V		Pass through a corridor / antechamber / leave hangar-like room where car sits		
	A		Inters control room with tables chairs, beings converse		
HLSDK	PWRT		In circular room		
L V	RI		In the examination room		
DK W			Subject undresses or beings undress subject,		
L V			Dressed in gown / in diaper / shirt pulled up		
			Subject rubbed in liquid		
S V	T		Beings collect blood hair nails / draw blood sample		
S W IV			Beings examine Sara's surgical scar Jan's breasts		
H S	WR		Resists being undressed strikes being / threatens beings / Jan struggles		
L D	I		Witness lies on table		
H K P			is numb and strapped to table / strapped and paralyzed / levitates over table		
S			sits in chair / sits on table / floats in air at 45-degree angle		
H P			Witness scanned head to toe		
L D	A		by lens-like device / eye-like lens		
K T			by X-ray device / grid like device / camera device emerging from wall		
	W		by planetarium device descending from ceiling / anvil device descending		
			Rocker-like device lies across his ribs		
H			Beings take samples of Betty's skin, hair nails earwax bag and store		
HL		A	Being looks into Betty's eyes / shine light into eyes		
			In second room cleansed with light		
H V	A		Beings inspect head to toe remove dress / changes into gown enters exam room		
H V	A		Lies on table / rests on couch / floats to table		
			Vomits as noxious smoke enters room		
H K	TV		Examiner touches Betty with cluster of needles, Barney along vertebrae and at base of spine / needle over back / seem to mark back		
D A			Examine with pen-like object / pass handheld device over her		
	A		Needle up nostril removal of implant		

Table 4 (continued)
Comparison of 11 UFO Abduction Reports

II Examination (continued)			
H	K	R	A
H	V		Test reflexes examine all over Needle in abdomen or navel (pregnancy test)
K			Cup around Barney's groin sperm sample taken rectal exam / sperm taken
V			Poke stomach with rod clamp hips flex legs
			Naked woman enters room intercourse follows
I		R	Fyehke device from ceiling scans her
H	D		Seem to open head remove and alter brain / needle in head takes thoughts
			Surprise that needle caused Betty pain wave of hand relieves /
			Sue unconscious at touch
S		R	Decentful human man assists in examination
	V		Beings remove button from jacket
H	V	R	Woman points to belly then to sky leaves room he returns to control room
D			Re dress
			Find selves dressed in gowns
III Conference			
H			Betty waits during Barney's examination beings excited over his false teeth she discusses time aging food and colors with the leader
D		R	Discussion with leader beings reproduce through humans
		T	Inquiries about family favorite animals urgent need to understand human emotions
H	V		Sara told she was 'body technician' in former life given cancer cure
			Promised book as souvenir / attempts to steal clock-like device from control room
IV Tour			
D	V		Leader shows around ship
D			Offered food musical entertainment
		T	Sees engine room
H	D	W	Betty shown star chart / both see star maps on screen / flees exam room enters room with stars all around sits in chair and operates controls causing stars to move / map?
V Otherworld Journey			
D		R	Human on board deceives her into thinking craft had taken her somewhere
		W	Sees hologram of alien planet
			Tall human escorts him out of craft into vast hangar containing many similar craft
			He enters white room where humans like clones of the escort push him onto table place oxygen mask on his face He loses consciousness
		A	Placed in glass-like chamber covered with liquid When she emerges two beings escort her through tunnel to realm where lemur-like creatures crawl on walls She floats through a lush realm lighted by no visible sun sees distant city pyramid
VI Theophany			
D		A	She passes through a mass of crystals sees gigantic phoenix burn reborn Voice like God's calls her chosen to show the world and lead others to the light
		D	See image of destruction of alien planet see elderly being holding glowing sphere called 'seed of life' and feel energy ebb from sphere
VII. Return			
ESD		A	Again immersed in chamber Before leaving ship leader discusses spiritual matters, eyes grow huge as he implants messages in her brain
H	K	A	Promise to return will meet again
H	V	IA	Told Betty they could find her whenever they wanted, reclaim souvenir book
I	P	R	Told better to forget forget until time is right do not reveal experience
S		A	Descends ramp / ladder
H	S	V	Floats back to car outside house
		P	Floats to bed with escort of beings carrying luminous spheres
		DK	Injected and escorted back to car
		W	Return to hangar where car rests
			Walk out watch craft take off
			Watch takeoff and receive message that beings peaceful
			Loss of consciousness find self back in car on ground or in house

Table 4 (continued)
Comparison of 11 UFO Abduction Reports

VII Return (continued)

H			Beeps signal return of consciousness
HL	DK	R1A	Time lapse ends while driving or at home, memory of abduction fades

VIII Aftermath

H	K	RI	Immediate sense that something happened presence anxiety desire to flee
L		RT	People, objects arranged in different order on return
H	K	P	Sense of dirtiness contamination desire for self-examination or bathing
S		W	Intense thirst
S	V		Eye irritation sleep difficulties
		A	Alien book disappears after ten days
H	D	VP	Dreams nightmares
H	K	T	Anxieties phobias related to a place or situation
H	SD		Paranormal apparitional MIB experiences after abduction
H	S	R	Hesitation or reluctance to reveal certain details of experience
D		I	Long-term change in lifestyle habits
L	P	TA	Repeat abductions encounters

Descriptions of the Craft

H	DK	A	Saucer-like disk / domed disk
	W	I	Two pie pans rim to rim / Saturn-shaped
	VP		Elongated disk
S			Cylindrical
H	SDKV	W	Interior contains multiple rooms levels
D	VP	A	Doors open close out of nowhere, without a seam
SDK		RIA	Examination room round domed smooth
H	W		Room triangular pie-slice shaped smooth and metallic
H	SD	P	Room hospital-like, barren equipment fits into walls
HLSDK		WRIA	Examination table
I.		RT	Computers clock device glass cases filled with liquid / control panels
H	DK	P	General luminosity fluorescence
S	W		Lights overhead / fluorescent panels overhead
LS	KV	W	Atmosphere cool chilly misty, moist
TA			

Descriptions of Entities

HLS	KV	WRTA	Standard or near-standard humanoids
D	P		Deviant humanoids (furry owl-faced/mummylike crab-claw arms, pedestal legs)
D	W	TA	Mixed crews Two types ("Nordic and humanoid) / Two sizes high rank taller
H	SDKV	WPWRTA	Humanoids are short (usually 4-5 to just over 5 feet tall) Tall (6 feet) (mummylike with clawed hands)
L			
HLS	KV	W	Have large heads,
HLSDKV		IA	Large, elongated w/ a pair round eyes
HLSDKV		WRTA	Slit mouths (or none visible)
HLS	KV	W	Vestigial noses (small, holes only)
	P		Pointed nose
HLS	K	W	Vestigial ears (none holes only small structure)
D	P	TA	Large batlike ears / pointed projections
HLS	K	PW	Hairless
	V		Have hair
H	S	K	Gray or pasty white skin
		PWRTA	Skinny frail build
HL		A	Robust large chest
H	KV	WRTA	Wear uniforms tight overalls
LSD			Lower garment gown
V	R		Helmets, headgear
D			Nordics —Near-human 6-5 feet tall pink eyes face behind mask no visible hair
	W		Humans 6' 2" tall long blond hair odd hazel eyes similar as clones
H	DK	TA	Social hierarchy—leaders examiners liaison
HLS	KVPWRTA		Beings unfriendly indifferent businesslike, treat captives like guinea pigs
H	D	V	One or more beings friendly become friendly after examination completed
TA			

Table 4 (continued)
Comparison of 11 UFO Abduction Reports

Communication and Control			
HLSD	P	RIA	Communication with captive by telepathy understanding without speech
H	SDK	P	Reassurances of personal safety peaceful intentions
H	D	P	Control by hypnotic eyes repetitive reassurances touch
H	S	RIA	Uncharacteristic behaviors ready submission to entities
H	K	A	Urge to keep eyes closed sense that entities did not like to be watched
I	P	A	Paralysis numbness

cases, with Villas Boas, Walton, and Hickson-Parker being the exceptions. Different investigators participated in the various cases.

The story unfolds in an ordered sequence of broad plot moves or episodes. Several of these accounts include the rarer episodes of tour, otherworld journey, and theophany, while no story scrambles the arrangement so that, for example, conference precedes examination. Betty Andreasson's escorts show her the engine before she enters the craft, but this event seems more like a passing incident than a misplaced tour. Episodes of capture, examination, and return follow complex schemes of their own. The capture events differ according to circumstance, with prolonged observation of a UFO beginning highway encounters while only a light through the window hints that a UFO has arrived for a bedroom abduction. A consistent course of events characterizes the three modes as a UFO closes in, mental controls settle over the subjects, alien entities approach, the abduction experience resists but the aliens win and bring the captive aboard. Many of these events are obvious, since any storyteller imagining an alien abduction must introduce the UFO and its occupants, stop the car and subdue the captive. Other motifs like silence and odd isolation, tranquilization and time lapse, flotation and the levitating beam of light, have no inherent necessity and belong to the abduction story as part of its tradition.

All abduction experiences in these reports undergo examination in a room set aside for that purpose. The examination progresses from preparation to sample taking, scanning, and instrumental procedures, then concludes with reproductive and neurological work. While the cases vary in how many events they describe and allow some flexibility of sequence, the recurrence of similar events in roughly the same order is evident. Returns largely reverse capture, but add a final discussion wherein the leader tells the abduction experience that they will meet again. The aftermath begins with a sense that something odd happened and with specific physical complaints. Nightmares, anxieties, and phobias follow, while in the long term, abduction experiencers report paranormal phenomena, changes in lifestyle and habits, and repeated abductions or encounters.

A great deal of repetition characterizes descriptions of the craft and the entities. Nine reports specify the shape of the craft and—no surprise here—eight of those descriptions conform to the flying saucer image. Inside is an examination room, smooth, metallic, spare, and hospital-like with an examination table and perhaps some equipment stored in the walls as the only features. In a few cases a screen or comput-

erlike equipment is visible. The room is usually round with a domed ceiling and lighted by a general luminosity, with a cool and misty atmosphere.

If little about the craft exceeds expectations, most of the entities share a noteworthy likeness. Crews of standard humanoids, deviant humanoids, and human or "Nordic" types man the ship. Humanoids are usually short with large bald heads, large or wraparound eyes, a slit mouth, vestigial nose and ears, and gray skin. Some differences distinguish these entities—some are fragile while others appear robust, eyes may be more elongated than large or have catlike pupils, and Sandra Larson reports a tall examiner. Any differences that accumulate in verbal descriptions fade to insignificance in a comparison of illustrations drawn by the abduction experiencers or sanctioned by them. The humanoids of Stephens, Kilburn, Walton, and Andreasson match the "standard" image to perfection, while the Hill and Shaw aliens are close despite slight idiosyncrasies. Even a depiction of Larson's tall entity compares favorably with these smaller beings. Roach's visitors counter this trend by sounding closer to this norm in a verbal description than they appear in sketches, while the owl-faced, bat-eared workers in the Day case share many individual features with standard humanoids yet look quite distinctive when all the parts come together in a drawing. The beings that Hickson and Parker describe are short, gray, and hairless but otherwise deviate farthest from the norm, having wrinkled, mummy-like skin, pointed ears and noses and almost invisible eyes, also crab-claw hands and legs fused together like pedestals.

Besides humanoids, Walton's crew includes tall, attractive male and female humans, noteworthy mostly for a slight peculiarity of the eyes and for looking so much alike they could pass for clones. The Days also report tall entities nearly human in appearance, though they have pinkish, elongated eyes and no visible hair. Villas Boas could not describe the facial features of his captors because they, unlike any other aliens, wore a space suit and a helmet covering the face. His alien woman mixed human and humanoid features. She was short with a large head and elongated eyes, small nose and mouth, but she also had hair, though its thinness brings to mind later descriptions of hybrids. Nowhere in these descriptions do we find monsters or the variety of forms prevalent in cultural depictions of aliens.

Both humanoids and humans dress in uniforms or tight overalls, though in a few cases the beings wear loose-fitting gowns. A social hierarchy is evident, with the shortest humanoids serving as workers and slightly taller humanoids assuming roles of leader, examiner, or liaison. In the Day case, the human entities supervise while the subservient bat-faced entities carry out the examination. One consistent reaction of abduction experiencers is a sense that the aliens are not deliberately cruel but businesslike and efficient, indifferent and emotionless toward their captives. Only the leader or liaison entity is likely to communicate and show some degree of concern, though the beings tend to relax and become more responsive once they have completed the examination.

No intelligible communication passes between the aliens and Villas Boas or Walton. Witnesses in eight of the remaining nine cases specify telepathy or direct understand-

ing without an audible exchange as the means of communication. Throughout these abduction stories run hints of the aliens controlling their captives by procedures akin to hypnosis. Staring, hypnotic eyes receive frequent mention. The aliens often express reassurances or profess peacefulness, with a surprising consequence that this message lulls the captive into a tranquil, submissive state. This seemingly imposed mood soon wears off and the aliens repeat the procedure to soothe the abduction experiencer's resurgent alarm. A simple touch may achieve the same results, or relieve the pain of an intrusive procedure. Paralysis or numbness may denote alien control over the abduction experiencer, so may uncharacteristic or inappropriate behavior, such as turning off onto a back road, unwillingness to fight, or compliance against all good judgment with the aliens' requests. One recurrent peculiarity of alien control is a readiness of captives to close their eyes or avert them from the entities, sometimes in response to a sense that they do not like to be watched.

Even as similarities stack up, case-by-case differences also demand acknowledgment. No capture or examination duplicates another in every detail. For example, only the Hills describe beeping sounds and only Kilburn a clamp device; Hickson's examination consists of no more than a scan while the aliens scan Andreasson twice. The time lapse sets in at different times for different abduction experiencers, or not at all in the cases of Villas Boas and Hickson. Reproductive procedures are clinical, even gruesome for several experiencers, but quite human and old-fashioned for Villas Boas. Odd and individualistic details crop up here and there, like the Hills' road-block and Kilburn's aliens digging a hole, or the rocker-like device across Walton's ribs. Elements like Andreasson's implant or Roach's human assistant have no parallels in this sample of cases although these motifs recur in other abduction reports. Conferences here are largely informal discussions without specific structure, and while Sara Shaw learns a supposed cancer cure that she must reveal on her return, it is only the two theophanies that include the familiar apocalyptic images and messages of unspecified missions. Observations of star maps are the one distinctive consistent feature in four episodes. The otherworld journeys of Walton and Andreasson comprise elaborate and quite different scenarios, one a view inside an apparent mother ship and the other a visit to two distinctive environments.

Descriptions also slip out of the common mold. Stephens sees a cylindrical UFO, Hill and Walton enter a triangular examination room rounded only on one side like a pie slice. Other exceptional exam rooms have specific overhead lights and a warm atmosphere. Enough variation characterizes the occupants to suggest that if they are real, they hail from more than one planet, or else the aliens' captives experience considerable confusion in describing their captors. When controlling humans the aliens resort to such crude methods as physically overpowering Villas Boas, or low-tech means like injections in the cases of Stephens and Jan Whitley. Important story motifs like floating, scanning, reproductive tests, and messages simply fail to appear in some reports. Moreover, this selection of reports singles out cases where the examination is prominent, though other early cases involving Nebraska patrolman Herbert Schirmer, or Army Sgt. Charles Moody, or elk hunter Carl Higdon include examina-

tion as a minor aspect of the abduction and consequently the story line takes some distinctive turns

A case for abduction reports manifesting more consistency than ritual abuse accounts is thus no simple black-and-white contrast. Just as culture has provided a fund of ideas and imagery associated with Satanism, abduction story elements like telepathy or big-brained aliens belong within the pale of expectations fostered by science fiction. Abduction reports are far from carbon copies of one another. They permit considerable latitude of variation, some of it reasonably attributable to the fear, confusion, and impaired consciousness of witnesses if their claims are literally true; otherwise the expected result of creative individuals fantasizing a personal version out of suggestions and cultural antecedents.

Yet important to remember is the fact that the abduction story is long and elaborate with a complex sequence of events and ample opportunities for deviation, any of which would still tell a credible story of alien kidnap. Abductions realize little of this potential, whereas ritual abuse accounts are mostly collections of motifs free to scatter and recombine, and so they do. No parallel to the endless reshuffling apparent in ritual abuse stories appears among abductions. What variation they show remains limited to minor points while the story unreels with considerable sameness not imposed on the story by its own logic.

Also important to consider is how tenaciously some elements recur even without publicity or inherent noteworthiness to boost them into prominence. The needle-in-the-navel motif is striking on its own merits and the sort of idea a borrower might be expected to pick up, while the eerie silence that closes over the abduction scene might trace to traditional beliefs connected with the appearance of ghosts. But the diffuse lighting of the exam room, attention to the abduction experiencer's back and a procedure akin to counting vertebrae, an unaccountable sense of dirtiness or contamination, and the slit mouth of humanoids recur in case after case even before abduction becomes a well-known phenomenon. Motifs later to achieve recognition, like staring into the experiencer's eyes or the liquid-filled glass tanks associated with hybrids, turn up in this early era long before anyone called attention to them or proposed that they boded any significance for the story. Alternatives to the prevailing descriptions are easy to imagine and in fact alternatives appear. Yet they fail to appear often, and from a long-term perspective, the exceptional entities, humanlike entities, implants, and many other motifs present in a minority of reports continue to show up in similar proportions over the years. When even the differences are alike in how regularly they appear, the exceptions seem more like parts of a phenomenon than the creative acts of storytellers.

A literary evaluation of the abduction story recognizes its affinities with the initiation of the shaman. The shamanic candidate meets spiritual beings and enters an otherworldly environment, undergoes dismemberment and reconstruction, then returns with magical powers to commune with the spirit world. Another parallel is the kidnap into fairyland, where supernatural beings take a captive into a subterranean world where no direct sunlight is visible, often for reproductive purposes. Time runs

at a different pace in fairyland, so that a short stay there amounts to many earthly years. Taken piece by piece some of the similarities are striking, but on the whole abduction stories compare with models from religion, folklore, and mythology only in broad, abstract terms. The fit is loose and unconvincing. Where ritual abuse bears a snug and self-evident relationship with salvation and survivor narratives, abduction depends on its inner logic for meaning—a situation possible for a story but likely for an independent phenomenon.

The similarity among ritual abuse stories seems due to a finite set of possible ideas, where similar descriptions and events necessarily reappear however the narrator rearranges them. The abduction story offers much more freedom. Narrators simply out to tell a tale are at liberty to create whatever story they want and under no obligation to provide a ufologically correct account. Yet many narrators provide just such a story, and only among claimants that investigators suspect of hoaxing or overt mental disturbance do the tales veer off into truly imaginative variants. The suspicion that investigators suggest the story they want to hear offers one external organizing force, but in this sample as within the abduction literature as a whole, too many investigators with a diversity of agendas insure that abduction experiencers find a variety of scripts pressed upon them.

The influences from culture are likewise diverse but ineffectual. Movie after movie has bombarded the abduction experiencer population with negligible effect. We might expect more variation simply by accident than we see in fact, given hundreds of stories on record and assuming no experience to guide story composition. While individual histories of exposure are impossible to judge, some experiencers appear to have little knowledge of the phenomenon yet they seem as capable of telling the familiar story as well-informed claimants, and often manage to work its deepest arcana into their tales. How a story so ripe for variation stays so much the same remains a challenge to reductive explanations. A body of abduction reports confined to a narrow range of variation stands apart from the possible range of alien kidnap yarns and sets abductions apart from ritual abuse accounts where certain content and events are the same but spread across many years of diverse rituals and practices. As stories go, abduction and ritual abuse cannot be genetic twins even if they are born of the same false memory process.

INDIVIDUAL DIFFERENCES AMONG THE ABDUCTED, THE ABUSED, AND THE BEDEVILED

A previous section of this paper reviewed psychological tests of people who report abductions. The conclusion drawn from most of these studies gives abduction experiencers a clean bill of mental health as a group, with no serious mental illness, fantasy-proneness, or excessive suggestibility despite the bizarre nature of their claims. Some findings point to this population as experiencing more than average childhood unhappiness and dissatisfaction or prevalent thoughts of suicide as adults. One or more studies identify them as having mildly elevated tendencies toward fantasy or

dissociation, also artistic talent, fluid sexual identity, interpersonal vulnerability, a negative early home environment awareness of alternate realities, psychic sensitivity, even serious sexual dysfunction. The weight of research stacks up in favor of abduction experiencers being "clinically normal, but atypical in a variety of ways" (Appelle, 1995/1996, p. 64, Appelle, Lynn, & Newman, 2000), with most of the atypical elements no more than minor shades of difference and no really striking personality characteristics to blame for the stories abduction experiencers tell. If abduction deserves to take its place among other bizarre claims as the creation of false memory we might expect abduction experiencers to resemble their fellow claimants in some revealing ways. In fact, abduction experiencers reveal personality profiles of intriguing contrast.

The Minnesota Multiphasic Personality Inventory (MMPI) is perhaps the most widely used of all personality tests. It measures an array of traits on a spectrum scale and psychologists have turned to it again and again to evaluate the people who report possible or probable false memories, also people suffering genuine trauma and reporting other claims that parallel or reflect on abduction in some way. Many studies in the literature include MMPI test results and make possible the direct comparison of mean scores in Table 5.

Table 5

MMPI Scores for Abductees and Subjects Identified with Temporal Lobe Epilepsy, Fantasy Proneness, Vivid Dreams, Recurrent Nightmares, Sexual Abuse, Ritual Abuse, Amnesia for Abuse, MPD, and PTSD

	n	L	F	K	Hs	D	Hy	PD	MF	Pa	Pt	Sc	Ma	SI	ES
Abduction															
1 Parnell (abductee)	22	56	59	56	54	52	58	61		58	53	58	61	48	53
2 Parnell (sighter)	88	52	58	57	55	53	59	62		62	57	62	61	51	54
3 Parnell (no UFO)	30	50	58	56	51	50	57	63		58	51	58	62	48	56
4 Stone-Carmen A	23*	53	58	55	57	53	59	58	54	56	55	60	52	45	
5 Stone-Carmen B	23*	56	62	52	56	56	57	56	62	58	54	62	56	46	
6 CUFOS	27	49	59	51	57	54	54	61		57	57	62	56	49	45
7 Sprinkle (male)	5	52	57	53	44	52	56	63	70	64	52	53	65	39	65
8 Sprinkle (female)	14	56	56	60	52	52	61	60	45	56	52	53	58	48	50
Temporal lobe lability															
9 High activity	26	44	65	46	61	57	56	60		65	66	70	70	54	
10 Low activity	29	46	56	53	56	58	58	63		58	58	58	56	54	
Fantasy proneness															
11 High (upper 5%)	23	45	71	44	59	59	60	67		66	68	84	78	53	
12 Medium	21	45	59	51	56	57	56	62		55	59	62	66	53	
13 Low (lowest 5%)	21	51	53	56	51	55	56	58		54	56	57	55	52	
Dreams/nightmares															
14 Vivid dreams	12	52	54	58	51	56	56	61		53	65	59	63	48	
15 Nightmares	12	46	73	48	56	64	60	72		70	68	77	74	52	
16 Nightmares	30				63	64	66	69		63	65	69	59		
17 Ordinary dreams	12	44	56	59	51	55	56	62		51	56	60	61	46	

Table 5
MMPI Scores for Abductees and Others (Continued)

	n	L	F	K	Hs	D	Hv	PD	MF	Pa	Pt	Sc	Ma	SI	ES
Abuse															
18 Sexual	105	51	69	49	65	72	67	74	49	67	68	74	62	60	
19 Sexual (father)	20	48	71	47	65	72	67	73	48	69	71	73	61	63	
20 Sexual (other)	32	48	59	52	56	57	58	62	45	61	58	61	61	55	
21 Sexual (control)	119	50	54	56	51	50	55	58	46	56	54	55	58	50	
22 Ritual	39	48	81	47	71	77	75	84	48	81	79	91	70	68	
Abuse + memory loss (MMPI-2)															
23 Abuse no loss	31	49	57	47	54	54	50	59	50	57	60	61	58		
24 Abuse and loss	14	48	65	47	60	56	60	61	57	59	64	62	62		
25 Controls	60 ^a	49	50	47	51	48	48	49	56	49	54	52	55		
MPD															
26 Females	15	46	85	45	79	86	77	85	38	83	84	100	69	71	
27 Females	42	49	84	49	69	80	72	83	46	79	80	92	66	71	
28 16 females 2 males	18	48	82	47	70	77	71	81	48	79	77	91	66	69	
PTSD															
29 Low	57*	48	84	42	88	103	79	86	61	77	93	100	70	74	
30 Medium	57*	47	92	42	87	105	76	84	67	79	96	107	70	75	
31 High	57*	60	95	42	95	104	80	87	64	89	98	117	70	76	

n = number of subjects

* = subject is drawn from total pool exact number in each group unclear

MMPI Validity Scales

I = Lie

F = Infrequency

K = Defensiveness

MMPI Clinical Scales

Hs = Hypochondriasis

D = Depression

Hv = Hysteria

PD = Psychopathic Deviant

MF = Masculinity/Femininity

Pa = Paranoia

Pt = Psychastenia

Sc = Schizophrenia

Ma = Hypomania

SI = Social introversion/extroversion

ES = Ego Strength

Sources

- 1-3 Parnell 1986 4-5 Stone-Carmen 1992 6 Rodeghier, Goodpaster & Blatterbauer 1991 7-8 Sprinkle 1999 9-10 Persinger, 1987 11-13 Rhue & Lynn 1987 14-15 17 Hartmann et al. 1987 16 Kales et al. 1980 18 Belkin et al. 1994 19-21 Roland Zelhart & Dubcs 1989 22 Leavitt 1994 23-25 Sherman 1999 26-28 North et al. 1993 p 96 29-31 Hyer et al. 1993

Means for abduction experiencers typically conform to the standard range of normalcy (45-59 for all scales except 46-55 for K and 46-54 for ES) in the Parnell, Stone-Carmen, CUFOS and Sprinkle studies. Sprinkle's scores for males veer a little higher and lower than other experiencee scores, but with only five subjects in his study, the deviations of one individual have a chance for disproportionate influence on the overall results. Any elevations above the norm are very slight and diminish

still further in importance when compared with control samples, such as Parnell's people with no UFO experience to report and those claiming only a sighting. The no-experience subjects post scores that are almost identical with experiencers, while sighters score slightly higher than experiencers on every clinical scale, even without a bizarre story to tell. Any anticipated indications for paranoia or schizophrenia prove to be negligible. Large standard deviations serve as a reminder that abduction experiencers comprise a diverse population, with some individuals scoring in elevated ranges and some few qualifying as mentally disturbed, even while most abduction experiencers, individually and as a whole, conform to an entirely normal personality profile.

Most other subjects in this comparison fare less well. They tally high scores on at least one scale and sometimes reveal a pattern suggestive of serious mental disturbance. In tests of subjects with indications of temporal lobe lability, individuals with low levels of this variable show normal personality scores, while subjects with low and moderate levels of fantasy-proneness likewise reveal little or no personality deviation. High levels of these traits are more serious, since they accompany elevated scores for several personality factors.

Vivid dreamers score mostly in the normal range and differ little from individuals with ordinary dreaming patterns, but chronic nightmare sufferers have a more disturbed profile. Included in this group are people who experience frequent sleep paralysis. The experience may have a distorting influence on personality whereas isolated incidents result in no permanent damage.

Various forms of abuse leave apparent deep scars, judging from high scores for sexual abuse victims on multiple scales. Predictions that traumatic damage follows father-daughter incest appear borne out by the high scores of these victims in contrast to the essentially normal scores from victims reporting lesser forms of sexual abuse. The readings of personality disturbance climb into the extreme when the claim is satanic ritual abuse. Whether multiple personality disorder results from horrific abuse or fantasy and false memory, MPD patients manifest sharply deviant scores on almost every scale. Veterans hospitalized for post-traumatic stress disorder show the most thoroughgoing disturbance of all even at low levels of PTSD indicators, with scores for depression and schizophrenia that rank near the top of the scale.

The subjects in these studies display a personality profile with modest to major abnormalities. By contrast, abduction experiencers as a group demonstrate exceptional normalcy of personality on the MMPI. People reporting other sorts of anomalous experience also qualify as free of psychopathologic indicators, and therein lies a distinction between anomalous and traumatic experience. Trauma tends to leave distinctive psychological marks not shared by abduction or other anomalous experiences. This difference appears to hold up whether the trauma results from true memories or false, since ritual abuse memories are likely to be false yet accompany some of the highest readings for mental disturbance. These findings could favor the uniqueness of anomalous experiences and exonerate them from accusations of false memory, but these same findings could just as easily support a sociocognitive interpretation,

where ritual abuse requires assumption of the 'sick role,' whereas abduction does not.

Two studies of abduction experiencers have included tests for dissociation. Ring & Rosing (1990 p. 74) find that both abduction and near-death experiencers score mildly but significantly higher than their respective control groups, while Powers (1994a, p. 47) locates abduction experiencer scores in the middle ground between sexually abused subjects and controls. Dissociation has emerged as common currency for a number of theories, some to explain the consequences of traumatic experience, others to explain the genesis of false memories. The importance of discovering dissociation in abduction experiencers lies not so much in the promotion of one explanation over another, since the condition might exist as the result of experience or just as easily as a predisposition to flights of imagination, but in challenging the portrait of normalcy that the MMPI presents.

A tendency to dissociate finally endows abduction experiencers with an element of psychological distinctiveness. Dissociation tests bear a second value because psychologists have applied them to an array of useful comparative phenomena—physical abuse, sexual abuse, amnesia for abuse, satanic ritual abuse, PTSD, and MPD. An unfortunate barrier to direct comparison results from neither study of experiencers using the Dissociative Experiences Scale (DES), the test most often employed in the other studies. Table 6 presents a selection of dissociation scores for a comparison of abduction experiencers with other groups tested for this trait.

Typical "normal" scores for the DES are very low, in the range of 3-5, while an individual diagnosed with a dissociative disorder usually scores a minimum of 22, and may double that value. Ritual abuse and MPD scores are consistently elevated, while scores associated with abuse are above average but inconsistent. The literature includes studies where figures for physical and sexual abuse remain moderate, never rising to the level of a dissociative disorder, while findings for other studies testing for the same variables climb well above that threshold.

A proposal that dissociative amnesia serves as a coping mechanism for traumatic abuse gains support in studies where subjects score higher for dissociation as their degree of amnesia increases, though the numbers differ considerably from study to study. In fact, a persistent source of confusion in the interpretation of dissociation scores lies in substantial differences between two studies when they purportedly test the same conditions (e.g., nos. 10 and 11, 17 and 22, 20 and 21, 24 and 26 in the table). Another surprise is the high score tallied by normal adolescents (no. 31) and a control group of undergraduates (no. 23) that equals the score for schizophrenics (no. 32). Also noteworthy is an experiment in which simulators, instructed to answer as they think people with MPD would answer, managed to outscore actual patients (no. 30). What is normal for the DES seems to vary over a wide range and the scores appear sensitive to expectations.

Ring and Rosing apply a test designed by Michael Wogan to assess dissociation in abduction experiencers, while Powers uses the Perceptual Alteration Scale (PAS), as well as an MMPI subscale for measuring PTSD. The Wogan scale or a similar ver-

Table 6
Memories of Dissociation among Abductees and Other Subjects

	n	DES	Ring	PAS	PTSD
Abductions					
1 UFO experiencers	97		111		
2 UFO controls	39		106		
3 Near-death experiencers	74		107		
4 Near-death controls	54		96		
5 Abused	20			146	31
6 Abductee/contactee	20			116	19
7 Sightee	20			97	6
Abuse					
8 Physical + sexual abuse	48	36			
9 Physical only	13	18			
10 Sexual only	10	11			
11 Sexual abuse	51	19			
12 Controls		4-5			
13 Physical + psychological abuse	(337)	23	(100)		
14 Physical or psychological abuse	(337)	16	(97)		
15 No abuse	(337)	12	(85)		
Abuse and amnesia					
16 No amnesia / physical abuse	31	30			
17 No amnesia / sexual abuse	30	30			
18 Partial amnesia / sexual abuse	19	49			
19 Full amnesia / physical abuse	20	51			
20 Full amnesia / sexual abuse	25	42			
21 Amnesia + sexual abuse	11	25			
22 No amnesia sexual abuse	12	16			
23 No amnesia, no abuse	136	14			
Ritual abuse					
24 Satanic ritual abuse	39	50			
25 Satanic ritual abuse	29	43			
26 Satanic ritual abuse	19	33			
Abuse + PISD					
27 Abused + PTSD	23	22			
MPD					
28	166	40			
29 Female	36	56			
30 Simulators	58	66			
Other					
31 Adolescents	31	14			
32 Schizophrenics	37	14			
33 Dissociative disorder—NOS	57	22			
34 Dissociative disorder—NOS	57	41			

n = number of subjects DES = Dissociative Experiences Scale Ring = dissociation test used by the Omega Project PAS = Perceptual Alteration Scale PISD = subscale of MMPI used to measure PTSD NOS = Not Otherwise Specified

Sources

1-4 Ring & Rosing 1991, 5-7 Powers 1994 8-10 Swett & Halpert 1993 11-12 Anderson Yasanick & Ross 1993, 13-15, Sanders McRoberts & Tolleson 1989 16-20 Chu et al. 1999 21-23 Sherman 1993 24 Leavitt 1994 25 Coons, 1994 26 Lawrence Corolino, & Foy 1995 27 Bremner Shobe & Kihlstrom 2000, 28-34 North et al., 1993 pp. 101-103

sion also appears in Sanders, McRoberts, and Tolletson (1989), while the PAS scores appear to resemble it.

If these comparisons are accurate the ambiguities apparent in other studies afflict studies on experiencers as well. On the Wogan scale, the near-death and UFO observer controls score higher than abuse victims, while on the PAS scale experiencers compare with abuse victims in some studies though in most cases their scores indicate a lesser degree of dissociation than typically accompanies abuse, amnesia, PTSD, ritual abuse, or MPD. Powers (1994a, p. 47) notes that the mean score of 19 for experiencers on the MMPI subscale is close to a cutoff point of 21 that indicates PTSD, while 9 of 20 experiencers (45%) reach 21 or above to suggest tendencies for PTSD. For the PAS test, sexually abused subjects in the Powers study (1994a, p. 48) score in a range characteristic of MPD, while abduction experiencers score slightly higher than subjects having dissociative tendencies associated with eating disorders, and her controls rise somewhat in excess of controls in the initial formulation of this scale (97 as opposed to 89).

Some evidence for PTSD and mild levels of dissociation emerge, but as a group abduction experiencers do not appear to enter the territory of serious disturbance that many of these comparison groups occupy. At worst, they manifest a low level of dissociation, but a better interpretation recognizes that they share a zone of ambiguity with teenagers, undergraduates, and individuals who have suffered abuse but seem largely undamaged by it. In any case, experiencers escape serious dissociative disorders or PTSD effects associated with amnesia for abuse, ritual abuse, or MPD.

UFO abductions, past-life memories, and satanic ritual abuse belong to a class of claims that psychologists identify as complex (and supposedly false) bizarre memories. A series of psychological studies provides a rare opportunity to compare individual differences among these claimants (Spanos, Burgess, & Burgess, 1994) and further reinforces an appearance of normalcy among abduction experiencers. The subjects who recovered memories of former lives under hypnosis revealed no indication of psychopathology but ran up elevated scores for hypnotizability and fantasy proneness. These claimants also readily incorporated suggestions from the investigator into their stories.

An identical pattern of traits seems to characterize people who report ritual abuse, with Paul Ingram a case in point. With no record of mental illness, he nevertheless created a welter of false memories on demand, incorporating suggestions of sexual abuse and satanic practices from his daughters and interrogators, often while in a state akin to self-hypnosis (Wright, 1994).

By contrast, abduction experiencers were indistinguishable from controls on measures of hypnotizability and fantasy proneness, and revealed good mental health. The skeptical psychologists had to resort to experiencers' willingness to believe in UFOs and acknowledgment of unusual body sensations as evidence for a psychological origin to the reports, despite the probability that genuine experience would lead to similar admissions. These critics also pointed to sleep-related encounters as reason to expect sleep paralysis, and investigator probing as a source of leading suggestions,

despite the fact that similar stories come from subjects without sleep-related encounters or investigator influence

Even as abduction experiencers seem to stand apart from the pack with their ordinary personality profile, confusion enters as studies of other groups conclude with less than unanimous verdicts. Suggestibility should be a property of subjects who recover memories of abuse, according to critics, but a test found remarkably little suggestibility among subjects reporting recovered memories, even among individuals with elevated MMPI and dissociation scores (Leavitt, 1997, pp. 269-270). Sociocognitive psychology raises a question of whether personality distinctions count for anything at all. Several relationships predicted to hold between MPD and dissociation, hypnotizability, or childhood sexual abuse are in fact key assumptions of the whole recovered-memory movement. According to these predictions, high hypnotizability and a capacity for hypnotic amnesia should accompany enhanced capacity for dissociation. As the severity of abuse in early life increases so should hypnotizability and dissociative capacity. Women are more likely to report sexual abuse than men and therefore should score higher in tests for hypnotizability and dissociation. A review of the literature finds studies that support the predicted relationship counterbalanced by studies that fail to reproduce the positive results. All in all, the supporting evidence proves to be weak at best, and often ambiguous or contradictory. No steady pattern of confirmation inspires confidence that these key hypotheses hold true (Spanos, 1996, pp. 251-254).

A further assumption takes capacity for hypnosis and dissociation to be stable personal traits. They may be inborn or consequences of early trauma, but by the time an adult subject undergoes testing, those traits are engraved as permanent features of personality—so runs the theory. In fact experimental studies show much flexibility in these traits. In experiments with subjects instructed to answer test questions as they think MPD patients would, these fakers score higher on dissociative traits than actual MPD patients, while glossolalics and abduction experiencers do not show high capacity for hypnotizability.

An alternative explanation assumes that MPD and other bizarre behaviors represent a role enactment shaped by external demands from therapists or cultural expectations. Imaginative individuals with acting skills and an ability to become absorbed in make-believe respond to the possibilities of the "sick role" by acting out the script for MPD, or the test role by responding to psychological questionnaires with the expected or desired answers. Psychological tests measure not responses shaped by a personality type but responses of people willing to identify with a socially constructed belief. If MPD patients test as psychopathological, it is because they see themselves as suffering from various psychopathological symptoms (Spanos, 1996, pp. 254-259). In this view, if abduction experiencers do not display psychological peculiarities, the reason is that psychopathology does not belong to the working script that society has constructed for the abduction role.

The sociocognitive approach represents one viewpoint out of several and enjoys no unanimous acceptance. Nevertheless, this theory serves as a caution against tak-

ing apparent differences in abduction experiencers—or even their apparent normalcy—at face value. Other interpretations are possible and persuasive, so the most striking distinction that the psychological study of experiencers has turned up may mean less than meets the eye after all. Role players need not be exceptionally suggestible, dissociative, or even fantasy-prone, though certain consistent personal characteristics may explain why some people enact bizarre beliefs so convincingly while others do not. What those characteristics may be is a topic for future study. Reliance on personality traits as a basis for separating true memory from false has guided the recovered-memory movement and spilled over to influence ufologists investigating abductions. What lesson we must draw from the current state of scholarship is that abduction experiencers appear largely normal—distinctively so when compared with people who report other bizarre experiences. On the other hand, normalcy itself is not definitive, since assumptions about the meaning of personality traits run into uncertainties of their own.

UFO ABDUCTIONS—TRUE MEMORIES OR FALSE?

Now that the time has come to draw conclusions about abductions in light of the false memory debate, readers may feel that they have taken a long and winding road only to stop, if not in the middle of nowhere, at least amid a wasteland of unsatisfactory ambiguities. No definitive answers are waiting at the end. If the destination comes as a disappointment, then we have all the more reason to appreciate the journey.

It shakes up the convictions of ufologists who begin with a fixed and simplistic view of memory, only to learn that the more we know about it, the less memory has any simple or straightforward identity. We do not remember the past by tape-recording it. Rather we reconstruct it in a process that is subjective, intricate, and protean, a process we trust every day and rightly so, but also one that sends people to jail on the basis of vivid recollections for events that never happened. Old verities, cherished beliefs, and oversimplifications have fallen by the wayside, and so has any reason to believe that people remembering abductions proves abductions are a fact. An understanding of how memory works brings little but bad news for a subject so thoroughly dependent on memory. The case for abduction demands physical evidence—if not the indisputable implant or videotape, at least footprints, fingerprints, an alien cigarette butt—yet all we have is memory and a new-found appreciation that memory alone cannot sustain a radical belief like alien abduction.

The truth in memory remains elusive because it enfolds two truths and many shades in between. Memory mixes personal with historical truth in indivisible and indefinite proportions. Abduction experiencers tell us their experiences, often in circumstantial detail and with emotional conviction. We value that face-to-face testimony because it brings us as close to the experience as we can hope to come, but not the vividness or the emotions or the honesty and conviction of the teller prove the event really happened. Memory cannot guarantee its own truth. The reality of memory lies squarely in personal territory where subjective standards rule and the historical lie may tell a

personally valid truth, more realistic in human terms than reality itself. Psychologists or humanists can live with this shared space of inner and outer meanings. Ufologists cannot. Their question is whether abductions mean aliens or no aliens, a physical presence or an illusory one, but human testimony comes ill equipped to answer. Perhaps the most sobering lesson for ufologists to absorb is that true memories and false memories look alike, feel alike, and no scholarly alchemy boils one free from the other on the basis of internal criteria or human responses. For all the report tells us, an experiencer's story may describe real events or imaginary events or a blend of the two—take your choice. Memory is complex and labyrinthine enough to support these causes with an equal and impartial hand, while sharp distinctions like true and false, right and wrong blur into delicate hues of uncertainty.

In some respects, memory is as predictable as moon phases and tides. Its reconstructive nature means that those reconstructions will be malleable and impermanent. Pieces of the past break loose from contextual moorings, mingle with extraneous information, blow hither and yon with the prevailing winds of suggestion, and come together in conformity with beliefs and desires at the expense of truth. Events like President Kennedy's assassination or September 11 may remain unforgettable but not necessarily unaltered. The hopeful news is that much of memory stays reliable enough to get us safely through life. The gist of an event or the kernel of most significant experience endures, but the fact remains that this endurance is not absolute. Not even an event as vivid and striking as a real abduction would stamp an impervious image onto memory. Abduction memories go the way of all the rest, losing and gaining and reshaping over time. Emotion, even trauma, cannot save them from the currents of change, and the dubious mechanism of repression serves as no magical preservative of memories but only as an excuse to save a flawed argument. If no memory carves itself in stone, can any memory, the guilty and the innocent alike, ever rise above suspicions that it is false?

If distortion, loss, and stereotyping of events or details were all ufologists had to worry about, they could forgive the faults of memory as a minor concern. A further and more disturbing lesson from memory research singers the rememberer as an active agent for reinventing the past. This tampering ranges from simplifications, rationalizations, and embodiments of bias to creation of a fictitious past, an extended life history of false memories with little or no basis in real-life experience.

Abduction experiencers could belong to this extreme group, at least in principle. Many psychologists take this possibility for granted and lump abduction together with other claims of fantastic experience as an "obvious" case of false memory. In this view there is nothing to explain about abductions. The answer lies in the experiencers and the full-blown fiction they have created, doubly dangerous because it falsifies the subject's life history and carries all the bells and whistles of genuine emotion, embraced by the subject as true with a full sense of conviction. Every fiber in the ufologist may resist this interpretation, every gut feeling may declare it wrong, but the critics hold the upper hand because they rightly affirm that a memory with all the trappings of truth may yet lack its substance.

Laboratory experiments demonstrate the possibility of false memory creation, but laboratories and textbooks cannot confine this monster. In fact, they convey only a pallid hint of what terrors the false memory process can unleash in the real world. The true measure lies in the witch hunts of long ago and the abuse panics of today. Children and adults have come to believe themselves victims of incest and ritual abuse, acquired behaviors appropriate for PTSD and multiple personality, accused parents and other caregivers of heinous crimes, and filled their lives with anger and anguish, all because suggestion and encouragement build imaginary events into false realities. Though the dispute drags on, as the recent dates on many books and papers cited in this study affirm, ample evidence cautions that therapists, recovery manuals, and support groups must accept responsibility for much of the current abuse epidemic. A similar framework of belief and promotion surrounds the recovery of abduction memories—so similar in so many particulars that the two seem interchangeable. Little wonder, then, that the critics see no reason to look for aliens, only for such down-to-earth influences as a zealous investigator, popular culture, and a desire to believe. If abduction has remained a minor folly, too small to repeat the calamities of the abuse panic, critics still have legitimate cause to condemn any unquestioning acceptance of beliefs and techniques that can lead to harm in spite of good intentions and deep convictions.

The chilling likeness of abduction to false memories shows plainest with abduction held up for comparison with ritual abuse. No one can fail to notice that both claims allege a vast, secretive conspiracy with extraordinary immunity from detection. Both involve mind control and focus on reproduction, both prey on children and include gruesome physical procedures. Ritual abuse victims experience trauma-induced amnesia and supernatural events just as those reporting abduction experience missing time and surreal phenomena like flotation that seem to violate the laws of physics. Supernatural experiences may count against the credibility of ritual abuse, while the apologist may excuse abduction experiencers for describing the magical technology of aliens, but the phenomenological similarities raise doubts that special pleading cannot satisfy. A long list of similarities draws the two claims together no matter how much their respective proponents would like to forget the unwelcome kinship. Any argument for the uniqueness of abduction has to reckon with this uncomfortable family resemblance.

Sociocognitive psychologists bring to bear a potent theoretical approach in their interpretation of abductions. Sociocognitive theory is a three-dimensional version of the psychosocial hypothesis in ufology. Where ufologists have contented themselves with tracing possible antecedents as a literary exercise and merely assuming an influence, sociocognitive theorists have applied a sophisticated understanding of individual behavior to the uses of cultural materials in social settings. A sociocognitive solution to false memories of any fantastic claim sums them up as instances of role-playing. Abuse victims conform to the demand situation of therapy and assume the appropriate survivor role, borrowing content from cultural sources and suggestions passed along in the therapy process, confabulating the story the therapist wants to

hear and gaining the satisfaction of membership in the survivor community. The fictitious life history becomes a personal fact, often the central fact in the life of the survivor. According to this same theory, abductions differ not in kind from recovered memories of childhood sexual abuse or satanic ritual abuse, but only in the script that abduction experiencers adopt. A different role with different characteristics, freedoms, limitations, and goals obliges the actor to play a different part, but its uniqueness lies in role demands and not in any characteristics of an experience. While not all psychologists would accept this answer, it confronts ufologists with the challenge of a worthy conventional explanation for the abduction mystery.

Adopting the terms of the false memory debate, the crux of the argument lies not in how credible experiencer testimony may be, but in whether we have any reason to think abduction reports are anything more than false memories. Those memories may be true, but how can ufologists prove it? Face to face, line by line, a real memory of abduction looks no different from a false memory, and the less radical assumption wins by default.

In brief summary, then, these are the issues and doubts raised by research into memory, false memory, and comparison of abduction reports with recovered memories of abuse. These findings arm critics with a well-formulated alternative to claims of literal truth for abduction. Ufologists should read this argument as a caution that nothing about abduction is or ever was as straightforward as they first imagined. These broader disputes in which abduction is now embroiled sweep the subject into a world far removed from simple questions of real or imaginary, hoax or aliens. Shadowy and labyrinthine, this realm of memory processes and subjective nuance complicates an already difficult problem and threatens to swallow it up as a mystery of psychology and nothing more. Of course abduction has always been a psychological problem and a question of memory processes, though ufologists have often overlooked this dimension, while psychologists, if they take notice at all, have largely ignored any indications of an independent, external phenomenon. But in the full light of memory research, the entanglement of abduction memories with the general problems and vicissitudes of memory intrudes as a matter of importance as frustrating to reckon with as it is impossible to ignore.

The results of memory research might explain abduction, but do they? Some fruits of these studies actually favor a literal interpretation. These findings reassure us that memories of personal experience have an integrity that may erode around the edges, but will likely hold firm at the center. The critics' worst fears about hypnosis and suggestion arise all over again in the recovered-memory dispute, where children badgered into believing they were abused and adults coaxed into fantasizing a fictitious past reinforce an image of beliefs and memories as soft clay for persuasive therapists to reshape. Yet experiments with real abduction reporters reveal limited susceptibility to suggestion and considerable reluctance to add chapter or verse to a report while under hypnosis. Experimental subjects imagining abduction respond to hypnotic suggestion with a haphazard mosaic of acceptance and rejection, not a straightforward "garbage in, garbage out" pattern. Still, the inability to distinguish true memories from

false by means of the story alone overshadows all these narratives

False memory also bears a double edge. Even as it cuts against literal acceptance of abduction reports, the same blade turns against all memories, even those no one would think to dispute. My memory of getting out of bed this morning may be as false as the wildest satanic orgy, since I know only (or think—perhaps I am dreaming) that I am now awake, and have faith that my memory reflects everyday experience. But I cannot turn over one memory and find it labeled true, turn over another and see it tagged false. One memory looks like any other in terms of form or structure. Content makes a difference—I trust the mundane memory but doubt the fantastic claim—but in doing so I bet on the likelihood of truth. I do not know for sure. All we have learned about false memory challenges every reality, not just abduction, and resolution has to come from some argument outside the similarities between abduction reports and other claims identified as false.

What evidence “outside the envelope” hints that abduction amounts to more than a bubble in the mind? If ritual abuse represents the closest relation on a family tree of psychological phenomena, any differences between the two claims loom large in importance.

Differences are in fact easy to compile. A large majority of females skews the demography of ritual abuse claimants, while abduction experiencers look quite normal with an almost equal male-female split. Serious mental disturbances like multiple personality disorder afflict most ritual abuse claimants, but with the exception of a supposed alien speaking through Betty Andresson at one point during her hypnosis sessions, abduction experiencers display few phenomena resembling possession or alternate personalities. The typical ritual abuse patient spends months or years in therapy before abuse memories emerge, and this emergence often takes the form of isolated scraps gradually enlarged on and stitched together. By contrast, abduction investigations typically play out in a hurry. As a practical matter prolonged therapy is out of the question and the participants have no time for a lengthy assembly process. Seldom is prolonged encouragement needed, since most experiencers spill their story in a rush as soon as the hypnotist lifts the supposed block imposed by the aliens. Continued sessions may add details or reveal other encounters, but the target incident pours out in a dam burst almost from the start. Ritual abuse claimants describe childhood events recalled after years, even decades, while many adult experiencers tell their stories within days or weeks of the event. A substantial minority of abduction reports include two, three, or four witnesses telling interlocking stories; ritual abuse is mainly a solo experience.

Some necessary qualifications undercut the significance of these contrasts. Yes, most ritual abuse claimants are women, but not all of them, some men also voice similar claims. Not all ritual abuse claimants display multiple personality or need endless hours in therapy or build up their story over time, not all abduction experiencers spill their story with little probing. Some people report recent cases of ritual abuse as adults, such as Paul Ingram’s daughters, and these two women also corroborate abuse within the same environment. We find many disparities of balance but few

absolute distinctions between the two claims, and counterexamples are common enough to reaffirm that the gaps between abduction and ritual abuse are less than canyon-like in breadth

Abduction and ritual abuse part company in a more convincing way over differences in story consistency and claimant psychology Tales of satanic ritual abuse frame enough similar rituals, tortures, and paraphernalia to throw up a superficially persuasive illusion that independent narrators describe similar experiences On close inspection this image breaks down into motifs familiar from popular culture or necessities of circumstance, such as the possible forms of sexual abuse a perpetrator can commit These pieces scatter over the course of a lifetime and sift through one ritual after another until they demolish the case for similarity better than they support it Along with this deceptive appearance crumbles the argument that a consistent ritual abuse story favors literal experience over imagination

Here abduction scores a distinction Actual abduction reports adhere more closely to an ideal of sequence and description than their ritual abuse counterparts This adherence covers obscure motifs as well as familiar elements Individuals often omit some possible events or add idiosyncratic aspects, confuse the order or even introduce features counter to the norm but even a difference like the presence of Nordic beings may recur in the long run of reports with its own regularity The overall fidelity to ideal type is impressive It earns additional credit because the story structure is loose and could vary a great deal without compromising the meaning of the story, because the subject is fantastic and invites creative innovation, and because cultural influences are diverse and imagination ought to reflect this variety Such possibilities should exercise considerable leverage for change on fantasies and fictions, less on experiential reports The distinctions between abduction reports and ritual abuse accounts remain admittedly subtle They lack the hulking and robust strength to convince everyone What significance these differences hold also remains subjective and a matter for individual judgment Some may minimize or question the differences, but enough exist to separate the two claims in some degree

Both literalists and skeptics have sought resolution to the abduction mystery in the psychology of abduction experiencers A thorough understanding of experiencer personality could go a long way toward deciding the nature of their stories With such stakes on the table, both sides have looked for the predictable psychological accompaniments to support their chosen explanations Skeptics aim for psychopathology, social marginality, fantasy proneness, paranormal experiences, unusual sensations, exotic beliefs, divergent thinking, and temporal lobe irregularities Proponents want normal people whose personality and beliefs reveal the consequences of abduction rather than potentially predisposing characteristics Neither side carries home all the chips A consistent buildup of evidence denies that experiencers are mentally ill, socially marginal, or subject to unusual temporal lobe activity Any atypical personality traits they possess have more the status of proposals confirmed in one study or another than consistent findings supported by one test after another

On the other hand they are not complete John and Jane Does As a group they do

have sensitivities, experiences, and beliefs that set them apart from the average run of their neighbors, most distinctively a slight tendency toward dissociation. The significance of these traits is ambiguous. They might represent predisposing factors, but many of them also could derive from an abduction experience or concentrate in the reporting segment of the experiencee population.

No ambiguities cloud the psychological profiles of experiencers in comparison with everyone else considered in this study. In this face-off the contrasts are clear-cut. Abduction reporters as a group show no striking elevations on MMPI scales or any other test to indicate psychopathology or deviant thought processes. What a difference we see among the others. The ritually abused, sexually abused, temporal lobe subjects, multiple personality patients, and PTSD sufferers all manifest some or many distinctive scores, often elevated far above the norm. In terms of comparison, abduction experiencers show little pattern of psychological distinctiveness despite the strangeness of their story, while people who claim other and equally bizarre experiences light up with varied and noteworthy abnormalities. This psychological distinction draws perhaps the most unequivocal partition between abduction experiencers and other claimants accused of false memory.

The verdict necessarily remains out on experiencer psychology. All conclusions rest on a few studies, often with small samples and incompatible techniques. Most of those few studies decide against any strong irregularities of personality among experiencers, in fact deny consistent personality traits of any sort that might contribute to unusual experiences. Yet the evidence remains ambivalent for fantasy proneness, boundary deficit, temporal lobe lability, schizoid tendencies, difficulties with sexual identity, or receptiveness to spiritual and psychic experiences. The Randle/Estes/Cone study identifies sexual abnormalities among abduction reporters but awaits formal presentation and peer review. The recent Australian study (Gow et al., 2001) confirms fantasy proneness and softens what had seemed the firmest of conclusions. Whether paranormal beliefs represent cause or effect needs further investigation. Other avenues—the predisposition to sadomasochistic escapism proposed by Newman and Baumeister, allergic sensitivity to electromagnetic radiation advocated by Budden (1998), and Kottmeyer's hypothesis of boundary-deficit personality—remain unexplored even though they are accessible to test.

New studies that raise old questions anew cannot count as the last word. They underscore instead that we are not in a position to write the last word. In fact the psychological study of abduction experiencers seems to have entered a stage of awkward adolescence, and only further studies designed with comparable samples and instruments will resolve the contradictory findings now beginning to emerge. Whether fantasy proneness spreads among all experiencers, whether elevated dissociation scores mean genuine behavioral differences, whether unusual beliefs among experiencers are cause or effect—these are issues in need of future study. Sociocognitive theory raises its own series of challenges, since the absolute validity of personality traits and tests to reveal them comes under fire. If these views are correct, personality is a fluid adaptation to roles and not an innate and established personal predisposition to be-

havior Tests that find abduction experiencers normal and ritual abuse survivors deviant reflect nothing more than role expectations the respective subjects are playing This sociocognitive view seems radical, a position outside the psychological mainstream, but it offers a formidable alternative to a view that the traits of abduction experiencers better reflect normal people reporting unusual experiences than unusual people creating strange fantasies

A study of false memory finishes in humility and restraint rather than with a triumph of certainty In the end, most conclusions apply to all memories, at least to all memories of bizarre experiences with only a little left to say about abduction itself Draw a circle representing the phenomena that false memory can encompass Draw another circle to circumscribe the phenomena of abduction Lay the first drawing over the second wherever a match seems possible and the one circle will almost overlap the other, but not quite Those leftovers of story consistency and psychological distinctions offset the two circles and declare abduction independent from other false memory claims, if only by thin slivers Critics may discount such differences as too slender to matter, too slight to support a monumental revision of understanding such as abduction entails, yet small distinctions may mean a lot in comparisons of memories Where the true and the false look alike and no formal distinction separates them, any qualitative difference stands out as valuable, especially if it does not depend on the prejudgment of content as possible or impossible

The clues in this mystery remain doggedly small and subtle Any difference at all counts as something to talk about, a newsworthy event that justifies serious attention to the abduction phenomenon What it is escapes final answers here What it is not emerges almost equally indistinct, but the few thin scraps of evidence at hand lead away from the false memory solution The unhappy saga of abuse and ritual abuse make all too clear the power of false memory to distort reality and warns that similar processes might spawn abduction Yet false memories of abuse and reports of abduction prove less alike than first meets the eye

Abduction may eventually resolve into another instance of this illusion or some other psychological aberration, but no one can simply take this conclusion for granted True or false, the consistent memories of abduction experiencers and the normalcy of their psychology set them ever so slightly out of step with other claimants of fantastic experiences This discovery may mean little or much, but here it stands

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Book Reviews

- Steven J. Dick, ed. *Many Worlds: The New Universe, Extraterrestrial Life, and the Theological Implications*. Philadelphia: Templeton Foundation Press, 2000. 217p.
David Lamb. *The Search for Extraterrestrial Intelligence: A Philosophical Inquiry*. New York: Routledge, 2001. 210p.
Allen Tough, ed. *When SETI Succeeds: The Impact of High-Information Contact*. Bellevue, Wash.: Foundation for the Future, 2000. 182p.

Although the long-distance search for extraterrestrial intelligence (SETI) has yet to turn up any evidence of its object, in recent years it has generated two developments that are already of interest. The first is a growing concern among academics and other intellectuals with the sociological, philosophical, and religious implications that contact with ETI might have for humanity. The second is that some in the SETI community are beginning to consider the possibility that ETI could already be here in the solar system, and that the search should be broadened accordingly. To be sure, entertainment of this possibility is often accompanied by ritual dismissals of ufology as pseudoscience, and by adoption of new terminology, such as “ETV” for extraterrestrial visitation and “probes” for UFOs, to avoid pejorative associations.

But like Gorbachev’s “New Thinking” about the Cold War, such new thinking about ETI may eventually break down the seemingly impenetrable wall between the SETI and ufological communities. Since they ultimately share the same interest, this would be all to the good, and it also points toward an issue that neither community has adequately considered: the distinctive implications of face-to-face contact. Thinking about contact in the past has been dominated by the SETI scenario of long-distance contact. Under those conditions, it is easy to imagine that most of the implications of contact would be positive, since humanity would not be vulnerable to ETI. A face-to-face contact scenario looks very different, and suggests that contact even with an entirely benign ETI could be intensely disruptive to human civilization.

The three books under review here are indicative of both trends, although with respect to the second they also suggest how far there is yet to go. Their central concerns are rather different. David Lamb’s *The Search for Extraterrestrial Intelligence* is focused on the nature and assumptions of SETI, with just one chapter devoted to the implications of possible contact, whereas Steven Dick’s *Many Worlds* and Allen Tough’s *When SETI Succeeds* are addressed almost exclusively to the latter. But each is a serious and thoughtful study of the ETI question, and this reviewer can strongly recommend them all.

As the only single-authored book in this set, Lamb’s volume is naturally the most

coherent. Perhaps more importantly, it is impressively comprehensive and even-handed. Consisting of seven chapters—communicating with ETI, the scientific status of SETI, astrobiology, terraforming and planetary colonization, ufology, the Fermi Paradox, and the problem of contact—the book covers virtually all the major issues and arguments pertaining to SETI, and in enough detail that the reader gets a strong sense of both the big picture and the nuances within it. Moreover, as a philosopher at the University of Birmingham, Lamb's work displays all the best qualities of philosophical scholarship, with an economy of presentation, analytical rigor, and dispassionate assessment of the pros and cons of different arguments. This not to say that Lamb has no point of view, he is clearly in favor of SETI and even thinks it should be expanded into a “comprehensive search” (p. 181), including in the solar system. But unlike much of the literature on ETI, one gets little sense here of an agenda, axes to grind, and so on. His treatment is consistently fair-minded and thorough, and raises hard questions for all concerned.

Lamb's discussion of three issues is particularly noteworthy. The first is the epistemological and methodological problems of SETI (Chapter Two). In contrast to most scientific inquiries, the object of SETI research is not manipulable by scientists, and our likelihood of finding it depends in part on debatable technological and sociological assumptions made during the search. As such, it is difficult to see how one might falsify hypotheses and thus make SETI a science. Yet, since “absence of evidence is not evidence of absence,” this sets the stage for acrimonious epistemological debates in which all sides are in the dark. Lamb does an excellent job surveying these issues, and situating them within the philosophy of science literature. Although his discussion is focused on SETI, as he makes clear later (p. 127) it is equally applicable to UFOs. He argues that the central philosophical question about UFOs is whether they can be studied with the methods of normal science or require an entirely new explanatory paradigm in the Kuhnian sense. Normal science ideally involves experimental control, and as such is not well-equipped to study a phenomenon that may be intelligent, mobile, and deliberately avoiding detection. What could count as hard evidence for ETI existence is therefore not clear. This seems like an important issue that bears further discussion by ufologists.

This relates to a second impressive feature of this book, unusual in SETI scholarship, which is the inclusion of a full chapter dedicated to the UFO problem. Lamb's stance is skeptical in the positive, scientific sense that is appropriate when dealing with any unknown phenomenon, but also remarkably well-balanced. Quite sensibly, he does not reach any firm conclusions one way or the other. Moreover, the chapter is also refreshing in its focus, spending relatively little time reviewing the well-known history of the UFO problem or its most celebrated cases, and concentrating instead on foundational issues. There is a useful summary of economic, technological, and physiological barriers to long-distance space travel which argues for caution in attributing an extraterrestrial origin to UFOs, but Lamb grants that unknown technology could make this possible. And while pointing out that ufology has long been contaminated by evasions of falsification, misplacing the burden of proof, and simple

fraud. Lamb makes a clear distinction between the pseudoscientific and the more methodologically rigorous forms of ufology (citing the work of BUFORA as an example of the latter). In the end he argues that the central problem for ufology is not that it is pseudoscience or that UFOs are clearly not extraterrestrial in origin—probably the most common reactions by the mainstream—but that serious scientists have been scared away by the lunatic fringe, and as such we have no way of drawing any scientific conclusions.

The third particularly useful aspect of the book is Lamb's critical review of the literature on the Fermi Paradox (Chapter Six), Enrico Fermi's argument that since there is no evidence of extraterrestrial visitation on Earth, and they would have had plenty of time to get here, there is probably no one out there to begin with. Lamb does not claim to add anything new to this literature, but his treatment is very comprehensive, covering every line of argument of which this reviewer was aware (and then some), and once again in a critical and balanced fashion. Moreover, unlike most in this literature, Lamb points out (p. 165) that its basic premise—that they are not here—may in fact be wrong, thereby dissolving the paradox altogether. Whether or not that is the case, however, Lamb concludes that skeptics' efforts to use the Fermi Paradox to debunk SETI make little sense, since in the end we simply do not know, the only alternative is a comprehensive search.

The only disappointing chapter in the book is the last, on the implications of contact with advanced supercivilizations. The discussion here is not as thorough as it might be, particularly on the potential dangers of contact, and as a result Lamb's conclusions seem skewed toward a relatively optimistic—one might almost say naive—assessment of what contact would mean for humanity. One reason for this may be insufficient attention to the differences between long-distance and face-to-face contact, which are discussed further below. But this weakness does not detract from Lamb's accomplishment as a whole. *The Search for Extraterrestrial Intelligence* is a superb book, a real tour de force, and one can only hope that more like it will follow.

Allen Tough's *When SETI Succeeds* is a collection based on a 1999 seminar organized by the Foundation for the Future. The focus is self-consciously long-term (up to 1,000 years), which gives the volume an even more speculative character than some other studies of the contact problem, but the speculation is disciplined and thoughtful. The book is divided into five parts consisting of 14 chapters of varying length, but mostly in the 8–10 page range, and thirteen shorter (1–2 page) memos written by seminar participants. The contributors are a prominent group, including some of the most well-known members of the SETI community, like John Billingham, Steven Dick, Albert Harrison, Jill Tarter, and Douglas Vakoch, among others. This fact, combined with being one of the most comprehensive surveys available of the contact problem, makes the book an excellent window on the state-of-the-art in this field.

The cornerstone of the book is an excellent overview chapter by Harrison and Dick on the long-term implications of contact for humanity. They open by arguing (p.

8) that we should be open to all possibilities for discovering ETI and suggesting that in the future the search might not be limited to the currently dominant microwave strategy. Among the alternative search strategies they include are UFO studies, if warranted by new scientific discoveries—although there is something of a vicious circle here, since it is difficult to see what could legitimate UFO studies short of the new discoveries. UFO studies would be necessary to make!¹ Harrison and Dick then consider the implications of contact. Importantly, these will depend on the contact scenario. The authors identify two dimensions along which scenarios might vary—the complexity of life forms that are found, and the distance at which they are detected. This yields a four-fold typology, one cell of which ('Space Visitors') in effect constitutes the ufological scenario. Assuming a scenario in which detection yields significant information about intelligent life, they move on to examine the possible benefits and costs for humanity. Their assessment is weighted heavily toward the former, with a lengthy discussion of positive impacts on science, religion, politics and law, the arts, and our overall view of ourselves. The cost side of the ledger receives less attention, with brief mention of two possibilities: subjugation and culture shock. Finally, Harrison and Dick offer some useful ideas for next steps. In addition to suggestions that might be characterized as preparatory (understanding ourselves better, doing research on interspecies communication on Earth, studying past first contacts among human groups, educational programs, and giving more thought to a reply policy), they advocate not only accelerating the search for ETI but also broadening it to new strategies, including a search for probes in the solar system. All in all this is a superb chapter, and refreshing in its open-minded consideration of all possibilities.

Two other chapters were particularly noteworthy. Harrison and several coauthors critically assess the currently very limited involvement of social scientists in SETI, and offer a number of constructive suggestions for how this state of affairs might be improved. This seems important, since if contact is made many, if not most, of the possible implications will lie more in the social than natural scientific domain. Finally, the volume's editor, Allen Tough, contributes a chapter outlining five strategies by which contact might be pursued, and among these like Harrison and Dick he includes searching both the solar system and Earth for evidence of ETI. Curiously, he makes no mention of UFOs in this context. One might think from reading his discussion that no one has ever seen anything that might be evidence of visitation, and so we have to actively go look for it rather than just more systematically investigate the reports that come in every day. But it is clear that the subtext here is recognition that some UFOs might be extraterrestrial, and as such the failure to make the connection to ufology explicit might be a rhetorical effort to legitimate the strategy.

These strengths notwithstanding, the volume's analysis of the contact problem has two related weaknesses. First, not enough attention is paid to the significant differences between long-distance vs. face-to-face contact situations on Earth. In the long-distance case, decision-makers would have the luxury of plenty of time to decide how to respond, and would be more able not only to control the dissemination of

information received but also spread its effects on our civilization out over time. Moreover, since ETI would be safely located many light-years away, we would remain "master of our own house." In contrast, in the case of contact here on Earth, the need to respond would be immediate, and the effects of contact much less under our control. And it would also be clear that humanity was intensely vulnerable, whatever ETI's intentions, its ability to get to Earth would mean that its technology was vastly superior to our own.

This bears on a second problem, which is that in a face-to-face scenario, the implications of contact for humanity might be more problematic than this volume suggests. Even assuming perfectly benign intentions on the part of ETI, it seems likely that we would experience much more than culture shock and panic. John Mack's idea of "ontological shock" seems more apt. Our science and technology—the pride of our civilization—would have been shown to be incredibly primitive, and even though the Copernican and Darwinian revolutions have already significantly displaced our tendency toward anthropocentrism, we retain the illusion that at least we are the dominant species on Earth, which would be destroyed by face-to-face contact.

That in turn could have serious political implications. Human civilization today is organized around the institution of the state, which derives its legitimacy ultimately from its claim to provide security to its members. A confirmed local presence of ETI would make it clear that the state could not fulfill that fundamental function, and that in fact human beings were highly vulnerable, at the mercy of an advanced civilization over which we have no control. Panic seems to underestimate the possible results, since panic is a temporary condition that could be expected to dissipate. ETV could call deeply into question the whole idea of allegiance to the state, with people possibly looking instead to ETI to provide security, and treating the state as irrelevant. It is difficult to imagine a more serious long-term threat to social order than that. This is not to downplay or ignore the beneficial consequences of even face-to-face contact. But the delegitimation of the state is not mentioned in this volume as a potential implication, perhaps because social scientists have to date taken little interest in SETI. Were they to start doing so, it is possible that a more mixed assessment of the implications of contact would result.

Steven Dick's *Many Worlds* is in a sense the most traditional of the three books under review, since the theological implications of discovering extraterrestrial life have been debated for centuries. However, Dick opens the book by pointing out that there is very little discussion of this issue ("cosmo-theology") today, which is surprising in view of scientific developments suggesting that life elsewhere may in fact be quite likely. The distinctive feature of this book lies in bringing these scientific developments to bear on the theological issue, thereby reinvigorating what had become a moribund controversy. As Dick makes clear in his concluding chapter, SETI is in part a religious quest, and as such has the potential to bring science and religion together.

The book is organized into three parts. The first reviews contemporary scientific theories about the origin and evolution of life, the second addresses humanity's place

in cosmic evolution, and the third tackles the theological implications of extraterrestrial life for our worldview. As in the Tough volume, Dick's contributors are well-known scientists and philosophers, including Christian de Duve, Paul Davies, Lee Smolin, Arthur Peacocke, Freeman Dyson, Jill Tarter, Ernan McMullin, and others. Their chapters are marked by clear and jargon-free prose that makes the book accessible to a lay audience, and also by the diversity of viewpoints that they express. On both scores the writers have done an excellent service. The book offers a good, introductory understanding of current debates not only in cosmo-theology but astrobiology as well. Moreover, contrary to the perhaps naive view that the discovery of extraterrestrial life would be devastating for anthropocentric religions, it becomes evident by the end of the book that this is by no means clear, and as such the chapters are sure to stimulate further debate.

That said, an important assumption in the volume is that the discovery of extraterrestrial life will not take place here around Earth, but either long-distance via the SETI program or by human colonization of other solar systems. This assumption is almost completely tacit. Just two authors mention the possibility of extraterrestrial visitation, and then only to dismiss it. Ernan McMullin asserts that "there is no longer any reasonable expectation of finding intelligent life anywhere in the solar neighborhood other than on Earth" (p. 152). One wonders here when there was such a "reasonable expectation," and what program of scientific research led to a conclusive finding to the contrary, until we conduct such a program it seems better to remain agnostic. And Jill Tarter argues that the *only* experimental procedure for discovering extraterrestrial life that could yield significant negative results is to try to detect it remotely on nearby solar systems. This is clearly wrong, since a number of scientists have proposed experimental procedures for the study of UFOs, which the scientific community has yet to take up. It seems more likely, therefore, that Tarter has already made up her mind that UFOs cannot be extraterrestrial, and therefore they are not. Since we do not have any empirical basis for concluding either way, McMullin and Tarter's attitude seems distinctly unscientific, and gives new meaning to the "theological" aspects of SETI.

Because of its tacit assumption about UFOs, the volume misses an opportunity to raise an interesting question that has not to date figured in theological controversies about intelligent extraterrestrial life. Would it matter if such life were discovered orbiting the Earth? Perhaps not, whether here at home or far away, the discovery of ETI would have a profound impact on anthropocentric religions. On the other hand, the theological implications of a near-Earth discovery might be unique in one important respect. It would confirm not only that we are vastly inferior to another life form, but also our profound vulnerability to it. None of the chapters in this volume considers this possibility, since they all assume that either we would be physically safe from ETI (in the case of long-distance contact), or that we would be more or less on par with it (in the case of human interstellar colonization). As master of his own house, civilized man has never had to consider the philosophical implications of vulnerability to other intelligent life, and as such there is little scholarship that would seem to

bear on them. But one place where analogous issues come up is in the growing body of work on animal ethics. By putting ourselves in the position of the animals in these debates we might begin to gain some insight into this question.

Taking these books together, it seems clear that the only rational approach to beginning to answer our questions about ETI is Lamb's idea of a comprehensive search, including around Earth. Why rule out the latter *a priori*? Budgetary constraints are one answer, but in fact a near-Earth search would be much cheaper than a long-distance one, and whatever one thinks UFOs are they are at least evidence of something, whereas in the case of long-distance SETI we do not yet have evidence of anything. Alternatively, we might rule out a near-Earth search because it would by definition be pseudoscience, but that makes little sense. UFOs are an empirical phenomenon (whatever they might prove to be), and like any other empirical phenomenon are worthy of scientific study. UFOs, in other words, cannot be a pseudoscience, only certain ways of studying them can be. In this respect, the Dick volume presents something of a paradox. Its review of astrobiology suggests ever more strongly that ETI exists, yet its contributors are adamant in their refusal to consider near-Earth search options. But even if *Many Worlds* indicates how far there is to go, a comprehensive search seems inevitable, since there is no reason *not* to undertake it. Lamb and many of the contributors to the Tough volume see this logic, which may portend a future rapprochement of the SETI and ufological communities.

ALEX WINDT

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David M. Jacobs, ed. *UFOs and Abductions: Challenging the Borders of Knowledge*. University Press of Kansas, 2000. 382p.

For more than 50 years the scientific community has for all practical purposes ignored UFOs, not considering the reports to be a valid topic of scientific inquiry. With few exceptions, the scientists who hold this belief (and they constitute a very large majority of mainstream science) have not bothered to study the subject in any detail if at all.

The approximately 300 scientists and professionals cited by the editor in his introduction who have gotten involved are a tiny minority group whose influence on their fellow scientists has been little. The intention of this book is to make a case that scientists, particularly academic scientists who ideally are on the cutting edge of intellectual inquiry, should take a closer look at the data. To that end, eleven scholars (seven of them with academic affiliations) contribute chapters from the perspectives of their scientific fields or other specialties. The collective result is a philosophical treatise on the psychological, sociological, and political factors that create obstacles to acceptance of UFOs as a legitimate field of study. Their respective views will be

briefly highlighted here, though each has far more to say

Stuart Appelle, a professor of psychology, sets the tone with his analysis of why the subject has not lent itself to becoming a scholarly discipline in academia, and why academic scientists tend to be unaware of serious data that cries out for attention. Ron Westrum, a professor of sociology points out that science at least in the short run often is more "oriented" than "objective," and that the ideal model of science functioning with "dispassionate curiosity" is not the way things work in practice. He presents brief case studies of the different ways that six well-known scientists (three pro and three anti) responded to the UFO subject.

Don Dondert, a professor of psychology, feels that the scientific enterprise by its very nature is not well-suited to deal with entirely new and nonpigeonholed phenomena such as UFOs. "Science is not the only profession that collects and analyzes evidence," he observes. "Comparing [the goals and methods of] law and military intelligence with science highlights the weaknesses of the scientific method and suggests that [they] are trained to do a better job than scientists when it comes to evaluating the UFO evidence" (pp. 56-57). His insightful analysis resonates very strongly with this reviewer.

Michael Swords, recently retired professor of natural sciences, provides a useful review of UFOs and the military during the Cold War era, focusing on security attitudes and their influences on responses to UFO sightings. His political and military history of post-WWII sets the stage for the initial major wave of UFO sightings in 1947 and the history of Air Force UFO projects thereafter. This is a topic that Swords has researched thoroughly.

Jerome Clark, one of the few nonacademic contributors, deserves at least an honorary PhD as the premier historian of the entire UFO subject in all its aspects. His encyclopedias are invaluable to anyone wishing to study UFOs in depth. His chapter here examines the evolution of the extraterrestrial hypothesis for UFOs and other belief systems, and the highlights of UFO history.

Although most of the chapters are rich in detail and cannot be adequately summarized in this relatively brief review, it is particularly difficult to do justice to Eddie Bullard's delightfully named chapter "UFOs Lost in the Myths." Bullard, trained in folklore, in essence disputes what he perceives as the misuse of the word "myth" as applied to UFOs by skeptics. His stated purpose is "to point a finger at why a phenomenon with all the qualifications of UFOs for serious scientific attention remains an outcast and scorned as an enemy of reason" (p. 185). In short, his answer is that UFOs have been lost in the widespread skeptical perception that they are only a myth. "A first step in understanding UFOs," he suggests, "must be disentanglement of the myth from the evidence" (p. 186).

The editor, a professor of history, contributes a well-written historical overview of reported encounters with aliens and of viewpoints and attitudes about these reports. He and his colleague Budd Hopkins report the salient features and key events of the so-called abduction phenomenon. Hopkins addresses the use of hypnosis and some often overlooked other types of evidence. John Mack, a professor of psychiatry, re-

ports on his investigations into abduction cases and his views about the allegedly repressive effects of the "western worldview" on discovery of the truth

Finally, Michael A. Persinger, a professor of psychology and neuroscience, presents the findings of his experimental studies that lead him to theorize that UFO experiences are "normal correlates of human brain function." Persinger asserts that many facets of UFO experiences have been experimentally reproduced, suggesting that a literal interpretation of them is suspect. He feels that UFO research can contribute important information about human genetics and future development of the human brain.

In the concluding chapter David Jacobs suggests "research directions," neatly summarizing both why UFO reports should be taken seriously and what lines of research could be pursued. In doing so he points out the confusing array of literature that faces neutral people who might be willing to take a look at any serious data, and this leads to one minor quibble about the book.

At first it seemed curious that solid examples of the phenomenon everyone was talking about are not easily to be found between these covers: hardcore, patterned, difficult to explain UFO cases. But upon reflection it was understandable why this approach was taken. Still, the selected bibliography (although it includes a section on UFO case studies) is in itself somewhat confusing. It might have been a good idea to point out to the reader that well-investigated and puzzling UFO cases are so numerous that they were best left to separate treatment, and then to single out two or three good books or publications that would serve as companion volumes to this book for readers seeking detailed case studies that illustrated the nature of the UFO phenomenon.

Perhaps we should merely assume that any academics who read this book can figure that out for themselves, but nevertheless they might like to have some choice recommendations by scholars who have studied UFOs in depth. Also, a few of the UFO case studies included in the selected bibliography are considered highly dubious by most scientifically oriented UFO researchers. Or maybe this just illustrates that one man's meat is another man's poison.

RICHARD H. HALL
Brentwood, Maryland

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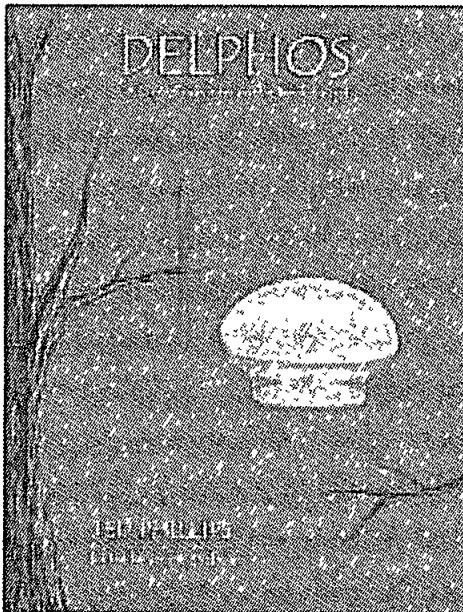
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The Editor will preview all articles as to appropriateness of subject, content, scholarship and format, and may return papers considered inappropriate for this journal. Papers that are deemed appropriate for review will be sent to two or more referees (see Submission section above for blind review). Following this review, authors will be provided with referees' comments and notified by the Editor regarding the manuscript's acceptance, rejection, or need for revision.

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