

Archaeological Anomalies in the Bahamas

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Abstract—Controversial claims have been made for the presence of anomalous underwater archaeological sites in the Bahamas by a number of investigators. The proponents emphasize extraordinary explanations for the anomalies and tend to bypass the scientific journals in favor of popular presentations with little scientific rigor. The skeptics debunk selected claims for some of the sites, do not adequately address the prominent anomalous aspects, and attempt to fit explanations with which they disagree into a general category of cult archaeology. This paper reviews the work of the proponents and skeptics, discusses some of the reasons why they are unable to reach agreement, and addresses the relevance of the controversy to the response of the archaeological community to extraordinary claims.

Introduction

Since the 1960's numerous claims have been made for the presence of underwater archaeological sites in the Bahamas which contain the remains of cultures capable of constructing large stone walls and buildings. Generally, mainstream archaeologists have not taken these claims seriously for two reasons. First, the sites themselves are anomalous because most of the area of the Bahama banks has been underwater since at least 8000 B.C., long before the appearance of the Mayas or any other high civilization in the Americas. Discovery of submerged cities would force a major reconstruction of American prehistory. Second, many of the proponents of these sites have conducted their research in an unorthodox manner, and have published in popular books and magazines rather than in scientific journals. In some cases they have linked themselves with psychics, UFOs and stories of the Bermuda Triangle, casting further doubt on their credibility from the point of view of the archaeological establishment.

As in other areas of anomalies research, proponents and skeptics have often drawn opposite conclusions from the same evidence. The evidence for

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and against the sites has yet to be presented in a balanced way, and the treatments of the subject to date have generated more heat than light. The wildest claims of the proponents have inspired attacks and charges of cultism by the skeptics, that contribute little to resolving the essential issue of whether anomalous findings do, in fact, exist.

Archaeology differs from many scientific fields in that amateurs have played, and continue to play, a major role, and are taken seriously by academic archaeologists. In contrast to many other fields, misguided amateurs can do irreparable damage such as destructive treasure hunting. Thus there is good reason not to dismiss amateurs as "pseudoscientists," even though they may not entirely follow rigorous academic standards, but rather to educate them. Despite the diatribes by some archaeologists (e.g., McKusick, 1982, 1984) against "psychic" archaeology and cultism, public interest in the subject has remained high, and some archaeologists see this as an opportunity for education of amateurs in archaeological methods, rather than as a cult to be debunked.

Unlike some popular anomalies in other fields, the Bahamas sites do not exhibit the "shyness" property, and are available for anyone to investigate. In this paper I will discuss the anomalous sites, the existing evidence for and against their man-made origin, and the ancillary conflicts which have diverted attention from the scientific issues. In the conclusion I will consider the response of the archaeological community to extraordinary claims, and the appropriateness of the label "cult archaeology."

The Anomalous Bahamas Sites

What are the sites being considered in this paper? They are purported to be the remains of high cultures, on the level of the Mayas, located underwater on the Bahama banks. These sites were presumably built when the banks were above water at a time of lower sea level, perhaps 10,000 years ago (c.f., Milliman & Emery, 1968). Much of the controversy has focused on a single site, known as the "road" or "wall" site near the island of Bimini, 45 miles east of Miami, Florida. A small amount of work has been done on a few other sites, including a "temple" near Andros island, and "columns" near Bimini. Numerous other roads, walls, geometrical patterns and pyramids have been described, most from aerial sightings, but have in general not been confirmed by independent sightings, nor is it possible to determine the exact locations from the published reports (Berlitz, 1984; Valentine, 1969, 1973, 1976).

In contrast, the sites of ancient human occupation discovered so far by mainstream archaeologists are those of Lucayan Indians, the inhabitants of the Bahamas before the arrival of Columbus. These sites are only a few hundred years old (Sears & Sullivan, 1978). There is no evidence at all of any higher culture. However, these archaeologists have considered only sites on land, most likely because such sites are more easily accessible than

submerged sites, and because the submerged portion of the Bahama Bank could not have been occupied in the last few hundred years.

The presence of early man on the Bahama Bank has become increasingly likely in the light of recent evidence of ancient occupation of Florida and the Caribbean islands. Evidence of human occupation dating to at least 12,000 years ago has been found submerged in sinkholes in Florida (Clausen et al., 1979). Shell middens (piles of accumulated waste) and other remains have been found dating back several thousand years in Cuba and Hispaniola, the two closest islands to the Bahamas (Cruxent & Rouse, 1969). Mammoth teeth have been found in ancient coastal areas submerged by rising water from the melting of the glaciers (Whitmore, Emery, Cooke, & Swift, 1967), and archaeologists have searched for artifacts of man on the U.S. continental shelf (Edwards & Emery, 1977). It is not unreasonable to speculate that the Bahama Bank was occupied when it was above water, although no evidence of such occupation has yet been accepted by mainstream archaeologists.

The problem is not so much with the concept of ancient man in the Bahamas as it is with the nature of the probable cultural level. Many ancient man sites elsewhere in the Caribbean consist of shell middens which would be difficult to find under water. The people looking for remains of higher cultures are looking for buildings and roads, evidence much easier to find under water if it exists. However, most mainstream archaeologists would not even consider such a search because they do not believe such a civilization ever existed. Thus it is not surprising that mainstream archaeologists have not made any of the purported discoveries.

Historically, underwater exploration in search of ancient man in these areas has been stimulated by two sources outside mainstream archaeology: psychics and transatlantic diffusionists. The most visible psychic source was the work of Edgar Cayce (1877–1945), an American psychic who spoke of the Bahamas as the last portion of the ancient civilization of Atlantis left above the waves. According to Cayce, Atlantis, which had been inundated in approximately 10,000 BC, would begin to rise again in '68 or '69 (E. E. Cayce, 1968). Although most archaeologists have had little regard for this "psychic archaeology," a geologist in 1958 did a substantial amount of research suggesting that at least some of Cayce's predictions were surprisingly consistent with recent geological discoveries, and that Bimini was not an altogether unreasonable location in which to look for underwater ruins. The geologist, whose work is presented in H. L. Cayce (1980), wished to remain anonymous, fearing damage to his career if his work in this controversial area were to become known.

The second source of interest in the Bahamas is harder to define, but appears to be independent of the Cayce material and more related to the hypothesis of ancient transatlantic cultural diffusion. The diffusionist point of view is much broader in scope than the strict Atlantis hypothesis. Sources for American civilization could include virtually any Old World culture,

from any period in history. Marx (1971), for example, brings up the possibility of Phoenicians. The most visible of the Bahamas explorers in this category were J. **Manson** Valentine, a zoologist and amateur archaeologist, and Dmitri Rebikoff, an underwater explorer and photographer.

My discussion of the history of this controversy will focus primarily on the "road" site near Bimini, which has been the most extensively studied site, and will briefly touch on the "temple" and on the problem of finding and investigating anomalous features.

The Bimini Road Site

The road site was discovered in 1968 by J. **Manson** Valentine, and has been described in articles by Lindstrom (1980, 1982), Mam (1971), Rebikoff (1972, 1979), and Valentine (1969, 1973, 1976), and books by Ferro and Grumley (1970) and Zink (1978). Skeptical articles describing the site include those by Gifford (1973b), Gifford and **Ball** (1980), Harrison (1971), **McKusick** and Shinn (1980), and Shinn (1978). The site consists of rows of stone blocks about one-half mile north of Paradise Point, North Bimini. The longest row of blocks is about 1600 feet long, with a J-shaped bend at one end. Although from the air the formation looks relatively uniform, the blocks themselves vary considerably. In some short sections, the blocks are generally square or rectangular, and give the very strong impression of a human-constructed wall. The Rebikoff articles contain an underwater photomosaic of the best example of the wall-like formation. In other areas of the site, however, the block-like structure grades into apparently random fracturing of the stones resembling natural beachrock deposits. The site was initially thought to be a buried wall, but it was soon established that it was composed of only a single layer of blocks, and it became known as the "road." Explorers on both sides of the controversy agree that it was unlikely to have been an actual road, but beyond that, the interpretations vary widely.

The key point in contention is whether the stones are beachrock, fractured naturally in place, or blocks carved and positioned by human agency. Beachrock is a common formation in the Bimini area, and consists of slabs of cemented sand which typically form along the shore (Scoffin, 1970). Beachrock naturally fractures as the sand underneath shifts, and can occasionally form rectangular blocks. Since beachrock forms along the beach, a submerged line of eroded blocks oriented parallel to the current beach would be highly suggestive of a beachrock deposit formed at a time of lower sea level. The skeptics feel that the road site is an example of this type of formation. The proponents of the man-made interpretation point to several anomalies which they feel argue against the natural beachrock explanation. These include an orientation not parallel to the beach and unusually geometrical construction.

From almost the day it was discovered, the site has generated controversy. According to Marx (1971), rather than getting caught up in the Atlantis controversy, Valentine and Rebikoff had hoped to keep the discovery of the road a secret. However, lacking capital for more intensive explorations, they joined forces with aircraft pilots Robert Brush and Trigg Adams, explorers who had been inspired by Cayce. Together they founded the Marine Archaeology Research Society (MARS). MARS expeditions in 1969 discovered several more sites of interest near the road, including clusters of cement and marble columns in several locations.

By 1970, the owners of the land on shore nearest the road site had obtained an exclusive excavation permit from the Bahamas government. They proceeded to exclude both the MARS group and Valentine and Rebikoff, who by this time had broken away from MARS and joined forces with Marx, an underwater explorer and archaeology editor for *Argosy* magazine. The Valentine group was not allowed to excavate the site, although they were allowed to dive on it (Marx, 1971). This "claim jumping" by the landowners on shore angered the original MARS explorers, who were unable to obtain permits for further work and confirm their interpretation of the site (Adams, 1971).

With the permit holder's permission, two groups closer to the mainstream were permitted to study the site in detail. They were led by Wyman Harrison, a geologist from Virginia Beach, and John Gifford, a graduate student in marine geology at the University of Miami.

Harrison (1971), published a short paper in the prestigious British journal *Nature*, in which he concluded that the stones were natural beachrock, and that the columns had come from a ship. Harrison's paper was the first response from the scientific community to the publicity about Atlantis. It begins by referring to the popular articles published by Valentine, Marx and Rebikoff, and the book by Ferro and Grumley. The Harrison paper, however, consists primarily of skeptical speculation about the possible natural origins of the road site, and presents no real data. Harrison also discusses the columns, and makes a somewhat better case that they are cargo left from a shipwreck. He does not address reports of columns arranged in a circle at a distance from shore (c.f., Zink, 1978), though, and only describes the jumble of columns near the Bimini entrance point. Harrison was not an archaeologist, and made no attempt at a comprehensive archaeological study of the purported anomalies. It seems likely that the paper was published solely to debunk the accounts in the popular press.

The study by Gifford, on the other hand, was far more thorough. Gifford, in work for his Master's thesis in marine geology, did extensive investigation of a small section of the road site, supported in part by the National Geographic Society. Unlike Harrison, Gifford measured and mapped the blocks, and performed a detailed analysis of the composition of the blocks. Gifford became convinced that the blocks had been formed naturally, and advanced this point of view in a lengthy paper (Gifford & Ball, 1980), and

in a short journal note in response to the Rebikoff (1972) article (Gifford, 1973b).

Despite his skepticism about the road site, Gifford joined forces with two amateur archaeologists, Talbot Lindstrom and Steven Proctor, the founders of the Scientific Exploration and Archaeological Society (SEAS). SEAS espoused the transatlantic diffusionist viewpoint, and was founded with the intention of gathering high-quality evidence of ancient transatlantic contact. The SEAS group returned in 1972 and 1979 and began exploration of the other promising sites in the area. They excavated some of the columns, and found them over a far wider area than reported by **Harrison**. From aerial surveys they discovered a linear feature off North Bimini, that, in contrast to the road site, made an oblique angle with the beach and cut across the submerged beach lines. Underwater, the feature consisted of regularly spaced piles of stones, extending for over a mile and a half across the sea bottom. They dubbed the feature "Proctor's Road."

The SEAS findings, more anomalous than those reported in the mainstream literature by Harrison and Gifford, were published only in *The Epigraphic Society Occasional Publications* (Lindstrom, 1980), a journal generally presenting the extreme transatlantic diffusionist point of view, and not taken seriously by the mainstream archaeological community. SEAS conducted several expeditions to Bimini as well as to sites in Central America. Once again, the work was not reported in the scientific literature, but rather in the *Explorers Journal* (Lindstrom, 1982). Still, this presentation was far more professional than the popular articles by others, but has not been referred to in the literature on either side of the controversy.

The next major player on the scene was David Zink, an English professor from Lamar University in Texas. Zink, who intensively studied the road site from 1974 to 1979 in a series of expeditions, was also an amateur, self-taught in archaeology. He enlisted the help of several geologists and archaeologists, however, and his work had the potential of being the definitive study of the road site. His supporters included the President of the Bahamian Senate, who established The Bahamas Antiquities Institute with Zink as Director of Research. He won the Explorer of the Year award from the International Explorers Society in 1976, and made numerous television appearances. In the end, however, his work had the effect of further polarizing the scientific community, and led in part to the **McKusick** (1982, 1984) attacks on psychic archaeology. His 1978 book, *The Stones of Atlantis*, not only concluded that the road was the ruins of an Atlantean structure, but that extraterrestrials from the Pleiades had been involved in its construction. Placing himself in the camp of the UFO and Bermuda Triangle advocates, he alienated himself even from the supporters of the Edgar Cayce Atlantis theory, and, by 1980, was unable to obtain sufficient funding and ceased his research. In contrast to the articles by his detractors, none of his work was ever published in the professional journals, and the detailed survey that he

did accomplish is not clearly described in his book for comparison with the debunkers' accounts. Zink did, however, present some of his work to the scientific community at the annual meeting of the Society for Historical Archaeology and Conference on Underwater Archaeology (Mahlman & Zink, 1982).

Zink's major contribution was a detailed mapping of the entire site, far more than the few blocks studied by Gifford. His data confirm Gifford's conclusions: There is only one course of blocks, arrayed in rows approximately parallel to shore. He did, however, turn up several additional anomalies which have not been addressed by his critics. The longer lead of the road takes a 90° turn perpendicular to shore, an unusual formation for beachrock. There is a fracture in the seabed running under the blocks at a different angle from the joints in the blocks, an anomaly for the hypothesis of natural fracturing. In several cases, large blocks are resting on smaller blocks beneath, although this does not appear to be a true second course of blocks. Zink was also the only investigator to address another important archaeological issue: the presence or absence of artifacts in addition to the blocks themselves. Although he recovered a stone building block and a possible marble sculpture, the context was not preserved and the artifacts themselves were undatable. There is no reason to assume that they were associated with the blocks. Unfortunately, Zink's popular presentation made it unlikely that any mainstream archaeologist would take his work seriously.

The remaining study of interest was by Eugene Shinn, an orthodox geologist (McKusick & Shinn, 1980; Shinn, 1978). One of the articles reporting his work (McKusick & Shinn, 1980) notes that he is a member of the U.S. Geological Survey (USGS), but that the study was at his own expense and not part of a USGS-sponsored project. That even a skeptical article has a disclaimer of this sort is indicative of the controversial nature of the subject. Shinn addressed the important question of whether or not the blocks were arranged by man. He reasoned that blocks which had formed in place and fractured would have identical sediment bedding in adjacent blocks. Blocks which had been moved by human agency would be likely to show different bedding patterns. He drilled cores into adjacent blocks, a procedure attempted with little success by Zink as well. X-ray photographs of some of Shinn's cores showed that the blocks had similar bedding patterns, and the bedding planes and dip direction convinced him that they had been formed as beachrock on a sloping beach and fractured in place. In other cores, taken from the north part of the site, large pebbles in the rock prevented formation of laminations, but Shinn concluded that the similarity from block to block was further evidence that they had fractured in place (Shinn, 1978).

In another part of Shinn's project, Carbon-14 dates were taken on the material in several cores. Although the spread was quite wide, the dates ranged around 3000 years before the present. This recent date was **inter-**

preted to show that the blocks could not have been formed in the time frame required by the Atlantis hypothesis. It is worth noting, however, that the dates are consistent with the transatlantic diffusion by Phoenicians hypothesis, a point of view not discussed by McKusick and Shinn. Since sea level curves (e.g., Milliman & Emery, 1968) indicate that the site was long under water by this date, the Carbon-14 finding is also anomalous. McKusick and Shinn explain it away by saying that a substantial amount of sand (seven to nine feet) eroded from underneath the blocks, submerging them to their present depth. Considering the precise linear arrangement and relative lack of disturbance of the site (c.f. pictures by Rebikoff, 1972 and Zink, 1978), this explanation also does not seem parsimonious. Given the wide range of the Carbon-14 dates, perhaps the most likely explanation is that the samples were contaminated by relatively recent biological intrusion. Zink (1978), in an appendix to his book, provides a balanced and even somewhat skeptical discussion of the wide spread of dates from Gifford's work and the sea level curves of others. In their *Nature* publication, McKusick and Shinn (1980) were so intent on debunking that they failed to address anomalies generated by their own work, and devoted much of the article to an attack on transatlantic diffusionists and the Cayce "religious cult." They interpret the Bimini controversy as a "clash between scientific interpretation and religious dogma." As I have shown, the proponents of these sites as significant anomalies are a more heterogeneous group than McKusick and Shinn would imply. Far from being a coherent dogmatic position, the hypotheses of the proponents range from Atlantis to Phoenicians to extraterrestrials. In the midst of the competing claims and hypotheses, however, the question of the nature of the anomalies has still to be addressed objectively.

The contradictory descriptions of the site by those investigators who believe it to be man-made and the skeptics who believe it to be a natural deposit illustrate the ways in which the same evidence can be arranged to fit preconceived hypotheses. The investigators of the site who believe it to be man-made emphasize the regular block-like structure, whereas the skeptics emphasize the random character of the rest of the site. Similarly, the skeptics describe the site as being parallel to the beach line, and therefore likely to be a submerged beachrock deposit, whereas the believers note that it is not quite parallel to the present beach line, and therefore likely to be a man-made formation. Other characteristics which might discriminate between natural and man-made features also receive different interpretations. Cores through the blocks reveal similar, but not identical layers. For the skeptics this is further evidence that the blocks were all originally part of a single deposit which fractured in place. For the believers the slight differences between the blocks are evidence that they were assembled from different sources. There is not even general agreement on the composition of the blocks. The skeptics (e.g., McKusick & Shinn, 1980), as well as Zink (1978), say that they are composed of beachrock, whereas Rebikoff (1979) describes micrite, a different type of rock. Some of the more puzzling evidence, such

as the fact that some of the large blocks are resting on smaller stones (Rebikoff, 1979; Zink, 1978), has received no comment from the skeptics.

Figures 1a and 1b illustrate the complexity of the road site area. There are numerous submerged beach lines and other features criss-crossing the area. Note the 90° curve in the road, and "Proctor's Road" cutting diagonally across the submerged beach lines.

The Andros "Temple" Site

The temple site was discovered from the air in 1968 near the island of Andros by pilots Robert Brush and Trigg Adams. It is a stone, foundation-like structure approximately 60 X 100 ft. Later in 1968, J. Manson Valentine and Dmitri Rebikoff investigated the site, and described 3-foot thick, skillfully worked limestone walls rising 2 feet above the ocean bed, and resembling the Mayan "Temple of the Turtles" in floor plan (Zink, 1978). Marx (1971) has described several more sites and concluded that they were man-made. Marx noted that even before Valentine and Rebikoff had explored their site, the press was already reporting that an Atlantean temple had been found. Due to the relative inaccessibility of these sites, and the uncertainty concerning their locations, no one else has made a careful study of them. The Atlantean temple story circulated for nearly 10 years largely unchallenged. In 1976, David Zink, travelling with the Cousteau group during the filming of "Calypso's Search for Atlantis," examined the Valentine-Rebikoff site, and found it to be composed of much smaller stones, with no evidence of additional stones below the sea bottom. That, and the claim by a man from Andros that he helped build it as a sponge pen in the 1930's, convinced Zink that it was unlikely to be of ancient origin (Zink, 1978). McKusick (1982) gives Zink credit for some good judgement in this case. Nevertheless, the site, and others like it, has still not been studied by a professional archaeologist, and Zink's observations differ from those of Marx as well as Valentine.

Searching for Anomalies in the Bahamas

One of the central problems with investigation of underwater anomalies is the difficulty of relocating sites. The road site is within a half mile of shore and easily accessible, but the others have not been available for study. In 1983, in an effort to make more reliable maps of other bottom features on the Bahama bank, I obtained photographs from Landsats 1 and 4, two satellites which provide photographic coverage of the Bahamas from an altitude of about 400 miles. The size of the smallest picture element in the Landsat 4 photograph was about 30 meters, and in the Landsat 1 photograph about 100 meters. This resolution was not good enough to identify buildings, either modern ones on land or ancient ones under water. Despite the low resolution, however, several anomalous large-scale geometric pat-

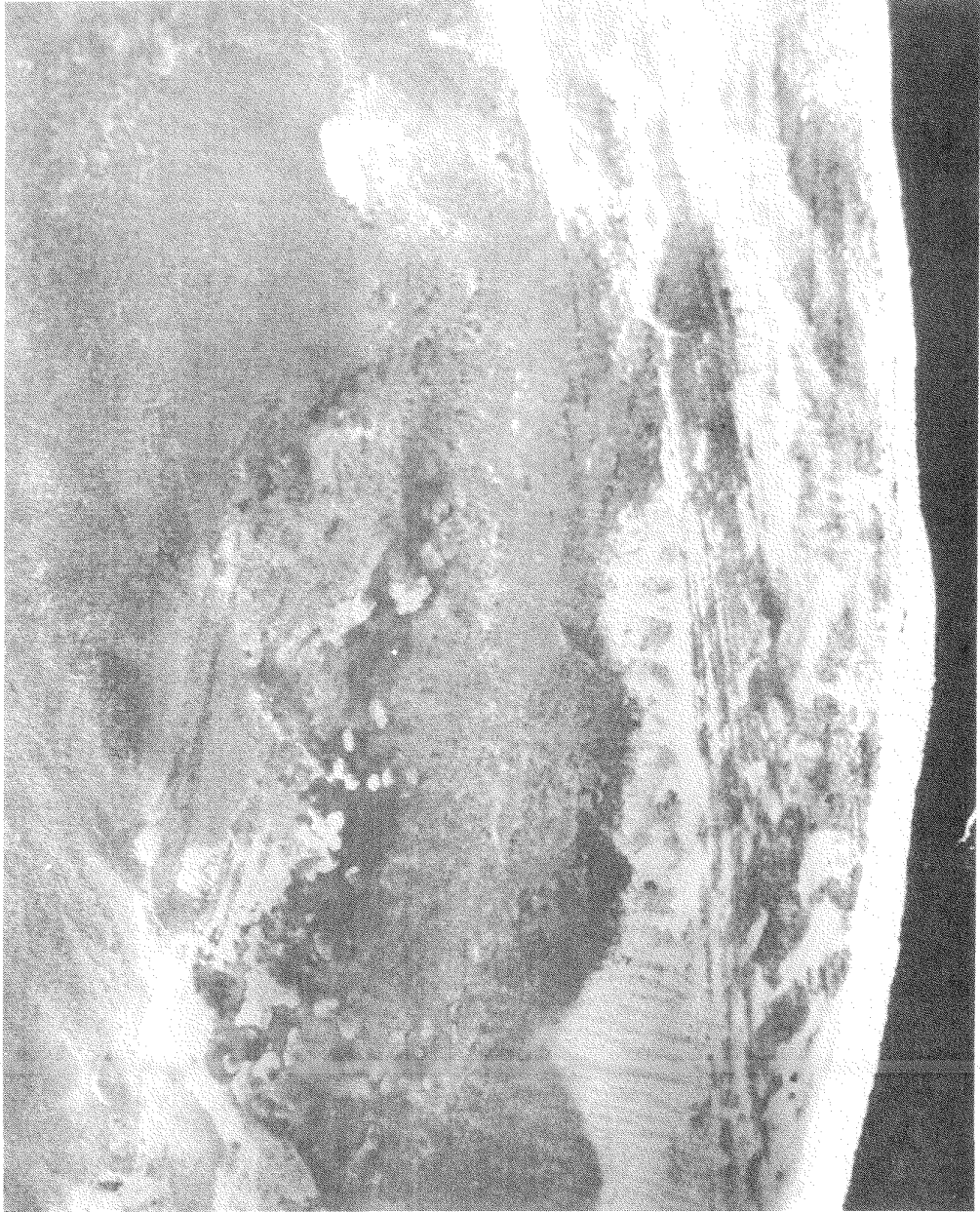


Fig. 1a. Vertical aerial photograph from about 8000 feet altitude showing the area around the road site; photograph provided by the Edgar Cayce Foundation.

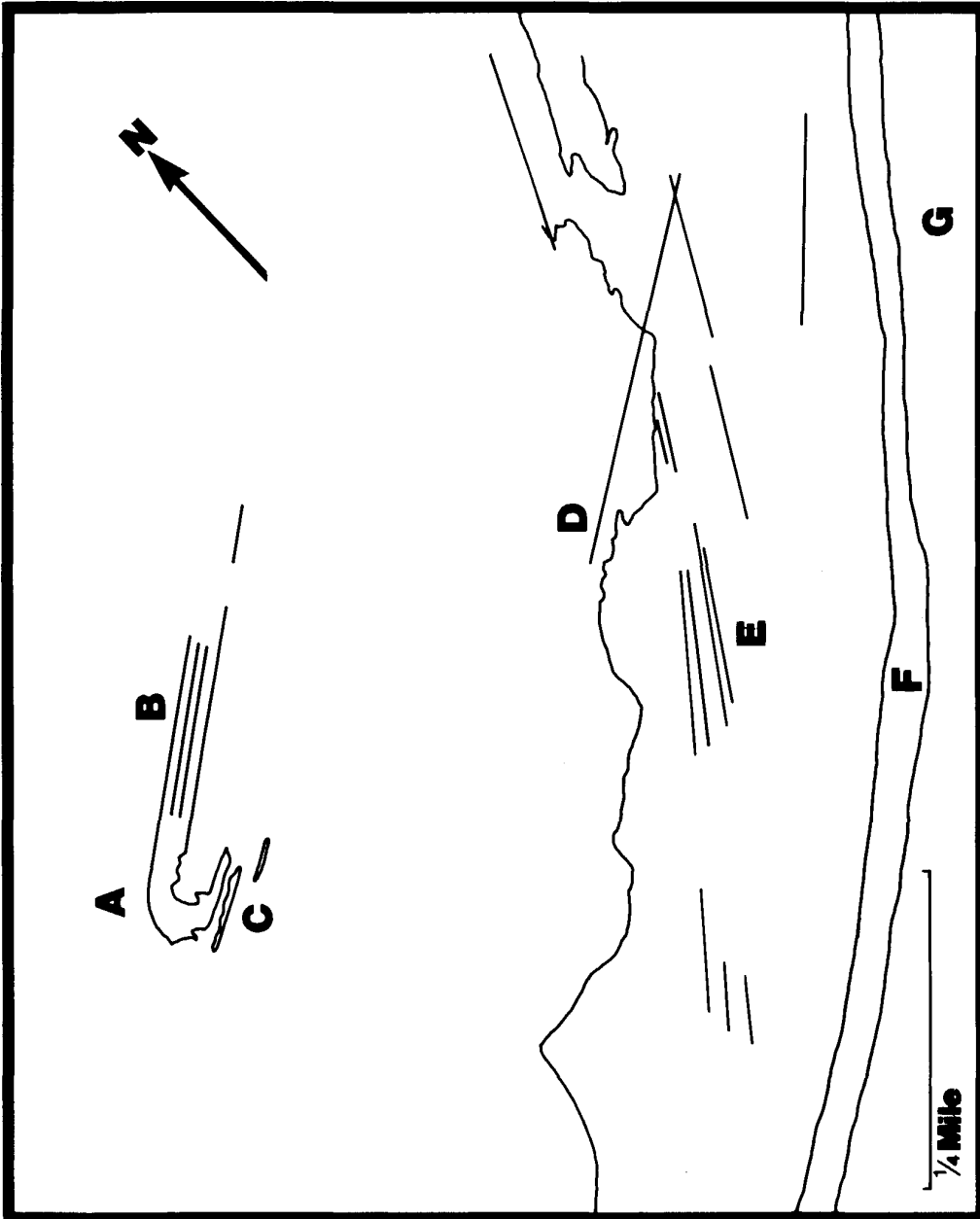


Fig. 1b. Map drawn from the photograph, highlighting features including: A, the 90° bend in the road site; B, the parallel rows of stones; C, the short section containing the most regular blocks; D, "Proctor's road" (note how it cuts diagonally across the ancient beach lines); E, ancient beach lines; F, current beach; G, forested shore. Scale mark is $\frac{1}{4}$ mile.

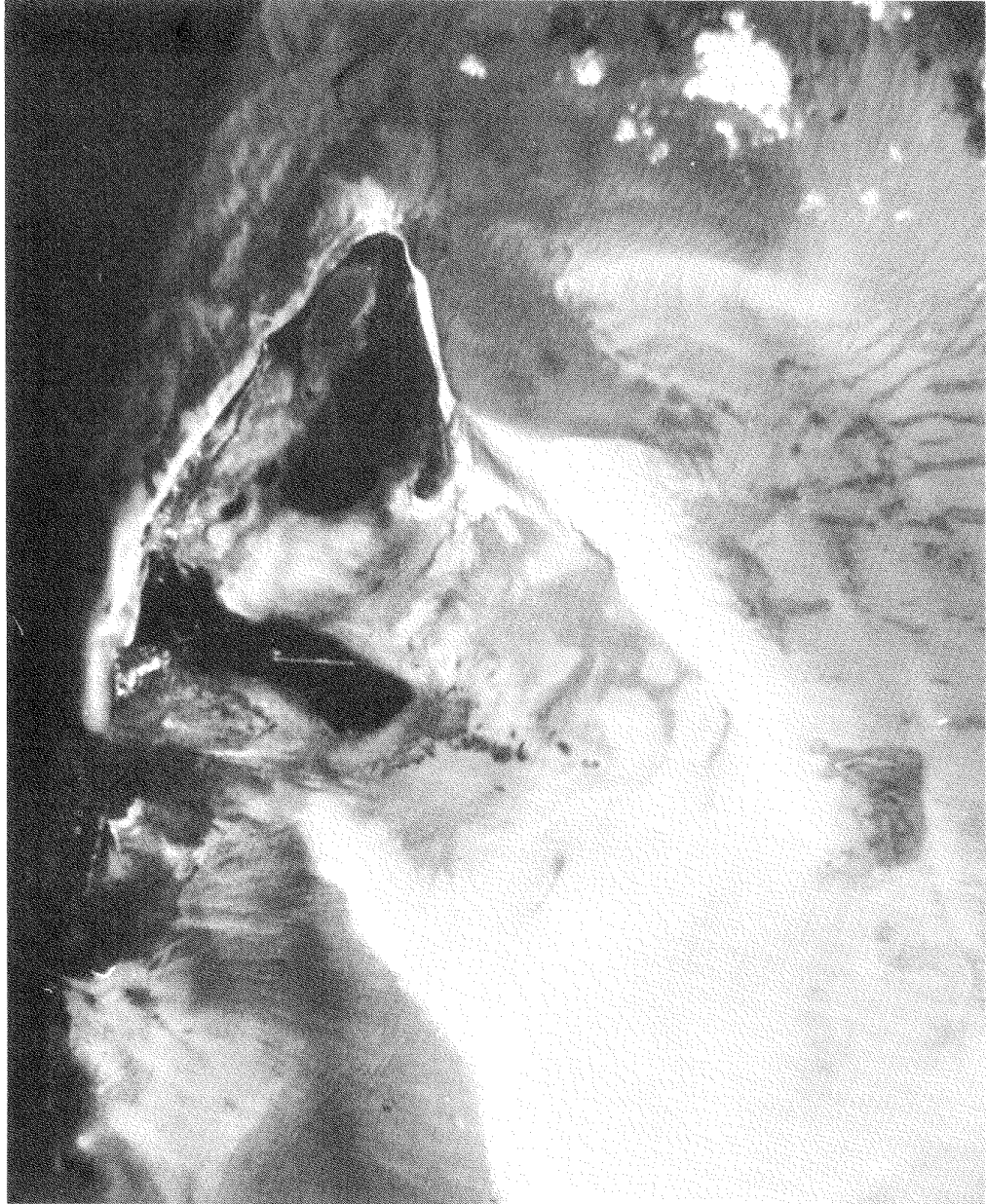


Fig. 2a. Thematic mapper satellite photograph of Bimini area from Landsat 4, blue-green band, 14 January 1983; photograph provided by the U.S. Geological Survey.

terns were clearly visible. These included some roughly pentagon-shaped figures, rectangles, and a figure with a right-angle corner and mile-long sides, oriented very close to true north-south, east-west. Figure 2a is a Landsat 4 photograph showing some of these anomalous features near Bimini (see also Figure 2b, a map drawn from the photograph).

Comparison of the photographs with Valentine's work revealed that at least one of the anomalous features was not a new discovery, and that satellite mapping offers a major improvement in the ability to accurately relocate sites. Valentine (1976) reported and attempted to map one of the same rectangles from a low-altitude aircraft. His location was incorrect by

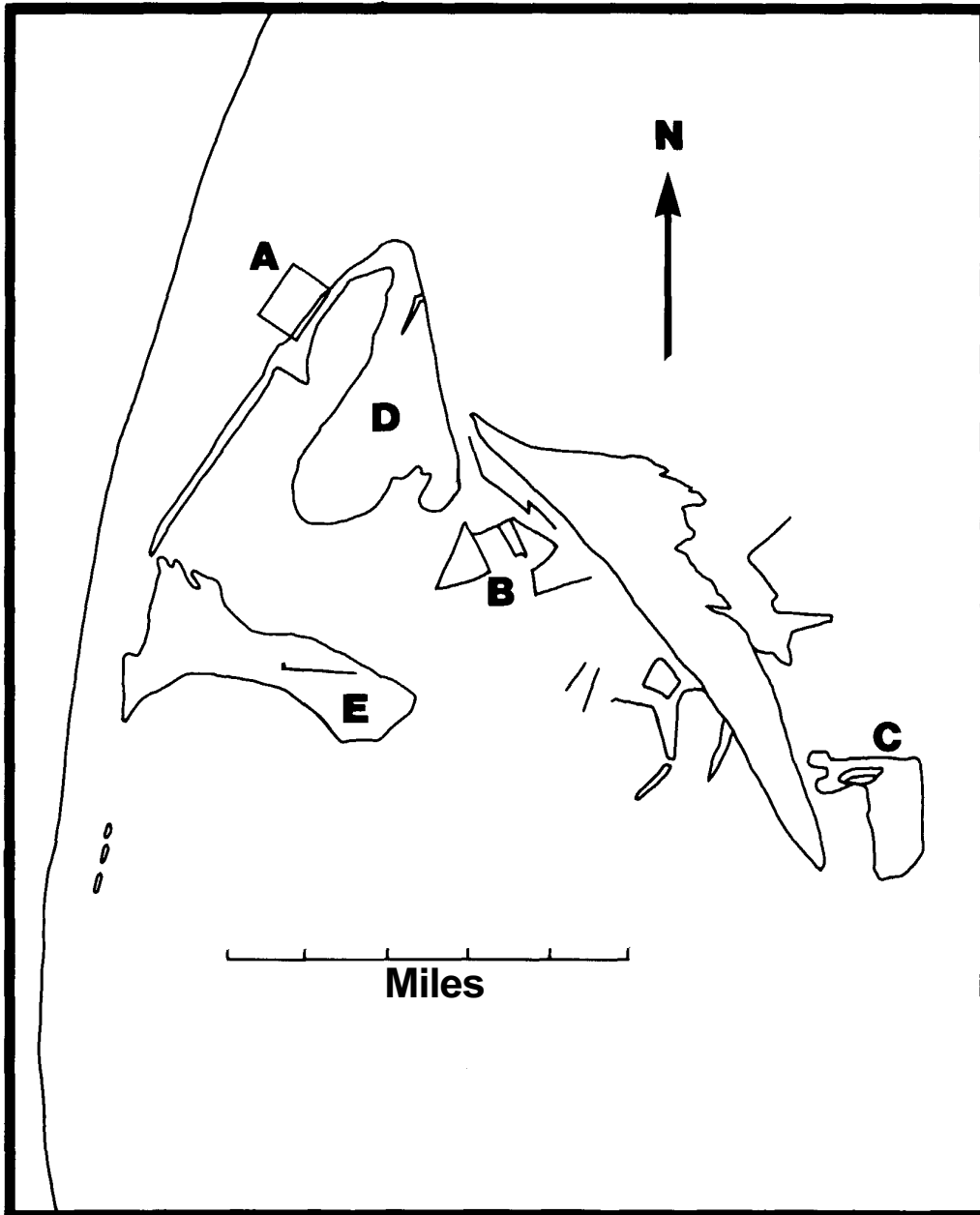


Fig. 2b. Map drawn from the photograph, highlighting features including: A, the area covered in Figure 1; B, a "triangle," "rectangle," and "pentagon"; C, a rectangular corner; D, the island of North Bimini; E, the island of South Bimini, with mile-long aircraft runway. All features other than the islands are submerged in 3 to 20 feet of water.

about one-half mile, and the size he gave was off by nearly a factor of 10 from the satellite photograph.

The satellite photographs provided no information regarding the depths of the patterns or their causes. To further study the anomalies I conducted a short expedition to survey the areas from low-flying aircraft and from the surface. Patterns identified from the satellite photographs were clearly recognizable from an altitude of 1000 to 6000 feet, and photographed using water-penetration techniques I had developed previously (Richards, 1980).

The patterns were still clearly unusual, but there was no further detail suggestive of buildings or other human construction. In a small boat I travelled to some of the patterns for on-site study. From the surface, there was no sense of an anomaly. The patterns were caused by differential growth of seagrass and abundance of white sand. No unusual structures were visible.

This work illustrates the problem of studying these anomalies. Valentine has called some of his patterns "ghost patterns," visible from the air but not distinctive at the surface. Observed from a high altitude, the patterns are quite unusual, and a land archaeologist would take similar evidence as a good indicator of a possible site. Whatever causes these patterns, however, is likely to lie under several feet of sediment. Thus, for the moment, the patterns remain simply anomalous. Calling them "cities" or "buildings" is not justified, but they should not simply be dismissed without further investigation.

The problem of discriminating man-made ruins from natural geological formations is by no means unique to these sites. For example, Jones (1983), has described the ancient walls in the Menai straits of North Wales. Even more than the Bahamas sites, the Welsh sites have persistently been linked with Atlantis. The Welsh walls, which were submerged as the sea level rose, were apparently ancient fish traps. Their builders made use of natural bedrock formations, blending man-made walls in as necessary. Jones notes the difficulty of separating true discoveries of submerged walls from natural forms said in legends to be sunken Atlantean cities. Jones⁷ careful study is the type of work sadly lacking in the Bahamas. What is different about these sites in the Bahamas is that the strong views on both sides, combined with the inherent unlikelihood of any ruins at all, have made it difficult to obtain objective descriptions or evaluations of the sites. The reader attempting to assess the evidence usually does not have the opportunity for on-site inspection, and must rely on his perceptions of the reasonableness of the evidence and arguments from both sides. As I will show next, the ways in which the proponents and skeptics have pursued these claims has emphasized the extraordinary nature of the explanations, while downplaying the actual evidence and discouraging the resolution of the anomalies.

The Pursuit of Unconventional Archaeology

The anomalies discussed here would seem to be relatively easy to resolve, either as unusual geological features or as archaeological ruins. Why, then, has there been a sustained controversy? Debunkers have simplified it into a struggle between cult archaeology and science, yet the actual situation is more complex. There are issues concerning the methods used for studying the anomalies, and issues concerning the role of the popular press and the extraordinary explanations that have been advanced by some of the pro-

The search for the anomalies themselves, and attempts to verify their man-made origin, is what Truzzi (1977) has called a cryptoscience. The claims are of an extraordinary anomaly—ruins—within the purview of the existing science of archaeology. In theory, achieving scientific acceptance would simply require a validated find of man-made ruins. Failure of a skeptic to find a site, however, does not disprove claims of their existence. Thus the existence of a multiplicity of possible sites, most of which have never been investigated, sets the stage for the long-term persistence of these claims. Ironically, it has not only been the uncritical nature of the popular accounts, but also the polemical tone of the response by the skeptics, which has perpetuated the controversy.

Methodological Issues

The methodology of the investigators is central to the resolution of an anomaly. To some degree, the differences in approach between archaeologists and geologists have contributed to the problem of resolving these anomalies. They are anomalies only to archaeology. That is, current reconstructions of prehistory do not allow for ruins in this area. Archaeology looks for patterns in context. Geology provides tools which can help resolve the natural or man-made origin of those patterns, but geological methods only have meaning in the context of an archaeological investigation. Thus the proponents (e.g., Zink, 1978) can agree that the road site blocks are indeed composed of beachrock, while at the same time arguing for the hand of man in their arrangement. Geological arguments such as those of Gifford and Ball (1980) and Shinn (1978) largely miss the point of view of the proponents. No one has critiqued arguments based on large-scale patterns, such as Zink's (1978) contention that the road site is megalithic, or **Rebikoff's** (1979) contention that the road site is an ancient harborwork, presumably because of the reasoning that beachrock formed in *situ* precludes any modification of the site on a large scale. The work of Jones (1983) in Wales demonstrates that this assumption is not necessarily correct because a site may have both natural and arranged components.

The actual fieldwork of the proponents (in contrast to their extraordinary explanations) has been appropriate to the early exploratory phases of amateur archaeological work: locating and mapping finds so that specialists can determine their origin. In some cases, proponents collaborated with relatively mainstream researchers (e.g., Lindstrom and Gifford, or Zink and the Cousteau Society), and differ primarily in their interpretation of the results. In this phase, the proponents have done as well or better than the skeptics. For example, Rebikoff (1972, 1979) has produced an excellent **photomosaic**, and Zink (1978) has produced an overall plan and detailed drawings of selected areas of the road site. The Gifford and Ball (1980) article has some maps of the area, but does not include the details of the entire road site. In contrast, the Harrison (1971) article contains a somewhat inaccurate **dia-**

gram of a small portion of the road site, and Shinn (1978) included only a diagram of the blocks that he cored, without noting their relationship to the rest of the site. McKusick and Shinn (1980) provide no diagram at all that might allow identification of the source of their samples.

On the other hand, the proponents have not done well in the next phase of the investigation: the specialized work which could determine the origin of the sites. Zink (1978) removed potential artifacts without regard to context, making it impossible to determine whether they were in any way associated with the site. This is an important problem, since Shinn (1978) has pointed out that the absence of confirmed artifacts considerably weakens the case for a man-made interpretation of the site. Gifford and Ball (1980) and Shinn (1978), with their greater access to professional resources, were able to have tests performed on geological samples. However, Zink (1978) indicates that he, too, understood the importance of such tests as cores through adjacent blocks and Carbon-14 dating, and collected samples for these tests, although he reported no results.

The methodological problems of proponents such as Zink are those that would be expected in any largely amateur undertaking, and do not in themselves distinguish this work from other amateur archaeology. In most sciences, all phases are almost exclusively conducted by professionals. In archaeology, on the other hand, much of the work is performed by amateurs, some of whom have status equal to professionals and present papers and make original contributions to the science. Both amateurs and professionals acknowledge the valuable function amateurs serve by discovering sites the professionals would otherwise miss, because the demands on the latter preclude this sort of low-yield exploration (Stebbins, 1980). In the case of the Bahamas sites, however, the professionals have taken primarily a debunking stance, rather than using these popular anomalies as an opportunity to educate amateurs in more sophisticated archaeological methods.

One significant methodological issue has tended to overshadow the normal aspects of these investigations — the use of "psychics." Since one source of interest in these sites was the work of Edgar Cayce, psychics have been a part of the process from the beginning, and their use has tended to polarize opinion.

Psychics have been used in two ways in archaeology, neither of which typically receives support from mainstream archaeologists. First, in the exploration phase, they have been used to locate potential sites. Second, following site discovery, they have been used to provide details about the sites or artifacts that cannot be obtained using the standard archaeological methods (Goodman, 1977). This is a significant distinction. A site prediction is verifiable by the actual locating of a site, whereas other information may include extraordinary explanations which are difficult or impossible to verify.

Use of psychics and dowsers to locate sites has become surprisingly common among archaeologists, though controversial. For example, Schwartz

and DeMattei (1986) collaborated with The Institute of Nautical Archaeology, very much a mainstream organization, to test the usefulness of psychics in locating shipwrecks. In principle, use of the intuition of a person labeled "psychic" is no different than using an archaeologist's "intuition" to locate a site. Several mainstream archaeologists have been willing to consider the use of psychics or dowsers in this manner (Martin, in the preface to Goodman, 1977; Hume, 1974; Thomas, 1979).

The use of psychics to provide details about artifacts or sites that cannot be obtained using archaeological methods is considerably more problematic, and is unlikely to ever be considered a valid source of evidence by the archaeological community. It goes against the entire tradition of archaeological reasoning based on the physical evidence, and is a major source of the extraordinary explanations which fuel the controversy. Critics (e.g., McKusick, 1982, 1984 and Feder, 1980) have confounded these two concepts, lumping them both in the category of "cult archaeology."

Extraordinary Explanations and Popular Support

The original discovery of the sites was accompanied by some extraordinary claims and attracted substantial media attention, leading to a reflexive negative response by the scientific community. As McClenon (1984, p. 72) has noted, "continual interaction with the media is repugnant to established scientists and further supports their rejection of the deviant researcher." After only a cursory study of the road site, it was rejected as an archaeological anomaly in the Harrison (1971) article in *Nature*. The article implied that the other anomalous sites were also unworthy of further investigation.

Increasing adherence to scientific methodology by the investigators is one way for the study of a rejected anomaly to regain some legitimacy in the eyes of the scientific community. Despite the debunking article by Harrison, the subject was considered appropriate for a Master's thesis (i.e., Gifford, 1973a). This strictly geological study of the road site (Gifford & Ball, 1980) was funded and published by the National Geographic Society. Since it resolved the road site anomaly in favor of a natural explanation, and contained no extraordinary claims, further funding became unlikely.

For those who felt that there were still claims worthy of investigation, the alternative was to generate support from the general public. The popular media are needed as an aid to recruitment and funding. Consequently, the anomaly must have an unusual quality to generate media interest. The double-bind is that this quality, and the subsequent media attention, "spoils the act" for the deviant researcher in his or her attempt to gain legitimacy within science (McClenon, 1984). The situation is especially touchy in archaeology, since more than most disciplines this field has long depended on media publicity and public funding.

Despite the attraction of media attention, there were substantial differences among the approaches of the various proponents. Valentine, the dis-

coverer of the road site, published in the house publication of the Miami Museum of Science, and in the *Explorers Journal*, both of which are outlets for both professional and amateur scientists, and are more closely related to scientific journals than to popular mass media. Similarly, Lindstrom's work was published in the *Explorers Journal* and *The Epigraphic Society Occasional Publications*; again, not professional journals, but perhaps the only outlets available to those conducting amateur archaeology on anomalous sites. Rebikoff published in the *Explorers Journal* and the *International Journal of Nautical Archaeology*, the latter being a major mainstream journal in the field. Even Zink presented some of his work at a mainstream scientific meeting (Mahlman & Zink, 1982).

Thus, in many cases, the investigators, whatever extraordinary explanations they may have preferred, were serious amateurs following the scientific method to the best of their ability and attempted to publish in the nearest thing to scientific media (e.g., the *Explorers Journal*) that would accept their work. There is little in their writings that could be deemed antiscientific.

The popular books, on the other hand, were typically not written by the principals in the work. The first book, that by Ferro and Grumley (1970), was more a travelogue and journal of the personalities involved than a report of an expedition. The Berlitz (1969, 1984) books are the major source popularizing Valentine's work, yet Berlitz himself did not conduct a study of the sites. Most of the other popular books are entirely secondary sources, repeating Valentine and Berlitz, and often adding other speculations without attribution.

Zink's (1978) book must be considered separately. It was written in a sensational style in an effort to obtain support from the general public, yet contained descriptions of several years of in-depth work. Zink's explanations, including extraterrestrials as well as Atlantis, are the most extraordinary ones proposed, yet paradoxically he also conducted the most extensive field work, and was fairly successful in eliciting participation in his expeditions from academically oriented people, including geologists and archaeologists. Were it not for the choice to seek popular support, the field work itself could certainly have been presented in a more conservative format. Unfortunately, the book provided ample ammunition for the critics of cult archaeology.

The continued media attention provoked an even stronger response from the critics. Attention turned from the details of the sites to attacks on the investigators and their motivations. By the 1980's, the entire subject had been labeled a "hoax" (Shinn, 1978), and proponents, regardless of their approach, labeled, "religious cultists" (McKusick, 1984; McKusick & Shinn, 1980). As outlined in McClenon's (1984) model of deviant science, any investigator who became interested in the rejected anomaly was now labeled as deviant, reducing chances for publication, promotion, and tenure, and thus virtually guaranteeing that any further research had to be pursued outside the mainstream scientific channels.

Conclusion

The Bahamas controversy can be looked at in the larger perspective of the response of the archaeological community to extraordinary claims. Stiebing (1987) addresses the phenomenon of cult archaeology or pseudoarchaeology. He notes that many divergent viewpoints are at odds with mainstream archaeology, but feels that three common features allow them to be treated as a single phenomenon: (1) the unscientific nature of the evidence and methodology, (2) the tendency to provide simple, compact answers to complex, difficult issues, and (3) the presence of a persecution complex and ambivalent attitude toward the scientific establishment. The Bahamas controversy can be examined with regard to these criteria.

First, the Bahamas investigations were generally conducted in a manner appropriate to the early stages of amateur exploration of potential sites, with some of the proponents performing more careful survey work than any of the skeptics. Some proponents were also aware of scientific methods for more in-depth study and verification, although they did not successfully carry out such study. In general, it is the explanations, not the methods, which are extraordinary.

Second, the explanations of the proponents are far from simple and compact, with several competing factions espousing Atlanteans, Phoenicians, and extraterrestrials. An argument could be made that these are separate cults, since the Atlantean and Phoenician interpretations are mutually exclusive. However, the proponents with differing views often joined together (e.g., in the MARS organization), and seemed to have a high tolerance for a diversity of explanations. Stiebing's feature seems more descriptive of the debunkers, who appear to feel that our current knowledge of prehistory rules out the presence of any underwater sites in the Bahamas, regardless of the explanation advanced. Although all the explanations currently offered by the proponents may be wrong, any confirmed site is likely to require *some* extraordinary explanation.

Finally, a persecution complex would not be surprising because the proponents are, in fact, persecuted. They have not, however, answered attacks such as those of McKusick with attacks of their own. Their attitude toward the scientific establishment is driven by the need, on the one hand, for popular support in order to survive, and on the other hand, their recognition that scientific methods will be required to validate the anomalies and carry on advanced work. Nevertheless, it is certainly true that they tend to stand by their extraordinary explanations, and have not made a sustained effort to engage in a scientific dialog. Nor, of course, have their opponents.

Am I saying that cults related to archaeology, as addressed by McKusick and Stiebing, do not exist? No, the *popular response* to the Bahamas claims, as represented by the numerous articles in the media, is often uncritical and the nature of the material may encourage cultism. Neither do I feel that any of the claims of the proponents are established. The weight of the evidence

on the road site, primarily the study of Gifford and Ball (1980) rather than the polemics of the debunkers, favors a natural origin.

But the investigators of the sites themselves are a heterogeneous group with an interest in extraordinary anomalies. Regardless of their preconceptions and media hype, they may have discovered genuine sites worthy of further investigation. Unfortunately, the labeling of the entire area of inquiry as religious cultism has caused the rejection of other anomalies which have simply not been investigated, and has helped fuel an antiscientific bias in the general public who perceive an elite unwilling to examine the evidence. The debunking stance has actually been counterproductive, helping to perpetuate the mythology of the road site, rather than encouraging careful study of all the anomalies.

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