

Lorence G. Collins

Article

Noah's Ark near Dogubayazit, Turkey?

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Books and DVDs are still being sold, and websites claim, that a boat-shaped structure in the Dogubayazit area of eastern Turkey is what remains of Noah's ark. The formation is described as being composed of petrified wood, with iron washers, rivets, and brackets that held the ark walls together, and anchor stones that served to stabilize the ark. While remains of Noah's ark could conceivably be found at another site, more careful examination of this particular formation shows that (a) the "petrified wood" is actually basalt; (b) the supposed iron washers, rivets, and brackets are cemented grains of magnetite containing manganese and titanium; and (c) the stones labeled as "anchors" naturally occur in the area. Initial findings to this effect were noted by this author in the Journal of Geosciences Education 44 (1996): 439–44. Considering ongoing claims for the Dogubayazit formation, this article more thoroughly describes the geology with additional argument, figures, and information.

In eastern Turkey, 27 kilometers southwest of Mt. Ararat (fig. 1A), is a rock structure that some interpret to be the fossilized remains of Noah's ark. It occurs near Dogubayazit, east of the village of Nasar and north of the Turkey-Iran border. A map of this structure is shown in figure 1B and is illustrated in figure 1C.

This "Noah's ark" site in eastern Turkey was investigated in the 1970s and 1980s by Ron Wyatt, David Fasold, and John Baumgardner. Salih Bayraktutan, a geologist from the Atatürk University in Turkey, acted as a guide and host for the Turkish government during these studies. In the early 1970s, previous investigators dynamited the side of the ark site to look for petrified wood and found none. They decided that this site was a natural geologic structure.¹ Ian Plimer, a professor of mining geology from the University of Melbourne in Australia, also examined the ark site one summer in 1994 with

David Fasold. The belief persists that this site contains the fossilized remains of Noah's ark.² The claims for that judgment are discussed first in this article, and then followed by a scientific evaluation.

The Formation Interpreted as the Remains of Noah's Ark

Different kinds of evidence have been used to support the interpretation that this formation is the fossilized remains of Noah's ark. Its length is 515 feet (157 meters), which circumstantially is the same length as 300 Egyptian cubits and the same dimensions as given by Genesis 6:15 for the ark.³ Noah's ark is described as landing in the mountains of Ararat (Gen. 8:4) and after landing there, the conjecture is that it eventually slid down to its present position where its supposed ribs (gunnels) were exposed following an earthquake and landslide.⁴

Evidence for the ark's sliding down from a higher elevation is said to be the presence of manganese-rich rocks (interpreted as ballast) from the distant mountains.⁵

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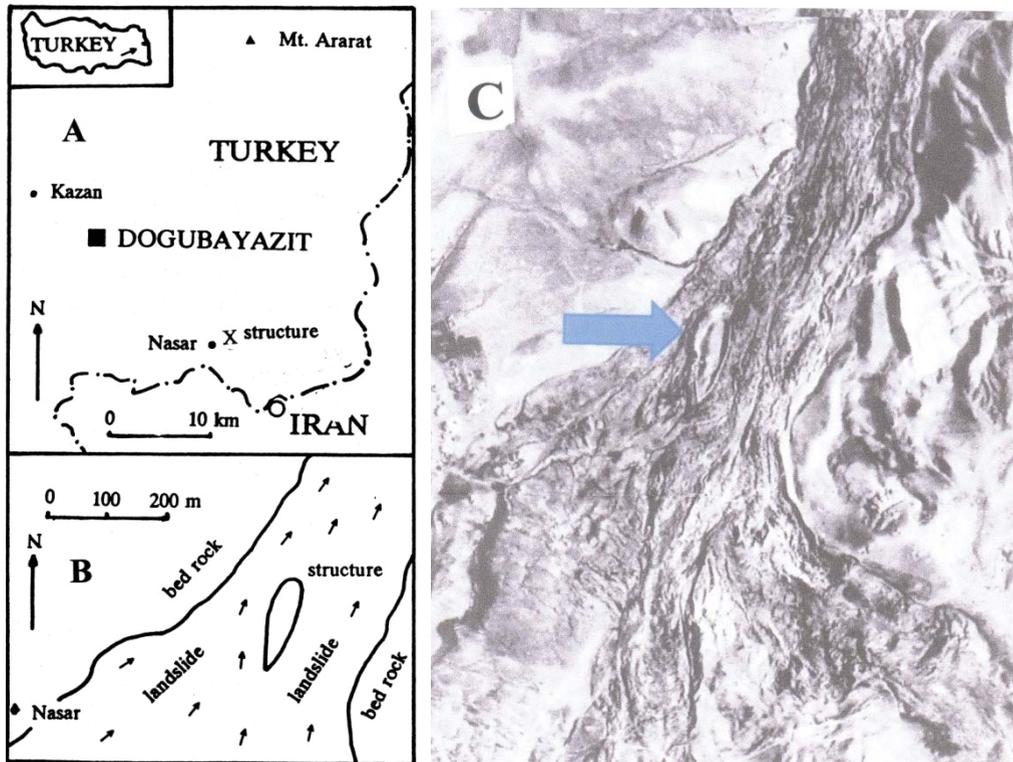


Figure 1A: Map showing location of ark-structure "X"—east of Nasar and north of the Turkey-Iran border. Symbol "O" is Mt. Judi.

Figure 1B: Map of part of what is shown in Figure 1C. Arrows point in the direction of the landslide from mountains in the vicinity of Mt. Judi.

Figure 1C: Aerial view of area in Turkey where the elongate, elliptical, ark-shaped structure is located (near center, arrow). Landslide debris is shown which came down from the slopes of Mt. Judi (from bottom to top of image) and which extends around the ark. Google Earth shows the location of the center of the formation to be: Latitude 39°26'26"N, Longitude 44°14'0.5.3"E; elevation 6,625 feet. (Aerial photo given to David Fasold by Atatürk University.)



Figure 2. Alleged fossilized remains of Noah's ark, as seen looking south toward the mountains in the Turkey-Iran border (fig. 1A). (A) Two people standing on the ark provide scale. (B) Semi-parallel lines are ribbons laid out by investigators. (C) White rock near the center is fossiliferous limestone. (Photo provided by David Fasold.)

Article

Noah's Ark near Dogubayazit, Turkey?

Local accumulations of such rocks there were interpreted to be places where the ballast was scraped off the bottom of the ark as it was sliding down to its present position (fig. 1C). At the completion of its sliding, the ark is said to have been impaled by a wedge of white limestone (fig. 2 at C, middle of the ark in front of the two standing people; right side, outcrop rises above the surrounding surface).⁶

After being transported by a landslide and before being exposed at the surface, the ark is said to have been covered by a volcanic lava flow that protected it from erosion and weathering. It is claimed that through time, water seeping through this volcanic rock-cover leached out various elements (iron, magnesium, manganese, aluminum, and titanium) that enabled the wood in the ark to be converted into petrified wood.⁷

Inside the ark are supposed remnants of iron rivets, washers, and brackets that held the walls of the ark together (fig. 3). Because chemical analyses of these iron artifacts—measured at the Los Alamos National Laboratory by John Baumgardner and at the



Figure 3. Photo of supposed iron washer with central mashed rivet but which, in reality, is a coating of cemented magnetite grains altered partly to limonite.⁸ (Image published by Wyatt Archaeological Museum.⁹)

Galbraith Laboratory in Knoxville, Tennessee—show elemental compositions of iron (Fe), magnesium (Mg), manganese (Mn), aluminum (Al), and titanium (Ti), Noah is said to have been given the ability to forge alloys of these metals when he made these rivets, washers, and brackets.¹⁰ By using metal detec-



Figure 4. The structure, looking south toward Mt. Judi. Epidote-bearing basalt (interpreted as ribs on far side), A–B; white limestone layer, C–D; light-colored sedimentary rock layer, E–F; dark sedimentary layers under light-colored layer, G–G, H–H, and I–I; columns of supposed ribs, up-arrows, J; stream channel on top of lowermost dark sedimentary layer, K; face of landslide block that slid away from the ark structure during three earthquakes in 1948 in foreground, L–M. (Source of photo is Wikipedia.)

tors, David Fasold, John Baumgardner, and Ron Wyatt recorded the positions of these alloy artifacts in what they thought to be walls along the length of the ark in regular intervals and at right angles to the walls (traced out in thirteen orange ribbons along the length and many across the width of the “ark”; only a few of these ribbons are shown in figure 2, at arrow B, and not over the whole ark).¹¹

Remnants of supposed rivets and brackets were also detected by metal detectors as rusted flakes in what were called the “ribs” of the ark. Frost wedging along the eastern side of the ark was suggested as having been the cause of erosion of petrified wood in the ribs, as having deposited the wood fragments as sand-sized particles on the land east of the ark, and as having exposed the former positions of these ribs in vertical columns (fig. 4, up-arrows J).¹²

A rectangular block of black rock (said to be a former wood beam) was unearthed by Ron Wyatt and brought to Galbraith Laboratory for chemical analysis and microscopic study.¹³ A cut-section through this block revealed three different layers that were described as “plywood,” which supposedly had

been cemented together by some kind of glue that had oozed out on one side.¹⁴ Chemical analyses of this material showed that it contained percentages of iron (8.08%) and aluminum (8.06%) as well as carbon (0.71%).¹⁵ Two examples of black rock identified by Ron Wyatt as petrified wood can be seen in a report by Jonathan Gray.¹⁶

Several large stones labeled as anchors for the ark (fig. 5) occur near Dogubayazit (fig. 1A), and the presence of eight crosses on some of these stones is projected to represent Noah, his wife, and family.¹⁷

Another rock found near Kazan (fig. 1A) has a rippled surface (fig. 6) and is described as being a fossilized cast of reeds or bark of wood that were once a part of the ark. When struck with a hammer, this rock sounds as if it were hollow, suggesting to some that the ripples represent hollow fossilized reeds.¹⁸

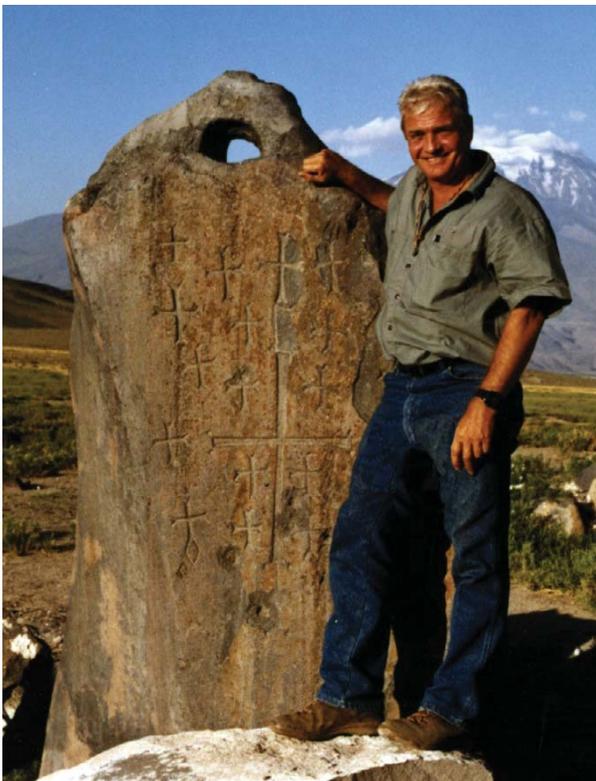


Figure 5. David Fasold standing beside an anchor stone (one of many) with crosses on its face. (Wikipedia is the source of the image; search David Fasold.)



Figure 6. Crinkled rock surface said to be from bark of wood or reeds in Noah’s ark.¹⁹ (Fasold; image source.)

Scientific Evidence That the Formation Is Not Noah’s Ark

Petrified Wood?

Thin Section Analysis. After being told by Ron Wyatt and others that the various black rocks exposed in the ark were petrified wood, “arkeologist” David Fasold began to entertain some doubts about this identification. He therefore collected twelve samples from various places along its length and width and brought them to me for verification. I made thin sections of each sample and discovered

Article

Noah's Ark near Dogubayazit, Turkey?

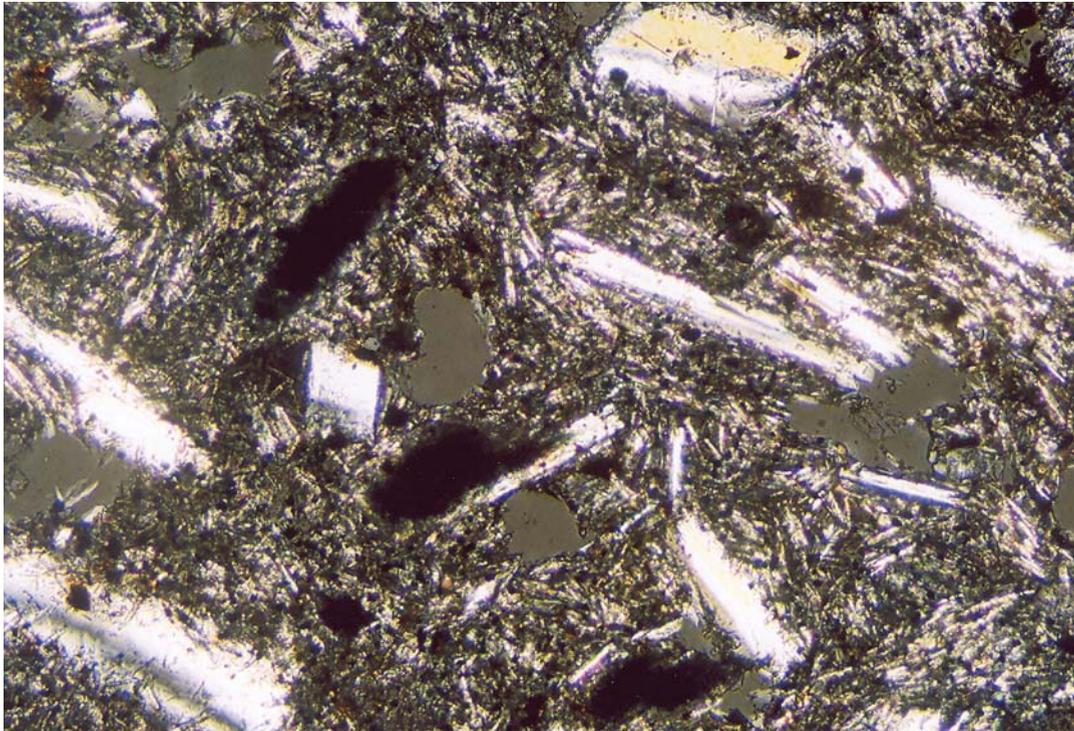


Figure 7. Basalt (40x magnification) showing magnetite grains (black) and elongate rectangular plagioclase feldspar laths (white) under cross-polarized light. Field-of-view width is 5 millimeters. Grey areas are places where friable minerals eroded out during thin section preparation. (Image by author.)

that each was composed of either basalt or andesite volcanic rock (fig. 7). I also brought David to my laboratory so that he could see these thin sections under the microscope. I systematically showed him what verified petrified wood looks like under microscopic examination (fig. 8), as well as many samples of other volcanic rocks of similar composition. Afterwards, there was no doubt in his mind that all black rocks at the “ark” were volcanic rocks.

Whether a volcanic rock is named a basalt or andesite depends on whether the plagioclase has more calcium (Ca) than sodium (Na) in its composition.

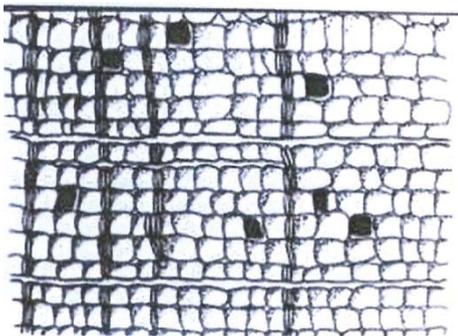


Figure 8. Thin section of petrified wood, showing cellular structure and partial development of tree rings that do not exist in figure 7. (Source is Wikipedia.)

That is, a very small difference in the amount of calcium and sodium can change its name. For example, the plagioclase composition could be 51% Ca and 49% Na and make the rock basalt, or it could be 49% Ca and 51% Na and make the rock andesite. In outward physical appearance, however, they can both have the same dark color and appear to be the same type of rock.

In addition to the thin section shown in figure 7, the other eleven thin sections also show a broad range of textures and mineral compositions. Along with magnetite and plagioclase, some of the basalt and andesite rocks contain pyroxene (a calcium-iron-magnesium silicate mineral), apatite (a calcium phosphate mineral), clay (hydrated aluminum-bearing silicates), interstitial or veins of calcite (a calcium carbonate mineral) or siderite (an iron carbonate mineral), and veins of cryptocrystalline quartz (chalcedony). On that basis, the “glue” that is said to have formed the cement between two wood layers in the plywood beam is likely a vein of calcite or siderite.

A sample of black rock that is basalt but called petrified wood in the Visitors Center of the museum can be seen to have tiny white plagioclase laths; these show that this rock cannot be petrified wood.²⁰

This sample is like that in the basalt outcrop (fig. 4, A-B) and on which a yellowish-green mineral called epidote can be seen coating the surface of the rock. Epidote is a hydrated calcium-aluminum-silicate alteration product of basalt in which steam has moved through the fractures; it cannot form on petrified wood that is nearly 100% silica (microcrystalline quartz).

Chemical Analysis. It was a mistake to ask the Galbraith Laboratory to do the chemical studies of the supposed wood plank from the site. Chemists at Galbraith Laboratory do very competent work when analyzing samples from the food industry and from organizations dealing with environmental problems. But this laboratory is not a place where geologic samples of rock are normally submitted for chemical analysis. There are other labs that specialize in this kind of work. In the types of reports that Galbraith Laboratory produces, chemical analyses are generally given in percentages of *elements* rather than as *oxides*, because their clients typically need to know what trace *elements* are in the submitted samples; for example, the trace *elements* may be contaminating soils, or they may be poisoning foods.

When Ron Wyatt received the chemical analyses from this lab as percentages of elements that were in samples of supposed fossilized wood or supposed rivets, washers, and a bracket, he interpreted these elements as being “pure” metals as opposed to what they actually were, namely, the ionic component of natural minerals.²¹ This misunderstanding implied that Noah was able to make unusual alloys of iron (steel) with manganese, titanium, magnesium, and aluminum, and that these elements as native metals could also be found in petrified wood—such, by the way, has never been observed. Nor would the wood contain 8.08% metallic iron as reported earlier. This same rock analysis reported 0.005% copper. The occurrence of copper is not unexpected in volcanic rock because many of our major copper ores are found associated with basalt.

It was further reported that Galbraith Laboratory made a chemical analysis of an alleged wood plank that listed the presence of 11.54% aluminum, supposedly in the form of aluminum metal (along with other metals). This amount of aluminum is likely a true value because if it, the wood plank, were basalt rather than petrified wood, this amount of aluminum would make sense. Basalt generally contains about

75% plagioclase feldspar crystals (fig. 7 shows the many tiny white plagioclase crystals). In the composition of plagioclase in certain kinds of basalt, its aluminum content is about 15%, and if the basalt has 75% plagioclase with 15% aluminum in it, the rock analysis would show 11.24% aluminum; this is very close to the observed value. Petrified wood might contain micro-traces of aluminum, but never 11.54%, and not as a native metal.

Iron at the Site

Iron readings in the formation can be explained by natural processes such as placer deposits of magnetite grains. This would be consistent with Fasold’s finding that there are seven iron-rich mounds on one side of the proposed ark and four iron-rich mounds on the other side. The deposits are not as symmetrical as one would expect to find in the remains of a symmetrical boat held together by iron.

“Interior Walls of the Ark”

The regular alignment of iron-rich layers along the length and width of the structure that were located by iron detectors and marked with orange ribbons (fig. 2, B)²² can be explained as the result of erosion of the volcanic and sedimentary rocks. Rain and melting snow, seeping down into rectangular-oriented joints and carrying tiny grains of magnetite, could have concentrated the magnetite in the fractures where they would eventually be oxidized to iron-rich limonite. Concentrations of limonite at intersections of the rectangular joints could look like iron brackets.

“Ribs of the Ark”

The supposed ribs of the ark, which are vertically aligned columns of rock (J in fig. 4), are said to have been modified by frost wedging so that the petrified wood was torn apart and deposited as sand below the side of the ark.²³ This scenario seems unlikely for the following reasons:

(a) It is true that frost wedging can tear rocks apart because of the 9% volume increase when water freezes, but this water must fill a crack for it to expand to do the mechanical destruction of the rock. Also, fractures in rocks are seldom, if ever, so closely spaced that water can enter them and freeze to wedge the rock apart to produce sand grains.

(b) Frost wedging, even at a small scale, does not destroy the composition of the rock. It merely breaks

Article

Noah's Ark near Dogubayazit, Turkey?

the rock into smaller pieces. Therefore, if these ribs were truly petrified wood, each small sand grain would still have the cellular structure of the wood preserved in them and this cellular structure could be easily seen in a thin section. They do not.

(c) The appearance of ribs in the side of the supposed ark (fig. 4, J) is not caused by frost wedging, but by differential weathering and erosion of the rock along evenly spaced vertical joints or fractures. Water from rain and melting snow simply seeped down through the walls of the vertical fractures and soaked into both sides of the sedimentary rocks to alter the plagioclase feldspar grains into clay minerals. In those regions with more clay, the rocks are much softer and more easily eroded, whereas areas of less clay are less eroded. It is therefore the differential erosion of the sedimentary rocks (hard versus soft) along these vertical fractures that creates the *illusion* of a former rib structure.

A video given to me by David Fasold shows the side of the ark with ribs composed of sedimentary layers of different compositions and thicknesses that extend nearly horizontally along the face of the steep wall of the exposed side.²⁴ A light-colored layer at the top of the so-called ribs can faintly be seen in figures 2 and 4 at E-F, overlying the dark layers at G-G, H-H, I-I. The dark layers are ancient mud flows which consist of poorly sorted, fine-grained sediments that locally enclose pebbles and boulders of basalt and metal oxide concentrations (the supposed "ballast rocks"). These mud flows came down rapidly from the slopes of Mt. Judi, south of the site. Their rapid flowage and relatively quick deposition caused the poor sorting. All these layers are inclined at a gentle angle (5 degrees) from the white limestone (fig. 4, C-D) down toward the lower end of the structure. The light-colored upper layer intersects the topographic surface near the stern (rounded end) of the structure (figs. 2 and 4, E-F), and the dark layers (G-G and H-H) under this upper layer intersect the surface near the purported stern.

Also, near the "stern," one of the dark sedimentary layers has a small stream channel (fig. 4, K) that cuts into the layer, with stream cobbles filling the channel. This sedimentary layering and the stream channel, 5 feet (1.5 m) wide and 5 feet (1.5 m) deep, were totally ignored by Ron Wyatt and others because it was not what they were looking for and because this occurrence would not fit into their Noah's ark site

model.²⁵ They saw only the vertical jointing that produced the columns (fig. 4, J), which they interpreted as casts of ribs of the ark.²⁶ There is no black basalt that supposedly produced casts of petrified wood on this side of the ark as is interpreted by the ark advocates for the far side (fig. 4, A-B).

"Washer and Rivet"

If washers and rivets were used by Noah in the construction of the ark, then thousands of these iron artifacts should have been found—not just three or four of the supposed washers, with only one washer having a rivet in its center (fig. 3). The purported iron washer with rivet (fig. 3) that was found is on top of a thick black rock more than 3 inches (7.6 cm) in diameter that was presumed to be petrified wood.²⁷ The rivet is alleged to have penetrated into the wood by being struck very hard with a hammer. However, ark videos never show that the "rivet" comes through the backside of this rock. Moreover, below the edge of the supposed washer, along the right side, and in some places in the upper areas, tiny white laths of plagioclase feldspar can be seen that look like some of the large plagioclase laths shown in figure 7. The image (fig. 3) clearly shows that the black rock is basalt and not petrified wood as in figure 8. No cellular structure of wood is visible.²⁸

Note also in figure 3 that the supposed washer has very little thickness so that even tiny white plagioclase crystals show through the washer. Moreover, although round like a washer, it is not also planar as would be expected for a washer. If the washer were composed of an alloy of iron with manganese, titanium, and aluminum, this alloy would have the hardness of steel (6.5 on the Mohs hardness scale), which is the same hardness of plagioclase in basalt (6.0–6.5); and, being made of steel, it would not easily rust away and become thin. Instead, this material probably consists of magnetite grains that are cemented together on top of a curved surface on basalt, where the cement is calcite (or siderite) and limonite with a hardness of 3. This surface material could be very easily eroded to leave only a thin film of oxidized magnetite on the basalt that would be too flimsy to hold the walls of the so-called ark together. Furthermore, if the orange ribbons actually mark the existence of washers, rivets, and brackets (fig. 2) where the walls are said to exist,²⁹ and if these walls (claimed to consist of petrified wood but actually consisting of basalt containing plagioclase which

also has the hardness of steel) are supposed to be held together by these iron artifacts, should not these hard-rock walls also be found at these same sites in which the supposed iron artifacts occur? But no such hard-rock walls presently exist there. This fact also supports the assertion that the regular positions of the supposed iron artifacts actually represent rectangular joint-systems containing magnetite/limonite of a natural sedimentary rock structure.

A thin section cut through this washer would easily show whether it is rusted wrought-iron metal or cemented magnetite grains altered to limonite, but this necessary sectioning was not performed by the ark advocates. Moreover, a diamond saw-cut through the supposed rivet would demonstrate whether a metal rod extends down into petrified wood below the washer or whether this is an unusual surface deposition of magnetite grains that has no depth beyond the surface layer. In a truly scientific investigation, such a saw-cut and a thin section would have been made immediately to confirm the correct model. Just claiming that it is a rivet and washer is not sufficient evidence for the belief that it is a man-made rivet and washer!

A Galbraith Laboratory report on another supposed 3.5 inch crescent-shaped remnant of a washer demonstrated 8.38% iron, 8.35% aluminum, and 1.59% titanium.³⁰ The remnant was found in a clay matrix outside the structure and has this chemical composition because it is composed of concentrations of titanium-bearing magnetite in aluminum-rich clay. Other chemical analyses of supposed rivets in a clay

matrix contain 13.02% iron, 15.84% aluminum, 2.93% titanium, and 45.2% silica as well as small percentages of calcium, magnesium, potassium, sodium, manganese, and phosphorous (oxide percentage of each element).³¹ Because of the large amount of silica, this analysis cannot represent a metal rivet, but instead indicates a mixture of magnetite, clay, feldspars, and apatite (a phosphate mineral).

"Iron Bracket"

As with washers and rivets, the question can be asked: Why was only one bracket found and not 10,000 if Noah used them to construct the ark? They should be abundant, and they are not. A thin section cut through the only purported iron bracket found (fig. 9A) shows that the bracket has no metal in it at all. Instead, it is composed of altered magnetite grains that are cemented together with limonite. Limonite is an oxidized and hydrated alteration product of the magnetite. Where the magnetite grains are not cemented together by limonite, interstitial clay and calcite (or siderite) surround the magnetite grains (fig. 9B). The thin section shows that the supposed iron bracket has a "right-angle" bend in it. However, note that the parts of the supposed iron bracket are not uniformly thick. The bottom slanted-right side is relatively thin, but the bottom left side becomes thicker and has still greater thickness on the top left side. Moreover, additional bending shown on the left side to make it "U-shaped" should not be present if it were intended to be a brace for a wall in the ark.³²

John Baumgardner reported chemical analyses of this proposed iron bracket at the Los Alamos

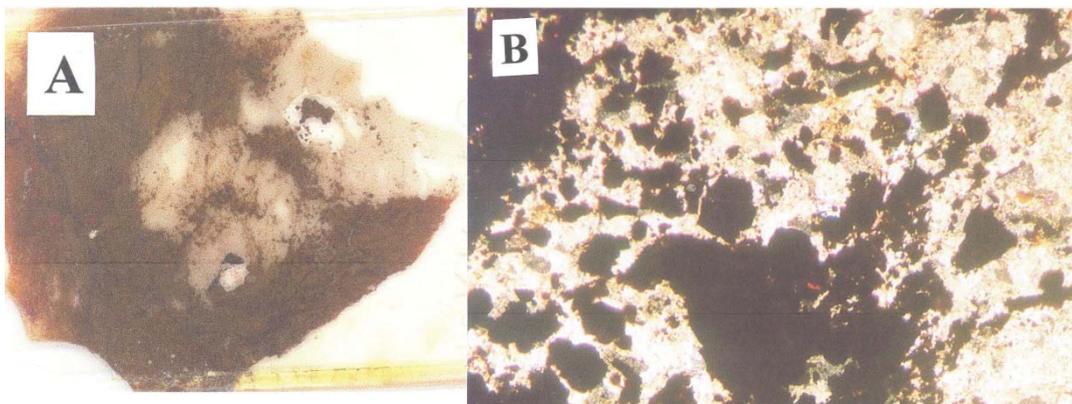


Figure 9A. Thin section cut through a part of the only supposed iron bracket found, containing both magnetite and limonite. The upper left is the thickest. Top to bottom is 5 centimeters. (Out-of-focus appearance is caused by the presence of a glass cover slip.)

Figure 9B. Image (40x) shows magnetite (black) altered to limonite (also black) in a matrix of calcite or siderite (white) and clay (grayish white); image comes from the right part of the thin section shown in 9A. In black-and-white images, these minerals cannot be distinguished from each other. (Images by author.)

Article

Noah's Ark near Dogubayazit, Turkey?

National Laboratory, not as elements but as oxides. These analyses were given as a report to David Fasold (table 1).

Table 1. Chemical analyses of supposed iron bracket, showing ranges of several analyses (Los Alamos National Laboratory)

Oxide	Percentage
SiO ₂	3.56–9.5
Al ₂ O ₃	2.67–4.4
TiO ₂	0.09–3.1
Fe ₂ O ₃	76.14–89.3
MgO	0.00–0.9
MnO ₂	0.11–1.25
CaO	0.20–7.62

Reporting the analyses as oxides is the standard way of reporting elements in rocks, but nevertheless, at the time, Baumgardner thought that he was analyzing an iron alloy that Noah had made in a forge. Galbraith Laboratory did similar analyses of supposed iron washers and rivets but reported the chemical analyses as elements. Baumgardner's method of analysis by an electron-microprobe would not have been able to determine whether the iron was native wrought-iron metal, and the probes would have been made on several parts of the iron bracket (fig. 9A). Because of the irregular messy appearance of magnetite grains in the supposed bracket in this figure, it is not surprising that Baumgardner's many different probes produced such a broad range of oxide compositions. In any case, (a) the reported oxide percentages of Fe, Mg, Mn, and Ti fit the natural composition of magnetite grains, (b) the Al is consistent with interstitial clay minerals, and (c) the Ca is consistent with calcite (or siderite) veins and interstitial cement. None of these elements would have been used by Noah in a forge to form metal alloys in rivets, washers, and brackets!

"Anchor Stones"

Several lines of evidence indicate that the stones (as many as ten)³³ with holes at the top were not anchor stones for the ark.³⁴

(a) The stones weigh as much as 10 tons so that the positioning of the holes at their tops close to the outer surface leaves too little enclosing-stone to support their heavy weights if they were intended to be hung vertically from a strong rope. Breaking along the top is what should be expected of these hole positions,

and in fact, some of the stones are broken in just this configuration. The holes at the top of the stones could have been used to insert ropes that would have enabled them to be pulled on sleds in winter over slick snow or ice to where they were erected—perhaps as memorial stones.

(b) A thin section of one of these supposed anchor stones shows that it consists of magnetite-bearing anorthosite that does not occur anywhere in Southern Mesopotamia (Sumeria) where Noah is said to have built the ark. Therefore these stones were more likely obtained from a quarry local to where this structure occurs.

(c) Many of the stones have up to twenty-three crosses engraved on them,³⁵ and so the eight crosses shown on the stone in figure 5 do not necessarily represent Noah, his wife, and family.

"Reed Casts"

A thin section of the rock that looks like a cast of reeds or possible bark on wood (fig. 6) shows that this rock consists of crinkled layers of pyroxene and olivine crystals that were once part of an igneous rock type called peridotite.³⁶ Because the rock shows no weathering or alteration, and because the crystals are well interlocked with each other, the rock vibrates with a hollow sound when struck with a hammer instead of making a dull thud sound when hit. Such igneous rocks are found in this part of Turkey where plate tectonics has brought them to the earth's surface.³⁷ Therefore, this rock is not a former part of the ark.

"Ballast Rocks"

In an exploration section of the "ark" that was dynamited by other investigators in the 1970s, investigators found heavy rocks (9 inches in diameter) within the dark sedimentary layers of the structure (fig. 4, G-G and H-H).³⁸ These rocks consisted mainly of manganese (87%), titanium (41.95%), or titanium oxide (74%).³⁹ On that basis, they thought that these rocks were used as ballast (heavy material carried in the bottom of a boat to control draft and stability). They also found similar rocks at higher elevations south of the structure in the mountain slopes below Mt. Judi (fig. 1B), which are surrounded by a supposed boundary of petrified wood. Therefore, they reasoned that the ark had slid down from Mt. Judi, and during the slide, the bottom of the ark had been scraped off, leaving most of the ballast there

along the slide. However, there is a natural explanation for these manganese- and titanium-rich rocks. Because of their high manganese (Mn) and titanium (Ti) content, these were probably derived from an ophiolite—a sequence of layered dark volcanic and upper mantle igneous rocks—which occurs on the slopes of Mt. Judi.⁴⁰ In ophiolites, concentrations of Mn and Ti oxides commonly precipitate as heavy masses during the crystallization process.

In Sum

Although some persist in claiming that this natural formation is the fossilized remains of Noah's ark, the scientific evidence points to the fact that its partial boat shape was created by erosion of bedrock by landslide debris, extending from the mountains south of the area (figs. 1, 2, and 4), and that the bedrock mostly consists of layered light and dark sedimentary rocks (fig. 4, E-F, G-G, H-H, I-I). These clastic sedimentary rocks were former flood-plain mud and silt deposits that locally contain placer concentrations of magnetite grains that have been altered to limonite, so that there appears to be rust on metallic iron. In some places, these layers contain transported pebbles and boulders of basalt and andesite volcanic rocks, perhaps in mud flows, which were interpreted to be remnants of walls, decking, support beams, and ribs. Also present are boulders of metal oxide concentrations derived from ophiolites south of the area. The only limestone layer in the site is a wedge that outcrops at its midpoint (fig. 4, C-D). Later these clastic sedimentary layers became fractured into a nearly rectangular joint system, which occurs on top of the formation surface in semi-parallel aligned ribbons along iron concentrations (fig. 2, A) and which, in a side view, produces nearly vertical columns (fig. 4, J). These columns have been subjected to differential erosion and weathering to form what has been interpreted as casts of former ribs or gunnels. The volcanic mass of basalt that forms a wall on the far side of the formation (fig. 4, A-B) is not ribs of petrified wood.

Remains from Noah's ark may some day be found in another location,⁴¹ but they are not at this site in eastern Turkey. Yet, there are websites and publications that still misinform readers that it is Noah's ark, despite the clear and overwhelming evidence to the contrary.⁴² ✧

Acknowledgments

I wish to thank David Fasold, although he is no longer alive, for his sincere efforts to find the truth. I also wish to thank Carol Hill for many good editorial suggestions and for encouraging me to publish this article. I thank Tim Helble for advice on the photos, Rudolf Pohl for locating Turkish ophiolite references, and David Liggett for assistance with arrows on images. Thanks are also due to Mehmet Salih Bayraktutan and Meral Kaya for information about the rocks in Turkey and two unidentified reviewers.

Notes

¹⁴“Discovered—Noah's Ark,” a documentary of the research and field work of Ron Wyatt and associates which led to the official recognition by Turkish authorities of the actual remains of Noah's ark, video, Wyatt Archaeological Research, 1994.

²Ibid.; Ark Discovery International, “Revealing God's Treasure,” DVD covers five major discoveries: Noah's Ark, Sodom and Gomorrah, Mount Sinai in Arabia, the Red Sea Crossing, and the Ark of the Covenant, 4 hours, 20 minutes, <http://www.arkdiscovery.com>.

³⁴“Discovered—Noah's Ark.”

⁴Mary N. Wyatt, “For the Record,” *Newsletter* 16 (September 1996), <http://wyattmuseum.com/for-the-record/2011-691>.

⁵⁴“Discovered—Noah's Ark.”

⁶⁴“Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary,” video, accessed May 19, 2016, <https://www.youtube.com/watch?v=uPRo7Q-7yQQ&list=WL&index>.

⁷⁴“Discovered—Noah's Ark”; “Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary.”

⁸Ibid.

⁹Ibid.; Associates for Biblical Archaeology, “1985–6 Noah's Ark Field Studies 01,” video, 6:11 minutes, <https://www.youtube.com/watch?v=ZR8LfnS3rE;UFOTV@TheDisclosureNetwork>, “The Noah's Ark Conspiracy,” feature film, 53:11 minutes (Jan. 31, 2013), <https://www.youtube.com/watch?v=w9pAjv1WgNg;DennisSchelles;Noah'sArk-RonWyatt'sStory>; “Noah's Ark—Ron Wyatt's Story,” video, 20:47 minutes, <https://vimeo.com/131454147>; “Noah's Ark Found—Jonathan Gray,” video, 49:19 minutes, https://www.youtube.com/watch?time_continue=1223&v=dxMPPJXkUjI.

¹⁰⁴“Discovered—Noah's Ark”; “Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary”; Ark Discovery International, “We Believe ... This Is Noah's Ark!,” http://www.arkdiscovery.com/noah's_ark.htm; B. M. Warmkessel, “Noah's Ark—Verification of Alien Contact,” March 10, 2003, <http://www.barry.warmkessel.com/NOAH.html#8> and <http://www.barry.warmkessel.com/NOAH.html#9>; and R. Rives, “A Rivet Discovered,” June 1991, Wyatt Archaeological Museum, <http://www.wyattmuseum.com/a-rivet-discovered/2011-107>.

¹¹Ark Discovery International, “Revealing God's Treasure: Noah's Ark Index of Pages,” <http://www.arkdiscovery.com/noah-index.htm>.

Article

Noah's Ark near Dogubayazit, Turkey?

- ¹²"Discovered—Noah's Ark"; "Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary."
- ¹³"Discovered—Noah's Ark."
- ¹⁴"Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary"; Warmkessel, "Noah's Ark—Verification of Alien Contact."
- ¹⁵"Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary."
- ¹⁶J. Gray, "Noah's Ark Overview, Pt. II," http://www.arkdiscovery.com/noah's_ark.htm.
- ¹⁷"Discovered—Noah's Ark"; UFOTV® The Disclosure Network, "The Noah's Ark Conspiracy."
- ¹⁸"Discovered—Noah's Ark"; "Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary"; L. G. Collins and D. F. Fasold, "Bogus 'Noah's Ark' from Turkey Exposed as a Common Geologic Structure," *Journal of Geosciences Education* 44, no. 4 (1996): 439–44, <http://www.csun.edu/~vcgeo005/bogus.html>.
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- ²⁰Gray, "Noah's Ark Overview, Pt. II."
- ²¹"Discovered—Noah's Ark"; Associates for Biblical Archaeology, "1985–6 Noah's Ark Field Studies 01."
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- ²⁵Ibid.
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- ²⁸"Discovered—Noah's Ark"; "Noah's Ark Found—The Original Noah's Ark Documentary—Ron Wyatt's Documentary"; "Noah's Ark found—Jonathan Gray"; Jonathan Gray, "Anchorstone International Presents the Biblical Discovery: Questions and Answers," <http://www.beforeus.com/NoahsArkQA.pdf>; "Noah's Ark Has Been Found! It's Not Just Some Fairy Tale!!," video, 33:26 minutes (August 19, 2012), <https://www.youtube.com/watch?v=iCyOVGBnNp8>.
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- ³⁵David Fasold, *The Ark of Noah* (New York: Wynwood Press, 1988).
- ³⁶Associates for Biblical Archaeology, "1985–6 Noah's Ark Field Studies 01."
- ³⁷A. Yilmaz, H. Yilmaz, C. Kaya, and D. Boztuğ, "The Nature of the Crustal Structure of the Eastern Anatolian Plateau, Turkey," *Geodinamica Acta* 23, no. 4 (2010): 167–83; A. F. Afshar, "Geology of Tunceli-Bingöl Region of

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³⁸"Discovered—Noah's Ark."

³⁹Warmkessel, "Noah's Ark—Verification of Alien Contact."

⁴⁰Gray, "Noah's Ark Overview, Pt. II"; Afshar, "Geology of Tunceli-Bingöl Region of Eastern Turkey"; J. R. Craig and D. J. Vaughan, "Ore Mineral Assemblages Occurring in Igneous Rocks and Vein Deposits," chap. 9 in *Ore Microscopy and Ore Petrography*, 2nd ed., (New York: John Wiley & Sons, 1994), 208–58, http://www.minsocam.org/msa/OpenAccess_publications/Craig_Vaughan/Craig_Vaughan_Chptr_09.pdf.

⁴¹C. A. Hill, "The Noachian Flood: Universal or Local?," *Perspectives on Science and Christian Faith* 54, no. 3 (2002): 170–83.

⁴²"Discovered—Noah's Ark"; Ark Discovery International, "Revealing God's Treasure."

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