

# INVESTIGATING THE SIRIUS “MYSTERY”

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Did amphibious beings from the star Sirius visit the earth 5,000 or more years ago and leave advanced astronomical knowledge that is still possessed by a remote African tribe called the Dogon? This astonishing claim was put forward in 1976 by Robert Temple in his “ancient astronaut” book, *The Sirius Mystery*. An astronomer, familiar with the Sirius system, would say no, because astronomical theory virtually precludes the possibility that Sirius is a suitable parent star for life or that it could have habitable planets. But most of Robert Temple’s readers would not know enough astronomy to judge the matter for themselves. Neither would they find the relevant astronomical information in Temple’s book, most of which consists of brain-numbing excursions into Egyptology. (Isaac Asimov has been quoted by Temple as having said that he found no mistakes in the book; but Temple did not know that the reason for this, according to Asimov, was that he had found the book too impenetrable to read!\*) Even the BBC-TV Horizon investigation on ancient astronauts (broadcast as part of the PBS “Nova” series in the United States), which did an otherwise excellent demolition job on the more extreme fantasies of Erich von Däniken, left the Sirius problem unanswered because of its extreme complexity. Yet an answer is needed, because the Dogon legends about a companion to Sirius are claimed to originate before any terrestrial astronomer could have known of the existence of Sirius B, let alone its 50-year orbit or its nature as a tiny, con-

\*Editor’s note: See Asimov’s essay, “The Dark Companion,” in his *Quasar, Quasar Burning Bright* (Doubleday, 1978), in which he says he is embarrassed by his stupidity in not specifying that his comment, made only “to get rid of him [Temple] and to be polite,” not be quoted. “I assure you I will never be caught that way again.”—K.F.

densed white dwarf star, all of which the Dogon allegedly knew. So what is the truth about the Dogon and Sirius? Does astronomical and anthropological information omitted by Temple help us to resolve this most baffling of all ancient astronaut cases?

First, let's recap Temple's story. At the center of the mystery are the Dogon people living near Bandiagara, about 300 kilometers south of Timbuktu, Mali, in western Africa. Knowledge of their customs and beliefs comes from the French anthropologists Marcel Griaule and Germaine Dieterlen, who worked among the Dogon from 1931 to 1952. Between 1946 and 1950 the Dogon head tribesmen unfolded to Griaule and Dieterlen the innermost secrets of their knowledge of astronomy. Much of this secret lore is complex and obscure, as befits ancient legends, but certain specific facts stand out, particularly those concerning the star Sirius, with which their religion and culture is deeply concerned. In the information imparted to the French anthropologists, the Dogon referred to a small and super-dense companion of Sirius, made of matter heavier than anything on Earth, and moving in a 50-year elliptical orbit around its parent star. The white dwarf companion of Sirius which answers to this description was not seen until 1862, when the American optician Alvan Graham Clark spotted it while testing a new telescope; the super-dense nature of white dwarfs was not realized until the 1920s. But the Dogon Sirius traditions are at least centuries old. How can we account for the remarkable accord between ancient Dogon legends and modern astronomical fact?

Temple's answer, since espoused by Erich von Däniken (of course!), was that the Dogon were told by extraterrestrial visitors. A Dogon legend, similar to many other tales by primitive people of visits from the sky, speaks of an "ark" descending to the ground amid a great wind. Robert Temple interprets this as the landing of a rocket-powered spacecraft bringing beings from the star Sirius. According to Dogon legend, the descent of the ark brought to Earth an amphibious being, or group of beings, known as the Nommo. "Nommo is the collective name for the great culture-hero and founder of civilization who came from the Sirius system to set up society on the Earth," Temple explains in his book. The Nommo were amphibious, he presumes, because water would keep them cool and absorb short-wavelength radiation from the hot star Sirius.

Much of Temple's book is devoted to establishing that the Dogon share common roots with Mediterranean peoples. This explains the cen-

tral place occupied by Sirius in Dogon beliefs, because the ancient Egyptians, in particular, were also preoccupied with Sirius, basing their calendar on its yearly motion. But is there any explanation of the apparent Dogon belief in life in the Sirius system?

First, let's look at what astronomers know about Sirius to see if it is at least theoretically plausible that advanced life might have arisen in its vicinity. Sirius A, the brightest star in the night sky as seen from Earth, has a mass 2.35 times that of the sun. Its white dwarf companion, Sirius B, has a mass of 0.99 suns. Stellar evolutionary theory tells us that the most massive stars burn out the quickest, so that originally Sirius B must have been the more massive of the two, before burning out to become a white dwarf. Probably Sirius B spilled over some of its gas onto Sirius A during its aging process, so that the original masses of the two stars were approximately the reverse of what we see today.

A star with twice the sun's mass, as Sirius B probably had, can live for no more than about 1,000 million years before swelling up into a red giant; this does not seem long enough for advanced life to develop. But had life evolved, it would have disappeared during the red giant stage of Sirius B, when any nearby planet would have been roasted by the star's increased energy output, followed by a stellar gale for at least 100,000 years as hot gas streamed from Sirius B to Sirius A. During this mass transfer the two stars would have moved apart, thereby destabilizing the orbits of any planets in the system. According to observations of Sirius B as analyzed by H. L. Shipman of the University of Delaware, Sirius B has been a cooling-down white dwarf for at least 30 million years. Sirius B is now emitting soft x-rays, so that life in the region of Sirius would not be very pleasant today. But in any case, Robert S. Harrington of the U.S. Naval Observatory has recently shown that planetary orbits in the "habitable" zone around Sirius, defined as the region in which water would be liquid, are unstable. So there are unlikely to be any amphibious beings living on planets in the Sirius system today, if indeed any such beings ever lived there.

Temple offers one prediction which allows a test of his theory. In his book he says: "What if this is proven by our detecting on our radio telescopes actual traces of local radio communications?" To help in my investigation of the Sirius mystery, I asked radio astronomers Paul Feldman at the Algonquin radio observatory, Canada, and Robert S. Dixon at the Ohio State University radio observatory, both of whom are carrying out searches for extraterrestrial signals, to listen to Sirius. They

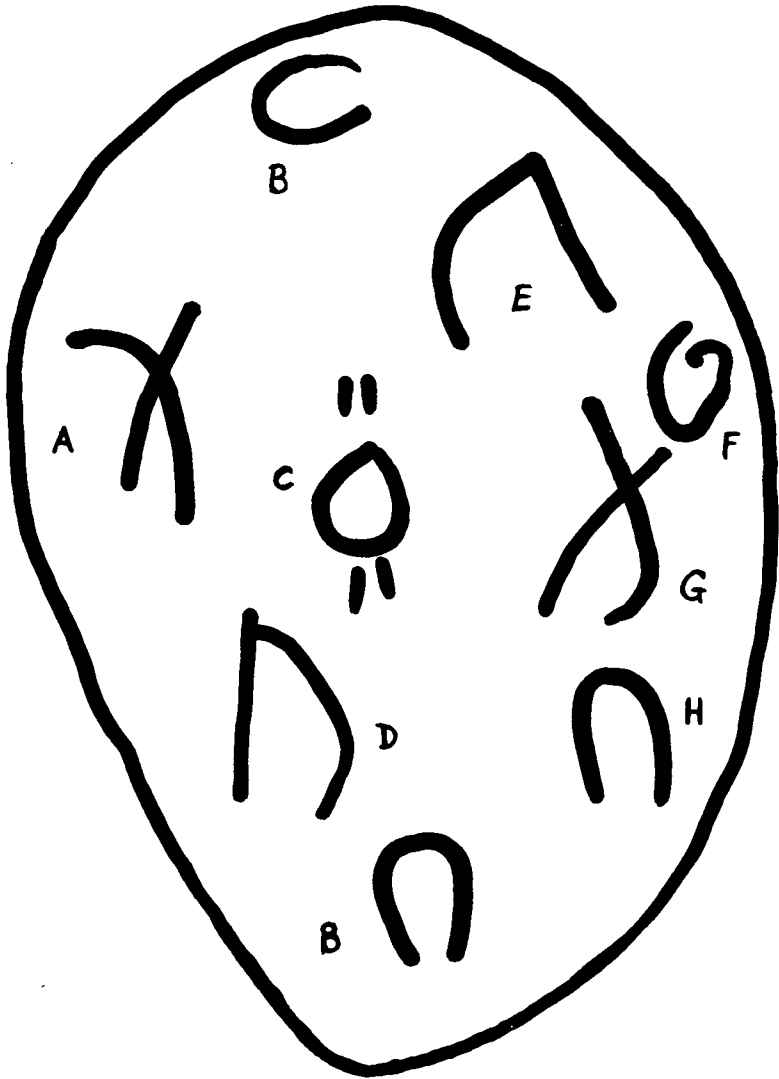
would normally have paid the star no attention, because of the extreme unlikelihood of its supporting life. In April 1977 both radio astronomers listened to Sirius on different wavelengths, without detecting any artificial signals.

With this information in mind, let's look more skeptically at the Dogon legend. Immediately, we encounter a surprise: the Dogon maintain that Sirius has two companions, not one. These companions have male and female attributes, respectively. It seems that they are not to be interpreted literally as stars, but as fertility symbols. Nowhere is this better shown than in a Dogon sand diagram of the complete Sirius system, shown in the illustration redrawn here from a paper by Griaule and Dieterlen. Its description, given in the caption from information by Griaule and Dieterlen, is clearly symbolic; Temple chooses to interpret it literally. On pages 23 and 25 of his book he gives his own modified version of this diagram, retaining the symbol for Sirius, one of the positions of Sirius B, and the surrounding oval; all else is omitted. He then interprets the surrounding oval meant to represent "the egg of the world," as the elliptical orbit of Sirius B around Sirius A, even though the symbol equated with Sirius B is drawn as lying within the oval, not on it. This is Temple's basis for saying that the Dogon "know" Sirius B orbits Sirius A in an ellipse.

The Dogon are also supposed to know that Sirius B orbits every 50 years. But what do they actually say? Griaule and Dieterlen put it as follows: "The period of the orbit is counted double, that is, one hundred years, because the Siguis are convened in pairs of 'twins,' so as to insist on the basic principle of twinning." The Sigui ceremony referred to is a ceremony of the renovation of the world that is celebrated every 60 years (not 50). And the "twinning" referred to here is an important Dogon concept which explains why they believe Sirius must have two companions.

Is there any astronomical evidence that Sirius has more than one companion star? Some astronomers in the 1920s and 1930s thought they had glimpsed a third member of the Sirius system, but new and more accurate observations reported in 1973 by Irving W. Lindenblad of the U.S. Naval Observatory, Washington, D.C., showed no evidence of a close companion to either Sirius A or Sirius B.

The whole Dogon legend of Sirius and its companions is riddled with ambiguities, contradictions, and downright errors, at least if we try to interpret it literally. But what can we make of the Dogon statement



Dogon sand drawing of the complete Sirius system, after Marcel Griaule and Germaine Dieterlen. A, Sirius; B, *po tolo*, the object equated with Sirius B, shown in two positions; C, *emme ya*, the sun of women, equated with Sirius C; D, the Nommo; E, the Yourougou, a mythical male figure destined to pursue his female twin; F, the star of women, a satellite of *emma ya*; G, the sign of women; H, the sex of women, represented by a womb shape. The whole system is enclosed in an oval, representing the egg of the world.

that Sirius B is the smallest and heaviest star, consisting of a heavy metal known as *sagala*? Sirius B was certainly the smallest and heaviest star known in the 1920s, when the super-dense nature of white dwarfs was becoming understood; the material of which white dwarfs are made is indeed compressed more densely than metal. Now, though, hundreds of white dwarfs are known, not to mention neutron stars, which are far smaller and denser. Any visiting spaceman would certainly have known about these, as well as black holes.

Perhaps one would forgive Robert Temple for believing that the Dogon had been visited by men from Sirius if their legend specifically stated so. But it does not! Nowhere in his 290-page book does Temple offer one specific statement from the Dogon to substantiate his ancient astronauts claim. The best he does is on page 217, where he reports that the Dogon say: "*Po tolo* [Sirius B] and Sirius were once where the Sun now is." Of this ambiguous statement, Temple comments: "That seems as good a way as any to describe coming to our solar system from the Sirius system, and leaving those stars for our star, the Sun." But this cannot conceal the fact that the whole Sirius "mystery" is based on Temple's own unwarranted assumption.

The parts of Dogon knowledge that are admittedly both ancient and profound, particularly the story of Nommo and the concept of twinning, are the parts that bear least relation to the true facts about Sirius. The parts that bear at least superficial resemblance to astronomical fact are most likely trimmings added in this century. Indeed, in view of the Dogon fixation with Sirius it would surely be more surprising if they had *not* grafted on to their existing legend some new astronomical information gained from Europeans, picking what fitted their purpose and ignoring the rest.

Carl Sagan has underlined how easily information gained from Westerners can be absorbed into native culture. He recounts the true case of the physician Carleton Gajdusek in New Guinea, who was approached by a scientific colleague who had found that some local natives believed that a certain disease was transmitted in the form of an invisible spirit that entered the skin of a patient. The native informant had sketched with a stick in the sand a circle outside which, he explained, was black, and inside which was light. Within the circle the informant drew a squiggly line to represent the appearance of these invisible malevolent spirits. How did the natives get such an astounding insight into the transmission of disease by microbes? Years earlier, Gajdusek himself had shown the

natives the appearance of a disease-causing germ through his microscope, and the sand drawing was simply the natives' recollection of this deeply impressive sight.

It is all too easy for Westerners to think of African tribes as isolated, uneducated, and ignorant. But the Dogon are not isolated. They live near an overland trade route, as well as close to the banks of the Niger River, an important channel of trade. Any number of travelers could have come into their midst, or Dogon tribesmen could have journeyed to the coast, where they might have met astronomically informed seamen. The Dogon have been in contact with Europeans since at least the late nineteenth century.

Nor are they uneducated and ignorant. Peter and Roland Pesch of the Warner and Swasey Observatory in Ohio have pointed out that French schools have existed in the Dogon area since 1907. Dogon tribesmen wishing to pursue their education have been able to do so in nearby towns. Then there are missionaries, who would naturally be interested in the legends of the natives. Missionaries from the White Fathers made contact with the Dogon in the 1920s. It is tempting to speculate that certain of the more specific details about Sirius B were grafted onto the existing Sirius legend at that time, because it was in the 1920s that astronomers were discovering the true nature of Sirius B as a tiny, super-dense star, and white dwarfs were being accorded the same kind of publicity as attends black holes today. Alas, there is no mention in the missionaries' summary reports of their activities that they discussed Sirius with the Dogon; if more detailed notes were published, these might throw more light on the origin and antiquity of Dogon myths.

The point is that there are any number of channels by which the Dogon could have received Western knowledge long before they were visited by Griaule and Dieterlen. We may never be able to reconstruct the exact route by which the Dogon received their current knowledge, but out of the confusion at least one thing is clear: they were not told by beings from the star Sirius.

## References

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