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An Analysis of Two Theories Proposing Domestic Goats, Sheep, and Other Goods were Imported into Egypt by Sea during the Neolithic Period

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Abstract

Based on her work in the Sinai and an evaluation of the appearance of domestic goats and sheep at sites in northeast Africa, Angela Close has proposed a sea route connecting the Sinai and Egypt as the entry point for these animals c. 7000 BP. In an earlier work Béatrix Midant-Reynes had proposed that turquoise, copper, and glazed-steatite beads were imported into Egypt during the Badarian Period via a similar route. A review of the archaeological data suggests that the traditional land route across the northern Sinai is the most likely route connecting Egypt to the Levant for all interaction and trade during the Epipaleolithic and Neolithic Periods.

Introduction

Two theories have been proposed that domestic goats and sheep as well as other goods were brought to Egypt by sea during the Neolithic Period. The first is that sheep and goats diffused south into the Sinai, and then across the Gulf of Suez into Egypt by c. 7000 BP. The second is that the Badarians imported steatite, copper, and turquoise c. 4500 BCE via a similar route. This article will evaluate the evidence for both theories.

Domestic Goats and Sheep—Sea Route and Supporting Data

The standard theory is that goats and sheep came from the Near East via a land route across the northern Sinai to Lower Egypt, and then diffused west to Haua Fteah, Libya, (c. 7000–6800 BP) and south along the Nile (Figure 1). Angela Close, however, has argued that dates for their appearance in Egypt are not consistent with this theory. The earliest evidence for these animals in Egypt comes from Sodmein Cave in the Eastern Desert c. 7000 BP, while goats were common in the Dakhla Oasis by c. 6500 BP and may have been at Nabta Playa c. 7000 BP (Figure 2). In contrast, neither is known in Lower Egypt until c. 6000 BP at the Neolithic Faiyum or Faiyum A sites and at Merimde (Figure 2).[1] Based on these data, Close proposed another route. Goats and sheep diffused south down the Sinai to El Qaa and then were transported across the Gulf of Suez to the Eastern Desert. They then diffused south to Sodmein Cave and from this site to the Western Desert and finally diffused simultaneously south to Nabta Playa and northwest to Libya (Figure 3).[2]

No technological obstacles to this theory exist. If these animals were brought via water from the Sinai to the Eastern Desert, the distance would be less than 30 km, which is well within the range of small vessels even without sails.[3] If herds were built up over time by importing one or two juvenile sheep per trip, very small boats could have transported them. For these reasons, only the most basic watercraft would be required.

After reaching the Western Desert from Sodmein Cave, it would be necessary to herd these animals over long distances to get to Haua Fteah, Libya, and Nabta Playa (Figure 3). The most likely route would be due west across the Nile to the Kharga Oasis and then north and south along trails that connect oases in the Western Desert (Figures 2, 3). The archaeological evidence allows for such a theory.

There is evidence of east-west trade from the Red Sea in Upper Egypt as early as the Epipaleolithic Period. The earliest known Red Sea shell found on an Upper Egyptian site was a striped engina shell (*Enigina mendicaria*), dating between c. 12,450 and 12,050 BP. It was recovered from one of the Makhadma sites north of the Wadi Hammamat (Figure 2).[4] Furthermore, Red Sea shells have been found at a number of sites along the Nile dating to the Middle Neolithic Period[5] and were traded as far southwest as Nabta Playa.[6] There is also evidence that Egyptian flint was traded over long distances at this time.

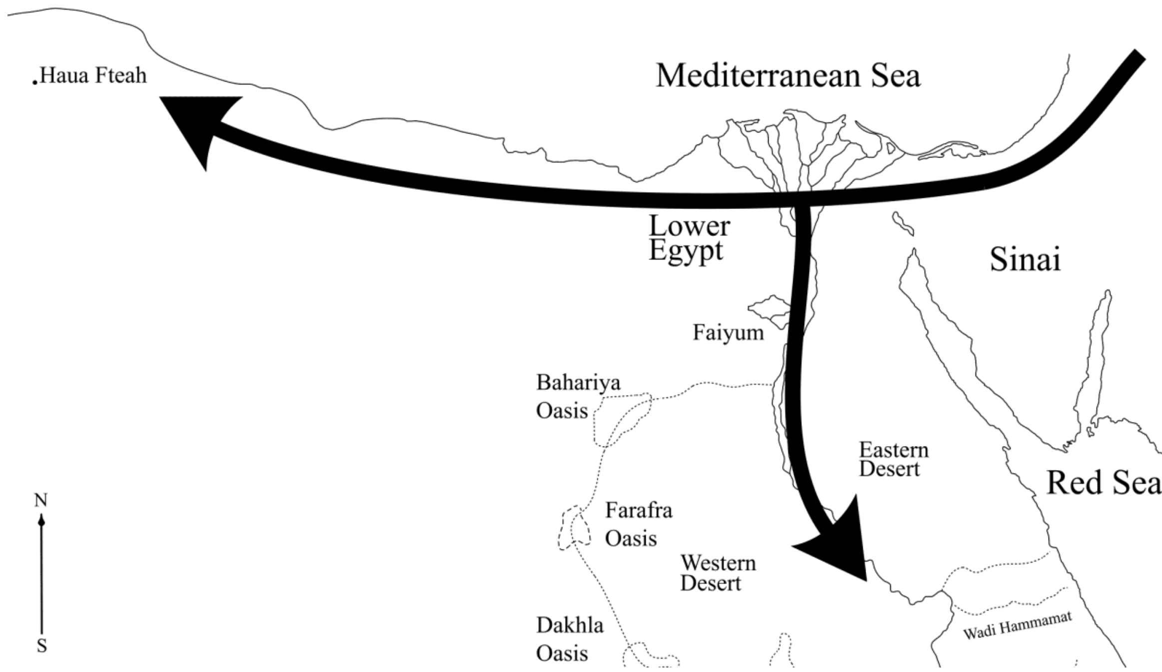

Figure 1: Traditional model for the diffusion of domestic goats and sheep into Egypt and Libya, after Angela E. Close, "Sinai, Sahara, Sahel: the Introduction of Domestic Caprines to Africa," in Jennerstraße 8 (eds.), *Tides of the Desert* (Köln: HeinrichBarthInstitut, 2002), fig. 1.

Numerous Abkan sites in the Wadi Halfa region imported it (Figure 2), and at two Abkan sites flint was of a type possibly from 170 km north or even farther, such as the Kharga Oasis or even the Faiyum region (Figure 2).[7] Thus, the east-west and north-south routes proposed for the diffusion of these animals in Egypt were already being used for trade.

Obstacles

A number of obstacles to this theory do exist. First, the earliest evidence for these animals in the southern Sinai dates to c. 6500 BP, 500 years later than two sites in Egypt. Close, however, argued that little work had been done in this region and what had been done revealed earlier activity and formal cemeteries. Further work may therefore uncover earlier evidence of these animals,[8] but in the ten years since the publication of this report no new evidence has been found to support an earlier date.

Second, there is no evidence of sea travel on the Gulf of Suez or Red Sea so early. At El Qaa marine shells and fish bones have been found,[9] but there is no indication that either would have required venturing out into deep water to collect or catch them. Neolithic sites in Egypt located on the Red Sea are rare. One, El Gouna (c. 5800 BP) (Figure 2), has been sampled, but only shells from shallow waters were found.[10] Moreover, the people living at El Qaa and those living in Upper Egypt have distinct cultures, and no evidence of any interaction exists. One trade item possessed by the people of El Qaa that would have been highly prized by Egyptians, as discussed below, was high-quality turquoise.[11] Turquoise has not been found on any Egyptian site earlier than the Late Neolithic, as discussed below.

Third, Close noted that her theory requires the reintroduction of goats and sheep into Lower Egypt via a land route through the northern Sinai during the Late Neolithic Period because their appearance is not an isolated event.[12] At the Neolithic Faiyum sites, evidence of sheep and goats were found with the earliest evidence of pigs and domesticated plants. The latter are wheat (*Triticum dicoccum*), six-row barley (*Hordeum hexastichum*), four-row barley (*Hordeum vulgare*), two-row barley (*Hordeum distichum*), and flax (*Linum usitatissimum*). All are from the Levant, and, since all appeared in Lower Egypt at the same time, they must have arrived by the same route.[13]

Fourth, the statement that "The earliest known examples [goats and sheep], at Merimde and in the Fayum, are unlikely to be earlier than about 6000 BP,"[14] is misleading. The beginning of the Neolithic in Lower Egypt may begin a bit earlier, at c. 6480 BP, and since the Lower Egyptian Epipaleolithic Period may have ended c. 7440 BP,[15] there is a hiatus in the archaeological record at the same time goats and sheep would have appeared in Lower Egypt. Consequently, it is not that goats and sheep are absent from sites in Lower Egypt during this period but that no sites have been found dating to this period. Additionally, since only the three previously mentioned sites have evidence of these animals as early as c. 7000 BP in northeast Africa, and since they are so widely spaced, the archaeological record must not only be incomplete in Lower Egypt but also throughout the region at this time.

Fifth, even if goats and sheep came to Egypt as proposed by

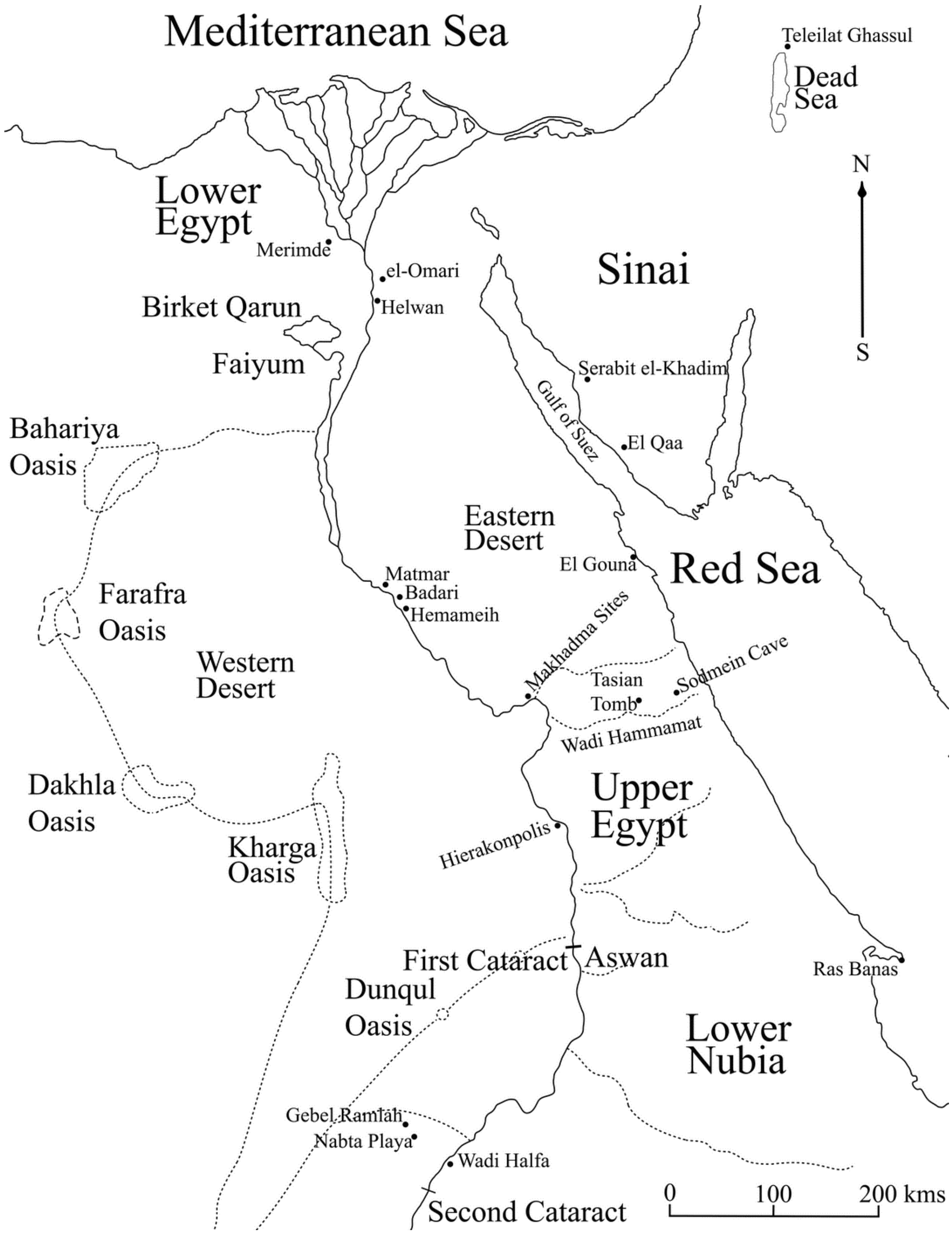

Figure 2: Epipaleolithic and Neolithic sites, after Toby Wilkinson, *The Rise and Fall of Ancient Egypt* (New York: Random House, 2010), xxxv, xxxvi.

Close, why did the people of Lower Egypt choose not to raise them for 1000 years? It was not due to a lack of access. The lithic industry at the Epipalaeolithic site at Helwan (c. 7000 BCE) (Figure 2) had "great similarities" to the Natufian lithic industry in the Levant,[16] suggesting that a land route across the Sinai was already in use well before 7000 BP. As noted above, what data we have suggest that indirect trade along east-west and north-south routes throughout Egypt also existed. Furthermore, the most likely route for herders to have taken goats and sheep from the Dakhla Oasis to Haua Fteah, Libya, would have been through the Farafra and Bahariya Oases (Figures 2, 3). This begs the question of why they ignored what must have been excellent grazing land in Lower Egypt, which was so close, and instead traveled west for a considerable distance to Libya?

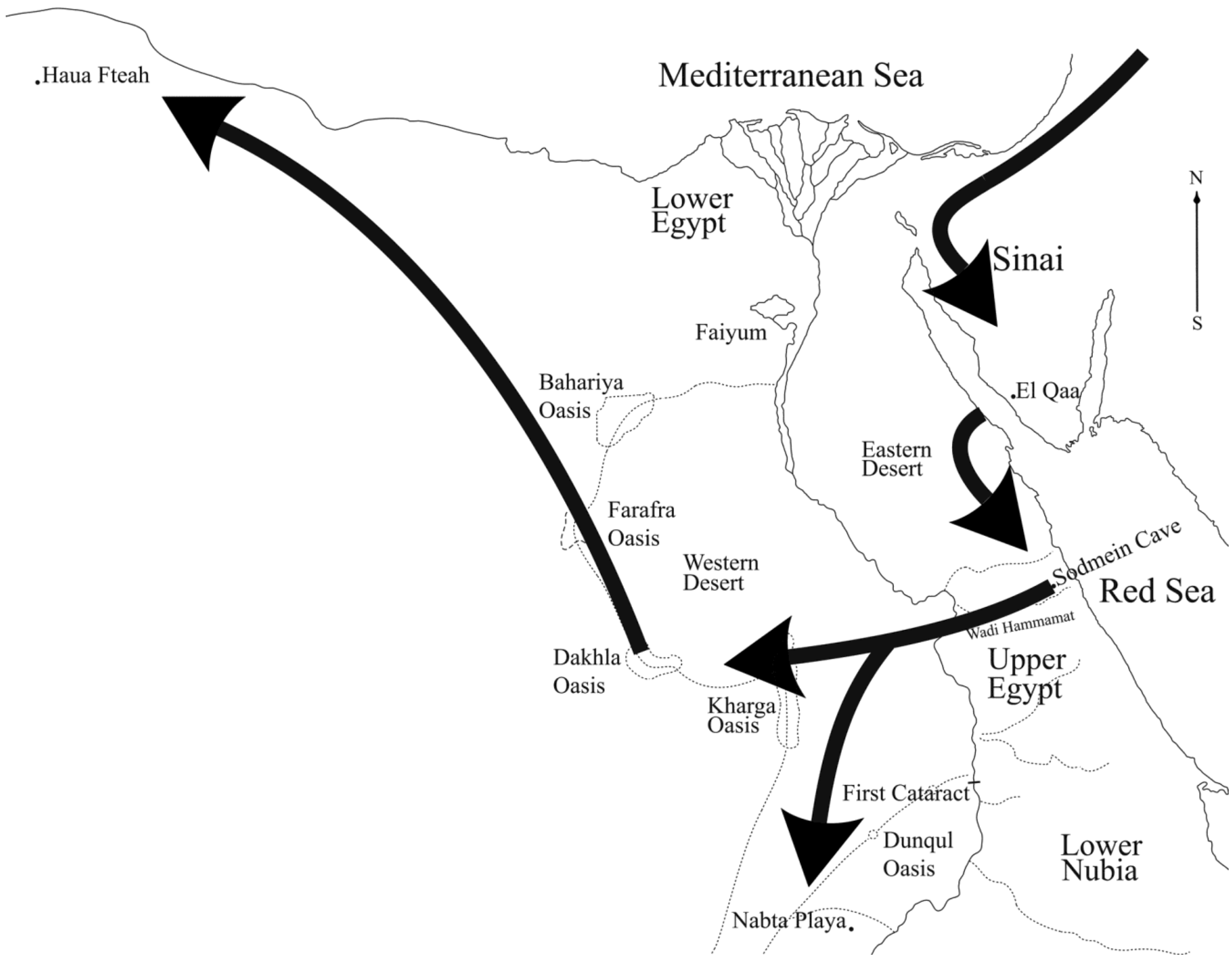

Figure 3: Model for the diffusion of domestic goats and sheep into Egypt and Libya via sea from the Sinai, after Close 2002, fig. 9.

Finally, considering that these domesticated animals appear at three distant sites at roughly the same time suggest one point of origin. Since Lower Egypt is central to these three sites along well-established routes of contact, it is the most likely region from which these animals diffused into Libya and Upper Egypt.

A review of these data therefore suggests that goats and sheep most likely came to Egypt through the northern Sinai to a Lower Egyptian site sometime before 7000 BP. From this region they continued to diffuse both westward to Libya and southward. Southern routes of diffusion are more difficult to discern due to a lack of archaeological data on settlements and population densities at this time. Considering that the climate was wetter and the primary north-south trade route appears to have followed the oases in the Western Desert, these animals may have followed this route south to Nabta Playa while diffusing along an eastern route from either the Dakhla or Kharga Oasis to Sodmein Cave, arriving at both places at roughly the same time (Figure 4 A). The traditional route is another possibility (Figure 4 B). A third route could be south through the Eastern Desert (Figure 4 C), or there could have been a combination of all three routes. Even if we knew the number of north-south routes, we have no idea if animals diffused at a uniform rate or how east-west routes influenced rates of diffusion. Nevertheless, extant data is consistent with goats and sheep diffusing into Egypt via a land route through the northern Sinai instead of across the Gulf of Suez.

Badarian Trade

The Badarian Period is dated to c. 4500–4000 BCE, but it may have existed as early as 5000 BCE. Badarian people lived on the east side of the Nile from Matmar to Hemameih (Figure 2). Badarian artifacts have been found as far south as Hierakonpolis and as far east as the Wadi Hammamat but are limited in number (Figure 2).[17] Whether these artifacts are an indication of Badarians living farther south, trade, copying, or a combination is unclear from the publications. According to Béatrix Midant-Reynes, "The presence of objects made from turquoise, copper, steatite, and sea-shells shows that they looked towards the east, where the earliest

Chalcolithic cultures had developed from the end of the sixth millennium BCE onwards."[18]

Her argument gains much of its power from the simultaneous appearance of copper and turquoise in Egypt, especially since deposits of both are found so close together in the Sinai. Turquoise was mined at Serabit el-Khadim (Figure 2) and copper at Wadi Nasb, which are separated by only 6 km.[19] Furthermore, both sites are near the sea, and it was thought that the people of the Ghassulian culture were mining both contemporary with the Badarian Period. It was also proposed that since turquoise is not found on Ghassulian sites (Figure 2), Egypt was the most likely destination. Midant-Reynes goes on to state that since "Egyptian sources of turquoise are located amid the copper-bearing regions of Sinai, therefore the presence of turquoise and steatite beads at el-Badari emphasizes the early exploitation of" the Sinai.[20] Yet, she concedes that it cannot be proven that turquoise and copper came from the Sinai, but then states that "the possibility that this was the case can hardly be denied." It possibly took place via direct trade-routes across the Red Sea, because contemporary cultures of Faiyum and Merimde in Lower Egypt lack evidence of a use of metal.[21]

Stan Hendrickx and Laurent Bavay do deny this claim. They point out that what pottery has been found at Serabit el-Khadim could as easily be dated to the Early Bronze I Period as the Chalcolithic. Additionally, the lithics and a few sherds of a cylindrical jar support a considerably later date of the Naqada IIIA2.[22] Accordingly, the mining of copper and turquoise in this region of the Sinai appears to have taken place later than the Badarian Period.

Copper

In regards to copper, the evidence suggests that it was rare at Badarian sites. Copper objects that have been found are small and flimsy,[23] consisting of a few beads and pins,[24] and only these few Badarian sites have evidence of copper use at this time in Upper Egypt. Moreover, since copper is not found in Lower Egypt and a number of deposits exist in the Eastern Desert, these copper deposits should have been adequate to meet the needs of the Badarians, especially if supplemented by smelting local deposits of malachite or azurite.[25]

Considering that the earliest evidence for large-scale mining expeditions is Early Dynastic times,[26] Badarians must have traded with their neighbors in the Eastern Desert to acquire copper. Additional imports from the Eastern Desert include red ochre, green malachite, siltstone, and Red Sea shells (*Nerita*, *Conus*, *Ancillaria*, *Oliva*, and *Natica*).[27] It seems unlikely that these trade goods would have been collected and traded while other desired items, such as copper and copper-bearing minerals, were ignored, supporting the Eastern Desert as a source of copper. This interpretation is based on the assumption that the archaeological record accurately reflects copper supplies and usage at this time in Egypt. The discussion on turquoise below raises the possibility that it may not be accurate, and if so, it is possible that copper was imported to Badarian sites from both the Eastern Desert and the Sinai.

Glazed Steatite

The earliest evidence of glazed-steatite beads comes from Tell Brak in Syria and Tell Arpachiya in northern Mesopotamia. Midant-Reynes has proposed that this early date and the large quantities glazed-steatite beads being produced suggest that Badarians were importing them from the Near East or an as yet unknown common ancestor for both existed.[28] The evidence does not support this interpretation.

The most obvious difference between Egyptian and Mesopotamian glazed-steatite beads is color. Mesopotamian beads are black or white.[29] The Badarians also made a white-glazed bead, but they created a unique blue-green glazed bead with a hue so close in color to turquoise that it is difficult to differentiate them.[30] Furthermore, an SEM analysis of two Badarian beads suggest that natron and the cementation method of glazing steatite were used to make them,[31] while neither was used to manufacture Mesopotamian beads.[32] The Badarians had also developed firing techniques to produce high-quality pottery, indicating they had the technological expertise to develop this glazing process.[33] Finally, deposits of steatite have been found in the Aswan region and at Ras Benas on the Red Sea (Figure 2).[34]

Aswan as a source of steatite is consistent with trade patterns at this time because the Badarians may have imported ivory and porphyry from this same region.[35] Likewise, the highly polished black top, characteristic of Badarian pottery, is found only in the Nilotic region and appears to the far south at Khartoum during the Neolithic Period,[36] suggesting diffusion or trade along the same route. Even in Lower Egypt there is evidence of indirect trade with Nubia. The earlier Neolithic Faiyum culture was importing palettes of Nubian diorite.[37] As such, a well-developed, indirect trade network appears to have existed along which steatite from Aswan could have been traded north.

The previously cited evidence suggests that the Badarians made their glazed-steatite beads by developing the cementation technique without any outside influence, and they made their beads from steatite imported possibly from Aswan.

Turquoise

In regards to turquoise from the Sinai, Midant-Reynes has her strongest argument. There appears to be no doubt that the source of turquoise was the Sinai,[38] and at least 1,500 years earlier the people of El Qaa had access to high-quality turquoise.[39] Yet, a stronger argument can be made for importing turquoise from the Sinai through Lower Egypt. No turquoise has been reported from any site in the Eastern Desert, but one turquoise pebble was recovered from a Neolithic Faiyum site,[40] and turquoise has been reported from graves and the settlement at Merimde (Figure 2).[41]

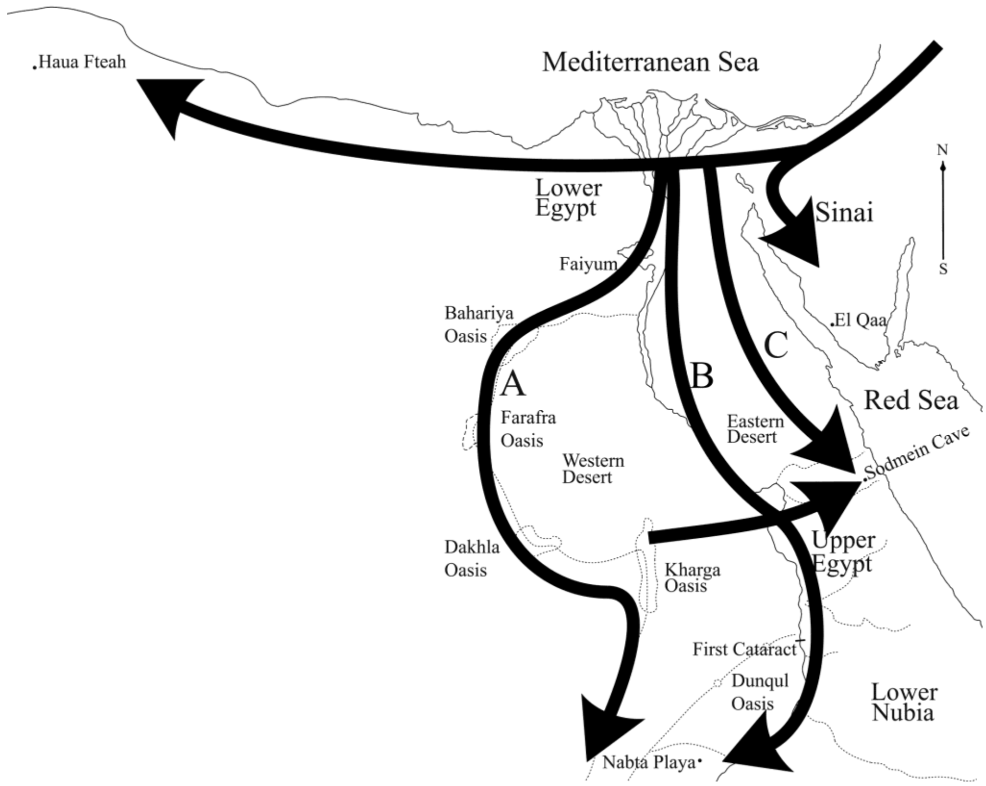

Figure 4: Possible routes for the diffusion of goats and sheep into Egypt and Libya.

Other evidence of contemporary contacts with the east at these sites are the previously mentioned pigs and domesticated plants. At the site of el Omari (c. 5000–4500 BCE) Red Sea shells were found along with fragments of what may be galena from either the Sinai[42] or Eastern Desert.[43] The pottery from this site has similarities with Palestinian Neolithic A and B pottery. Furthermore, the same technique of mixing two clays used to make Palestinian pottery was used at el Omari. A basalt three-footed base may have come from the southern Levant, as well as the domesticated donkey.[44] The evidence is consistent with a route connecting the southern Levant to Lower Egypt via the northern Sinai, along which turquoise could have been traded with other goods. In contrast, we lack evidence to support any trade via a sea route from the Sinai to Egypt at this time.

Hendrickx and Bavay raise some interesting objections to such an early date for any trade in turquoise, and they argue that turquoise was not imported into Egypt until the Naqada IIc Period. They point out that glazed-steatite beads and turquoise are so close in appearance that early excavators erroneously labeled glazed-steatite beads as turquoise.[45] Additionally, the only artifacts from these early excavations originally labeled as turquoise that have been proven to be turquoise by recent analysis came from fill that could not be reliably dated and should therefore be dated considerably later. The same may also be true for the piece of turquoise from the Faiyum, since it was a surface find.[46] Finally, there is an unexplained absence of turquoise from archaeological sites dating between the Badarian and Naqada IIc Periods. Hendrickx and Bavay state that "no known event can explain this hiatus." For these reasons, they propose that turquoise was first imported into Egypt during the Naqada IIc Period.[47]

This interpretation is flawed. Hendrickx and Bavay fail to mention turquoise found at Merimde, and turquoise has also been found at the Late Neolithic site of Gebel Ramlah (c. 5100–4700 BCE), which is only about 25 km northwest of Nabta Playa (Figure 2). Besides turquoise, Red Sea shells, beakers with complex designs, sheets of mica, knives of beige flint, rectangular and oval hard-stone palettes, and beads and lip plugs of carnelian were found on site. These grave goods and others "indicated far-reaching contacts with the Eastern Desert, and the Red Sea," while other grave goods, such as "mortars and pestles of hard stone, pottery with rocker stamp decoration, crescent-shaped lithics and mica slabs point to connections with the far south."[48] The closest parallel for this group of items was found in a Tasian grave in the Eastern Desert north of the Wadi Hammamat, dating from c. 4940 to c. 4455 BCE (Figure 2).[49] Grave goods included Red Sea shells, malachite, red ochre, fragments of mica slabs, and beige flint.[50] So, not only is turquoise found at this time in Egypt but it has also been found at a minimum of two sites on trade routes, and both sites lack evidence of glazed-steatite beads.

Their theory also raises a question. Since turquoise has such a unique blue-green hue, how could the Badarians create glazed-steatite beads identical in appearance to turquoise if they had never seen turquoise? It is more likely that turquoise was imported from the Sinai but was so rare and highly desired among the Badarians that they created turquoise-colored beads to mimic this mineral. To do so, however, they must have had turquoise for comparison. This in turn raises another question: how were they able to create such an exact copy? In recent attempts to recreate this glaze, a green color was produced when steatite was coated with a mixture of natron and malachite, while a blue color was produced with the same mixture, but steatite was replaced with crushed quartz pebbles.[51] There is no indication in this report that a blue-green glaze identical in color to turquoise was produced using minerals available to the Badarians. A difficulty with my interpretation is that it does not explain the absence of turquoise at Upper Egyptian sites dating between the Badarian and Naqada IIc Periods. Even if only small amounts were imported, as was the case for copper, especially used for jewelry, we would expect some to survive. A possibility is that turquoise was the colorant used to make these beads. If all turquoise imports were meant to be used to make a glaze for steatite beads, it would explain this absence, especially since these turquoise-colored glazed-steatite beads and Red Sea shells were common grave goods found in Badarian graves.[52] Such quantities of beads would require a consistent supply of turquoise from the Sinai.

This does raise another question. Why did turquoise become more common during the Naqada IIc Period? The evidence suggests it was at this time that sailed craft first appeared on the Nile, allowing larger volumes of all types of goods, including bulk goods like wine, oils, and grains, to be brought up the Nile.[53] For the first time turquoise could be imported in quantities large enough to be used as both a colorant and for other purposes. Nevertheless, the distribution of turquoise at Egyptian sites during the Late Neolithic Period, along with the distribution of domesticated animals, plants, and other artifacts from the southern Levant, is consistent with trade via a land route through the northern Sinai. Moreover, no evidence exists for any trade via a sea route between the Sinai and Egypt during this period.

Turquoise and Copper in Lower Egypt

If turquoise was imported through Lower Egypt, it raises another question. Since both turquoise and copper are found so close together in the Sinai and there was an obvious demand for copper in Egypt, why was only turquoise imported to Egypt? Gertrude Caton-Thompson's excavation report on the settlement site at Hemamieh sheds some light on this subject (Figure 2). "No trace of copper or metalliferous ore was found in the lower levels, and were it not for two examples from graves, the Badarain civilization, on the settlement evidence alone, might erroneously have been ascribed to a completely Neolithic status,"[54] which is the same situation at Merimde and Neolithic Faiyum sites. Consequently, the absence of copper in Lower Egypt may be a stronger indication of the difference in burial practices rather than a lack of trade in copper at this time.

What then happened to the copper? As previously mentioned, there is no evidence of large-scale mining at this time. So, even if copper was coming from both locations, minerals and stones were probably being collected from easy-to-find surface deposits. If so, the yearly amounts collected in both deserts may have been relatively small. Furthermore, copper was probably recycled. A difficulty in calculating quantities of some trade goods, especially metals, is that there is no way to date when they were imported and how efficiently they were recycled. Copper may have been more common during the Badarian Period than suggested by the archaeological evidence but still relatively rare and valuable, leading to an efficient system of recycling, including grave robbing. As it became increasingly common and cheaper, recycling decreased. For these reasons copper and most metals are referred to as invisible trade goods.[55] Some copper may therefore have made its way to Badarian sites along with turquoise from the Sinai, but the most likely route was a land route from the Sinai into Lower Egypt along which other goods were traded.

Conclusion

A review of the archaeological data suggests it is unlikely that animals and goods were transported to Egypt by sea during the Neolithic Period. Instead, sheep and goats were probably herded from the southern Levant to Egypt on a well-established land route running through the northern Sinai, which had already been used to bring Natufian lithics to the Epipaleolithic site of Helwan. These animals probably arrived in Lower Egypt around or after c. 7440 during an archaeological hiatus in this region. They then diffused west to Haua Fteah, Libya, and south to Sodmein cave and Nabta Playa, arriving at all three by c. 7000 BP or slightly later at Haua Fteah.

The archaeological data also suggest turquoise and possibly copper were transported along this same northern Sinai route during the Badarian Period c. 4500 BCE, but the primary source of copper in Upper Egypt was probably easily accessible deposits in the Eastern Desert. Furthermore, the evidence suggests that the process used to make glazed-steatite beads was developed by the Badarians who imported steatite possibly from Aswan. Thus, all evidence is consistent with a well-developed indirect trade network along land routes connecting the southern Levant and the Sinai to Egypt during the Epipaleolithic and Neolithic Periods.

Notes

1 Angela E. Close, "Sinai, Sahara, Sahel: The Introduction of Domestic Caprines to Africa," in Jennerstraße 8 (eds.), *Tides of the Desert* (Köln: HeinrichBarthInstitut, 2002), 460–461.

2 Close 2002, 464.

3 See Séan McGrail, *Boats of the World* (Oxford: Oxford University Press, 2001), 104–105; see also Samuel Mark,

"The Earliest Sailboats in Egypt and Their Influence on the Development of Trade, Seafaring in the Red Sea, and State Development," *Journal of Ancient Egyptian Interconnections* 5.1 (2013): 28–31.

4 Béatrix Midant-Reynes, *The Prehistory of Egypt from the First Egyptians to the First Pharaohs*, Ian Shaw (trans.) (Malden, MA: Blackwell Publishers; reprinted 2002 [original printing 1992]), 57–58.

5 See Midant-Reynes 2002, 94, 134–5.

6 Stan Hendrickx and Pierre Vermeersch, "Prehistory: From the Paleolithic to the Badarian Culture (*c*.700,000–4000 BC)," in Ian Shaw (ed.), *The Oxford History of Ancient Egypt* (Oxford: Oxford University Press, 2000), 29–30.

7 Midant-Reynes 2002, 142–145.

8 Close 2002, 464.

9 Close 2002, 467.

10 Pierre Vermeersch, Philip Van Peer, Veerle Rots, Liesbeth Van Kerckhoven, and Wim Van Neer, "The Middle Holocene Shell Mound of El Gouna on the Red Sea (Egypt)," *Journal of Field Archaeology* 30.4 (2005): 438.

11 Close 2002, 467.

12 Close 2002, 467.

13 Midant-Reynes 2002, 102–103; see Close 2002, 467.

14 Close 2002, 460.

15 See Midant-Reynes 2002, 105.

16 Midant-Reynes 2002, 83.

17 Henderickx and Vermeersch 2000, 38.

18 Midant-Reynes 2002, 160.

19 Kathryn A. Bard, *An Introduction to the Archaeology of Ancient Egypt* (Malden, MA: Balckwell Publishing, 2008), 173.

20 Midant-Reynes 2002, 161.

21 Midant-Reynes 2002, 161.

22 Stan Hendrickx and Laurent Bavay, "The Relative Chronological Position of Egyptian Predynastic and Early Dynastic Tombs with Objects Imported from the Near East and the Nature of Interregional Contacts," in Edwin C.M. van den Brink and Thomas E. Levy (eds.), *Egypt and the Levant: Interrelations from the 4th through the Early 3rd Millennium BCE* (London and New York: Leicester University Press, 2002), 60–61.

23 Jack Ogden, "Metals," in Paul T. Nicholson and Ian Shaw (eds.), *Ancient Egyptian Materials and Technology* (New York: Cambridge University Press, 2000), 151.

24 See Guy Brunton and Gertrude Caton-Thompsen, *The Badarian Civilization and Predynastic Remains near Badari* (London: B. Quaritch, 1928), 27, 33, 76.

25 Ogden 2000, 151.

26 See Ian Shaw, "Exploiting the Desert Frontier: The Logistics and Politics of Ancient Egyptian Mining Expeditions," in Arthur Bernard Knapp, Vincent C. Pigott, and Eugenia W. Herbert (eds.), *Social Approaches to an Industrial Past* (London and New York: Routledge, 1998), 243.

27 Toby Wilkinson, *Genesis of the Pharaohs* (London: Thames & Hudson, 2003), 181.

28 Midant-Reynes 2002, 162.

29 Max Mallowan and J. Cruikshank Rose, "Excavations at Tall Arpachiyah 1933," *Iraq* 2 (1935): 38, 97; Max Mallowan, "Excavations at Brak and Chagar Bazar," *Iraq* 9 (1947): 33, 97, 103–104; Peter R. S. Moorey, *Ancient Mesopotamian Materials and Industries: The Archaeological Evidence* (Winona Lake, Ind.: Eisenbrauns, 1999), 169–170.

30 See Brunton and Caton-Thompsen 1928, 27–28; Hendrickx and Bavay 2002, 60.

31 M.S. Tite and M. Binson, "Glazed Steatite: An Investigation of the Methods of Glazing Used in Ancient Egypt," *World Archaeology* 21 (1989): 87, 89, 93–94, 98.

32 Moorey 1999, 169–170.

33 Hendrickx and Bavay 2002, 60.

34 Midant-Reynes 2002, 162.

35 Samuel Mark, *From Egypt to Mesopotamia: A Study of Predynastic Trade Routes* (College Station, TX: Texas A&M University Press, 1997; London: Chatham Publishing, 1998), 125.

36 Midant-Reynes 2002, 163.

37 Gertrude Caton-Thompson and Elinor Wight Gardner, *The Desert Fayum* (London: The Royal Anthropological Institute of Great Britain and Ireland, 1934), 34.

38 Hendrickx and Bavay 2002, 60.

39 Close 2002, 467.

40 Caton-Thompson and Gardner 1934, 53, 87–88. See also Hendrickx and Vermeersch 2000, 34.

41 Midant-Reynes 2002, 115.

42 Midant-Reynes 2002, 122–124.

43 Bard 2008, 173.

44 Midant-Reynes 2002, 122–124.

45 Hendrickx and Bavay 2002, 60–61.

46 Hendrickx and Bavay 2002, 60–61.

47 Hendrickx and Bavay 2002, 60–61.

48 Renée Friedman and Joseph J. Hobbs, "A 'Tasian' Tomb in Egypt's Eastern Desert," in Renée Friedman (ed.), *Egypt and Nubia: Gifts of the Desert* (London: British Museum Press, 2002), 188–189. See also Michal Kobusiewicz, Jacek Kabaciński, Romuald Schild, Joel D. Irish, and Fred Wendorf, "Burial Practices of the Final Neolithic Pastoralists at Gebel Ramlah, Western Desert of Egypt," *British Museum Studies in Ancient Egypt and Sudan* 13 (2009): 149–150.

49 Friedman and Hobbs 2002, 178.

50 Friedman and Hobbs 2002, 187–188.

51 Tite and Binson 1989, 87–88.

52 See Brunton, and Caton-Thompsen 1928, 27–28

53 Mark 2013, 28–33.

54 Brunton and Caton-Thompson 1928, 76.

55 Mark 1997, 125.