

A New Approach to the Problem of Pattern Books in Early Byzantine Mosaics: The Depiction of the Giraffe in the Near East as a Case Study

Diklah ZOHAR

INTRODUCTION

The theory of pattern books has gained much popularity within the discipline of art history in general and within the study of ancient mosaics in particular¹. Lacking material evidence of such books that survived from Antiquity², the theory is mainly founded upon indirect evidence. The application of pattern books or shared models has been suggested as the mechanisms behind the appearance of similar iconography in works of art that are distant from one another in geography and/or chronology, when no direct model seems to have been available. The theory finds expression in the assumption that artists, and mosaicists among them, did not copy their designs from nature and rarely sought to create an original design, but reproduced their work based upon earlier models and shared patterns³. What the content of such a pattern book exactly was, is still a subject of debate.

Depictions of animals are among the most popular motifs in early Byzantine mosaics of the Near East⁴. Animals appear as part of hunt and pastoral scenes, symbolic depictions and as isolated motifs within a geometric frame or a vegetal scroll. Although representations of fantastic hybrid creatures, such as winged lions, griffins and other mythological creatures can also be found, the animals depicted most often are those species that belong to the natural habitat of the Near East. Birds, fish, domesticated animals and wild beasts are all part of the artistic repertoire. Animals that appear in fight and hunt scenes, such as the leopard, the lion, the boar and the bear are now extinct in that area, but appear to have still existed there during Antiquity. Desert areas would possibly have been a source for less common species, such as the wild ass, the ostrich, wolves and lizards. Conspicuous are depictions that include exotic species, especially wild animals of African or Indian origin, such as the elephant, the zebra, the rhinoceros and the giraffe that

are without any doubt alien to the Middle East, and were so also during Late Antiquity⁵. Depictions of these four animals in early Byzantine mosaics are the focus of the current investigation, with the purpose to shed new light upon the theory of pattern books.

How did these species enter the artistic repertoire of the early Byzantine artists? Did artists and commissioners actually have the chance to see these animals? How were they depicted and what implications does this have for our understanding of the work process? Did artistic depiction rely upon direct

¹ The theory of pattern books had already been advanced by the scholars of the nineteenth century (Buchta 1979, 13; Tikkanen 1889). Although more pronounced in relation to medieval art and especially manuscript illumination (Kitzinger 1975; Scheller 1963; Weitzmann 1947), the theory had been argued for mosaic art in Antiquity and became widely accepted since (Dauphin 1978; Dunbabin 1978, 9). Buchta sees the pattern book as an iconographical guide of, for example, narrative cycles, rather than a motif book (Buchta 1979, 66), while Dauphin advances the idea of a pattern book as a collection of motifs, which are independent from any specific iconographic context (Dauphin 1978, 408).

² Such books would probably be easy to perish due to intensive use and the fragile nature of the material that was presumably used for their making – either papyrus or parchment. Loose pages illustrating the canon of painting were recovered from Ptolemaic Egypt (Scheller 1963, 44-45). The earliest patterns in western Europe are attributed to the tenth century (Scheller 1963, 49-52).

³ Dauphin 1978, 408; Hachlili 1987, 55; Ovadia/Ovadia 1987, 184.

⁴ Dauphin executed counting according to percentage as well as absolute occurrences. Her work refers to images that appear within the *inhabited scroll* composition (Dauphin 1978, 419-423).

⁵ Prehistoric elephants (*Palaeoloxodon antiquus*) are known to have been hunted by prehistoric hunters in the Near East. An excavation at the 780,000-year-old site of Gesher Benot Ya'akov near the banks of the Jordan River, yielded a skeleton of a hunted prehistoric elephant (Hershman 1998). In historic times, however, the elephant had been extinct. Re-introduction of the tamed elephant in the region was its use in the battlefield by the Seleucid army during the Hellenistic period.

observation and copying from nature, upon visual memory and production formulae, or upon patterns that had been transmitted, copied and spread among craftsmen? And if all depictions go back to one or more original sources' – is it possible to trace their track of transmission? Although these questions are usually approached from an iconographic point of view, the current study pays attention also to stylistic and formalistic characteristics of the depictions

and the influence of artistic technique and inlay pattern of the tesserae upon the visual result.

WILD BEASTS IN MOSAICS⁶

Many of the mosaics that originally included figurative and animal depictions have not fully survived. Some suffered natural damage, while in others, mainly figurative representations were deliberately removed already in Antiquity.

The earliest representation of exotic beasts that has come down to us from the Near East appears in the fourth-century mosaic of Lydda (modern Lod) in Israel. It belonged to a private villa and shows both high quality and a superb preservation condition⁷. The northern carpet of the mosaic contains within a central octagon an emblematic depiction of open scenery; in the background are two mountains, on which a lion and a lioness are sitting facing each other. Beyond the mountains is a lake or sea, in which a water monster is dwelling⁸. In the foreground are a tiger and a zebu, and in the middle ground are an elephant, an African rhinoceros (with a double horn) and a giraffe with the horns of a deer (Pl. 1)⁹. The animals are depicted in a naturalistic manner, placed on a ground line and even seem to cast shadow. The positioning of the beasts in three height levels and partly overlapping each other, creates the illusion of depth and open space and it seems that the artist wished to create an illusion of animals in their natural habitat. This mosaic is dated to the fourth century, on basis of the ceramic and numismatic finds that were found scattered in the debris upon the floor.

Most depictions of exotic beasts derive from sixth-century mosaics. The synagogue at Gaza Maiumas included a few types of decorations. The central hall was decorated with panels, while the aisles were decorated with vine scrolls creating medallions, each of which includes an animal, in a composition that received the name *inhabited scrolls*¹⁰. The mosaic suffered much damage, and only a few sections have survived. A panel in the central hall of the synagogue shows King David, identified by a Hebrew inscription, playing the harp, with animals surrounding him, in an iconography that reminds of that of Orpheus (Pl. 2)¹¹. A lioness and a snake can still be recognized, but the rest suffered much damage. Asher Ovadiah identifies the animal behind the lioness as a giraffe¹². It has a long neck, but the horns of a gazelle. Since the body is

⁶ Exotic animals also appear outside the region of Syria-Palestina-Arabia, although not as often as one would expect. For example, North African mosaics do depict elephants (Blanchard-Lemée 1996, 35, Figs 3, 4, 6, 63; Dunbabin 1978, Figs 28, 186) and ostriches (Blanchard-Lemée 1996, Figs 5, 156), but do not depict giraffes and zebras. On the other hand, the mosaic of the great hunt in Piazza Armerina in Sicily (that was produced under North African artistic influence) depicts also a rhinoceros. Elephants are the most popular of the four mentioned beasts and appear in the mosaic of the great palace of Constantinople (Brett/Macauley/Stevenson 1947, Pls 31, 41), in a mosaic floor in Spain in a scene depicting Orpheus (Alvarez-Martinez 1994, Figs 6, 7), and in British mosaics (Smith 1965, Figs 1, 2, 12). Other African animals are rare in mosaics. Dauphin recognized a crown crane, the distribution of which is Kenya, Uganda and Sudan at the pavement of Bait-Mari in Lebanon (Dauphin 1978, 407). Other animals are sometimes difficult to identify with certainty. The mosaic from the ambulatory of the so-called Martyrion at Seleucia, the port of Antioch (dated to the second half of the fifth century) depicts a free composition of birds and various animals, of which one may be a zebra. In the same floor also an elephant is shown (Dunbabin 1999, Fig. 193).

⁷ Avisar 1999, Pls 2, 3, 4.

⁸ Such creatures usually belong to the repertoire of marine depictions and are often ridden by *Nereides* or accompanied by other sea scenes. The symbol of *Capricorn* in the zodiac was represented as a goat with a fishtail and was well known in the artistic repertoire of the East (Dothan 1983, Pl. 16, Fig. 6). Although such creatures seem to belong to the category of imaginary creatures, there is evidence that, at least some, did believe in their existence (Braslavi 1967, 129). Animal books sometimes include imaginary creatures next to existing animals, such as the griffin and phoenix (Kruk 2001, 355, 379). Artistically, the visual tradition concerning the iconography of these creatures was well known throughout Antiquity.

⁹ Photograph by Miki Davidov and Clara Amit in Avisar 1999, Pl. 3.

¹⁰ This design is also called sometimes 'peopled scroll'. Both terms refer to the design as a scroll creating a set of round frames, in which a wide range of figurative (but sometimes also non-animate) depictions appear. For analysis of the repertoire of designs: Dauphin 1978, 411, n. 4. For the Hellenistic source of the motif: Toynbee/Ward-Perkins 1950.

¹¹ Ovadiah/Ovadiah 1987, Pl. LIX.

¹² Ovadiah/Ovadiah 1987, 61.

completely destroyed, identification is difficult. The neck seems too long for a gazelle, but if a giraffe, it misses the typical skin structure and is too small in comparison to the lioness next to it. On the other hand, Byzantine art often ignores correct proportions even within one and the same section, and a depiction of a giraffe with horns of a gazelle is just as inaccurate as the depiction of a giraffe with the horns of a deer in the Lydda mosaic (Pl. 1). Be that as it may, this giraffe has a totally different appearance than the two other giraffes that are depicted in the southern aisle of the same synagogue.

The scroll motif in the southern aisle includes in one row a zebra (in the central scroll medallion) and

two giraffes, one on each side, facing one another (Pls 3, 4)¹³. The artist did not shorten the long necks of the giraffes in order to fit it into the space of the medallion, but allowed their neck to pass beyond the borderline. As a result, the giraffes' heads are depicted outside the scroll itself. The neck of the right giraffe is decorated with a band, probably as indication of ownership¹⁴. The two giraffes

¹³ Ovadiah/Ovadiyah 1987, Pl. LIII1. A good illustration of the zebra from Gaza Maiumas (by the photographer Zeev Radovan) in: Ben-Dov/Rappel 1987, 83.

¹⁴ Mosaics often depict wild animals with bands and even bells around their neck, indicating that this is not a wild animal



Pl. 1. Central detail of a mosaic at a private villa in Lydda, Israel (Avisar 1999, Pl. 3)



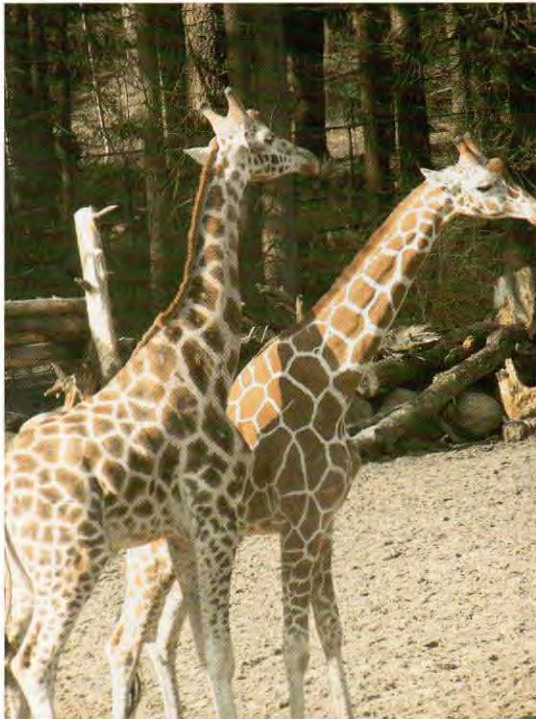
Pl. 2. Panel of King David playing the harp;
mosaic from the synagogue of Gaza Maiumas
(Ovadiab/Ovadiab 1987, Pl. CLXXVIII)



Pl. 3. Scroll; mosaic at the southern aisle
of the synagogue of Gaza Maiumas
(Ovadiab/Ovadiab 1987, Pl. LIII, Fig. 1)



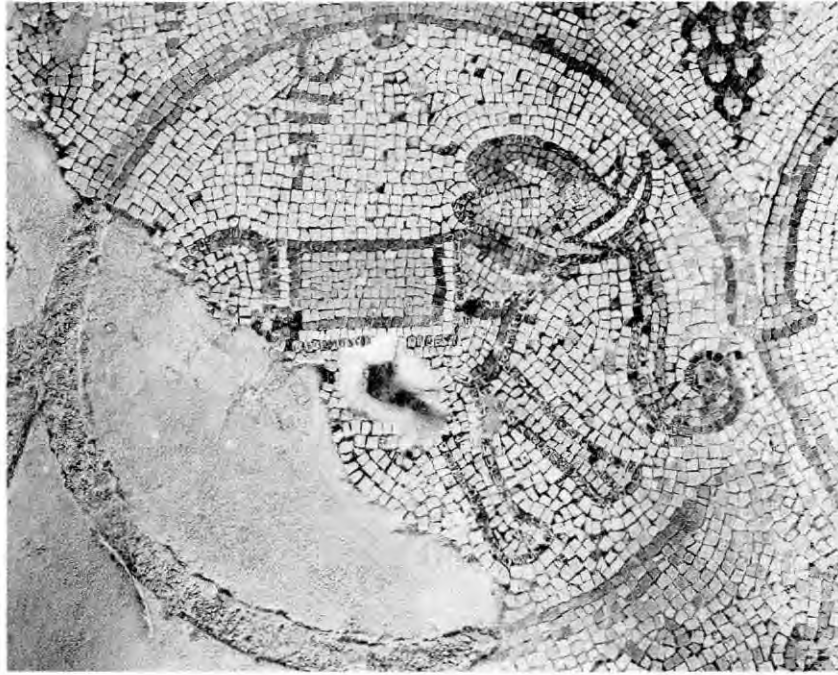
Pl. 4. Detail of Pl. 3: the right giraffe
(Ovadiah/Ovadiah 1987, Plate LV, Fig. 2)



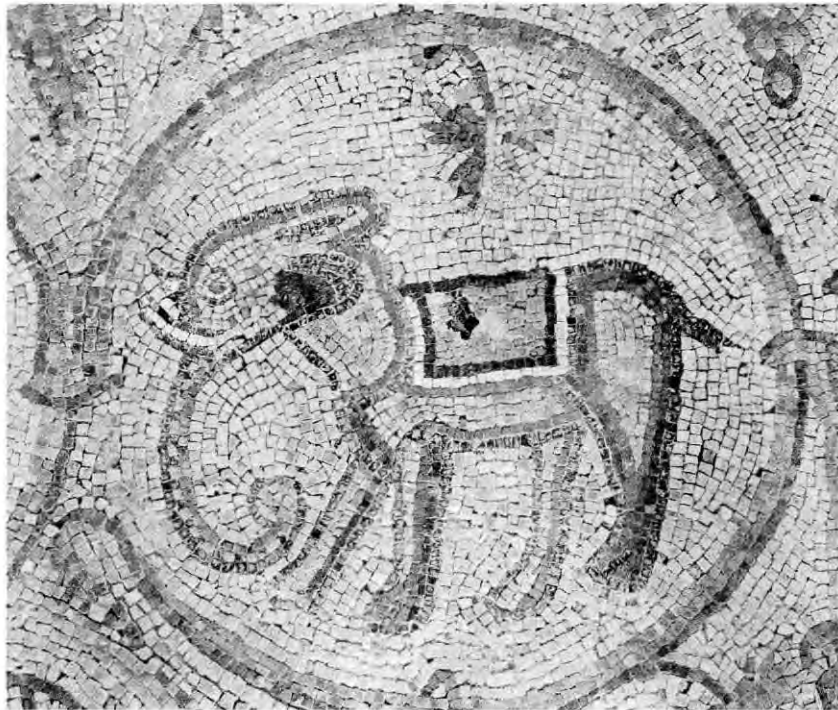
Pl. 5. Giraffe *Camelopardis Rothschildi* against Giraffe
Camelopardis reticulaire (photograph author)



Pl. 6. The split hoofs of a giraffe (photograph author)



Pl. 7. Left elephant; mosaic of Maon-Nirim (photograph author)



Pl. 8. Right elephant; mosaic of Maon-Nirim (photograph author)

seem to differ in their skin pattern and this may be an attempt of the artist to represent two different types of giraffes. The left giraffe may be a representation of the so-called 'wine leaf giraffe'¹⁵ owing to its typical skin structure, which is different from the type that has the more common patchy pattern (Pl. 5)¹⁶.

The mosaic of Gaza Maiumas preserved an inscription, which states the date in which the mosaic was completed: the year A.D. 508/9¹⁷. If the identification of Ovadiah is correct, the fragments from the mosaic of Gaza included three depictions of giraffes: two in the aisle scrolls and one in the nave panel. Except of their skin structure, the two giraffes in the scrolls arrangement are rather similar and their depiction strives to realism.

The synagogue of the nearby site Maon-Nirim has a mosaic decorated with a field of inhabited vine scrolls, in a strict symmetrical composition. Among the depicted animals are two elephants (Pls 7, 8). In this mosaic, each animal is isolated within a medallion and the symmetry seems the leading principle of positioning. Except for the lions at the end and peacocks at the entrance, the order of animals seems arbitrary. Like in other floors of the early Byzantine period, all animals are reduced to the measure of the scroll, ignoring realistic proportion between them. The elephants are depicted in the same size as the duck and the deer.

The nave mosaic of the Church of St Stephen at Beer-Shema' is also decorated with a field of inhabited vine scrolls. One of the medallions includes an African riding an elephant (Pl. 9)¹⁸. The two left-most medallions in the same row depict a man leading a giraffe (Pl. 10).

The mosaic in the church of Kissufim in the Negev is only partly preserved; the mosaic in the nave is completely lost and only the northern aisle and two sections between the columns have partly survived¹⁹. Among sections of hunt and a pastoral scene appears a section with an elephant and a giraffe, which has the feet of a camel (Pl. 11). The pastoral scene includes a man milking a goat, and the hunting scenes a winged lion hunting a spotted ostrich, a man mounted on a horse hunting a leopard, and a dog hunting a gazelle and a rabbit. The depictions between the columns show a man leading a loaded camel and portraits of the donors who apparently financed the work. The mosaic carries an inscription with a very precise date of completion, equivalent to the 4th of August 576²⁰.

The large concentration of exotic animals in the region of Gaza made Dauphin suggest that the occasion of transportation of two giraffes and an elephant to Emperor Anastasius, described by Timotheus of Gaza at the end of the fifth century, was the trigger for the depictions of these animals in mosaics in this region²¹. Recent excavations in the region of Gaza still yield new giraffes' representations, dating to the fifth and sixth centuries²². The recent excavation of the Lydda mosaic, however, shows that exotic beasts entered the artistic repertoire of mosaicists in the East already in the fourth century. The depiction in Piazza Armerina (discussed below) confirms that in the fourth century transports of these animals already took place on an organized scale. Dauphin further suggests that the high concentration of elephants, giraffes and zebras in the mosaics of the Gaza region may be explained by the location of Gaza on the important merchant route from the South to the North along the *Via Maris*²³.

Wild beasts, however, seem to have entered the repertoire of mosaic craftsmen also further than the main merchant route. At the complex of the Memorial of Moses at Mount Nebo near Madaba in Jordan, the mosaic of the Diakonikon-baptistery at the northeast side of the church depicts a free composition in registers. Each register seems to be dedicated to a different subject matter: the upper register to hunting scenes on foot and the

in its natural habitat, but under human ownership. Examples: gazelle with a bell around its neck at the Theotokos Chapel on Mount Nebo (Piccirillo 1992, Pls 173, 200); birds in the Church of the Lions in Umm al Rasas (Piccirillo 1992, Pls 342, 343); A marten with a red band around its neck fighting a snake in Beer-Shema' (Gazit/Lender 1993, 276, Pl. XXB). See also Pl. 10 in this article.

¹⁵ The scientific names of the giraffe of this type are: Rothschildi, Thornicrofti and Tippelskirchi (Pl. 5).

¹⁶ The types are not necessarily a different species, but one species with different characteristics. They do interbreed and every individual has a unique pattern (Dagg 1962, 550).

¹⁷ Ovadiah/Ovadiah 1987, 61, no. 83, Pls LIII, IV.

¹⁸ Gazit/Lender 1992, 33-40, colour plate there.

¹⁹ Cohen 1979, drawing on p. 20 and a photo on p. 22; also in Tsafirir 1993, 277-282.

²⁰ Cohen 1979, 19; Tsafirir 1993, 277.

²¹ Dauphin 1978, 407-408.

²² Humbert 1999, 216-218, see there a photograph of the mosaic floor from the baptistery of the church excavated in Jabalyah.

²³ Dauphin 1978, 408.

following register to hunting scenes on horseback. The third register depicts a pastoral scene and in the lower register two men of foreign origin appear, leading three animals on a leash: a black man leads an ostrich, and a man in Phrygian clothes a zebra and a camel-like spotted animal (Pls 12, 13)²⁴. Also here, a long dedicatory inscription provides the date of completion, corresponding to A.D. 530²⁵.

The complex of the so-called Kyria Maria monastery at Scythopolis (modern Beth Shean) in the north of Israel preserves a number of mosaics. Exotic animals appear in two of them. The main hall is decorated with a geometric carpet with a cycle of the personifications of the months in the centre. The geometric carpet creates a few hexagons, in which various scenes and beasts appear. Among them are a giraffe, an ostrich and an elephant (Fig. 1; lower side of Pl. 14)²⁶. In the same complex, in a room that was designated 'Room L', appears a composition of twelve vine scrolls creating medallions in which various scenes are depicted. The upper medallion on the right includes a black man leading on a leash an animal that Ovadiah/Ovadiyah identify as a giraffe (Pls 15, 16)²⁷. Despite the small scale of the animal in comparison to the man standing next to it, the two typical horns on its head identify it as a giraffe. Despite the fact that both giraffes appear within one site, at a small distance from one another, their appearances differ greatly. The mosaic in the monastery of Kyria Maria carries inscriptions that enable to date the mosaics to A.D. 567²⁸.

In the south aisle at the church of Beth-Guvrin, various animals were featured in square frames surrounding a central tondo. In one of these squares appears an elephant (Pl. 17)²⁹. Also the small synagogue in Beth Shean, situated within the 'House of Leontis' complex depicts an elephant, with no other exotic animals (Fig. 1)³⁰. The mosaic of the

church of al-Khadir in Jordan was decorated with a few carpets (Pl. 18). The western one is a free composition in registers, depicting various scenes and animals within a scenery of trees. Despite the intentional removal of the figures, which happened already in Antiquity, the iconography of many of the depictions can be recognized. On the right side of the second row from below a Phrygian man is leading a spotted camel, the only image that survived the destruction, which shows great similarity to the spotted camel at the Old Diakonikon (Pl. 13). At the opposite side of the same row was another Phrygian figure, holding a trident, seated on an elephant. In the lower row, a giraffe is positioned before a tree, and despite the damage, it is clearly identified by the two horns on its head (Pl. 18)³¹.

A few characteristics can be noted in relation to these depictions. First, there seems to be no fixed grouping of exotic animals. They may appear as a group, but at times, only two (a giraffe and an elephant or a giraffe and a zebra) appear together. The only animal of the four that appears as a single specimen is the elephant, which seems to have entered the more common repertoire of animals. Secondly, some mosaics repeat a certain specimen more than once. In the synagogue in Gaza Maiumas the giraffe is depicted at least twice, and if Ovadiah/Ovadiyah's identification is correct, it appears there three times. Also the floor from the monastery of Kyria Maria in Beth Shean depicts a giraffe twice, though in two completely different manners. The synagogue of Maon depicts an elephant twice because of the symmetrical nature of the composition. Thirdly, the subject of exotic beasts seems to have become an iconographic subject in its own right and was placed next to depictions of hunt and pastoral scenes. This is the case in Kissufim and in Mount Nebo, where each of the different panels or registers focuses on one visual aspect of the three subjects (either hunt scenes, pastoral scenes or exotic animals). As such, their depiction seems to express a specific subject matter, that is: animals for display. The animals are sometimes led on a leash by a person, himself of foreign origin, or, in the case of elephants, they are ridden upon.

EXOTIC ANIMALS IN THE NEAR EAST

Out of the four species, the giraffe, the rhinoceros, the zebra and the elephant, the Asian elephant is known to have been introduced as a fighting animal

²⁴ Piccirillo 1992, Fig. 166.

²⁵ Piccirillo 1992, 146.

²⁶ Ovadiah/Ovadiyah 1987, 27, Pl. XXI; Stern 1993, 222.

²⁷ Ovadiah/Ovadiyah 1987, 29, Pl. XXIV; Stern 1993, 223. Dauphin identifies this animal as a bushbuck (Dauphin 1978, 407).

²⁸ Chiat 1980, 11; Ovadiah/Ovadiyah 1987, 27, Pl. XXI.

²⁹ Ovadiah/Ovadiyah 1987, cat. no. 17, 19-20, Pls XI, 2.

³⁰ Bahat 1981, 82-85. Photo in Hachlili 1987, 51.

³¹ Piccirillo identifies it as a zebra (Piccirillo 1992, 129, Fig. 142).

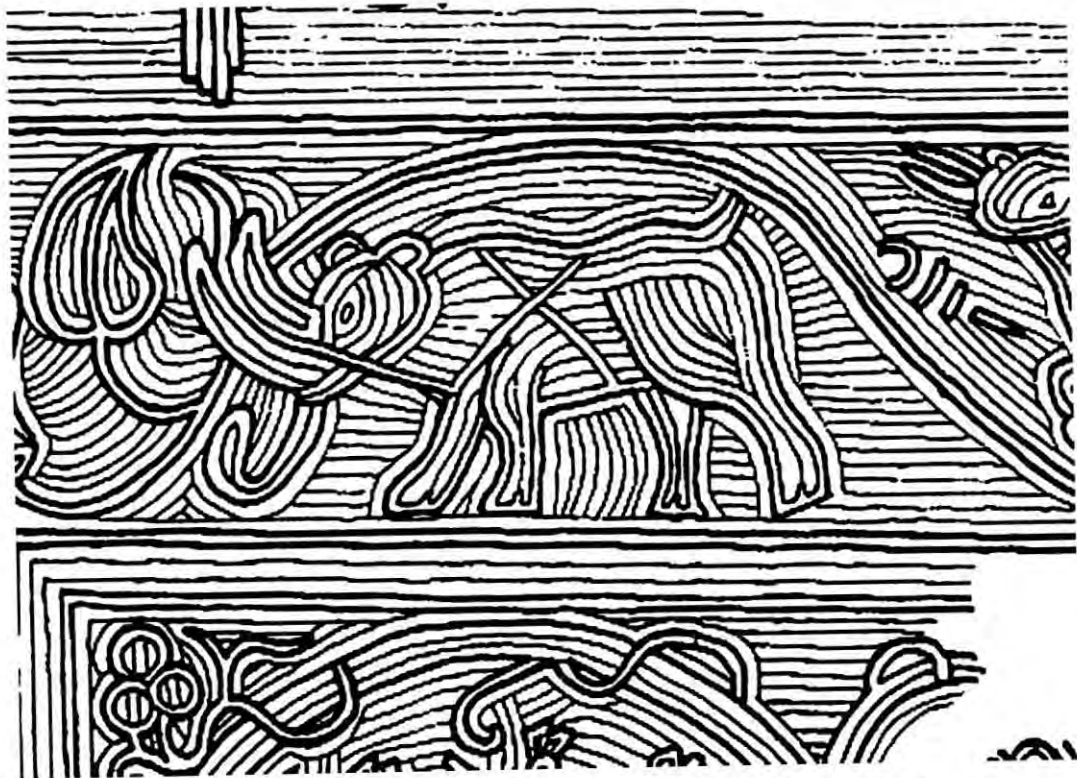


Fig 1. The synagogue at the 'House of Leontis' in Beth Shean. An elephant in a scroll
(source: Ovadiah/Ovadiah 1987, Pl. XXXIII)

during the Hellenistic period by the Seleucid army as well as by the Punic army in North Africa. There is evidence that elephants continued to be used in Rome itself as work and spectacle animals. For the Near East, however, it has been suggested that the familiarity with exotic animals during the Roman period derives from occasional passing through of animal transports³². It seems that exotic animals were a precious commodity and were considered a prestigious gift for kings and rulers. Giraffes, elephants and other wild beasts were apparently sent as gifts from Antiquity throughout the Middle Ages and until modern times³³. If giraffes were killed as a spectacle in Roman amphitheatres, it did not find expression in artistic depictions of circus games and amphitheatre spectacles. Later Arabic sources mention slaughter of giraffes for their meat and skin, but most mosaics that depict exotic beasts seem to present them as animals of display and the literary sources seem to support this impression.

One ancient literary source that mentions a transport of exotic animals is that of Timotheus of Gaza in his *De Animalibus* written in the fifth century. This literary source recorded the passage through Gaza of a man from India, bringing two giraffes to the Emperor Anastasius³⁴. The original Greek text is lost, but parts of it have been preserved in various sources³⁵. One of the later texts that mention the work of Timotheus as explicit source reference, is the Arabic book *on the nature of animals* by Marwazi, a court physician of the Seljuk Sultan Maliksha in the first half of the twelfth century:

³² Avi-Yonah 1975, 191.

³³ Kruk 2008, 570-580.

³⁴ Bodenheimer/Rabinowitz 1949, 5.

³⁵ Bodenheimer/Rabinowitz 1949, 14-18; Kruk 2001, 355-359; Morgan 1988, 268.

There came to us a man from India, a messenger of the king of India, with two giraffes covered with cloths and harnessed with many bridles and nose straps, that he wanted to bring to the king of Constantinople. He came to our house, and I was full of amazement about what I saw of their nature and shape. They had a stature of a camel in height, a skin like that of a panther, long forelegs, a prominent breast and a slender neck. Their head was like that of a camel, and so was their mouth. Their teeth were like those of a cow, and their tails were the size of a gazelle's...³⁶.

That exotic animals were sent as presents all through the Middle Ages and until modern times is apparent from literary sources. Rulers seem to have held private zoos, in which exotic specimens were kept, either for hunt or for display and pleasure. One of the earlier zoological gardens in Europe was owned by Emperor Charlemagne. In 802 he received the white elephant Abul-Abbas as a gift

from the Caliph of Bagdad, Harun-ar-Rashid³⁷. The existence of such gardens at all large European courts is well documented³⁸, and the situation in Byzantium as well as under the Muslim rulers, was not much different. Emperor Nikophoros Phokas hosted in 968 a German delegation at a park in Bithynia, which included wild beasts³⁹. Documentation from the eleventh and twelfth century indicate that the Philopation, a park located to the north of Constantinople, has functioned as a 'deliciarum locus'⁴⁰, and in 1053, Emperor Constantine IX Monomachos was sent a giraffe from Egypt, as is evident from the fourteenth-century text on the manuscript of Timotheus, that preserved the eleventh-century comment:

This was seen in our times, too: for also to the Emperor (Constantine) Monochamos were these two animals brought from India, and were at each opportunity shown to the people as a marvel, in the theatre of Constantinople⁴¹.

Cairo is known to have had a royal menagerie in the late ninth century that included leopards, panthers, elephants, and giraffes. Byzantine ambassadors witnessed in A.D. 917 the ceremonial role that was played by lines of elephants, giraffes, leopards and lions at the palace of the caliph in Baghdad⁴². In the year A.D. 1261, Baybars, the Sultan of Egypt, sent a giraffe as a gift to the Emperor Michael VIII⁴³. The historian Pachymeres describes the marvel of the sight of the giraffe as it was walked through the Agora. Apparently, such a sight was a real spectacle in the city of Constantinople and he described it in detail 'to remind those who have seen it and to enlighten those that have not'⁴⁴.

In 1489 the Mamluk sultan signed a commercial treaty with the Republic of Florence and he sent a royal gift to Lorenzo de Medici, which included, among other animals, also a giraffe⁴⁵. There is no direct evidence that spectacle opportunities occurred regularly in the Near East or that a zoo existed in the region during the sixth century, but the artistic depictions of gardens where wild and exotic beasts walk freely seem to suggest that the phenomenon was known to the contemporaries⁴⁶. Another question is whether artists, commissioners and the general public had access to such gardens and whether there was a permanent possibility to see and study these animals. The opportunity to observe those

³⁶ Kruk 2001, 364.

³⁷ The life of this white elephant is well documented. Abul-Abbas was a wild-born elephant who was captured and trained and was sent in 798 as a present to the court of Charlemagne. His journey from the Abbasid Empire to Europe started with a crossing of the Mediterranean Sea by ship. The elephant was accompanied by his trainer, a Jewish North African named Isaac. In the spring of 802 they started the march over the Alps to the emperor's residence in Aachen, arriving on July 1, 802. Abul-Abbas was exhibited on various occasions when the court was assembled, and was eventually housed in Augsburg in southern Bavaria. He died in 810 probably of pneumonia, when he was joined to the battle against the Danes, after crossing the cold water of the Rhine. About the elephant and the diplomatic contacts of the Carolingian Court, see Sypeck 2006.

³⁸ Ševčenco 2002, 77, 82-83. Ševčenco differs between 'game parks, where animals were also hunted, 'menageries', where animals were raised to be used in the hippodrome, and 'animal parks', which were mainly for pleasure.

³⁹ Ševčenco 2002, 72-74.

⁴⁰ Ševčenco 2002, 72-74.

⁴¹ Bodenheimer/Rabinowitz 1949, 31; Ševčenco 2002, 77. The 'two animals' in the text refer to a giraffe and an elephant.

⁴² Ševčenco 2002, 76.

⁴³ Ševčenco 2002, 78.

⁴⁴ Ševčenco 2002, 78.

⁴⁵ A ceiling painting by Giorgio Vasari in the Palazzo Vecchio from 1559 depicts Lorenzo the Magnificent surrounded by the gifts of the Sultan of Egypt, a giraffe among them; Wansbrough 1965, 39-40.

⁴⁶ See especially the depiction in al-Khadir (Pl. 19).

animals in real life, however, clearly did exist, at least in the rare occasion of travelling transports such as the one described by Timotheus.

The difficulties of transporting these animals and providing the conditions for their survival in a foreign climatic region must have demanded complicated logistics. A transport of an adult untamed animal without the help of anaesthetics was certainly a difficult task. Some of the evidence, like the report of the transport of Zaraffa⁴⁷, shows that transport was often practiced with young animals and the very capturing of these animals often involved killing the mother and capturing the young. It then had to get used to drinking cow's milk before transport could commence. In order to provide the amount of milk that was necessary to keep the animal alive along a journey that took at least a few months, it was necessary to hold a hoard of cows that accompanied the animal. The transport route to Constantinople seems to have taken place via Ethiopia and Yemen to India and then westwards and not directly from Africa via Egypt to the North. It is probably for this reason that India was thought to have been the natural habitat of these animals. This is supported by the account of Timotheus, which records that the man travelling to Constantinople was coming from India. It can be imagined, that such a journey had involved much animal suffer and that many of these animals did not reach their destination alive.

A representation of hunting, capturing and transporting wild animals in cages and wagons is depicted in the corridor of the Great Hunt mosaic in Piazza Armerina in Sicily, dated to the first third of the fourth century⁴⁸. It seems as though the mosaic is representing successive stages in the process. While the left and right ends focus upon capturing the animals, the middle left and middle right sections refer to transport on foot, with help of carts and wagons, while the direction of movement is clearly towards the centre, where ships are being loaded (Fig. 2)⁴⁹. Transport seems to have taken place in a few successive stages, that involved travelling on foot as well as shipping over sea, and the need to load and at times perhaps even reload the animals a few times until reaching the final destination. Despite the damage of the mosaic, the central depiction shows at least two ships. Curiously, they are not just being loaded with the animals, but it seems that there is an exchange of animals taking place. Remarkable are the scenes of capture that obviously involved much danger. In order to intense

the impression that the mosaic was meant to have upon the viewer, the events are given mythical proportions, depicting also a griffin next to various wild animals that are associated with known myths, such as the bull and the boar. Beside the capture scenes, the mosaic depicts also many hunt scenes. Although these may be added for the sake of impressing the viewer, they may be indicating that the working teams needed themselves to be protected during the process of capturing the wild beasts. Some animals demanded much force to handle. The wild bull is being held by three men, and three other men are pulling a rhinoceros with cables while two others in the crew, one at each side of the heavy animal, give them instructions (Pl. 19)⁵⁰. Further on, an elephant is climbing a ramp to enter the ship and other animals were already placed in cages to be carried into the ships. The people helping in the mounting of the animals are represented as soldiers, suggesting that the task of capturing and transporting the animals was an organized expedition. The choice of the subject may indicate that the owner of the villa was involved in providing these animals and in the orders of their capture.

It is probably both the strange appearance of the animals as well as the rarity of seeing them, which brought about strange stories regarding their conception and looks. The Arabic *Book on the Natures of Animals* of Marwazî, quoting Timotheus, says the following about the rhinoceros:

Atūuniyūs [Timotheus] says: '...Its size is like that of a horse. It lives by the Nile...He has one horn on his nose that is like a sharp sword; he can pierce a rock with it if he hits it. Sometimes he attacks an elephant with it and kills it. This species consists exclusively of males. There are no females, and nobody knows how they come into being or are generated'⁵¹.

Giraffes were even seen as a result of cross-breed and successive mating of different animals. The word Zarâfa itself means 'group' in Arabic, connecting this name to the view that its conception is a result of such successive mating. The Latin *Camelopardalis*

⁴⁷ Allin 1999, 68.

⁴⁸ Dunbabin 1999, 132-142, Figs 135, 143.

⁴⁹ Source of the line drawing: Dunbabin 1999, 134, Fig. 135.

⁵⁰ Source of the photograph: Dunbabin 1999, 140, Fig. 143.

⁵¹ Kruk 2001, 364.

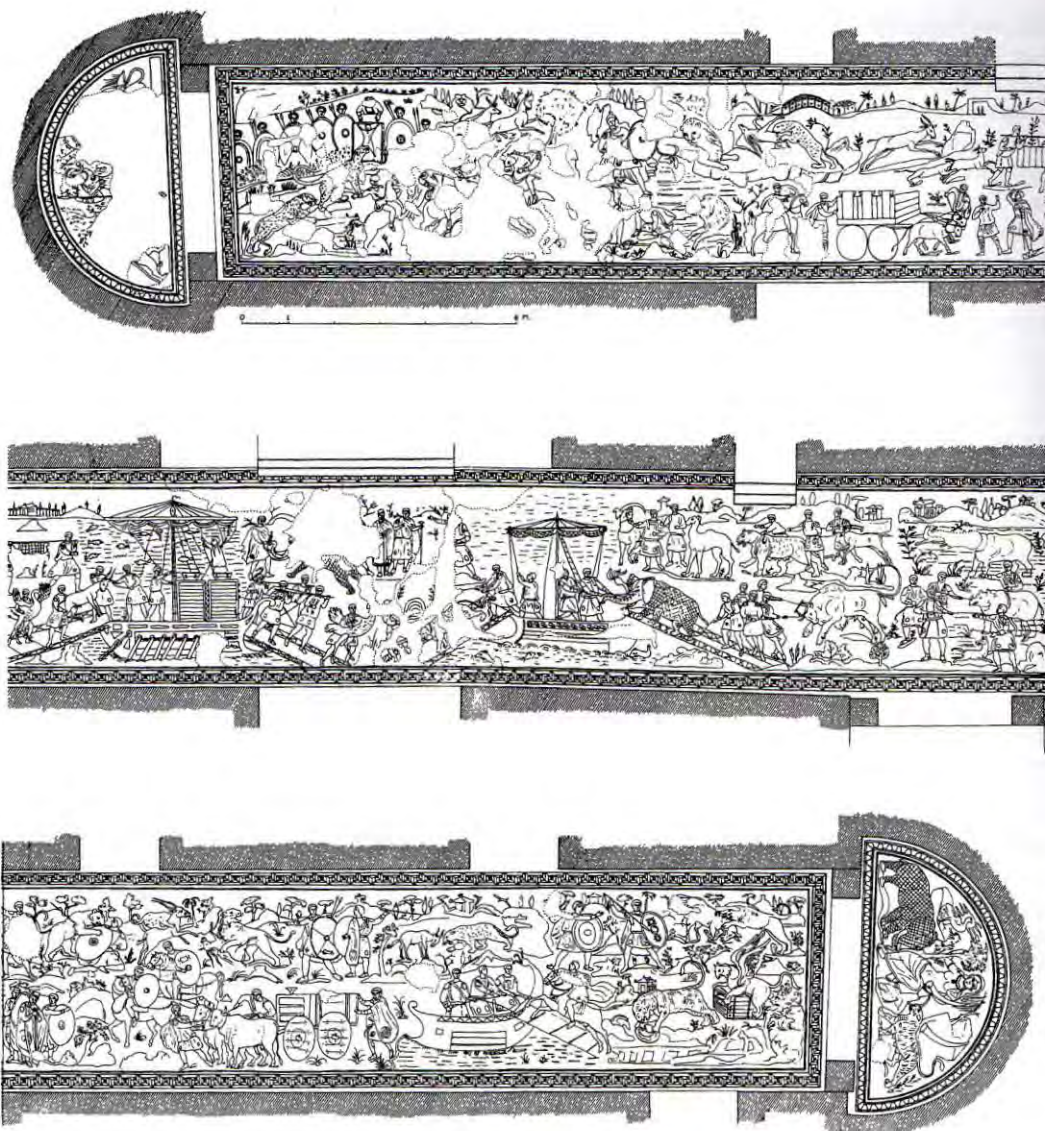


Fig. 2. The corridor at Piazza Armerina; line drawing (source: Dunbabin 1999, 134, Fig. 135)

(camel-panther) and the Persian *ushturgânpalang* (camel-cow-panther) both express the mixed impression of the animal on the ancient viewer. The fourteenth-century manuscript on Timotheus says: 'That the giraffe...is born from the intercourse of

different animals'⁵². The ninth-century Arabic writer al-Jahiz in his *Book of Animals*, disagrees with the view that the giraffe is a result of cross-breeding, but explains:

The male hyena...happens upon a female wild camel and mounis her. If she produces young, the young will be something in between a camel and

⁵² Bodenheimer/Rabinowitz 1949, 31.

a hyena. If the young is female and is mounted by a wild bull, the result is a giraffe. The same happens if the young is male and mounts a wild cow. Some people absolutely deny the possibility that a female giraffe could be impregnated by a male giraffe: they say that every giraffe on earth is brought forth in the way they have thought up...⁵³.

FORMALISTIC ANALYSIS: THE GIRAFFE AS A CASE STUDY

We have no knowledge as to the content of pattern books, the detail of the model and instructions they might have contained for the production of a figure. Dauphin suggests: '(pattern books) are not cartoons displaying whole pavements, but notebooks or sketch-books in which each page consisted of one sketch of one type of bird, animal, human figure, inanimate object, vegetal element or scene. These would be made into separate files dealing with birds, animals, human figures, etc., produced in a standardized fashion. Each 'workshop' or each master-craftsman would have possessed at least one complete set of files: a file for birds, a file for animals, a file for human figures and so on'⁵⁴.

Dauphin's suggestion assumes a very detailed depiction of each model in the pattern book. She also suggests a high degree of standardization in the depiction of motifs. This raises the question of how detailed the presumable pattern would be. Would it resemble patterns such as those that are used, for example, for needlework? Despite the great difference between the two crafts, needlework resembles mosaic in the nature of colour use in that sense that in each available space, only one single colour can be applied. It is the combination of colours in a certain order that creates the illusion of a figurative design. Indeed, needlework patterns refer exactly to this aspect of the artistic work and include detailed instructions for production in terms of the location and distribution of colour (Fig. 3). If mosaic patterns were that detailed, we would expect motifs that are based upon shared patterns to show a high measure of similarity, while motifs that from different patterns would show a larger degree of difference.

The figure of the giraffe will be used here as a case study in order to try and determine whether the depictions in the mosaics presented above may derive from one shared pattern or more. The approach towards the images is not only formalistic, but takes in consideration also the inlay pattern of



Fig. 3. An African leading a giraffe; detail from a modern needlepattern based upon the mosaic of Kyria Maria in Beth Shean (here Pl. 16; Roth 1975, 18-19)

the tesserae, as indication for the technique of production applied by the executing craftsman. The giraffe depictions that were presented above show that although these animals may all be identified as giraffes, they also differ fundamentally in the details of their appearance: the giraffes of Lydda and the giraffe at the nave of Kyria Maria have both the horns of a deer, but differ in the form of the body and texture (let alone in stylistic aspects). The same giraffes of Kyria Maria share with Kissufim the form of the feet as those of a camel, but differ again in the form of body, horns and texture, and again, in style and in the aspect of inlay pattern.

A comparison between the giraffe from the right medallion of Gaza and the giraffe at Kissufim will demonstrate the differences between the two as a basis for a discussing the question whether they could derive from a shared pattern (Pls 4, 11). The comparison between these two specific examples is especially interesting, since the two sites are geographically close by, and it had been suggested in the past that they might be a product of the same workshop⁵⁵. Stylistically, both giraffes are convincingly realistic and identifiable, although they do show formalistic differences: the feet of the Kissufim giraffe

⁵³ Translation in Kruk 2008, 581.

⁵⁴ Dauphin 1978, 408.

⁵⁵ Cohen 1979, 24. Cohen suggests attributing the Kissufim pavement to the so-called 'Gaza workshop' that was identified by Avi-Yonah (Avi-Yonah 1975, 191-193).

are that of a camel, while that of Gaza have the correct form, which resembles that of a cow (Pl. 6). While the neck of the Gaza giraffe is long, the giraffe of Kissufim has a relatively short neck, perhaps in order to fit it into the height of the section in which it was depicted. Both artists attempted to create a convincing illusion of three-dimensionality and volume, but the method of creating this illusion is fundamentally different in each case, and the artists clearly produced the images in a different technique. The white intersection lines of the texture of the giraffe from Gaza create closed areas that the artist treated individually, by filling them with three lines of graduating colours from dark to light: black along the outer border, brown in between and yellow in the centre.

In the giraffe at Kissufim, there is no treatment of each section in itself, but a treatment of the whole body volume apart from the texture; there is use of two colours, light and dark ochre, in order to create shadowing and gradual colouring from dark to light, that mark the three-dimensionality of the limbs and body. This artist was capable of treating the three-dimensionality of the body apart from the structure, without interruption. He achieves this by placing the light and dark ochre lines along the outlines of the animal in a way that creates gradual tonality, skipping the interferences of the lines that mark the texture, themselves indicated in two tints: yellow and white. The effect that the artist achieved is an illusion of smooth shadows that mark the anatomy of the animal in an effective and convincing manner.

These observations show that the giraffe of Gaza and the giraffe of Kissufim are different in more than one aspect and seem not to have derived from a shared pattern. Next to difference in form, the giraffes of Gaza and Kissufim possess diverging technical qualities, deriving from a different artistic treatment. It may also be concluded that patterns, if used, did not include instructions for execution or an exact inlay pattern. In fact, it seems more reasonable that such technical aspects as the inlay patterns derive from the artistic training that each mosaicist followed; it is evident that the mosaicists of Gaza and Kissufim followed different training, learning each a different artistic tradition and production methods. The study of these application methods offers a new factor in the study of mosaics, which has the potential of shedding more light upon the transmission of application traditions and

distinguishing between producers on the basis of the application tradition applied by them.

If a shared model was used for the execution of both giraffes, it was no more than a general linear design of the outlines, which was not even specific as to the form of feet and other details. Such a pattern would allow much freedom and would enable artists to apply further details according to their own artistic insight. On the other hand, it would offer little guidance to the craftsmen who needed it. It seems, however, that artists were capable of enriching their repertoire through direct inspection when circumstances allowed. The Gaza depiction is especially convincing in this sense. The depiction is highly realistic and the various formalistic details are correct and reliable in comparison with the looks of the animal. Furthermore, if each of the two giraffes in the synagogue of Gaza is intended to be a representation of a different type (the *reticulate giraffe* next to the so-called *vine leaf pattern giraffe*), it seems convincing that the artist was not relying upon a general prototype, but actually had the chance of inspecting the real animals, being aware of the difference between the two types that were standing before him, creating a genuine design that does not appear elsewhere. The mosaic of Kissufim was produced 67 years after Gaza. That the two giraffes were produced by two different artists is clear from the chronological difference between the two mosaics. The differences between Gaza and Kissufim also indicate that the later artist, who worked in Kissufim, did not copy his image directly from the earlier Gaza mosaic, and that the two can hardly be conceived as deriving from a shared model, unless that model was so unspecific as to diminish its practical application.

The differences indicate further that the two artists did not rely upon the same artistic inlay traditions that would be expected if the later producers still belonged to the same workshop and were presumably trained by the earlier generation of artists. In such a case they would have been expected to at least preserve certain production techniques.

Where, then, did the model for Kissufim derive from? It is possible that a giraffe passed through the region also around the time of production of that mosaic, and that also the artists working in Kissufim were capable of studying the animal from nature and create an original design. At the same time, if the real animal was not available for study, it can be expected that an artist would search for an existing

model if he needed one. The fact that such a model cannot be traced still leaves the possibility of an individual creation. The artist could make inquiries as to the looks of the giraffe in order to create a convincing image or manipulate an existing image to fit what he came to know about the looks of a giraffe. The next example will illustrate that such a manipulation probably also occurred at times. Artists were thus not mere copyists, but possessed artistic capabilities that allowed them to use the models at their disposal in a creative way, change, add and manipulate them in order to enrich their repertoire. At the same time, the translation of the image into the medium of mosaic demanded from the artist to apply the techniques that he had learned during his training in order to execute a new type of image. The success of the process depended upon the experience, the artistic ability of the mosaicist, and the level in which he mastered his craft.

The two examples from the monastery of Kyria Maria in Beth Shean show that despite their similarities, the differences indicate that they could not have derived from the same pattern, and that next to the iconographic and formalistic aspects of the depiction, inlay patterns seem to differ and to indicate a different producer. The giraffe in the medallion in 'Room L' (Pl. 16) is led by a figure of African origin, which is in itself an iconographic difference in comparison to the representation at the nave. The giraffe has a camel-like body with a single hump that is slightly positioned towards the front of the body, short neck, simple straight horns, feet of a gazelle and a spotted body texture. These formalistic aspects are not shared with any of the other giraffe depictions. The inlay pattern of the tesserae reveals that in the method of production of the figure, this giraffe has unique traits, especially in its texture: the giraffe is made in four colours. A few layers of contour lines in ochre mark the outer body while the inside of the body and face is made with the light-coloured limestone that is also used for the background. The texture is made as three and sometimes four black tesserae placed in a square formation that are reduced to a single tessera dot in the legs and face. A single red line marks the lower eyelid. The other giraffe at the same site is depicted within an octagon in the nave (Pl. 14). It resembles the giraffe in 'Room L' in its general body form, which resembles a camel with a forward positioned hump. But it has the feet of a camel (not of a gazelle) and the horns of a deer (and not of a

giraffe), which show that even within one and the same site formalistic differences did occur.

Despite the difference in the shape of the horns and feet of the giraffe, it is without any doubt the camel that served as a basic model for the design of the body of both giraffes. Since the difference between a giraffe and a camel is clear to anyone who even just had a glimpse at both creatures, it should rightly be doubted whether the mosaicists who worked in Beth Shean ever saw a giraffe with their own eyes and designed the animal based upon inspection from nature. It is very much probable that the craftsmen heard a description of the curious *camelopardalis*, the 'leopard-camel', and decided to reproduce their own visual interpretation. They probably would not need any special pattern for this: the camel is an animal that is often depicted in mosaics, and, if relying upon a pattern, they could certainly use any pattern of a camel and adjust it to their needs. Interestingly, the formalistic differences between the two giraffes, such as the shape of feet and horns, seem to be a result of a different interpretation regarding the looks of the giraffe and the details in which it differs from a camel.

In contrast to the giraffes at Kyria Maria, the depictions of Lydda (Pl. 1), Kissufim (Pl. 11), both examples from Gaza Maiumas (Pls 3, 4) and the depiction at Beer-Sheva' (Pl. 10) create a rather realistic impression. The differences between the depictions, both in the formalistic as well as in the inlay patterns, make it clear that these depictions cannot have derived from a single pattern that circulated among the mosaicists.

It can be concluded that there was no standardized iconographic type or a pattern that circulated among artists, and that each depiction shows a variation in its own right. From the point of view of the inlay pattern of the tesserae, it may be observed that, even if pattern books were used, these instructions were not included in them in any way. Each giraffe depiction seems thus to have been a result of independent artistic processes, that ranged from observation of nature to designs that almost seem to reflect reliance upon secondary evidence, and in which it seems that the artist who designed the pattern had never seen a giraffe at first hand. He either misinterpreted the model he relied upon, or simply had no such model. One possible factor in the formation of the visual characteristic of such a design may be the linguistic aspect.

To illustrate this point, some attention should be given to the curious depiction of the spotted camel from the Diakonikon mosaic (Pl. 13). It appears in a section of the mosaic that is dedicated to animals for display, led by a figure of foreign origin, suggesting that this is not a regular camel. It has a leopard-like skin texture and it seems almost as though the artist made a literal visualization of the name *camelopardalis*. If this is the case, it appears that the artist never saw a giraffe himself or a reliable pattern of a giraffe. It was the far fame of the leopard-camel that triggered his imagination to create this strange looking camel. The artistic process that is involved in this creation is rather complex; if the artist did not rely upon a visual model, he must have possessed enough artistic qualities that allowed him to create a design out of his own imagination, which involves 'inventing' the iconography as well as the formalistic principles of the design, and working-out the inlay pattern that yielded the desirable design. Despite the non-realistic result of a non-existing animal, the depiction of the spotted camel is convincing and naturalistic in style. If the artist relied upon a pattern, it was probably the pattern of a camel, in which the necessary changes were made.

The depiction of the giraffe as a camel with spotted skin could have been inspired by the myth of its origin as a breed crossing between a camel and a leopard or a spotted hyena. If the design was indeed based upon the linguistic source of the name of the animal, it suggests that pattern books were far from standardized files that Dauphin suggested them to be. The study of the artistic material supports an interpretation of the pattern books as a collection of sketches for private use.

The artist who produced the spotted camel in the Old Diakonikon seems to have worked also on the mosaic of al-Khadir (Pl. 18, right corner at the second row from below). Also here we come across the iconography of the Phrygian figure leading a spotted camel, which is depicted according to the same formula of the one that appears in the Old Diakonikon. Curiously, in the same mosaic, one row under the spotted camel depiction, very destroyed, but still good to identify, is a depiction of what seems to be a giraffe of a more realistic type. The skin texture of this giraffe seems again to reflect the 'wine leaf' type. It is not a spotted camel type, but a giraffe with a straight back, long neck, and the two typical horns on its head. This giraffe is not led by a foreign figure and seems to walk around

freely, nibbling on a leaf. It seems surprising that one mosaicist would use two different formalistic principles for the depiction of the same animal. So, was the spotted camel not meant to depict the *camelopardalis* after all? Would it be an extinct type of camel? Did the artist simply sought to enrich the representation by the curious skin structure? Or did he finally obtain a (apparently rather realistic) pattern of a giraffe, but since he could not verify its reliability, doubted which of the two he should depict (resulting in the depiction of them both)? Or did he become aware of the correct form of the giraffe only after he already finished the depiction of the spotted camel? At any rate, it seems that the fame of the giraffe also reached places where it was never – or very rarely – seen. The process of creating its figure took in each case a different course, depending upon the visual sources that were available to the artist, the external knowledge that he possessed as to the nature and source of the animal, his artistic ability, his stylistic inclinations, his training and techniques of production.

CONCLUSIONS

The overview of depictions of exotic beasts in eastern mosaics shows that they gained certain popularity among artists and commissioners. The subject of exotic animals for display seems to have become a genre or a subject on its own. It appears as such in the Diakonikon mosaic, Kissufim, Gaza and al-Khadir, in which case they do not appear as isolated images, but as a group, sometimes led by a human, himself of foreign origin. At the same time, no fixed standard seems to have been developed, and the animals are grouped differently in each case. The elephant seems to have become the most popular of the four, and has entered the more general repertoire of animals. As such, it may also appear in isolation, where no other exotic beasts appear (such as in Maon-Nirim, the synagogue from the House of Leontis and Beth Govrin).

The genre developed at all probability from actual display of such animals that took place during transports along the merchant routes of the East, as described by Timotheus of Gaza. It may be assumed that such events were rather rare (and therefore worthy of recording), but they were enough to create an impact that generated a new artistic fashion. It is difficult to explain, however, why the specific figure of the giraffe does not occur

in other regions, and became popular only in this specific area of the Near East.

This investigation was aimed at drawing conclusions from the specific case study of the giraffe to the more general issue of pattern books and the use of models by mosaic artists. The iconographic and formalistic differences between the various representations show that the image of the giraffe did not go through a process of standardization, and that the depictions do not seem to derive from a shared pattern. Within each representation, variations as to the shape of the horns, the feet, the back, the proportions and skin structure can be observed. There are hardly two images that can be identified as deriving from the same pattern. The only example of two similar depictions, namely that of the spotted camels in the Old Diakonikon and in al-Khadir, may in fact be the work of one and the same artist, rather than two different depictions, produced by different artists that are derived from a shared pattern. If produced by the same artist (a hypothesis that still needs further investigation), it may mean that pattern books, if existed, were a collection of patterns and models for private use, exclusively by an individual mosaicist and perhaps by his direct assistants, rather than shared, standardized patterns that were in broad circulation.

The comparison between the giraffes from Gaza and Kissufim shows that the production method, which seems to be a function of the training of each artist, is resulting in characteristics that are unique to each of the images. The technique and pattern of inlay of the tesserae appears to be no less influential for the artistic result as the model that presumably stood before the artist. Furthermore, it seems that craftsmen were not mere copyists and the creation of each image appears to have been a dynamic creative process, in which the implementation of possible models was enriched by the ability of direct observation from nature and was submitted to flexible use and creative manipulation of the repertoire of images that a craftsman was familiar with. The training of the craftsmen played an important role in determining the artistic result. While some artists chose for application methods that led to a more naturalistic, three-dimensional and convincing depiction of the animal, others chose for more simplistic or flat representations. These factors seem not to have derived from any pattern or model, but from the artist's own stylistic traits and the artistic tradition that he was trained in. Also those artists who made

use of a creative process in which they attempted to depict an animal that they had never actually seen, manipulating the familiar repertoire to match secondary evidence as to the looks of the animal they wished to depict, did not always result in un-naturalistic depictions: the spotted camel of the Old Diakonikon is very convincing in its stylistic naturalism, despite the fact that the animal is not realistically depicted.

It is left to describe the model or pattern in the presumable pattern book as a very general drawing of the animal that was not specific as to the formalistic aspects, and did not include instructions for production. It was more a collection of the repertoire available to the artist and could be used as a tool to remind the artist of the figurative possibilities that he could apply in his mosaic. It may also have been used for illustration of those possibilities for the commissioner, but it was hardly useful for the artist in the practical aspects of production. It can further be inferred that if pattern books were involved in the production process, it was not during the production phase itself, but perhaps in the preparatory phase, that the choice of motifs was presented to the commissioner, the general layout and subject matter were, perhaps as indication of the preliminary drawings that were brought under the surface of the mosaic.

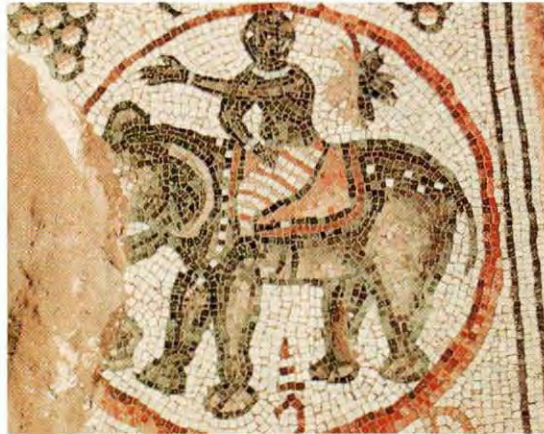
The difference in execution and inlay patterns indicates that the manner in which a figure was transformed from the pattern in a mosaic, depended to high degree upon the technique, the individual artistic capacity, and the artistic tradition that the mosaicist was trained in. Such a conclusion demands a reassessment of the whole pattern book theory regarding the eastern mosaics during the early Byzantine period. The conclusion that patterns, if existed, were very general and unspecific, does not support the theory of pattern books as a practical and indispensable tool. A pattern book was probably in itself an expensive product, which would be purchased or produced only if absolutely necessary. As shown above, this necessity is not supported by the analysis of its possible content. Other factors, especially technique and training processes of the artists seem to be more influential for the final artistic result than patterns. The presumption that such patterns were shared by more than one artist even seems untenable.

At the same time, it cannot be denied, that large parts of the repertoire itself, from hunt and pastoral scenes to grape gathering and wine production have

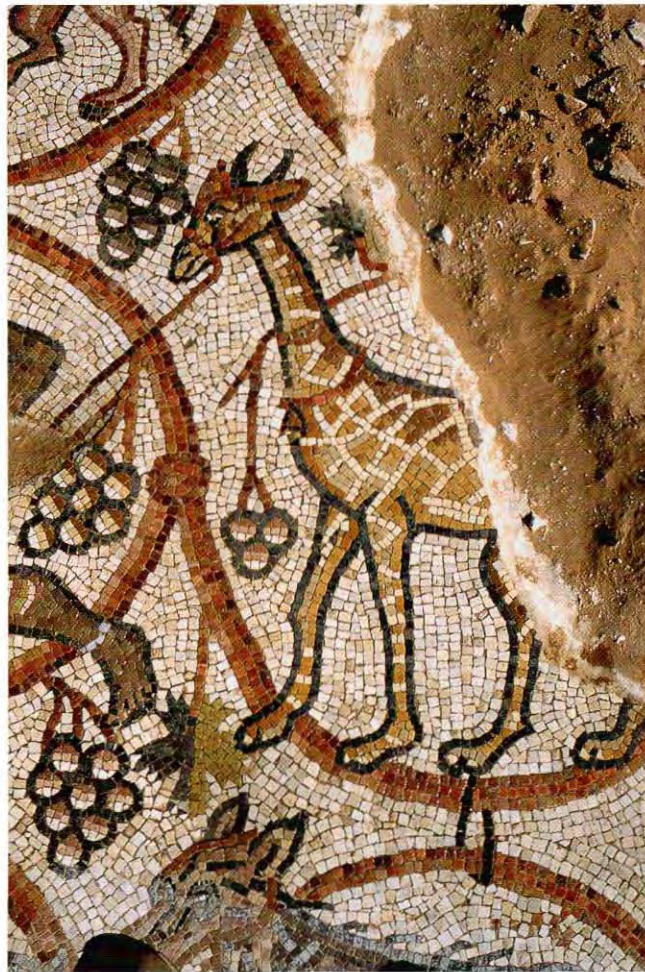
become popular motifs that were widely known to different craftsmen, and obviously also to the commissioners. If this was not achieved by shared patterns, a new investigation is necessary as to the mechanism of transmission of artistic traditions, based upon other principles of transmission, such as the use of technical formula and visual memory, next to the possible existence of individual collection of sketches that did not have a wide circulation. The investigation of inlay patterns may play an important role within such an investigation as a tool for studying traditions of inlay, and production techniques that were applied by individual craftsmen.

BIBLIOGRAPHY

- Allin, M., 1999, *Zarafa; A Giraffe's True Story, from Deep in Africa to the Heart of Paris*, New York.
- Alvarez-Martínez, J. 1994, 'Nuevos documentos para la iconografía de Orfeo en la musivaria hispanorromana', in: P. Johnson, R. Ling, D.J. Smith (eds), *Vth colloquium on Ancient Mosaics*, Part I, Ann Arbor, 211-227.
- Avisar, M. 1999, 'Lod – Mosaic Pavement', *Qadmoniot* 117, 41-43 (in Hebrew).
- Avi-Yonah, M. 1975, 'A Mosaic School in Gaza in the Fifth-Sixth Centuries', *Eretz-Israel* 12, 191-193 (in Hebrew).
- Bahat, D. 1981, 'A Synagogue at Beth-Shean', in: L. Levine (ed.), *Ancient Synagogues Revealed*, Jerusalem, 82-85.
- Ben-Dov, M., Y. Rappel 1987, *Mosaics of the Holy Land*, New York.
- Blanchard-Lemée, M. et al. 1996, *Mosaics of Roman Africa – Floor Mosaics from Tunisia*, London.
- Bodenheimer, F.S., A. Rabinowitz 1949, *Timotheus of Gaza on Animals, Περὶ Ζώων: Fragments of a Byzantine Paraphrase of an Animal-Book of the 5th Century A.D.*, Leiden.
- Braslavi, J. 1967, 'Symbols and Mythological Figures in the Early Synagogues in Galilee', in: H. Hirschberg (ed.), *All the Land of Naphtali, The Twenty-Fourth Archaeological Convention October 1966*, Jerusalem, 106-129 (in Hebrew).
- Brett, G., W. Macaulay, R. Stevenson 1947, *The Great Palace of the Byzantine Emperors. Being a First Report on the Excavations carried out in Istanbul on behalf of the Walker Trust (The University of St. Andrews) 1935-1938*, Oxford/London.
- Buchthal, H. 1979, *The 'Musterbuch' of Wolfenbüttel and its Position in the Art of the Thirteenth Century*, Wien.
- Chiat, M. 1980, 'Synagogues and Churches in Byzantine Beit She'an', *Journal of Jewish Art* 7, 6-24.
- Cohen, R. 1979, 'A Byzantine Church and Mosaic Floor near Kissufim', *Qadmoniot* 45, 19-24 (in Hebrew).
- Dagg, A. 1962, 'The Subspeciation of the Giraffe', *Journal of Mammalogy* 43-44, 550-552.
- Dauphin, C. 1978, 'Byzantine pattern books: A Re-examination of the Problem in the Light of the 'Inhabited Scroll'', *Art History* 1/4, 400-423.
- Dothan, M. 1983, *Hammath Tiberias, Early Synagogues and the Hellenistic and Roman Remains*, Jerusalem.
- Dunbabin, K. 1978, *The Roman Mosaics of Roman North Africa – Studies in Iconography and Patronage*, Oxford.
- Dunbabin, K. 1999, *Mosaics of the Greek and Roman World*, Cambridge.
- Gazit, D., Y. Lender 1993, 'The Church of St. Stephen at Horvat Be'er Shema'a', in: Y. Tsafir (ed.), *Ancient Churches Revealed*, Jerusalem, 273-276.
- Hachlili, R. 1987, 'On the Mosaicists of the 'School of Gaza'', *Eretz-Israel* 19, 46-58 (in Hebrew).
- Hershman, D. 1998, *Elephant tale*, leaflet of exhibition at the Prehistory Gallery, Israel Museum, Jerusalem.
- Humbert J.B. 1999, 'The rivers of Paradise in the Byzantine Church near Jabaliyah Gaza', in: M. Piccirillo, E. Alliata (eds), *The Madaba Map Centenary 1897-1997: travelling through the Byzantine Umayyad period*, Jerusalem, 216-218.
- Kitzinger, E. 1975, 'The Role of Miniature Painting in Mural Decoration', in: K. Weitzmann et al. (eds), *The Place of Book Illumination in Byzantine Art*, Princeton, 99-142.
- Kruk, R. 2001, 'Timotheus of Gaza's On Animals in the Arabic Tradition', *Le Muséon* 114, 355-387.
- Kruk, R. 2008, 'Zārāfa. Encountering the Giraffe, from Paris to the Medieval Islamic World', in: Gründer, B. (ed.), *Classical Arabic Humanities in their own Terms*, Leiden, 569-592.
- Morgan, J.R. 1988, 'Two Giraffes Emended', *The Classical Quarterly*, N.S. 38/1, 267-269.
- Ovadiah, A., R. Ovadiah 1987, *Hellenistic, Roman and Early Byzantine Mosaic Pavements in Israel*, Rome (Bibliotheca archaeologica 6).
- Piccirillo, M. 1992, *The Mosaics of Jordan*, Amman.
- Roth, A. 1975, *Mosaic Masterpieces in Needlework and Handicrafts on Motifs from The Holy Land*, Jerusalem.
- Scheller, R.W.H. 1963, *A Survey of Medieval Model Books*, Haarlem.
- Ševčenco, N. 2002, 'Wild Animals in the Byzantine Park', in: A. Littlewood, H. Maguire, J. Wolschke-Bulmahn (eds), *Byzantine Garden Culture*, Washington D.C., 69-86.
- Smith, D. 1965, 'Three Fourth-Century Schools of Mosaic in Roman Britain', in: H. Stern (ed.), *La Mosaïque Gréco-Romaine* II, Paris, 95-115.
- Stern, E. (ed.) 1993: *The New Encyclopedia of Archaeological Excavations in the Holy Land*, 4 vols, Jerusalem (The Israel Exploration Society & Carta).
- Sypeck, H. 2006, *Becoming Charlemagne: Europe, Baghdad, and the Empires of A.D. 800*, New York.
- Tikkanen, J.J. 1889, *Die Genesismosaiken in Venedig und die Cottonbibel*, Helsingfors.
- Toynbee J.M.C., B. Ward-Perkins 1950, 'Peopled Scrolls: A Hellenistic Motif in Imperial Art', *PBSR* 18, 2-43.
- Tsafir, Y. 1993, *Ancient Churches Revealed*, Jerusalem.
- Wansbrough, J. 1965, 'A Mamlūk Commercial Treaty concluded with the Republic of Florence 894/1489', in: S.M. Stern (ed.), *Documents from Islamic Chanceries*, Oxford, 39-79 (Oriental Studies 1.3).
- Weitzmann, K. 1947, *Illustrations in Roll and Codex, a study of the origin and method of text illustration*, Princeton.



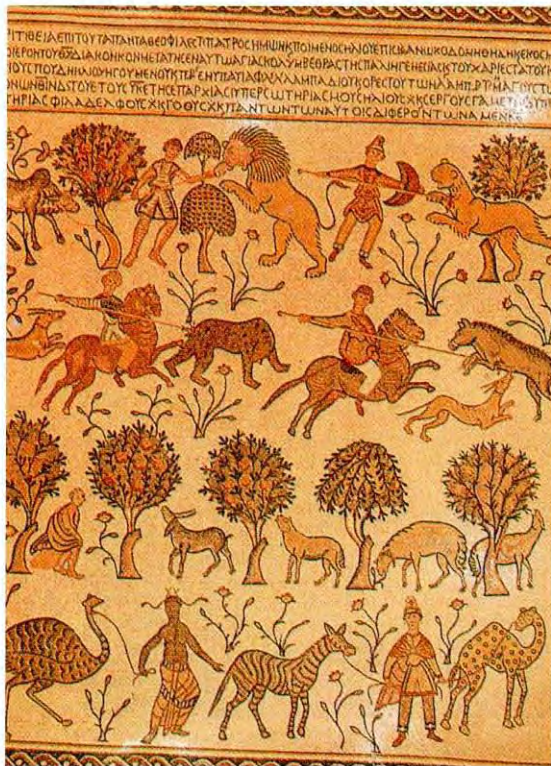
Pl. 9. Detail of a black man riding an elephant, from the mosaic of Beer-Sheva, Israel (photograph Israel Antiquities Authority)



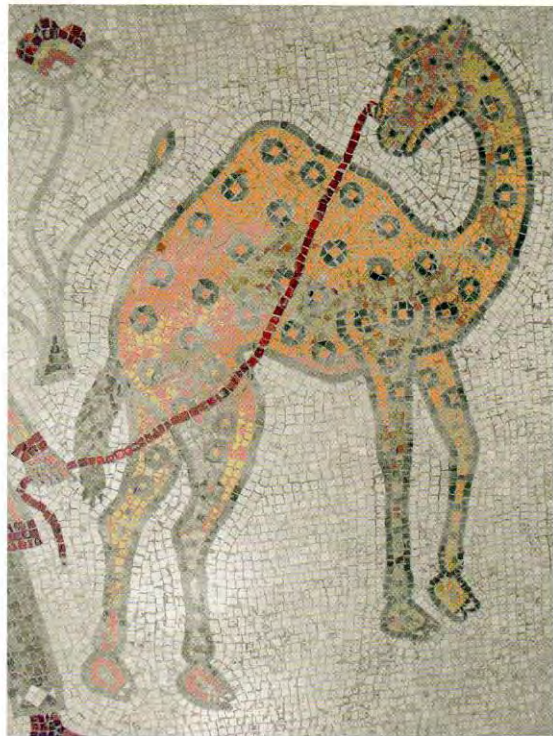
Pl. 10. Detail of the giraffe from Beer-Sheva (photograph Israel Antiquities Authority)



Pl. 11. Church of Kissufim; section with giraffe and elephant (photograph author)



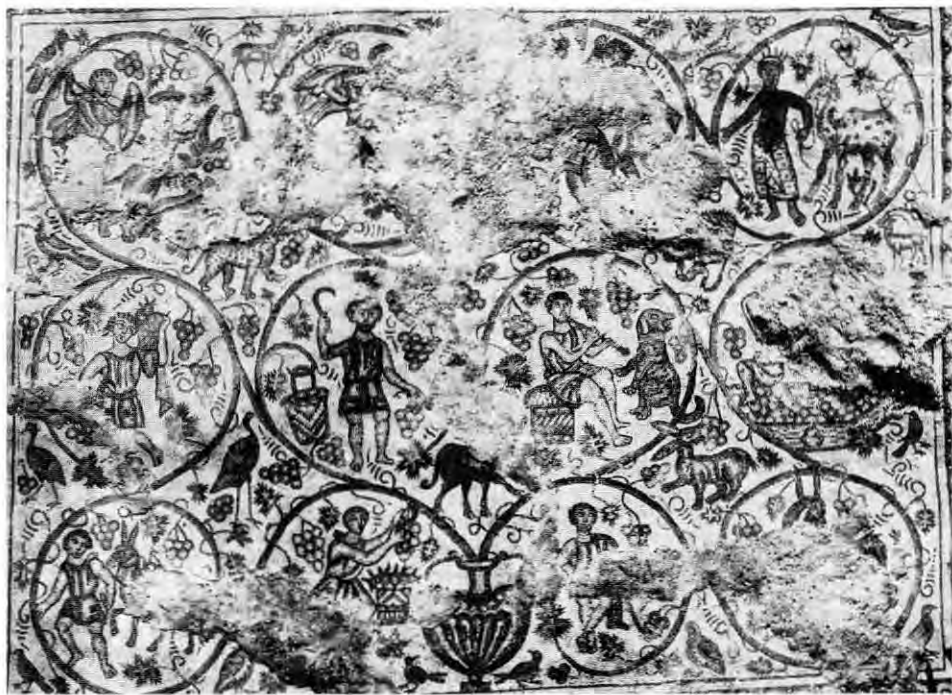
Pl. 12. The mosaic of the 'Old Diakonikon';
Memorial of Moses on Mount Nebo, Jordan
(Piccirillo 1992, 135, Fig. 166)



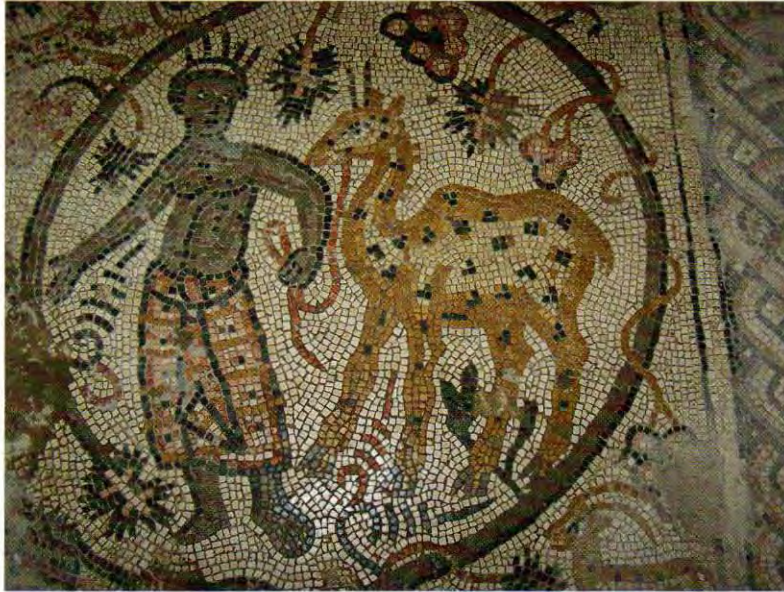
Pl. 13. Detail of Pl. 12 (photograph author)



Pl. 14. Detail from the geometric carpet; Church of Kyria Maria in Beth Shean
(photograph Israel Antiquities Authority)



Pl. 15. 'Room L'; Church of Kyria Maria in Beth Shean (Ovadiah/Ovadiah 1987, Pl. XXIV)



Pl. 16. Detail of Pl. 15: upper rightmost medallion (photograph author)



Pl. 17. Damaged square frames with animals (elephant to the bottom right); mosaic of Beth Guvrin, Israel (Ovadiah/Ovadiah 1987, Pl. XI, Fig. 2)



Pl. 18. Mosaic; Church of al-Khadir (Piccirillo 1992, 129, Fig. 142)



Pl. 19. The corridor at Piazza Armerina; detail (Dunbabin 1999, 140, Fig. 143)