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Pre-Mauryan “Rattle-Mirrors” with Artistic Designs from Scythian Burial Mounds of the Altai Region in the Light of Sanskrit Sources

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Numerous publications appeared in Russia in the late 1990s related to a series of so-called “rattle-mirrors” unearthed in Scythian burial mounds, mostly in the Altai mountains, South Siberia.

The first mirror of this kind (Fig.1) was found by the archaeologist Sergei Rudenko in 1947 in a burial chamber inside the Second Pazyryk mound. Its owner was a young woman buried together with a man of a high social rank (probably the ruler of a tribe or union of tribes).

On the reverse of the mirror between two (inner and outer) circular rims there are 12 perfectly regular concentric circles obviously drawn with the help of compasses. Between each two circles there is a row of triangles looking like flames of fire or the rays of the sun. It can be maintained with certainty that the whole makes a “solar” design.



Fig. 1. The mirror from the Second Pazyryk mound. Hermitage Museum.
Photo by A. B. Nikitin.

It should be taken into account that the Pazyryk mirror was found in

permafrost. It is therefore still in very good condition, being an exemplary model of a “rattle-mirror”, and the best preserved of those we possess. This mirror helps us to form an idea of what a “rattle-mirror” really was.

Any “rattle-mirror” consists of two bronze disks fastened together, with hollow space between and a few tiny pieces of metal or some other small objects inside. Even now, upon shaking, the perfectly preserved mirror from the Second Pazyryk mound makes a rattling sound. The sound is no longer musical because the small pieces of metal inside have probably corroded, but in ancient times the sound must have been quite different.

The metal of this mirror deserves special attention. The scholar who discovered it, Sergey Rudenko, wrote in his report (Rudenko 1948) that it was made of silver, but he was wrong. The metal is a high-tin bronze (bronze with a high percentage of tin), also termed ‘white bronze’. It is also called “bell metal” precisely because upon striking it produces a musical sound of a very high tone. So a mirror of this type, apart from common usage, could have had another function: it could have been used as a musical instrument to accompany dancing or, perhaps other ritual movements.

The bronze of these “rattle-mirrors” has one more specific feature. It looks like silver, but when polished acquires a tinge of golden color. When its surface catches sunlight it produces a bright golden reflection. Therefore a mirror of this type could have also served as a specular mirror which reflected the sun’s rays and which was used in ritual or other contexts.

Having sighted the Pazyryk mirror, Rudenko realized that given its artistic and technical perfection it could not have been of local, Scythian origin. He attributed the mirror to “one of the great civilizations of Asia”, but to which one exactly he could not say because the mirror “had no analogies” (Rudenko 1953: 143).

In 1968 the archaeologist Konstantin Smirnov published the bronze mirror unearthed at the Mechetsai site (South Urals), in the mound where two Sarmatian noble women were buried (Fig. 2). The mirror was quite different from the Pazyryk mirror: on its reverse side, in the disc between the outer rim and the inner circle was engraved, according to Smirnov, “a religious symbolic scene”: two female figures flanking the central circle, wearing exotic garments, stretching out their arms towards a face in the upper part of the disc (Fig. 3). Smirnov looked for analogies in the Near East and Ancient Iran, yet the parallels he suggested do not seem to be convincing (Smirnov 1968).



Fig. 2. The Mechetsai mirror. The Historical museum, Moscow. Photo by the author.

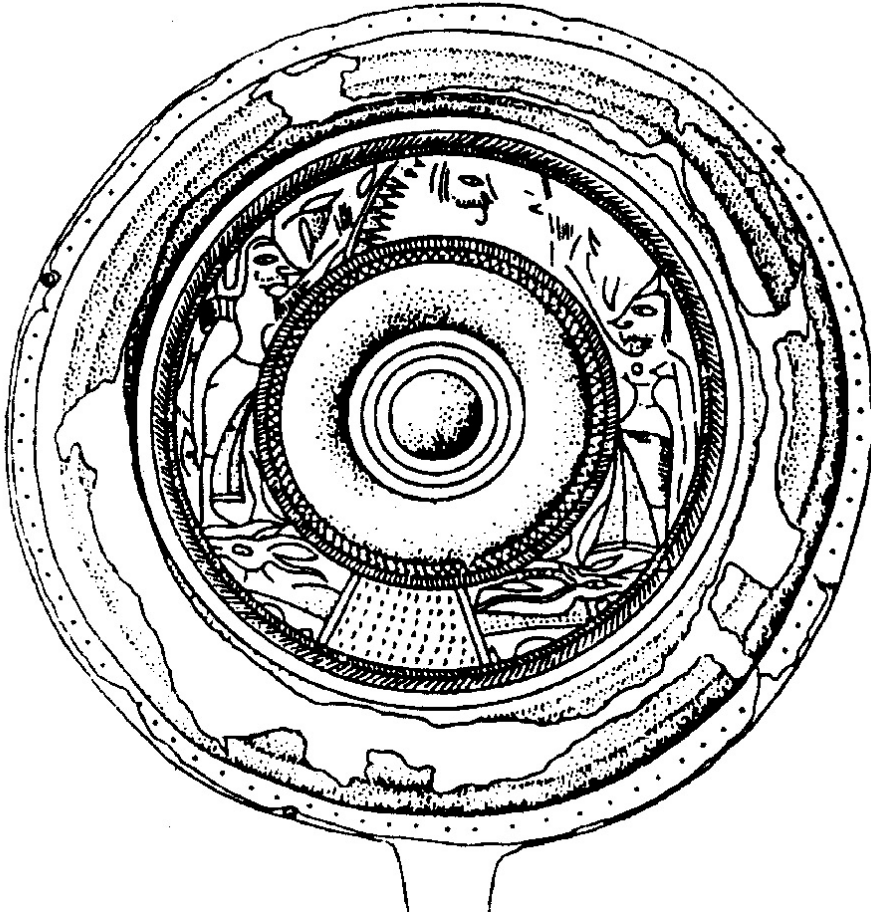


Fig. 3. The drawing of the Mechetsai mirror. (After Umanskij, Shul'ga 1999).

Another discovery was made by Professor Alexander Umansky (of Barnaul University in Siberia) in 1985 during his excavation of a group of burial mounds in Rogozikha (the Altai region). He unearthed one more mirror, which can be attributed to the same series, with a complicated scene engraved on its reverse, which was preserved in excellent condition (Fig. 4). This finding can be viewed as decisive for the interpretation of all “rattle-mirrors”. In the upper part of the gilded disk-like panel there is a drawing of an elephant, apparently used for riding, whereas the garments of the female characters depicted on the panel leave us in no doubt of their Indian origin (Umanskij 1986; Umanskij 1992; Umanskij 1999).



Fig. 4. The Rogozikha mirror (After Umanskij 1992).

Crowning the series is the fourth mirror unearthed in 1994 in the mound registered as Lokot'-4, in the Altai region, in the grave where two women were buried (Fig. 5). In the upper part of the gilded disk-like field there is the figure of a deer or antelope. In the center there are two female figures clad in Indian garments, each woman stretching her left or right arm towards the deer. Similar to the Mechetsai mirror, there are two more antelopes in the lower part of the mirror, looking in different directions (Shul'ga 1997; Shul'ga 1999; Umanskij, Shul'ga 1999).

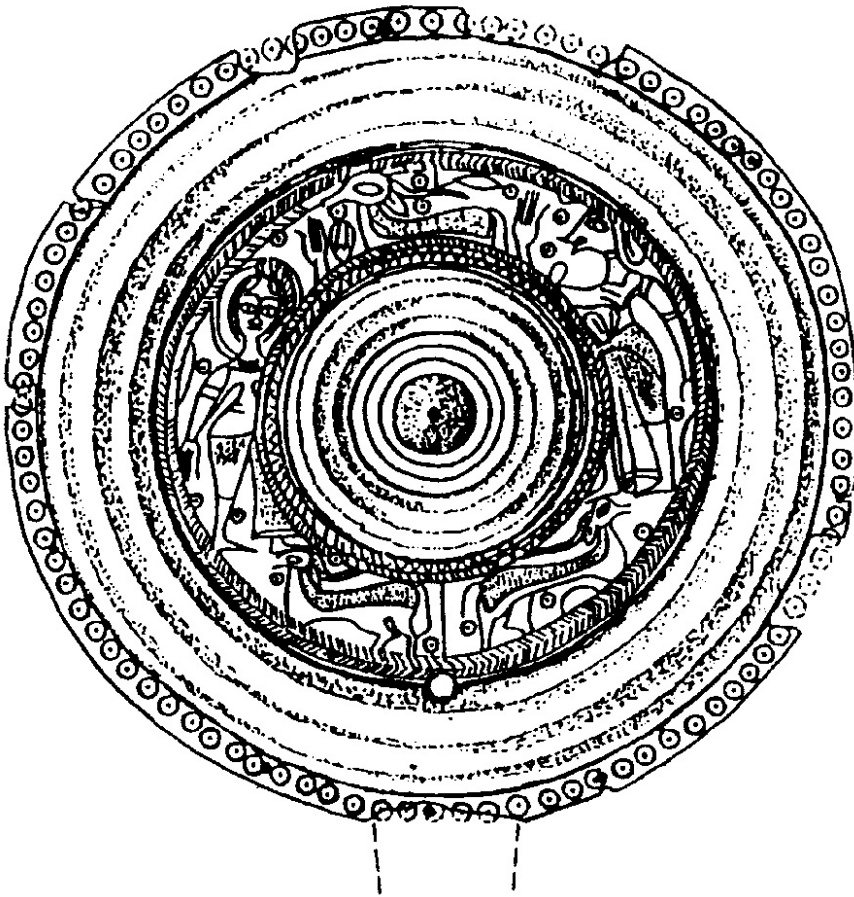


Fig. 5. The Lokot' mirror (after Umanskij, Shul'ga 1999).

Initially all four “rattle-mirrors” were dated by the archaeologists who found them back to the period beginning from late sixth till the end of the fifth or early fourth century B.C. Within this sequence the Second Pazyryk mound occupied an intermediate place in the middle of the fifth century B.C. The dating of the other findings depended on this dating (Umanskij, Shul'ga 1999: 58, 63). But in the 1990s an alternative, earlier dating of the Pazyryk site was suggested: the fourth or even early third century B.C. (see: Source, vol. X, № 4. 1991, Summer). This dating is still disputed, but getting increasing numbers of supporters. The beginning of the 3rd century BC seems acceptable, but I would suggest the 4th century B.C. as the most plausible date.

Although a tendency can be discerned of looking towards India in the search for mythological and literary analogies for the drawings, Prof. Umansky and his colleagues refuse to acknowledge an Indian origin for the mirrors and tend to attribute them to a neighboring country influenced by Indian culture – for example Baktria (Umanskij, Shul'ga 1999: 63).

The hesitation of archaeologists to acknowledge an Indian origin is understandable: not a single mirror of this type has yet been unearthed in India. Moreover, findings of art objects (apart from the terracottas) dating to the period of the sixth until the third century B.C. are almost entirely lacking. When they do appear at sites dating to the third - second centuries B.C., the

style of the art is considerably different from the style of the Ural-Altai mirrors. It is already the style of Classical Indian art so well-known to us.

Although profoundly different from the classical style, the style of the pictures on the “rattle-mirrors” bears at first sight striking parallels with Indian *folk* artistic traditions known to us through samples of the eighteenth, nineteenth and twentieth centuries AD. But the paradox is only superficial. Classical art had undoubtedly grown out of ancient folk traditions, and the unique Indian mirrors unearthed in the Urals and South Siberia can be viewed as samples of the “pre-Classical” Indian art which was very close to folk art.

A Russian specialist in the art of Central Asia, the late professor Boris Marshak who worked at the Hermitage museum was the first scholar who suggested in the paper he read in 1997 at the South Asian Archaeology Conference in Rome and in an article published in 2000 jointly with Leonid Marsadolov (Marsadolov, Marshak 2000) that the “rattle-mirrors” were “very important documents of the completely unknown pre-Mauryan period of Indian Art”. He also noticed some parallels of the style of the mirrors in the Indian art of later periods, including the art of the Jaina miniature.

When I started my own research into the mirrors I had no idea of the work being undertaken by Boris Marshak, but arrived independently at similar conclusions. At first I was greatly surprised to find very close parallels to the Siberian mirrors and their style in the *Jaina* miniature tradition which dates back to the eleventh century, but which continues the ancient tradition of folk drawings on cloth or birch bark (*paṭa*, *paṭṭa*, *paṭṭaka*) used by narrators to illustrate folk tales, epics and myths. The manner in which faces are portrayed (the pointed noses, the almond-shaped eyes and certain elements of composition, e.g. two female figures in similar attires, facing each other, flanking the center) in *Jaina* miniatures (Plate I) is not unlike the style characteristic of the “rattle-mirrors” (Vassilkov 2002: 29, 32-33; Vassilkov 2003: 88-89).

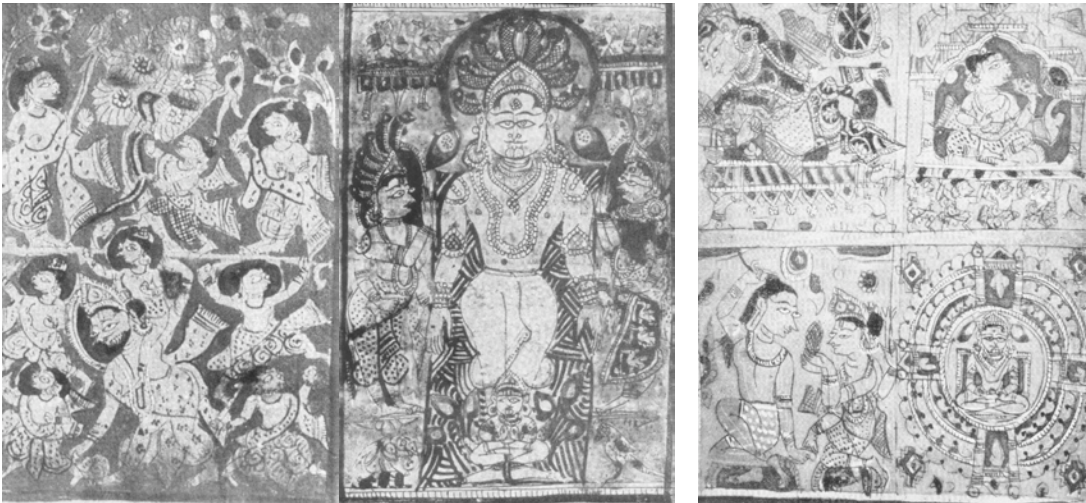


Plate I. Stylistic and compositional parallels in Jaina miniatures

which considerable similarity in style with the “rattle-mirrors” can be discerned. It is, e.g., a man’s head from a terracotta figurine found in Sonkh, near Mathura (Plate II) which, upon discovery, immediately drew

archaeologists' attention by its "hitherto unknown" style (Gupta 1990: 134-136). The almond-shaped eyes, the line of the nose merging with the forehead and a certain "grotesqueness" of its style in general reveal considerable similarity with the profiles of the characters on the "rattle-mirrors". This terracotta can be dated, with a high degree of precision, to the second half of the fourth century B.C.: the layer in which it was found is superimposed by the layer of the early Mauryan period.

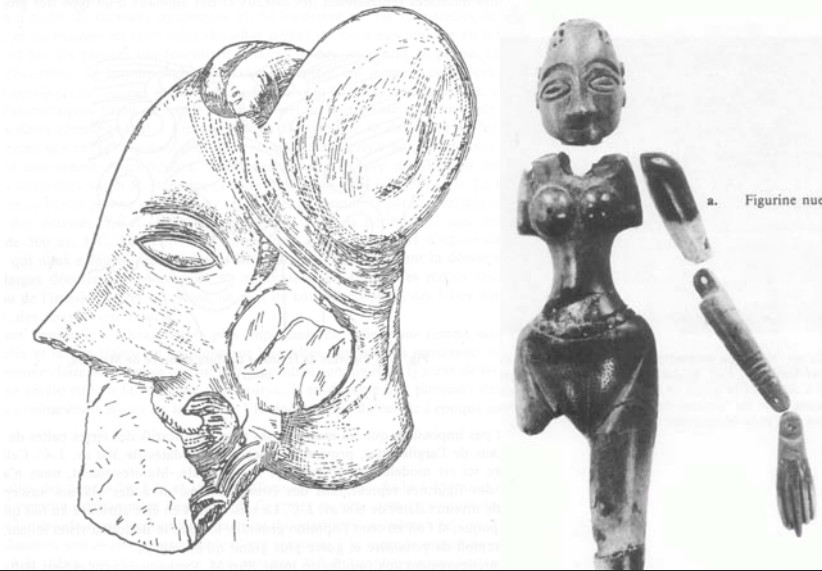


Plate II. A) Terracotta head (of a sadhu?) from Sonkh, near Mathura. B) An ivory puppet from Champa. (After Gupta 1990: pl. 64b, 103a).



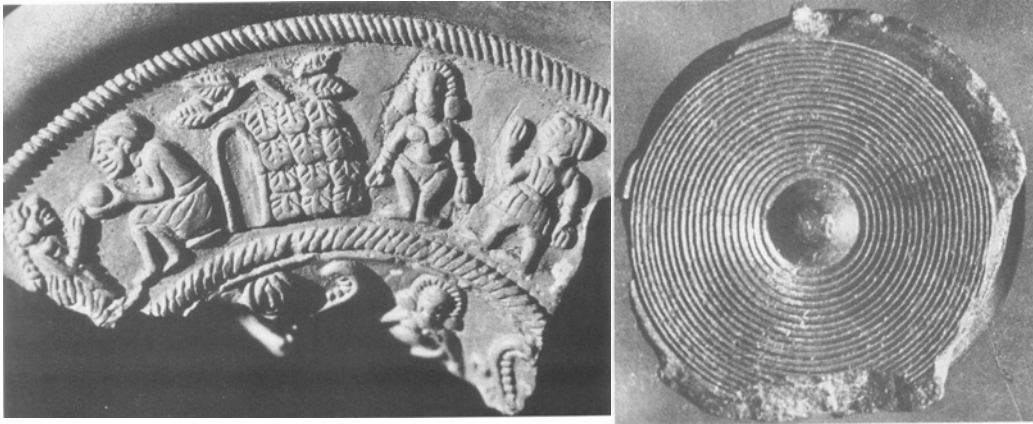


Plate III. Stylistic and compositional parallels:
Mauryan stone disks and ring-stones (after Gupta 1990).

Certain parallels with the style of the Altai mirrors are provided by one more object: a puppet from the city of Champa, made of ivory and on archaeological grounds attributed with certainty to the pre-Mauryan period.

Pointing to the Indian origin of the “rattle-mirrors” is also the general composition of the décor on their reverse, which is similar to the artistic compositions on the stone disks (or ringstones) with enigmatic functions dating back to the Mauryan period (third-second century B.C.). Found in various parts of North India, these small disks (Plate III) are from 3 to 9cm in diameter. They are made from soft species of stone and have one smooth specular surface without decorations, whereas on the reverse they are decorated with a bulb in the center and concentric bands in which there are various symbols and figures carved in low relief. The style of these carvings, although somewhat different from the style of the “rattle-mirrors”, provides nevertheless certain parallels with it and can be defined as the “pre-classical” style with its roots in ancient folk art.

The image of elephant as the key to the whole picture

As mentioned above, a decisive role in the process of the cultural attribution of the “rattle-mirrors” is played by the mirror from Rogozikha (“the mirror with the elephant”). It was the image of the elephant that was used by A.P. Umansky as his major argument against the Indian origin of the mirrors. He pointed to some “abnormalities” in the anatomy of the elephant. These “abnormalities” provided him with grounds to assert that the artist “had never seen an elephant” and consequently “had not been an Indian” (Umanskij 1999: 210).

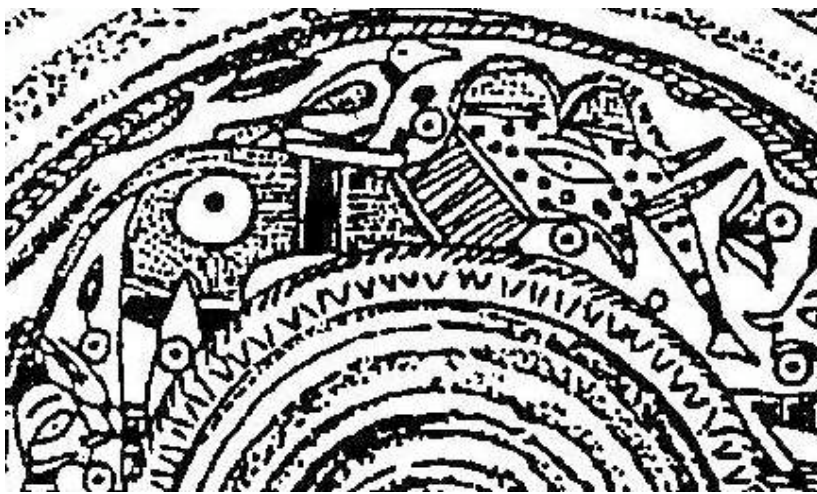
But the same “abnormalities” are suddenly seen in a new light if we take into account data from the Indian mediaeval treatise on what could be termed “elephantology” - the *Mātāṅgalīlā* (ML) in which one can find a detailed description (see: Ganapati Shastri 1910: 7-10; cf. Edgerton 1934: 54-57) of a wonderful white elephant, gift from the gods to the king -- ruler of the universe (*cakravartin*).

A.P. Umansky and his colleagues emphasized, for example, the “slightly exaggerated representation” of the two knobs (*kumbha*) on the head of the elephant covered, much to their surprise, with hair (Plate IV). But in the ML we find a reason for this “abnormality”: it reads that an ideal royal elephant’s kumbhas should be raised “like ripe female breasts” and should be covered with hair (ML II.8: *kāntāghanastānasamānasaromakumbha*).

Another “irregularity” in the elephant's image on the mirror sighted by the archaeologists was that its “head and trunk are spotted with dots”. The same treatise, ML, mentions that the cakravartin’s (the emperor's) elephant should have its face and trunk covered with small spots, or dots (*bindu*; ML II.7). Moreover, pictures of a white royal elephant with black dots on its head and trunk can be found in Jaina miniatures (Plate IV). In the same Jaina miniatures it can be seen that the elephant’s tusks grow from beneath the trunk (or out of the trunk) – the detail which puzzled A.P. Umansky in the Rogozikha mirror and which was interpreted by him as one more anatomical incongruity (Umanskij 1999: 210). During the discussion following the report I made at the Oriental department of the Hermitage museum, Boris I. Marshak remarked that the tusks of the elephant on the mirror pointed upwards, whereas live elephants have their tusks pointed down. There is a direct indication in the ML (II.1) that the tusks of the cakravartin's elephant should point upwards; the Jaina miniature being in complete accord with this.

There is yet one more superficial abnormality: a large dot in a circle on the leg of the elephant. According to the ML, a royal elephant has on its body signs of a conch, a wheel or a lotus. In the Jaina miniatures one can often see a similar sign (probably of a conch) on the leg of a cakravartin's elephant (Plate V).

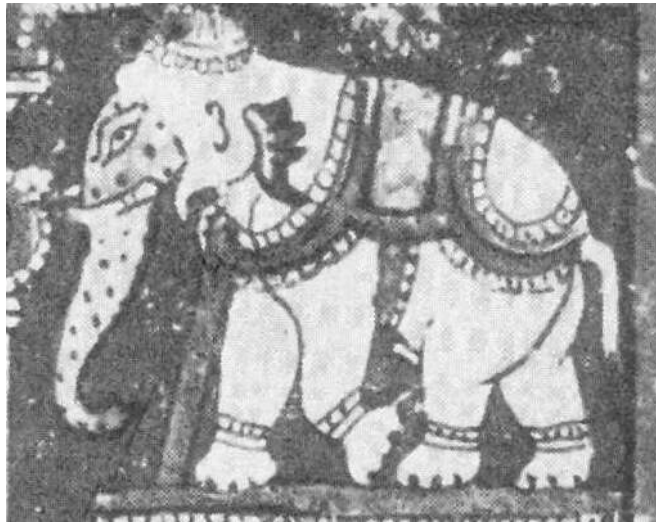
The elephant depicted on the mirror is therefore *a magical royal elephant of the cakravartin*, and the artist who engraved the picture knew all its attributes perfectly well, in accordance with the traditional views of ancient Indians.



A

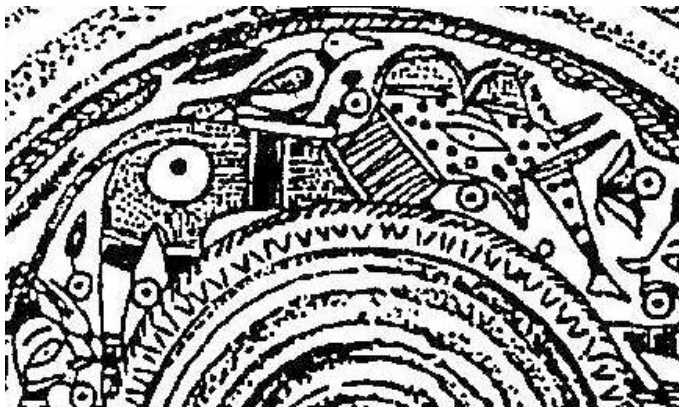


B



C

Plate IV: *Cakravartin's* elephant with spotted face and trunk: A. – on the Rogozikha mirror; B, C - parallels in Jaina miniature.



A



B

C

Plate V. *Cakravartin's* elephant with the conch (?) sign on its thigh:
A. on the Rogozikha mirror; B and C. in Jaina miniature.

The story told by the mirror

Regarding the composition on the Rogozikha mirror as a whole (Fig. 6) there are the following remarkable features.

First, the bird sitting on the back of the elephant bears no resemblance to any of the Indian “mythological” birds (a goose, an eagle etc.). I have asked the opinion of an outstanding ornithologist, Victor Dolnick (Institute of Zoology, Russian Academy of Sciences, St. Petersburg) and was told that it is “just a wild forest bird, perhaps, a *maina* – the Indian starling, or a *bird in general*”.

Second, the right arms of the two women standing to the left of the elephant cannot be interpreted, in the light of the Indian material, as “gestures of adoration”, or a greeting (in both cases it would sooner be *prāñjali* – both hands folded): here we can see merely an attempt *to reach the elephant, or to touch him*.

Third: the specific hairdos of the women represented on the Rogozikha mirror – thick plaits, folded in twos - were in the most ancient period typical hairdos of *married women* (see, e.g.: Auboyer 1965: 122).



Fig. 6. The picture on the Rogozikha mirror (after Umanskij, Shul'ga 1999).

And fourth (see Fig. 6): in one case the hairdo is slightly different: the heavy plait of the small figurine in the centre of the lower part of the mirror is fastened to the back of her head – probably to facilitate movements while working. These features point at a lower social status of the woman engaged in doing household chores. At the same time, the figurine is undoubtedly marked with decorative elements from the background: she is surrounded by several dotted circles. It can therefore be suggested that this character is significant for the story illustrated in the picture, but at the same time is of a low social status.

I saw my task in trying to find in the treasury of Ancient Indian literature a text which would combine all these elements (a bird sitting on an elephant, married women trying to touch the animal, a servant woman etc.) in a single story line. After many failures, I was eventually rewarded with a plot in the *Kathāsaritsāgara*, “The Ocean of Stories”, an eleventh century collection of tales by the famous poet Somadeva. But the *Kathāsaritsāgara* is a Sanskrit rendering of a much earlier collection of fairy tales, the *Bṛhatkathā* “The Great Story” by Guṇāḍhya (1-2 centuries A.D.) written in a Prakrit and founded in its turn on an ancient folk tradition.

Below is the story as told in the *Kathāsaritsāgara*.

Once upon a time there was a king who wanted to become the ruler of

the universe (*cakravartin*). He was not so much fond of power as he was fond of female beauty. And his secret wish was to have the biggest harem in the world. By way of tapas (severe ascetic austerities) he managed to please Vishnu. The god appeared before his eyes and said that the king would receive a gift: a wonderful white flying elephant. As soon as the king mounted the elephant and flew to another kingdom, the local king would submit to him and give him his daughter as a tribute. As a result of such expeditions he would have 80 000 beautiful princesses in his harem.

The promise was fulfilled. Very soon the king lived in his palace with 80 000 beautiful wives, amusing himself as he pleased. But during one of his flights on his magic elephant, when the king was descending from the sky back to his capital, a *certain bird* appeared in the sky and pecked the elephant on the back of its head. The elephant descended and, since that time, not only had stopped flying, but had also stopped eating and moving. The king appealed to the gods for help, and a voice from above told him that there was only one remedy to heal the elephant: a *chaste woman* (the one who had never thought about any other man beside her husband) had to touch the elephant with her hand.

At first the king was very glad: the method to cure the elephant seemed quite simple. Following the king's order, his carefully guarded first queen touched the elephant, but the animal did not rise. Then all the 80 000 king's wives followed by all married women in the town moved past the elephant, touching it with their hands - all in vain. And the king was ashamed because there was not a single chaste woman in his city.

Finally, a travelling merchant from the land of Tāmraliptī followed by his servants happened to arrive in the palace driven by curiosity. In his train there was a woman-servant, Śīlavatī by name (the name is meaningful, "One who is true to her duties as a wife"). When she saw what was going on, Śīlavatī said to the king: "Let me touch the elephant with my hand because I have never thought of a man other than my husband". With the king's consent, she touched the elephant with her hand, and the elephant regained its ability to fly.

Now the king took Śīlavatī on the back of his elephant and flew with her to her native city where he found her father and married his younger daughter, Śīlavatī's sister. He had realized that chastity in a woman was such a rare quality that it was much more important than her noble origin. He was determined to avoid all contacts with his other wives and ordered that they could stay at the palace although within limits - merely provided with food and clothing.

Such is the story (Somadeva 1915: 163-165; Somadeva 1924-1928: III, 169-178). It is remarkable that in a slightly different version (without the elephant and the bird) the same plot was recorded by the famous Greek historian Herodotus in Egypt (Herodotus II.111). It means that the origin of the story can be traced back to the fifth century B.C. when it was spread, it seems, in the area of urban civilizations of the East.

Fortunately a trace of this story has been found in the Indian art of the Mauryan period (Plate VI). On the polished side of a stone disk from Murtazinganj an unfinished drawing can be discerned: a sketch of the figure of an elephant drawn in a circle, with a bird sitting on its back. If we have a

closer look at the decorated side of the stone disc we shall see that the line of the ornament in the disc between the inner circle and the outer edge is at one spot interrupted with a small image of a bird. The use of this unusual detail in the ornament could revive in the mind of the unknown author of the graffito the memory of the popular tale. It could be considered confirmation that the story of the flying elephant and its cure was well known in early India at a time close to the date of the Altai mirrors' manufacturing.



A

B



C

Plate VI. The Tale of the Elephant and the Bird on the stone disc from Murtaziganj (after Gupta: 1990). A. The reverse side, where the ornament is interrupted at one spot with the small image of a bird. B. The polished side with a graffito: an elephant with a bird on its back. C. Drawing of the same done by Yuri Y. Piotrovsky (Hermitage Museum).

Some small details in the picture also betray its Indian origin. The instrument played by the lady on the right-hand side of the picture was recognized as a typically Indian curved harp (with its gourd-shaped sound box). The small dotted circles in the background were interpreted by archaeologists as "solar symbols" or, even more mystically, as Tantric cakras. However, it was proven convincingly by Boris Marshak that the small dotted circles together with the large flowers represented in profile are ornamental elements. They are employed in the same function on the "Kulu Vase" from the region of Lahul and Spiti in the Himalayas (about 200 BC) and on the Indian high-tin bronze bowls from Thailand (of the same age) as well as in Jaina miniature (Marshak, Marsadolov 2000: 1059-1060). It seems to me, their function is to indicate that the scene depicted is going on in a garden. Small dotted circles probably represent the "eyes" of the peacock's tail (peacocks were typical inhabitants of gardens and parks).

The semantics of the other mirrors

Briefly, it can be considered to be proven that the scene depicted on the Rogozikha mirror is a non-verbal representation of the fairy tale known from the *Kathāsaritsāgara*. It means that the pictures on the other "rattle-mirrors" may be representing some other popular Indian stories. But reconstructions in these cases would be highly hypothetical.

Let us take, for example, the mirror from the Lokot' necropolis in Altai. Here the central, most important figure is that of a deer. There are also two

women with their hands stretched towards the deer. There are in ancient Indian folklore and literature numerous stories about a magical, enigmatic deer that lures the royal hunter into the depths of the woods where the king is to meet an adventure or to encounter a god etc. But it should be noted that in this case the bronze disk with the picture is yet again gilded, whereas the deer is accompanied by two young women. This is why the picture probably represents another tale from the same collection of tales, the *Kathāsaritsāgara* “Ocean of Stories” (taraṅgas 121-122). It is the *story of the “two heavenly maidens and a golden deer”*. A king meets them in the forest and since that time has been keeping them in his palace garden. The composition on the gilded Lokot’ mirror finds its own pictorial and stylistic parallels in Early Indian art. The figure of the deer resembles the deer on the golden coin of the Yaudheya gaṇa from the Punjab. The woman shown not in profile but full face is similar to the images of the so-called “Mother Goddess” on some stone disks (Plate VII).



A



B

C

Plate VII. A. The Lokot' mirror: "Story of two heavenly maidens and the golden deer". B. The deer on a golden coin of the Yaudheya gaṇa (c. 200 BC). C. The so-called "Mother Goddess" (rather a celestial maiden) on a stone disk from Murtaziganj (after Gupta 1990).



A

B



C

Plate VIII: A. The Mechetsai Mirror.
B. The image of Krishna from the South Indian puppet theatre.
C. Ambikā with cāmaradhara females as attendance. Mt. Abu. 12 century (after U.P.Shah).

The mirror unearthed at Mechetsai in the Southern Urals (Plate VIII) is heavily corroded, which, of course, creates an obstacle to the identification of the subject represented on it. The only thing we can do is to draw some Indian parallels regarding the general design of this mirror. I have had an opportunity to have a close look at the Mechetsai mirror at the State Historical Museum in Moscow where it is kept and have found that there are more small "leaves" on this branch, and there are traces of another similar branch with leaves in front of the head. In other words, the central figure, or, more precisely, the face (we cannot say with certainty whether it is male or female) was originally framed into a vegetative arc. We have many examples of this compositional type in Indian art, as e.g. the image of Krishna playing a flute under the tree, flanked by two gopis with their hands raised – an item from the South Indian puppet-show. In another picture, from Mount Abu in Rajasthan, the central personage is female: Ambikā, one of the forms of the Mother-Goddess (Plate VIII).



Fig. 7. The decorated backside of the Pazyryk mirror in electric light.
Photo by A.B. Nikitin.

The Pazyryk mirror is different from the rest. It belonged to a Scythian lady of the highest social rank. In India it was also most probably an attribute of a queen. This is the only "rattle-mirror" without an entertaining picture with a fairy-tale story on it. Instead, there is a deeply symbolical solar design. As has been noted earlier, this mirror could have been used for catching sunbeams to send them on (see how even its non-polished, ornamented side reflects the electric light: Fig. 7).

All this brings to mind a myth common to Scythians and Indo-Aryans: the story of the daughter of the Sun, the shining Sun-maiden, spouse of an ancient king. Her name in Scythian was Tabiti, in Sanskrit - Tapati, from the same root with the meaning "to heat, to warm". On the well-known golden plate from Chertomlyk (North Pontic region) there is the scene of the Scythian royal consecration (Fig. 8): the goddess Tabiti, sitting on the throne, holds a mirror in her hand, while a Scythian king, standing in front of her, drinks from a horn-made goblet (see: Rayevsky 1977: 93-99; Ermolenko 2001: 85-86). I would therefore suggest a tentative interpretation of the Pazyryk mirror as an attribute of the *queen* who was worshipped as a representative of the divine Sun-maiden, the king's celestial spouse.



Fig. 8. Chertomlyk golden plate: goddess Tabiti and the consecration of a Scythian king.

The composition of the metal

The argument in favor of the Indian origin of the mirrors is also supported by the analysis of the metal. It is bronze with a high percentage of tin in its composition. In the following Table a comparison is drawn between the compositions of the metal in the earliest bronzes found in India (with the

percentage of tin [Sn] contained in the metal around 20% and higher; see Prakash, Rawat 1965: 51, 53; Marshall 1951: II, 567) - and the Mechetsai mirror (20% tin; Smirnov 1968: 118).

| NN | Site | Item | Date | Cu | Sn | Pb | As | Sb | Fe | Ni |
|----|------------------|---------------|------------------|--------------|--------------|-------------|-------------|--------------|------------|-------------|
| 1. | Kaushambi | ingot | 6-5 c. BC | 79.21 | 19.13 | ----- | 0.27 | ----- | 0.51 | Trace |
| 2. | <i>Mechetsai</i> | <i>mirror</i> | <i>5-4 c. BC</i> | <i>basic</i> | <i>20.00</i> | <i>0.07</i> | <i>0.07</i> | <i>0.009</i> | <i>0.8</i> | <i>0.13</i> |
| 3. | Taxila | bowl | 3 c. BC | 76.76 | 21.55 | ----- | 0.16 | ----- | 0.95 | 0.48 |
| 4. | Taxila | bell | 2 c. BC | 74.8 | 24.14 | ----- | 0.10 | 0.20 | 0.55 | 0.21 |
| 5. | Taxila | mirror | 1 c. BC | 74.28 | 24.85 | ----- | 0.04 | 0.12 | 0.71 | ----- |
| 6. | Taxila | mirror | 1 c. AD | 74.61 | 22.00 | ----- | 0.11 | 1.23 | 0.71 | 0.47 |
| 7. | Taxila | bowl | 1 c. AD | 75.54 | 23.20 | ----- | 0.28 | 0.30 | trace | 0.49 |
| 8. | Taxila | beaker | 1 c. AD | 73.39 | 25.59 | 0.05 | ----- | 0.12 | 0.71 | 0.15 |
| 9. | Kaushambi | fragme | 3-2 c. AD | 75.21 | 23.51 | ----- | 0.35 | 0.18 | 0.26 | 0.49 |

It should be added that the metal composition of the Rogozikha and the Lokot' mirrors is very close to that of the Mechetsai mirror (Umanskij, Shul'ga 1999: 50), and the preliminary analysis of the Pazyryk mirror done by Sergei Khavrin (the Hermitage museum) proved that its metal contains more than 20% tin. In contrast, the Scythian mirrors and other bronze objects made by Scythians contain a considerably smaller percentage of tin - about 6-8%. And, no less importantly, the quantity of the microelements in them (such as, e.g., arsenic [As] or iron [Fe]) is also different. E.g. the local Scythian mirrors of South Siberia contain from a few tenths percent to several percents of arsenic. So we can conclude that the chemical structure of the metal from which the rattle-mirrors were made is different from the local Scythian metal and *identical* to that of Early Indian bronzes.

This link with Early Indian high-tin bronzes is further supported by some data contained in the Indian written sources.

The first reference to the metal in Sanskrit texts is contained in the "Funeral hymn" of the *Atharvaveda* (18.3.17) in the form *kasyá-* which refers to a metal bowl or "vessel". Specialists explain this form as a "prakritism", a distortion of the Old Indoaryan *kaṃsa-* or *kāṃsya-* with the meaning of "high-tin bronze". The twelfth-century alchemical treatise CE *Ratnasamuccaya* provides a precise definition of the word's meaning: *kāṃsya-* is an alloy, consisting of 80% copper and 20% tin, i.e. high-tin bronze. There is also a significant passage in the *Arthaśāstra* which reads that *adhyakṣa*, an officer in charge of metals must supervise over production of copper, lead, tin, *vaikṛntaka* (?), brass, steel, *kaṃsatāla*, and iron.

Kaṃsatāla which specialists usually read as 'high-tin bronze' can probably be also understood literally as a 'bronze rhythm', 'bronze beat' or 'bronze cymbal'. This idea belongs to the Indian specialist on metals and metallurgy, Sarada Srinivasan. She refers to the well-known Classical Tamil poem the *Shilappadikkaram* ("Story of a Bracelet"). There is the word *kanca-tala* in it, meaning "cymbals used for musical accompaniment". She has also pointed to several related words in Tamil:

kañca-tala 'cymbals used for musical accompaniment';
kañjam 1. 'cymbals', 2. 'bronze speculum-mirror'

kañcam 1. 'white bronze', 2. 'cymbals';

kañjaram 1. 'bronze', 2. 'tambourine'.

All these terms ethymologically go back to Skt. *kaṃsa-*. So, according to Sarada Srinivasan, the Skt. *kaṃsatāla* could also refer both to the metal and to instruments made from it (Srinivasan 1998: 244).

In this case, I believe, *kaṃsatāla* or some other related word might well have been used to designate rattle-mirrors in the Old Indo-Aryan.

High-tin bronze in the Mahābhārata

High-tin bronze and items made from it are mentioned several times in the Mahābhārata.

Mbh. 4.63, 47: Draupadī collects Yudhiṣṭhira's blood in *sauvarṇam pātram kāṃsyam* - the 'gilded vessel of white bronze'.

Mbh. 12. 220, 113: on the eve of the world's destruction, dirt will lie on the dishes of white bronze (*kāṃsyabhāṇḍaiḥ*), while the sacrificial offering - on the plates of the worst kind (*kupātrakaiḥ*).

These references demonstrate that the items - bowls or dishes made from white bronze, sometimes gilded - were very expensive luxury objects which had symbolic significance. Of special interest is a paragraph from the first book of the Mbh (I. 176.30) where Draupadī appears at her svayamvara ("choice of a husband" ceremony), having in her hand(s) "white bronze for the hero" (*vīrakāṃsya*). There are three possible ways to explain the meaning of this term:

1. it is a "champion's goblet" (as J.A.B. van Buitenen translated it);
2. it is a mirror;
3. it is a set of symbolic objects used in the svayamvara ritual, including probably both a goblet and a mirror.

The subsequent history of Indian mirrors in the Eurasian steppe

When Indian artistic mirrors ("rattle-mirrors") first appeared in the part of the Eurasian steppe adjacent to the Altai mountains it must have created a sensation in the Western part of the Scythian world. The reason for it was that *mirrors* played an enormous role in Scythian funerary rites. Everybody had to be buried with his or her mirror. It can be suggested that as a result, a great demand for Indian mirrors arose in the steppe. Indian craftsmen (especially craftsmen from North-Western India which had had for centuries trade relations with the steppe) made efforts to meet this demand. Since the third century BC they had been manufacturing in large quantities mirrors which were more simple in their construction (made from a single bronze disc, without hollow space inside), but which had the same general design on the reverse (the central boss and two rims, without pictures). They can be viewed merely as a simplified type of the same pattern.

In Taxila, a large city in North-Western India, these mirrors were found in great quantities in the layers of the first century BC and the first century AD: large stocks prepared for transportation somewhere. It seems reasonable to conjecture now that the destination was the Northern steppe.

Such mirrors are known to Russian archaeologists as "Sarmatian" mirrors. They were found in hundreds in Sarmatian and late Scythian burials across the steppe from Ukraine to the Altai mountains (Plate IX). The metal of these 'Sarmatian mirrors' was the same, typically Indian high-tin bronze. The Scythians living to the east of Altai preferred to use Chinese mirrors in their burials.

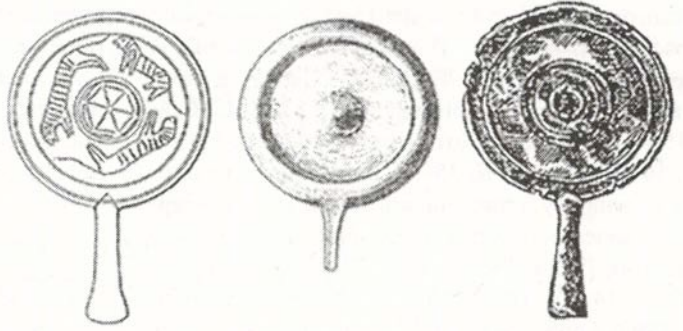


Plate IX. Simplified "Sarmatian" mirrors of Indian origin. Left – the "Mirror with tigers" from Bystrovka, Novosibirsk region (after Troitskaja, Borodovskij 1994); center – one of the Taxila mirrors; right – a mirror from the early Sarmatian Malokyzylsky cemetery.

At first the memory of artistic mirrors with pictures on them was still alive in the minds of nomads, and they felt that something was missing in those simplified mirrors. E.g. the mirror of Indian origin found to the north of the Altai mountains was originally blank, with no pictures on it, but then a local craftsmen engraved three figures of tigers (an exotic animal for this region) on the reverse (Plate IX, left). Other instances of the same kind are known to archaeologists.

The large-scale import of Indian high-tin bronze mirrors to the Eurasian steppe started in the fourth century BC and continued until the fourth century AD -- i.e. lasted for many centuries. And, to the best of my knowledge, until the present time this fact has escaped the attention of historians of India.

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