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In Rudenko’s excavations at Pazyryk, musical instruments were commonly found. Of the five major barrows, the kurgans II, III and V contained small goblet-shaped drums made of ox-horns artfully joined. Kurgan II had parts of string instruments. They were found to fit one harp which, when joined, seemed to be quite complete (Pl. 57,1) including a wooden body, leather covers and sinew strings. The harp was unique in Pazyryk but later excavations at Bashadar yielded a similar instrument which, unfortunately, was only fragmentary (Pl. 57,2). However, its parts could be made to fit the design of the Pazyryk harp. Kurgan II, like all others at Pazyryk, had been robbed shortly after its completion and many objects, including the harp and drum, had been thrown randomly. Rudenko believed the instruments had originally been with the interred, well-preserved, couple who had shared one coffin. The man, about 60 years, was a markedly mongoloid type while the woman, slightly above 40 years, had hardly any mongoloid traits. The man had extensive tattoos which Rudenko thought signified noble birth or was a mark of manhood or perhaps both. Judging from the rich tomb inventory, the man was a chief and Rudenko believed the woman was his concubine. One of them had, presumably, been a harper.

The exact dating of the harps is in some dispute because the radio-carbon dates (Bashadar: 520 B.C., Pazyryk II: 390 B.C.) give wide errors (± 140 years). Dendrochronology has established that Bashadar is 130 years older than Pazyryk. Rudenko’s stylistic arguments, based on the representations of human figures on woven cloth and a carpet, supported the radio-carbon dates (with zero errors), but Griaznov argued for a date a century later and Mongait asserted that most scientists be-

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lieve the Pazyryk burial mounds to date from the 3rd–1st century B.C. However, with such a very late date, the kurgans would have been constructed when the area was under Xiongnu domination. That possibility was rejected by Rudenko and Griaznov. Moorey\textsuperscript{11}, summarizing the evidence, dated Pazyryk II to the early fourth century.

If one may hazard to generalize on the basis of two finds, the similarity of the Pazyryk and Bashadar harps and their dispersion over 130 years imply that the harp must have had a well established and durable presence in the Altai region near the middle of the first millennium.

\textbf{Description of the harp}

The Pazyryk harp is displayed in the State Hermitage Museum, Leningrad where it was examined in August 1984 and 1985. Conclusions about the original shape and function of the instrument are probably best illustrated by the reference to my full-scale reconstruction (\textit{the model}) of the harp (Pl. 58,1).

\textit{Wooden body}

As already mentioned, the body was made by joining\textsuperscript{12} two halves found at the excavation. The broken edges of this wooden, knotless, body seems to match well and the restoration appears to be correct. The instrument body is now completely symmetric with a total length of 83 cm. Its body is, basically, a hollowed out vessel or trough. The outside surface is smooth and gently curved while the inside is left in a somewhat rougher state of finish since it was intended to be hidden by top covers (leather and wood), tautly fitted to the body.

The view from the top (Pl. 58,1 b) is somewhat like a figure-8 where the width varies between 11.0 cm (near the ends) and 5.0 cm (middle), i.e. it is strongly waisted. The »waist parameter« (= D) defined earlier in a paper on the Egyptian shoulder harp\textsuperscript{13} has a value of 0.55, i.e. the Scythian harp has a more pronounced waist than ancient arched harps and modern guitars, but similar to violins. At each end there are prominent lugs. Not counting these lugs, the body proper is 76.5 cm long.

From the side the instrument appears strongly arched with the ends higher (8.5 cm) than the middle (5.6 cm). Each lug is pierced.

The cross section is everywhere horse shoe-shaped with 5 mm (top) to 7 mm (bottom) thick sides bending slightly inward toward the top.

Three wooden sticks (3 mm thick \times 14 mm wide with rectangular cross section) were inserted in the top to act as spacers intended to prevent the body from collapsing in case the skin cover became too taut. Such spacers are similarly used in recent Burmese arched harps\textsuperscript{14}.

This body reveals sophisticated wood-working skills in the symmetric shaping of this body and its evenly thin sides. The complex bending and tapering of the instruments gives rise to a design of great sculptural plasticity.

\textsuperscript{10} Gryaznov, The Ancient Civilization of Southern Siberia (1969) 158 seq.; Rudenko, Pazyryk (note 1) 298.
\textsuperscript{11} P. R. S. Moorey, Some Ancient Metal Belts: Their Antecedents and Relatives, Iran 5, 1967, 94.
\textsuperscript{12} Restoration and reconstruction based on the proposals of M. P. Griaznov (Rudenko, Pazyryk [note 1] 277).
\textsuperscript{13} B. Lawergren, Reconstruction of a shoulder harp in the British Museum, Journ. Egypt. Arch. 66, 1980, 166, n. 9.
\textsuperscript{14} M. C. Williamson, The Construction and Decoration of One Burmese Harp, Selected Reports (Institute of Ethnomusicology, UCLA) 1 (2), 1968, 46.
Ancient repair of body

On the outside surface, under the body, are three shallow rectangular incisions (Pl. 58,2, from the extant instrument). They have been carved to a depth of about 1-2 mm with straight, sharp edges and clean corners.

The fact that the rectangular cuts straddle a crack in the instrument reveals their purpose: evidently, the crack is ancient and the rectangles were the sites of patches glued to the body to prevent further widening of the crack. Traces of a glue-like substance were still lodged on the bottom of the incised rectangles. Although the glue had remained, the patch (from wood, leather?) itself had fallen out and disappeared.

Remarkably, cracked string instruments are still repaired in much the same way. Thin rectangular pieces of wood are glued across the crack on the inside of string instruments (Pl. 58,3 shows the inside surface of the cracked top plate of a modern cello). However, today one would not carve incisions into the wood of the instrument plate and the patches would be concealed inside the instrument.

Among the objects in Pazyryk II, another ancient repair was discussed by Rudenko. His remark on a patched earring may also apply to the harp: »It follows that even if there were not jewellers capable of creating such an earring in the Altai, at any rate there were probably craftsmen there capable of mending them«15.

Skin cover

On the top surface of the harp skin covered each of the ends and a wooden plate the middle section. At one end the skin was quite intact while the other end had fared worse. Each skin section had three sound holes (10 mm diameter). The type of skin could not be identified, but pig was ruled out. (The model used parchment made from calf). The skins rested loosely on the extant body but crease marks clearly showed that they had once been firmly attached to the top of the body.

Very likely, the skins would have been attached to the body while wet and subsequently dried to give flat, taut surfaces stretching across the top of the body. However, the method of attachment presents a puzzle. In the model the skin was »nailed« into the sides by drilling 1 mm holes and driving wooden dowels through the skin into the holes. To act as pegs for the skin, the dowels must protrude a few millimeters from the body. This procedure grips the skin firmly without the use of glue16.

The harp had all the holes necessary for the skin attachment. For example, there were no holes at the middle section, the site of the wooden plate which was, presumably, glued into the top of the body (see below). Most of the dowels were still in place but all had been cut flush with the outside and inside of the wall. Moreover, at some places the edge of the skin had been cut too short to cover the row of dowels. This could not be effect of the skin shrinking while drying because the flat top surface had not shrunk; furthermore, there were no holes from dowels penetrating the skin. In this state the dowels could not have served to hold the skin. However, since the dowels were there, they had once held the skin (as in the model) but at the time of the burial they had lost their function.

What could have happened? The skin may have come loose or may have been ripped at the rim (in antiquity); to save appearance the torn pieces were cut and the dowel-plugs, now without function,
were smoothed down to the wall. One could imagine that attempts might have been made to glue the skin to the body instead of fastening it with the old dowels but (1) there were no traces of glue at the rim and (2) in many places the overlapping edge of the skin was too narrow (~ 5 mm) to permit a glue joint of any strength. It seems most likely that the instruments was simply deposited with the skin loosely in place, i.e. the instrument would have been unfit for playing.

In some places, the skin had a dark red color from cinnabar (vermillion) dye, popular at Pazyryk. It was available locally and used in many other leather and wood objects.

Central wooden plate

A 4 mm thick plate (Pl. 59,1) was found inside the instrument. It was broken at one edge, presumably as a result of the whole instrument being ruptured near the middle. The other part of this plate was not recovered.

It was observed that the inside of the top edges of the body had grooves (»rebates« in carpentry parlance) near the middle. The depth of the grooves was such that the wooden plate would fit snugly in the manner of Pl. 59,2. The grooves seemed to extend between the ends of the skin covers. If the wood plate was extended symmetrically on the other side of the narrow broken edge, it would fill the space between the sides of the body and the ends of the skin covers. The fits were good and the model was reconstructed that way (Pl. 60,1).

At the broken edge of the plate there was a finely carved hole (Pl. 59,2). Since the rest of the harp is exactly symmetric, the hole was assumed symmetric. Because the end of the plate and the skin was cut straight, without any holes or markings, simple, overlapping joints were used in the model.

Stick

There is a curved, broken, 11 cm long, stick (Pl. 57,1) tied with a leather strap to one of the lugs. It has an oval cross section, approximately 12 mm high and 9 mm wide. I assumed that this fragmentary stick belonged to a longer stick to which the strings had been attached. In fact, all other antique harps – angular as well as arched – have such sticks. Presumably, the break occured when the instrument was broken near the middle. The original stick was probably quite straight and I assume its long history of soaking/freezing/drying caused the stump to bend as in Pl. 57,1.

How was the other end of the stick attached to the instrument? One can arrive at an informed guess by inspecting Egyptian arched harps from the New Kingdom. There the end of the stick usually penetrated into the body, under the skin, to rest on a little shelf inside the instrument. The Pazyryk instrument contains no such internal shelf. It also seems unlikely that the stick would have extended the whole length of the instrument because of (1) the strong arching of the instrument and (2) the presence of the wooden plate at the mid section. In the model the stick terminates at the wooden plate.

The model uses a copper wire to tie the stick firmly to the plate. It is possible that the extant harp may have had a more desirable metal at this junction. In that case, the tomb robbers may have broken

17 Rudenko, Pazyryk (note 1) 206.
18 Lawergren, Reconstruction (note 13) 167.
The Ancient Harp from Pazyryk

The harp\(^{19}\) for the same reason they hacked off heads, legs and a hand at Pazyryk II: to remove desirable objects, as Rudenko\(^{20}\) speculated.

It is chiefly this stick which transmits the string vibrations to the skin cover which, in turn, produces the sound. For that reason the stick would have been made to rest in close contact with the skin.

\textit{Angular stick}

This inverted T-shaped piece was made from a tree branch and its immediate anchor in the trunk. Such a T-piece was also found at Bashadar (see middle of Pl. 57,2). Its foot was only partly preserved but, apparently, it lacked the instep. The foot was tied with a leather strap to one of the lugs.

\textit{Plectrum}

Other horizontal harps were always played with a plectrum held in the right hand. If such a playing technique was used here, the plectrum would most probably have been placed near the harp. None was found but it may have been lost in the debris from the tomb robbers.

\textit{Strings}

Extant sinew strings, about 0.8 mm in diameter, added up to a total length of about 5 m. Pieces were attached to the angular stick by means of 6 mm wide leather straps/collars. There were 5 dark, horizontal bands on the Pazyryk angular stick\(^{21}\) while the Bashadar stick shows about 15 similar markings. Most likely, these miscolorings were caused by leather tuning straps, one for each string. The inconsistent string counts of the two Altai harps are somewhat disturbing but it may be due to their apparent difference in size. None of them have 9 strings, a common string count in Assyria\(^{22}\).

The angle between the strings and the stick/skin, important for the sound production\(^{23}\), is 28°. According to Picken's survey\(^{24}\), Assyrian horizontal harps of the first millennium had smaller angles (10° to 20°) while vertical harps had larger. The comparatively large angle of the Pazyryk harp is a result of the arcing of the top surface. Had it been flat, the angle would have been reduced to 16°, a value typical of Assyrian horizontal harps.

\(^{19}\) It seems unlikely that the harp was purposely broken at the burial because the drums (Rudenko, Pazyryk [note 1] Fig. 13 No. 31, Fig. 15 No. 17) appear to have been found intact.

\(^{20}\) Rudenko, Pazyryk (note 1) 33.

\(^{21}\) These marks are clearly visible on an early photograph of the harp but have now faded on the exhibited extant instrument.

\(^{22}\) B. Lawergren, Ancient Harps: Archaeology and Acoustics (to be published).


\(^{24}\) L. E. R. Picken, String/Table Angles for Harps, from the Third Millennium B.C. to the Present, Musica Asiatica 3, 1981, 35–51.
Pl. 58,1; 61,1 shows the harp in its original state, i.e. before the dowels were shaved off. There are two principal uncertainties: (1) the attachment of the inner end of the horizontal stick to the instrument; (2) the attachment of the strings to that stick.

Discussion

Angular harp

This instrument is an angular harp\textsuperscript{25}. Would it have been played in a horizontal or vertical position?\textsuperscript{26} Both orientations are known\textsuperscript{27} on iconographic material from the Near East (3rd mill. B.C. to 1st mill. A.D.)\textsuperscript{27}.

With the lugs at each end, and a carrying strap tied between the lugs, it could have been carried comfortably in either position\textsuperscript{28}. As a horizontal harp, the strap would have passed above the player’s left shoulder; as a vertical harp, the strap would have gone around the back of the left shoulder and been tucked firmly between the upper arm and the chest. Some experimentation with the model shows that a horizontally held harp needs a longer strap than a vertical model. This length would have given a decisive answer to the question posed above but, unfortunately, no strap had survived. One cannot decide if it is a horizontal or a vertical harp. I shall, arbitrarily, continue to show it as a horizontal harp.

The Pazyryk harp resembles the horizontal\textsuperscript{29} angular harps of the Assyrian wall reliefs in the British Museum. Pl. 61,1, for example, shows a member of the court orchestra of the Elamite city of Madaktu conquered by Assyria which is about 1 and 2 centuries older than the Bashadar and Pazyryk harps, respectively. The harp in Pl. 60,2, from the Ishtar temple of Sennacherib, is half a century older still.

The bottom of the Madaktu harp is curved somewhat like the Pazyryk harp but the top surface is very different: (1) it lacks the wooden center piece; (2) the stick probably extends along the full length of the body making the top straight; (3) the lever arrangement involved in the model’s inverted T-piece lacks an Elamite/Assyrian equivalent. Instead the Assyrian angular stick, often shaped like a human arm (Pl. 60,2), appears to be mortized to the body, as was also the custom in Egyptian vertical angular harps. Other details, too, differ sharply, e.g. the contours at the ends of the harps from Altai and Assyria.

The similarity of the Pazyryk and the Assyrian horizontal angular harp was already noticed by Rudenko\textsuperscript{30}. But, as we have seen, the resemblance is only in term of the general structure, such as the horizontal body, the vertical stick and the suspended strings. That arrangement had already existed for over a millennium in the Near East and may not necessarily have arisen as late as mid-first millennium in Central Asia. The details of the Pazyryk harp differ significantly from any horizontal an-

\textsuperscript{26} It is shown in the horizontal position at the Hermitage State Museum and in all illustrations listed in note 3.
\textsuperscript{27} Lawergren, Ancient Harps (note 22).
\textsuperscript{28} There were distinct grooves around the lugs, possibly caused by thin straps.
\textsuperscript{29} The fact that Assyrian vertical angular harps had very different dimensions from the Pazyryk harp hardly constitutes a proof that the Altai harp was horizontal. There might have arisen a Central Asian tradition of vertical harps (having the Pazyryk shape) unknown to us.
\textsuperscript{30} Rudenko, Pazyryk (note 1) 277.
gular harps seen in the Assyrian palace reliefs. In my opinion, these idiosyncratic details are so numerous and so consistently carried out at Pazyryk and Bashadar, that it indicates a distinct local, well established, tradition.

It is not plausible to argue that the differences between mid-7th century harps in Assurbanipal’s palace and that of early 4th c. at Pazyryk could be the result of changes over time. At both locations we know that the harp designs were quite stable during the preceding centuries.

One detail, the rounded, boat-shaped ends of the body, were not present on the Assyrian reliefs. The boat-shape reappears the next time extant harps have come down to us: the Chinese harps of the Tang dynasty (8th c. A.D.), now preserved in the Shōsōin museum at Nara, Japan. The end of its body is curved identically to the Pazyryk harp – although with the new addition of a narrow spear-shaped extension to which the angular stick is fastened. Considering that the Altai region came under the influence of the Xiongnu people not long after the Pazyryk burials and that they, in turn, were assimilated over several centuries into Han dynasty China the boat-shaped harps may possibly be seen as a long-range influence. In the past commentators, perhaps unaware of the Pazyryk harp, have only compared the Shōsōin harps with more contemporary Central Asian harps such as those shown on 6th c. frescos in a cave temple at Dunhuang and a 7th c. Kuchan reliquary.

Waisted instrument tradition

We are ignorant about the three-dimensional structure of Assyrian angular harps because of the restricted iconographic material but the top-view of the Altai harp reveals a markedly waisted contour (Pl. 58,1 b) reminiscent of an other type of horizontal harp, namely the Egyptian arched (shoulder) harp from mid-second millennium.

Modern waisted instruments (e.g. violins, guitars) constitute the latest members of a long tradition. Various stages of this tradition are marked by the Coptic guitar, the Shōsōin harp, certain Islamic lutes like the gurumi, the waji (Pl. 59,3) and the saran. The last two instruments survives among the Kafirs of Nuristan, probably, with very ancient roots.

Additional references:
31 In Altai we find similar designs 520 B.C. and 390 B.C. (Bashadar and Pazyryk); Assyrian palace reliefs from the reign of Ashurnasirpal II (860 B.C.) and Ashurbanipal (640 B.C.) also differ little.
32 The reliefs can not unambiguously represent rounded forms in depth and it would be hazardous to appraise this detail; but they all convincingly show that the ends were cut straight in the frontoparallel plane.
33 Judging from illustrations, the Konghou was a vertical angular harp; the ancients considered it a Central Asian import.
34 Jettmar, Art (note 3) 154.
35 Already in Pazyryk V – no more than 50 years after Pazyryk II – there are Chinese influences and Rudenko (1970, 191) speculated that the interred woman could have been a Chinese princess.
36 Yü Ying-shih, Trade and Expansion in Han China (Berkeley 1967) 204.
37 e.g. R. Hayashi, The Silk Road and the Shoso-in (New York 1975) 98.
38 The Art Treasure of Dunhuang (Compiled by Dunhuang Institute for Cultural Relics, Hongkong and New York 1981). The earliest is Pl. 30, (cave No. 285, 538–539 A.D.) from the Western Wei period but there are several later harps: Pls. 73, 87, 100.
39 A. Grünwedel, Altbuddhistische Kultstätten in Chinesisch-Turkestan (1912) Fig. 664 (Fig. 264 is an arched harp); A. von Gabain, Das Leben im uigurischen Königreich von Qočo (1973) 151 seq.
40 Lawergren, Reconstruction (note 13) 166.
41 This tradition does not exclude other purposes (acoustical, aesthetic) for the waist.
The sound hole is centrally located on the wooden plate (Pl. 60,1) of the horizontal Altai harp, i.e. in the horizontal plane. Since the Assyrian horizontal angular harps are shown in side view, any structure on their top surfaces is invisible and one can not know if the placement of the hole on the Pazyryk harp is unique. Its shape is not unique, however, for it exists on the wooden side of Assyrian vertical harps (Pl. 61,2). The characteristic figure, a concave rectangle, was mentioned in ancient texts as being »the ear of the sammu instrument«. This identification implies that the Akkadian name for »harp« was sammu.

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Nachsatz


66 This shape is commonly inscribed on the rear of 20th c. Shamanistic drums from Lapland; E. Emsheimer (Studia ethnomusicologica eurasiatica [Stockholm 1964] 68–75) has traced this »hourglass-shaped« motif from Lapland back to 19th c. Shamanistic drums from the Altai region.


68 Previously M. Duchesne-Guillemin (1969, 113) – and, subsequently, M. Duchesne-Guillemin, Note complémentaire sur l'instrument ALGAR, JNES 29, 1970, 200 – had argued that its Sumerian name was ALGAR but her arguments have been shown to be flawed.
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