

INTRODUCTION TO STUDY ON LATE SASANIAN PROTECTIVE HORSE ARMOR

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Abstract. The principle thought underlying this paper is to characterize general sorts and the advancement of stallion protection utilized by world-class warriors of Sasanian ancient Iran. By investigation and studying about Reliefs, Comos, Terracottas, Grafittos, Seal Impression, Archaeological reports and historical and literary text, we can find out and realize the Protective Horse Armor in this period. The types of armor protection examined in this paper are included: Scale barding armor, chain mail horse armor, barding composed of multiple elements and fragmentary bardings covering a part of the mount and full lamellar/lamellar barding. The most important part of the Sassanid army was the heavy armored cavalry (Svaran), which played a crucial role in the wars, especially in the confrontation with the Roman infantry, and it easily collapsed the fighting arrangement and targeted them as beams of riflemen. Many Roman sources have reported that the entire Sassanid horse armored riders were covered with thick iron. It was similar to a ferrous sculpture that was both an instrument of psychological destruction and a shock weapon. Many types of horse-armored riders were formed, such as the Royal Guard. The Sasanians, like their predecessors, used armored riders in almost all battles.

Keywords: Sasanian, Protective Horse Armor, stallion protection

Introduction. The principle thought underlying this paper is to characterize general sorts and the advancement of stallion protection utilized by world class-warriors of Sasanian Ancient Iran, basing on scholarly sources and iconographical confirm with minor reference to archeological finds. Moreover, these sorts will be contrasted with mount's security utilized in different parts of early medieval Asia, being the establishment for impressive defensive gear of later Mongol, Chinese and Islamic armed forces. This would prompt vision of transformative advancement of Sasanian bardings. In the first place, stallions to be shielded by protective layer were the ones from Egyptian and Mesopotamian chariots achieving abnormal state of modernity as far as development and strategic employment (Crouwel, 2002;p.146 & Crouwel, 2002b;p.417 & Littauer M.A, Karageorghis, 2005;p.534,545). Battlefield where expansive quantities of rocket weapons were sent required security for both the rider and the mount being a major and defenseless target (Moorey, 1986;p.196,215). With the advancement of inflexible seats, rangers stun strategies got to be broad, in any case it must be borne as a top priority that even without such a gadget Scythians, Assyrians and Achaemenid Persians had their nearby battle reinforced stallion troops, regularly with their mounts incompletely protected (Sekunda, 1992;pp.21-22). The steeds of imposing power of Great Macedonian were in all likelihood not secured at all, regardless of the undeniable utilization of stun strategies. This would recommend that at any rate at first, the rockets were a figure giving the mounts some scope (eminently Near Eastern chariot fighting was in its center the rocket fighting). This might be a side perception on the talk about the beginning of the cataphracts an effective compel of substantial rangers, initially recognized by the sources in Seleukid armed forces, which turned into a trademark highlight of Iranian armed forces from Arsakid run onwards (as of late Darius III was credited for making this constrain by Olbrycht) (Anderson, 2011;pp.34,38 & Coulston, 1986;pp.59,75 & Eadie, 1967;pp.161,179 & Mielczarek, 1998;p.41,73). It must be very much noticed that appearance of these troops in the Hellenistic world is regularly clarified by the impact of early Parthian kingdom, especially Antiochus III's eastern expedition (Mielczarek, 1998;pp.101,106 & Mielczarek, 1993;pp.67,73). Be that as it may, the correct definitions and qualification between expressions: kataphraktai, catafracti, catafractarii and clibanarii, stays cloud, we may discover an accord that the appropriation of these troops by the Roman armed force was roused by Parthian-Sasanian and Sarmatian prototypes(Ibid). It ought to be stressed that in both situations substantial mounted force was joined by stallion toxophilite, and some Roman units had going with steed bowmen attachments (Mielczarek, 1998;pp.101,106 & Mielczarek, 1993;pp.41,75).

Taking all things together stallion multitudes of Arsakids and rangers commanded Sasanian armed forces, mounts were profitable asset that should have been ensured. Losing a stallion in battle made a warrior alongside pointless and minimized him, at any rate for quite a while, to the part of infantry paygan so scorned by Persian aristocrats (Zakeri, 1995;pp.13,69). Then again, the stamina and speed of a stallion weighted with barding more likely than not endured significantly. Brisk substitution (because of wounds or weariness) amid the fight was unimaginable unless the following mount was likewise ensured. Extra component was the high cost of such gear. Consequently having a couple substitution steeds may be found a more proficient alternative. In this way it might be accepted that generally as with Byzantines of Maurice's Strategikon credited to sovereign Maurice or his military officers just a little number of Sasanian warriors had their mounts wearing armor (Maurices Strategiikon, 1984;p.11 & Syvanne 2004;pp.335,352 & Wiitta 1977;pp.53,112). The Author of the Strategikon himself doesn't specify any bardings of the Persian mounts and Procopius even says that Persians were less reinforced than their Western rivals of the time (Ibid). Both enrichment on the shell from the British Museum and Late Sasanian stucco board from Metropolitan Museum demonstrate an obviously regal or if nothing else first class horse warriors in covering riding an unarmored steed (Pl. 1, 2). Likewise related however either before or starting from

neighboring societies material can be cited here: Parthian earthenware from Babylonia with the lion chase scene, Indo-Saka coins, well known Orlat plate with a fight scene, Sogdian and Kizil wall paintings. By the by, steed defensive layer appeared to be a significant imperative protest of some typical esteem. Karnamak e Ardašir-e-Papakan notice horse barding among the articles stolen from Artaban by Ardashir I administration founder, its innovation was recorded by Shahnameh as one of the socially essential things made at the beginning of mankind and Khusro Anushirvan's warriors of his transformed armed force were relied upon to have stallions all around ensured with protection, which is affirmed by both Persian and Arabic sources (Farrokh, 2005;pp.16-17& Mielczarek, 1993;pp.65-67 & Skupniewicz, 2006;pp.151,172).

Center Persian manuscripts named horse armor as: tiġfāf, bargustuvān and silī (Farrokh, 2005;pp.16-17). It is difficult to discover strict contrasts between these three anyway it must be noticed that pehlevi war pack classification is a long way from exact and would not permit distinguishing proof of the barding sort by these terms themselves (Taffazzoli, 1993/94;pp.187,198 & Skupniewicz, 2009;pp.49,53 & Mielczarek, 1993;pp.51,65). Most Greco-Roman sources containing portrayals of steed bardings allude to Parthian period and delineate them as scale caparisons¹⁵ yet even a short look to iconographic material makes it sensible to expect that there were a few sorts utilized and they can be arranged both in sequential request driving from times long past to early Middle Ages and demonstrating diverse impacts. Horse protection of the era can be generally divided into single-piece body coverings, more elaborated ones made of several elements (where one can find pieces somehow reflecting division to chamfron, crinet, peytral, flanchard and crupper used to describe mediaeval and renaissance European horse armor. It should be stated that first European description of fully armored knight (equusarmigerus, equuscoopertus) comes from 1187 and the barding described there consists of three parts: testeria protecting head, coleria protecting neck and cruperia protecting crupper. Side protection or flanchèr appeared later. That is basically analogical to classical Chinese construction of full horse armor. and fragmentary ones i.e. protecting only selected areas and being only combination of selected elements or the fragments of the former. Naturally this division is an artificial one and one piece covers might have been supplemented with additional components protecting the head or the neck. It seems that efficient leg protection for horses was never developed probably due to the fact that mounts' limbs were a relatively small and mobile target and perhaps it was a difficult design to make horse leg-armor (Farrokh, 2005;pp.18-19 & Dien, 2000;pp.23,59 & Robinson, 1967;pp.153-154 & Werner, 1932;p.38). Due to this fact Byzantine military authors prescribed for infantry receiving cavalry attack aiming at horses' legs (Maurice's Strategikon, 1984;p.10). The first group to discuss, are the coverings made of one element that covers entirely the mount's trunk whether supplemented by crinet and chamfron or not.

1.a.Caparisons

One-piece trunk coverings made of textile, felt or leather will constitute the first group of bardings this is the main difference in comparison with late mediaeval European models where caparisons were often made from separated pieces. Sasanian caparisons covered only the trunk of the horse, leaving the legs un- covered not dissimilar to modern horse blankets that are currently used as the protection from the elements and insects that do not limit horses movements (not to be mistaken with saddle blankets). The only visible difference to modern devices of that kind is that some of the latter are also fastened underbelly while Sasanian had the edges left loose. This type of barding is the part of horse protective kit most commonly depicted in works of art. It can be found on magnificent rock reliefs illustrating scenes of mounted combat (so-called jousting scenes) at Firusbad and Nakš-e-Rostam as well as the on so-called Shapur cameo currently held in Louvre (Pl. 3, 4, 5) (Farrokh, 2005;pp.16-19 & Gal von, 1990;pp.20,37 , & Robinson. 1967;p.22-23). What clearly indicates its military character is that it appears only in combat scenes or scenes depicting warriors armed for war while as it was said above there are depictions where warriors ride horses not protected at all. All of them cover the entire trunk of animal. On Nakš-e-Rostam reliefs NRM 5 and NRM7 one can clearly observe the fastening on the chest while the caparison of the "page's" horse from Firusbad bends slightly at front proving that the opening was there. The edges of the caparisons on NRM5b and NRM3 are decorated with small roundels or bells (Gal von, 1990;pp.30,35). Harness decorations depicted on Persepolis graffito may also intentionally depict lavishly decorated caparisons or alternatively a decoration in net pattern. Firusbad frieze proves that just like in European Middle Ages, heraldic signs were placed on them.

The fact that Persian horses were covered with leather caparisons was mentioned by Ammianus Marcellinus (XXIV.6.8), however such devices were already employed by Assyrian heavy horse, which may be additional evidence of the adoption of old Near Eastern traditions in the Sasanian culture. Although the protective value of caparison may raise some doubts it must be reminded that Maurice's Strategikon mentions felt protections for horses and wide, thick coats to give protection from arrows (Dennis, 1985;pp.12-14 & Skupniewicz, 2006;pp.151,174). During the battle of Niniveh padded, possibly felt, caparison cataphract aneurika protected Heraclius' horse Dorkon from the spear thrust of Persian infantryman (Theophanes, 1982;p.319). Also the protective value of goat fleece, cilicia were recognized as means of protecting the walls from missiles shot by siege engines (Skupniewicz, 2006;p.157). Despite the defensive significance of caparisons one must admit their communication role on the battlefield and undisputable decorative importance being part of psychological warfare. It is worth adding that textile/felt decorations were shown on Achaemenid Rhyta from Susa and Maku (Pl. 6) however they consist of separate, connected parts that do not constitute a horse-blanket covering entire trunk (Ghirshman, 1973;pp. 94,107).

Leather, felt and quilted textiles (or a combination of these) all gave decent protective value without burdening with too much weight, which allowed multiple repetitions of swift maneuvers, rapid attacks and retreats that were so difficult to tackle for Julian's army retreating from Ctesiphon. As testified by Ammianus Marcellinus the unexpected arrival of Sasanian heavy troops was as an important success factor as powerful strike. It may appear that unlike armored cavalry of Parthians of Chinese Sui dynasty Sasanian asavira relayed more on maneuverability and dynamics than on mere weight of the battering hit. On the battlefield full of missiles, speed made aiming difficult therefore limiting the efficiency of the shooting, hence properly prepared caparisons provided good compromise between protective values and leaving the reserve of dynamic stamina. Caparisons with family designs and colors might be a clear sign allowing easier identification in the combat and playing a role in command. The mounts presented as a gift to Maurice by Khusro II were all covered with satin caparisons decorated with gold and pearls. When Khusro I was in dire straits he was to be helped by the mysterious army all clad in green – from hooves to riders heads (Pourshariati, 2008;p.380). Last two examples prove that this mode of horse protection and decoration was employed virtually until the end of the dynasty. Inherited by the armies of Islam it was later adopted by European knights.

Iranian style horse warrior from Himayrite stone relief (Pl. 7) being an imitation of Sasanian rock reliefs shows the horse protected with some kind of armor (Yule. Robin, 2005/2006;p.261,271). On the body one can observe a diagonal mesh pattern which might be interpreted as quilted cover. The pattern covers only side of mounts body so it cannot be included to the caparisons as defined here.

It must be mentioned that in Mediaeval Iran there was used another type of barding made of layers of silk, felt and mail covered with brocade called bargostvan-ekanjin , associated with elephants, though there is no reason to doubt the same construction was used with horses (this point of view is strongly supported by iconography) (Melikian-Chirvani, 1988;Internet). Such an armor would look like textile, felt or leather caparison for the viewer. Placing the chainmail between the layers of organic material (textile or felt) is attested for Sarmatian and Sarmatian influenced Bosporan warriors (Goroncharovski, 2006;pp.445,452). though not for their mounts. The relation between Sarmatian and Sasanian military technique has been also highlighted, however such relations must be treated with high cautiousness. Therefore one might expect that caparisons of the horses depicted in the scenes of the mounted combat of uppermost social elite were indeed reinforced below the external layer of rich and expensive textile. Also felt or textile was a good protection for horse's skin as well as a separation of metal parts from the sweat. The undisputable military or even combat character of caparisons in iconography makes existence of the reinforcements plausible as if caparisons were of purely decorative character one would expect them in other scenes while in combat mere textile would not offer protection. Leather was the material mentioned by Ammianus Marcellinus but artworks suggest rather thin textile than stiff leather, this however might be mere stylization. Therefore, one might expect that layers of protective value were hidden below ornate textile(Bivar, 1972;pp.273,291).

Similar features of horse armor construction and form can be tracked in Chinese iconography. Art of Central Empire starting from post-Han era shows heavy cavalry horses covered with caparisons made of thick fabric (Pl. 8). Most often reinforced with hard material, probably metal affixed in scale or lamellar manner. Chudjakov has reconstructed Xianbei heavy horseman mounted on the horse covered with a thick caparison fastened on top of the neck thus suggesting nomadic origin of such device (Pl. 9) The important feature of these early mediaeval East Asian examples, which distinguishes them from Sasanian pieces, is the lack of fastening on horse's chest, which suggests that even if no stiff reinforcement is visible, they might have consisted of several parts placed to interlink and cover any gaps, or perhaps such devices were indeed fastened at the top. Looking from the practical point of view such a solution would suspend the weight of entire device on delicate fastening points. In the heat of the combat or during dynamic maneuvers such an appliance would be at risk of easily being worn. Also the top of the neck was later usually carefully protected so leaving bindings there would increase risk (Chudjakov, 2006;pp.43,78).

1.b.Scale barding

Greco-Roman authors described heavy cavalry warriors of the Parthian and Sasanian kingdoms as being protected by scale armor and riding mounts covered with scales affixed to textile base in form of caparisons. Reinforcing textile or felt covers with stiff, usually metal plates was probably the first and initially the most common construction of mount's protection of early or proto-cataphracts as can be seen on Khumbuz Tepe tile (Pl. 10) (Nikonorov, 1997;p.36). Two full sets of such armor were found in Dura Europos, one made of bronze and one of iron (Pl. 11) (James, 2004;pp.49,72 & Gall von, 1990;p.62 & Mielczarek, 1993;p.60 & Nicolle, 1996;p.17). They follow construction pattern known from caparisons they cover the body and are fastened on the horse's chest. The scales cover the whole surface except for the very top of the crupper. One element supplements the general idea one can deduce from the rock friezes and so called Shapur cameo large opening at the top being the place for the saddle. As the rock reliefs show elements of the "horned" saddle it is clear that the saddles were not covered by the caparison. On the other hand, neither girth is visible nor the lower edges of the caparisons seem to be bent. Therefore, analogical opening must have been employed there. As the sets of scale reinforced caparisons were found inside the fortress they must have belonged to Roman defenders (James, 2004;p.49,72). It seems however that they are the clear evidence of adaptation of the Eastern models by the Romans. Smaller pieces of lamellar coverings are interpreted as neck or chest protection (Ibid).

Scale form of barding was depicted on famous graffito from Dura Europos depicting a charging, heavily protected lancer (Pl. 12). Scales of the horse's armor in this crude drawing cover the entire animal except for legs. One cannot judge the way such a cover was constructed, however diagonal line by the neck may suggest the edge of the reinforced caparison dividing it from scale crinet. According to Pugacenkova's view (later accepted by Nikonorov) mounted adversaries of Romans wearing tight scale armors riding horses in similar covers shown on Trajan's column would not be Sarmatians but Parthians. This highly stylized representation cannot lead to any responsible reconstruction and was made by artisans whose knowledge of opponents equipment based on oral testimonies (Gall von, 1990;p.77 & James, 2004;pp.42,46 & Mielczarek ,1993;p.119 & Nicolle, 1996;p.15 & Skupniewicz, 2006;p.165 & Wilcox, 2006;p.7 & Woźniak, 2010;pp.237,240).

The bardings shown in Khalchayan (Pl. 13) and on late Parthian Tang e Sarvak frieze (Pl. 14) could be caparisons reinforced with longitudinal, vertically positioned, scales but these could also represent an early phase of development of an elaborated lamellar horse armor made of several separate pieces covering horse's trunk. Tang e Sarvak barding seems to have a plain rectangular top on the crupper, which corresponds with one of the Dura horse armors. Such a solution would allow versatile sides covered and still provide some flexibility to make the wearing the mount easier while leaving the relatively unimportant parts more lightly armored (Abdullaev, 1995;pp.151,162 & Abdullaev, 1995a;pp.163,180 & Gall von, 1990;pp.48,49; Mielczarek, 1993;pp.35,36, 130; Nikonorov, 1994;pp.11-12).

The presence of chamfrons and neck protection surely indicates employment of separate pieces for the head and the neck but that was a relatively common practice of supplementing protection given by the reinforced caparisons as was illustrated above. Also no construction details are shown so it is unknown how the pieces were affixed.

As mentioned above Chinese and Korean iconography of the era are a rich source of analogies for caparisons reinforced with plates of stiff material in the form of scales or lamellae, perhaps metal however hardened and lacquered leather is attested on both edges of Eurasi (Chudjakov, 2006;pp.43,71 & Dien, 1981/82;pp.5,66 & Dien, 2000;pp.23,59). None of the depicted East Asian bardings has the opening on the mount's front. However, in most cases armored peytrals are employed perhaps to cover the chest and fill the gap in coverage. In Late Han example entire barding is limited to quilted apron on mount's chest. Similarly Old Turkic bardings reconstructed by Gorbunov (Pl. 15) in most cases consist of reinforced caparison supplemented with peytrals, crinets and chamfrons. Chinese and Korean examples are usually longer than Iranian ones or having at least a longer front apron (Pl. 16). This might have been the attempt to protect the horse from agile infantry warriors who were able to rip mount's belly as attested in Plutarchos' description of the battle of Carrhae and Heliodorus' Aethiopia. None of these is really fastened at horse's chest, therefore this might have been protection from infantry missiles. It should be also added that "traditional" i.e. high mediaeval Chinese (that can be found in Ming military manuals but very likely transit older material) barding consisted of five separate parts none of them covering entire trunk of the horse (Pl. 17); none being "reinforced" caparison (Robinson. 1967;p.22-23 & Werner, 1932;p.38). This could lead to conclusion that covered with scales or lamellae "horse-blankets" evolved into multi-piece sets, first by attempt to fill the gaps and add protection to versatile fragments of the body by adding supplementary elements. After armor built on reinforced caparisons overburdened the animals and stiff material vastly limited maneuverability its idea was given up being replaced by multi-element bardings.

On Sogdian silver plate from Anikovskoe now exhibited in Ermitage St. Petersburg (Pl. 18), one of the riders besieging the fortress has the horse wearing a horse blanket covered with rows of rectangular plates. Also a line curving up towards the top divides it from the crinet. What is strange, however, is that the harness traps are visible on alleged reinforced caparison. Most likely it is the attempt of reconciliation between existing iconographic model and a required dose of realism in the environment where bardings were not used at the time. A similar rectangular pattern is shown on Korean examples (Nicolle, 1996;p.17).

1.c.Chainmail horse armor

There is no firm evidence that horse armor made of interwoven metal rings was used by Sasanian warriors. Such form of horse protection has been confirmed only in ninth century and the preference to use lamellar protection for horses has been pointed (Wita, 1977;pp.77-78). However Melikian-Chirvani suggested the existence of chain mail bardings at least from the early Sasanian times. His opinion is argued with numerous errors and misconceptions hence cannot be found fully reliable however it quotes alleged archaeological finds. As mentioned before Pehlevi terms do not provide any clues towards the material and construction of horse armor, however chain mail adopted from Rome was gaining popularity in Iran during the Sasanian era and it is highly probable that it was used for horse armor manufacturing. A crude stucco plaque from British Museum (Pl. 19) also shows a horse with crupper covered with material that could be interpreted as a chain mail or quilted textile (Nicolle, 1996;p.17). It is possible that mesh pattern on horse's crupper on some crude graffitos from Dura Europos, depicting armored archers (Pl. 21, 21), may in fact represent chain mail protection of the horse (James, 2004;pp.49,72). On one hand it seems that such mesh pattern in later Byzantine painting most likely meant chainmail but on the other hand on Persepolis graffito, as said before, some horses are decorated with a slightly similar pattern which in that situation represents either a decorative caparison or a richly adorned net. The lack of protection on the front of the first ride raises doubt as to whether these devices could indeed be a part of the armor. A horse archer employing a tactic of Parthian shot might indeed require protection from the back though also from the front. It must be mentioned however, that scale

armor covering just the back and the flanks of the horse was depicted in the 16th century edition of *Hamsa Navoi*, painted in Bukhara (Gall von, 1990;p.62). The very nature of chain mail would allow following long tradition of caparisoned mounts and was well suited to replace the textile; however, the fragmentary pieces of protection were also possible to be made from this material. Also, as it was stated above, the mail could be used between the layers of organic material for both decorative and practical reasons.

The nature of spahbedan seals impressions does not provide undisputable data on the construction of the arms and armor depicted and it must be treated with great cautiousness and interpreted only through analogy to more defined material. However they represent some three or four ways of depicting horse armor (Mielczarek, 1993;pp.67,73 & Robinson, 1967;pp.153-154). On the seals of Weh-Šabuhr (Pl. 22) and Gorgon (Pl. 23) one may observe small circles covering almost the entire body of the horses, which may be seen as an attempt to show the rings of the chainmail, however these could just as well be decorations of the caparisons (Gyselen, 2010;p.110). Two seal impressions of Pirag (Pl. 24) and one of Sed-hoš (Pl. 25) show the bardings regularly covered with regularly placed small holes that might be perceived as a simplified depiction of a chainmail, not dissimilar to the way of showing mail on some Roman examples quoted by Bivar (Bivar, 1972;pp.273,291). Again these could be the rows of small lamellae or even the heads of decorative nails joining the plates covered by textile or leather. The nature of these objects does not allow certainty. All seals quoted above have a diagonal line by the low neck of the horse, which would normally be a division between armored caparison and a crinet. Both Taq-e-Bostan (Pl. 26) rider and a vast majority of Chinese and Korean examples of the era (Pl. 27) show the crinet and peytral rather as homogenous single piece (Skupniewicz, 2006;p.151,172 & Robinson, 1967;pp.153,154 & Gall von, 1990;p.62). This was later changed to have the neckpiece clearly separated from the chest protection. Although that is not in line with Gorbunov's reconstruction (Pl. 15), the petrolyphic material he is using is rather supporting the idea of single-piece apron covering the neck and the chest of the steed. Also the seal of Sed-hoš (Pl. 25) show the double line at the front of the steed that is definitely not a contour so may represent the front opening of the chain mail or the caparison (Ilyasov, 2003;pp.271,273).

Aforementioned seals of Weh-Šabuhr (Pl. 22), Gorgon (Pl. 23), Pirag (Pl. 24) and Sed-hoš (Pl. 25) contain fragments on top of the crupper that seem separate from the "caparison" pattern. In case of Pirag's and Sed-hoš's seals (Pl. 24, 25) the field limited by the curved line is covered by a different pattern suggesting a different type of protective layer, maybe additional to the alleged chain mail caparison. This might be the way of showing an additional part covering the vulnerable top part of reinforced caparison (presented with Dura Europos (Pl. 11) scale bardings and Tang e Sarvak (Pl. 14) frieze) was protected. Perhaps the Dura Europos graffiti with armored archers (Pl. 20, 21) and stucco panel from the British Museum (Pl. 19) where cruppers are the protected areas of the horses' bodies should be recalled here. Alternatively, these lines may represent a tack element. Surely this is not the back strap as such would be covered by the caparison. On Nakš-e-Rostam friezes (Pl. 4) and Shapur cameo (Pl. 5) such stripes seem to affix the tassels on the top of the crupper. Such a tassel crowning the crupper is depicted in Sasanian art as always accompanied by two side-tassels. The device came to Iran from the Steppe zone through Bactria where it was a single piece (Ibid,pp.283,288). What is more important it does not seem to appear on non-combat depictions with an exception of dipinto from Dura Europos showing Roman officer sacrificing to god Iarhibol with a rider in Iranian dress on the left part of the scene (James, 2004;pp.42,46). It must be mentioned here that the rider seems to hold a shield which definitely is a part of the combat equipment. Both triumphal and investiture friezes as well as hunting scenes show only two tassels hanging on the sides of the mount. The single tassel or more often a plume crowning the crupper can be noted in Korean Koguryo and Chinese of pre-Tang and Tang bardings that are in most cases fitted on separate armored base (Pl. 34) (Robinson, 1967;pp.153-154). It is likely that the Central Asia was the source of such decoration which was later locally developed by Iranian and Chinese civilizations. The discussed seals do not show a raised tassel or plume and such regalia would not be omitted even despite limited space, however the side tassels in this situation are not affixed to the saddle but seem to hang from the strap being discussed currently. The chain mail barding was much later successfully used by Moghul heavy cavalry and European knight (Ibid). Caparisons, scale reinforced caparisons and possible mail armor clearly seem to constitute one constructional model of one piece covers for horse's trunk fastened at the mount's chest. Added protection covering horses' heads, necks and fronts closes this type to multi-element bardings and consequently makes the division more blurred however the trunk protection is the main factor to constitute the typology.

1. Bardings composed of multiple elements and fragmentary bardings covering a part of the mount

This is the group of horse armor which could be also named as lamellar-laminar bardings defined by the mode of construction of the protective layer, as most of the examples present a lamellar type with a few that could be interpreted as laminar (although latter possibility seems less plausible). As the mentioned example of late Han armor shows, together with the reconstructions of Scythian bardings and horse armor from metopes of the temple of Athena from Pergamon and preserved horse peytral from Magna Graecia and probably a lamellar peytral of the horse from Bosporan Athenaios stele, horse protection made of a few separate elements was very popular well before Sasanian era in different parts of Eurasia. This general conclusion might not apply for Sasanian era itself as the reinforced caparisons seemed more popular at least at the beginning of the dynastic period (Anderson, 2011;pp.34,38 & Mielczarek, 1993;pp.67,73 & Sekunda, 1992;pp.21-22).

2.a.Full lamellar/laminar barding

As mentioned above the earliest iconographical examples of lamellar horse armor in Greater Iran can be identified on the sculpture of Khalchayan (Pl. 13) and late Parthian frieze Tang e Sarvak (Pl. 14) (Abdullaev, 1995;pp.151,162 & Abdullaev, 1995a;pp.163,180 & Wilcox, 2006;p.7). Although they seem to represent rather a type of reinforced caparison, the ropes or thongs affixing the lamellae are clearly visible and as the size of the plates is different it is also possible that the barding was made of attachable elements. The fact remains however that correlation between these two objects suggest strongly the import of the technology or items into Iran from the Steppe peoples probably Sakas pushed by Yuezhi fleeing from expanding Xiong Nu empire (Gal von, 1990;pp.20,37).

The bardings consisting of several elements are represented on seal impressions of spahbedan Cihir-Burzen (Pl. 28), Dad-Burz-Mihr (Pl. 29), two seals of Wahram (Pl. 30), two seals of Wistaxm (Pl. 31) and a seal of Ohrmazd Wuzurg (Pl. 32) (Gyselen, 2010;p.110). That is clearly marked by a different pattern of the lines representing the elements of the armor. The lines covering the surface of the trunk in cases of Cihir-Burzen, Dad-Burz-Mihr, one of Wahram, Wistaxm and Ohrmazd Wuzurg do not provide enough details to figure whether depicted armor was a banded – laminar one or the lines represent the rows of lamellae with weathered details. It should be pointed here that laminar barding is attested for 5-7th century China (Pl. 33) and mediaeval Persia. Also old Tukic bardings were reconstructed by Chudjakov as laminar rather than lamellar– the difference in interpretation is obvious as the petroglyphic material is unclear. The latter option is much more plausible as on the other seal of Wahram one can notice small marks on the bands strongly suggesting the rows of plates were affixed one to the other. Also a vast majority of comparable material is definitely of the lamellar type (Robinson. 1967;pp.22-23).

The closest analogies for the cruppers covered with curved rows of lamellae come from 5-7th century China where they are most often supplemented with one piece neck and chest protection. Such curved lamellae rows appear on two old Turkish barding types distinguished by Gorbunov, however when considering the petroglyphic material he used, the analogy is even more clear as his reconstruction contains horizontal rows creating a curved closing of the crupper while in fact entire rows are shown curved concentrically (Robinson, 1967;pp.153,154).

Very similar banded construction can be found as well however it is not clear what kind of material was used for such cover. It would need to be stiff enough to require cutting in bands and flexible and light enough to allow the mount being dressed in it. Stitched layers of leather would be the most plausible option although perhaps the leather was not hardened. As was mentioned above one can find pieces of similar kind in late mediaeval Maveranahr (Mielczarek, 1998;pp.101,106).

Seals of the spahbedan Wahram (Pl. 30), Wistaxm (Pl. 31) and probably Cihir-Burzen (Pl. 28) (where it is less clear due to the state of preservation) show an x-shaped pattern on the part of the barding covering the horse's chest, which might suggest that this was tied front of the armored caparison (Gyselen, 2010;p.118). Alternatively, it could be a decorative element. In the former case it would be very surprising to find full crupper protection and no apron covering the weaker area of reinforced horse-blanket opening. It is however possible that the barding consisted of a front piece made up of two pieces connected in the middle of the chest and crupper. Despite the time difference, one might quote the Achaemenid horse-tack from the rhyta from Maku and Susa where an adorned apron is one of the decorative pieces. In both cases this, apparently single piece, element is visually divided into two parts. In 15-16th century Hamsa Navoi from Herat an armored apron was shown consisting of parts joining at the mid chest (Ghirshman, 1973;pp. 94,107). Also as was discussed earlier, the seal of Sed-hoš seems to have the front opening clearly marked.

2.b.Fragmentary barding

As it was said above separate peytrals were used as the horse protection often being supplemented by crinets. Often the single pieces covering neck and chest were used probably granting protection to the trunk armor formed as the reinforced caparison. It seems more plausible that the peytrals were covered by decorated textile or padded material. Felt covers of possibly Avarian origin of the Byzantine warriors were attested by Strategikon and a felt piece saved Heraclius' horse from a Persian spear. Also mediaeval Tibetan and Mongol bardings often had peytrals of reinforced leather and textile straps (Dennis, 1985;pp.12-14).

The lamellar armor of the mount of the armored rider in great aivan at Taq-e-Bostan (Pl. 26) covers only the front of the animal consisting of richly decorated chamfron, and an apron combining the functions of the crinet and knee reaching peytral. Such construction clearly shows the association with Steppe (especially Old Turkish) and Chinese (also inspired by Steppe dwellers) horse armor (Chudjakov, 2006;pp.43,78). It should be recalled here that Gorbunov (Pl. 15) in his reconstruction of Old Turkish heavy cavalry has noted a varied level of coverage of Turkic horses as he concluded from petroglyphs (Bivar, 1972;pp.273,291). Although some of Gorbunov's reconstructions look remarkably similar to the ones from spahbedan Cihir-Burzen, Dad-Burz-Mihr, Wahram and Wistaxm seals (Pl. 28-32) it must be borne in mind that his work is based on rather unclear iconographic material which itself depends on extensive Chinese material. None of Turkic bardings as reconstructed by Gorbunov reached below horses' knees however as was mentioned above Chinese bardings had the front parts longer relatively often. From the European source referring to a Chinese book from the Qing times we

know a lamellar armor covering only the front of the animal (Pl. 34) analogical to Taq-e-Bostan rider (Pl. 26), with the rear of the body covered by the caparison (Robinson, 1967;p.153-154).

It must be noted here that the long single-piece front cover combining the functions of the extended peytral and crinet may be observed on one of the Dura Europos graffittos (Pl.21) mentioned above. The diagonal mesh pattern covering it makes it unlikely to represent lamellar cover though this cannot be excluded in such a crude form. It is not impossible that structural solutions developed by the Persians for mail barding were later adopted in Central Asia and forwarded East to be implemented to lamellar form. Also diagonal lines on the neck of the Himayrite warrior mentioned above could represent quilted or laminar protection in the way not dissimilar to some of the petroglyphs used by Gorbunov .It should be mentioned that some of Gorbunov's reconstructions emphasize protection of the horse's neck. Alternatively, these could be decorative necklaces. Although the latter option seems less plausible (Yule. Robin, 2005/2006;pp.261,271).

Conclusion. As has been shown above, Sasanian horse armor of the first centuries consisted of caparisons covering the horse's trunk being fastened at the mount's chest with possible reinforcements of different kind. The very nature of iconographic sources (size and stylization) and the state of preservation does not always allow definite answers; however, these gaps can be to some extent filled with balanced analogies from other cultures. The knowledge of early Sasanian bardings can be supplemented mainly by Greco-Roman literary material while from 6th century onwards one may observe an increasing role of Turkic and Chinese analogies. This phenomenon was caused by two factors:

- 1) As was convincingly proposed by Chudjakov, from the settlement of Xianbei in Chinese territories the development of horse tack and armor speeded up rapidly in that area resulting in the creation of the stirrups and the evolution of barding. Technology provided by settled Han population supplied nomads' demand for elaborate arms and armor. That resulted in a growing demand for new weapons and eventually creating iron processing area in Altai led by Tukyue.
- 2) The vastness of the First Turkic kaganate allowed almost immediate exchange of ideas on the area unimaginable until that time. Even if Gumilev is right suggesting that the silk was the blood in the veins of this system, the weapons and weaponry designs were transmitted quicker than ever before. The 6th century faced the first Turkic-Persian alliance against Hephtalites and then great conflict between both states resulting in Bahram Chobin's uprising.

One could find following phases of barding development in ancient and early mediaeval Iran:

- 1) Late Achaemenid and when armored cavalry required some protection for horses after employing shock tactics and subsequent close combat.
- 2) Mid Parthian, influenced by invasions of the steppe dwellers initiated by Xiong Nu expansion. Developed locally later.
- 3) Late Sasanian resulting from contacts with Turkic warriors who transmitted some Eastern military technologies to Iran. The turkization of war equipment could be observed with examples of sword fittings (changing from scabbard slide to P-shaped), archery equipment (hour-glass quivers) and probably some types of helmets. Current paper adds new barding types on top of these. It has been suggested already by Laufer that the idea of heavy cavalry reached China from Iran. Development of "Chinese cataphracts" was to be induced by Iranians through Xinjiang oasis cities. Such a simplified view needs to be revised.
 - 1) There is a huge time difference between the appearance of heavy armored lancers in Persia and China. Recently it has been proposed by Olbrycht that the creation of such troops should be credited already to Darius III. Mielczarek and other scholars believe that heavy cavalry was a traditional Parthian/Aparni force that was adopted by the Seleukids through the contacts with the former. It might be suggested that this type of armored horse units was adopted by Arsakids from Sakas in 2nd cent. BC. Thus the time span is from 4th century BC to 2nd century BC. Armored cavalry riding armored horses (whatever the definition of the term cataphract is it is not enough to apply it here) in China it appears in late Han that is 3rd century AD but the true development can only be observed after the fall of the dynasty. Also the question is whether these early armored horsemen were already lancers as later examples prove that Chinese tradition managed to develop different types of weapons for the heavy horsemen. In both cases it seems that creation of the heavy horse units was preceded by development of saddles that allowed rider stability and in case of China stirrups.
 - 2) Although the creation of heavy horse units in China and Iran took place in different times and were influenced by different nations it should be emphasized that it was an intense period of contacts between settled population and nomads that led to the development of heavy horse. Independent creating of such formations in places so distant both geographically and chronologically proves that this effective force was created as a result of cultural exchange and technological development. The idea that Iranian heavy horsemen were merely the nomadic reply to Macedonian phalanx should be refuted. The range of horsemen's lance would not match the infantry pike however

armored cavalry would be a valuable weapon against other cavalry, especially horse-archers who in turn were the grave danger for infantry. It should be mentioned that in Greco-Roman records heavy cavalry is rarely successful against disciplined infantry. Also Chinese late Han armies did not have phalanxes of pikemen so the adoption of armored lancers must not have been a cavalry reply to such a formation.

The evolution of Sasanian barding is therefore one of the fascinating traits of cultural exchange in Eurasia and a note on the margin of the consideration of conservatism and adaptivity of Sasanian culture.

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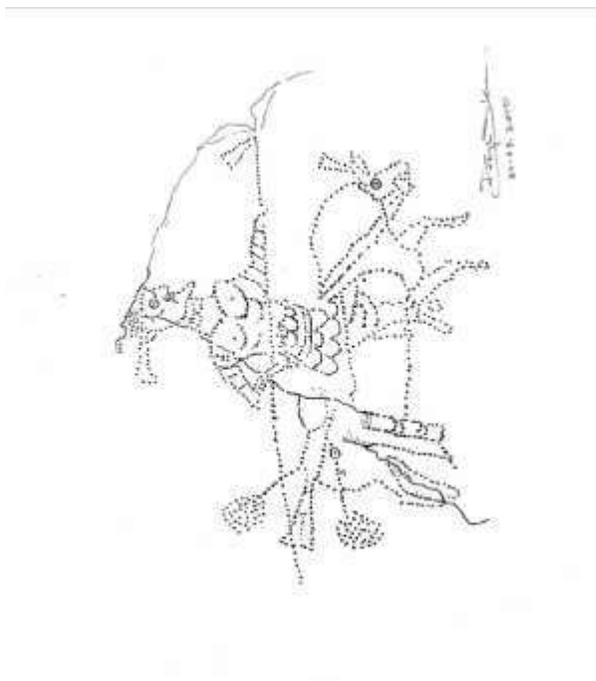
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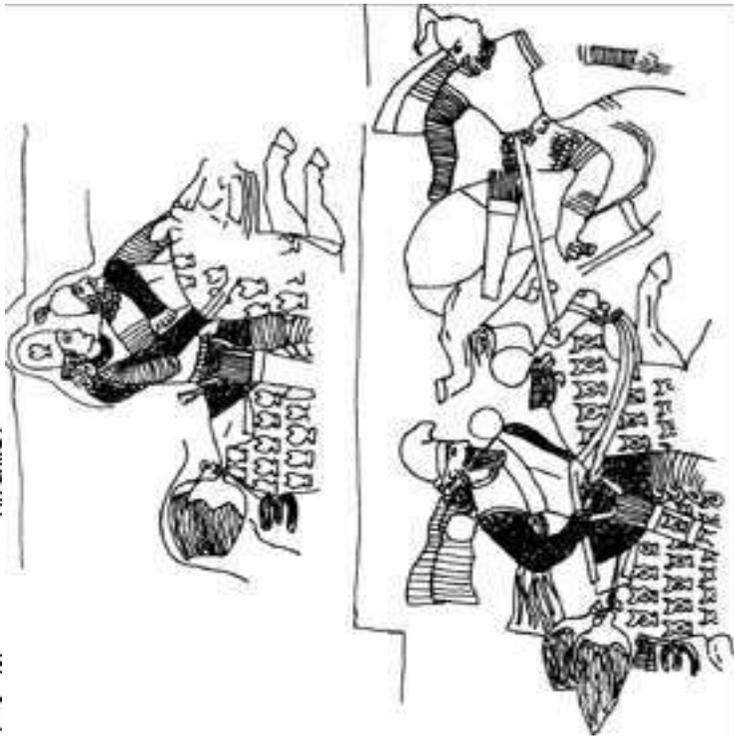
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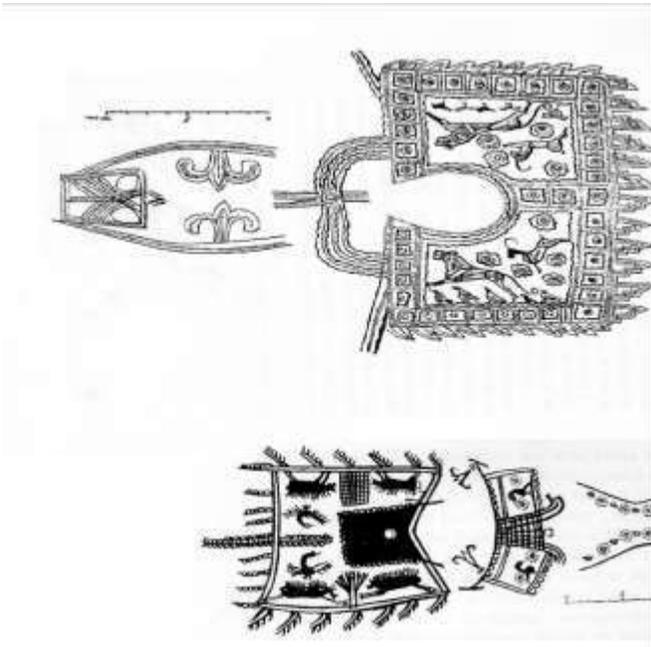
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PL 3. Firusbad fizee

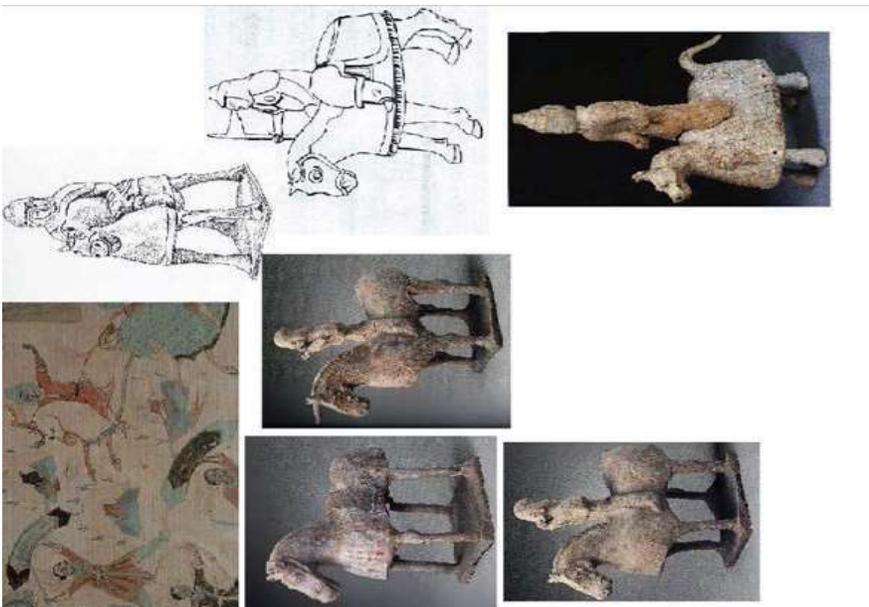


PL 4. Naks e Rostam

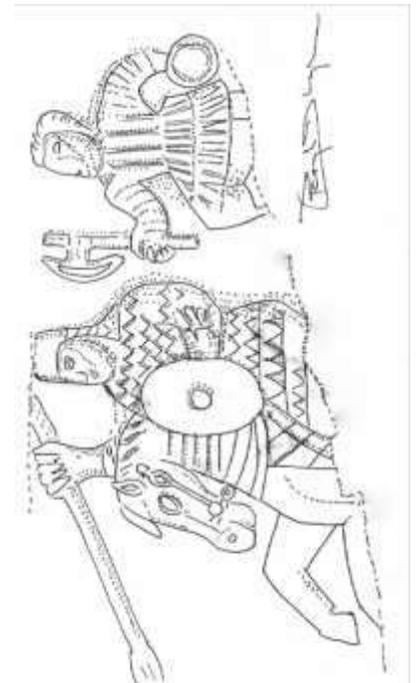


PL 5. Shapur cameo

Pl. 6. Rhyta from Susa and Maku



Pl. 7. Himayrite slab relief - Drawn Skupniewicz





Pl. 8. Caparisoned Chinese horses pre-Tang/Tang era

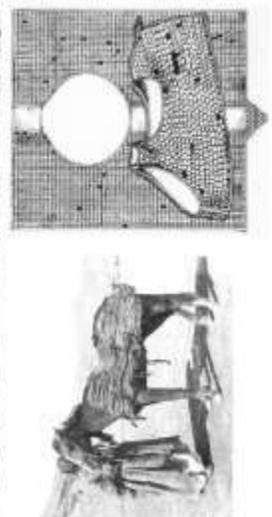
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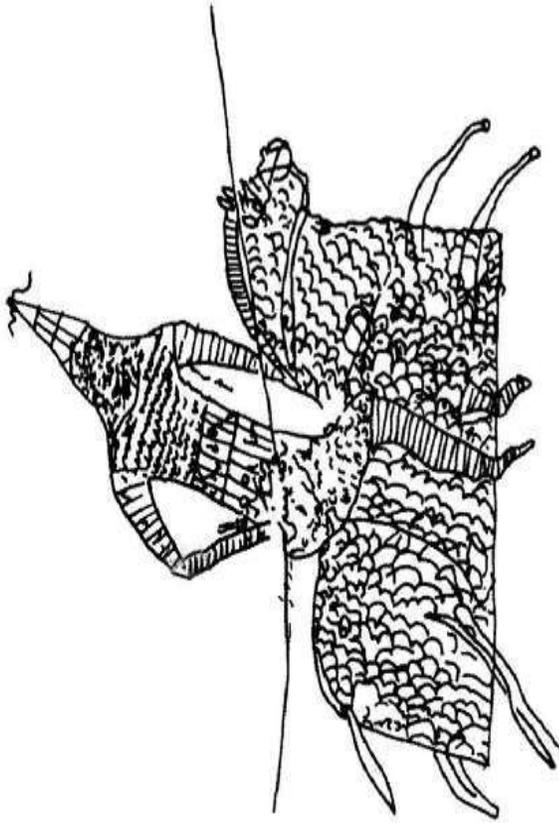
Pl. 10. Khumbuz Tepe terracotta slab showing heavy armored lancer



Pl. 11. Bardings from Dura Europos



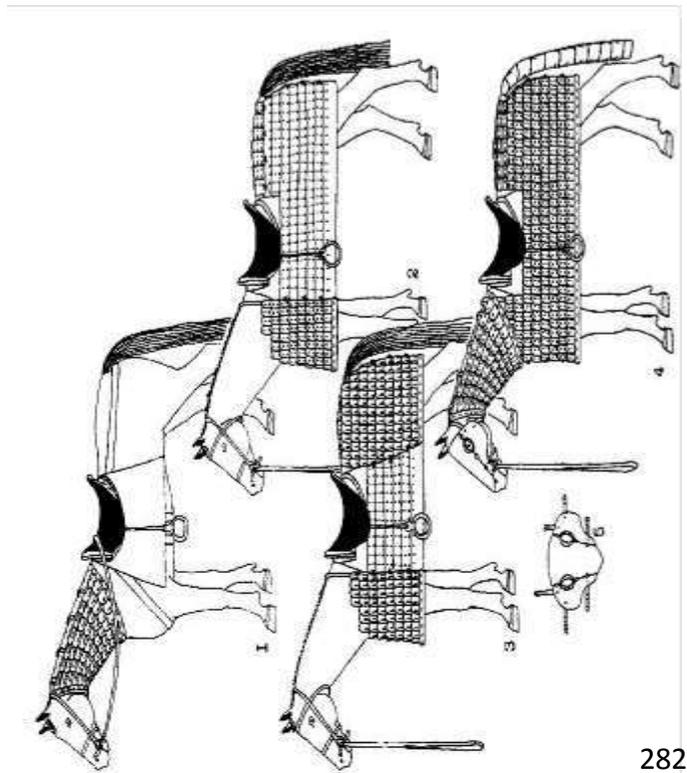
Pl. 12. Grafitto from Dura Europos

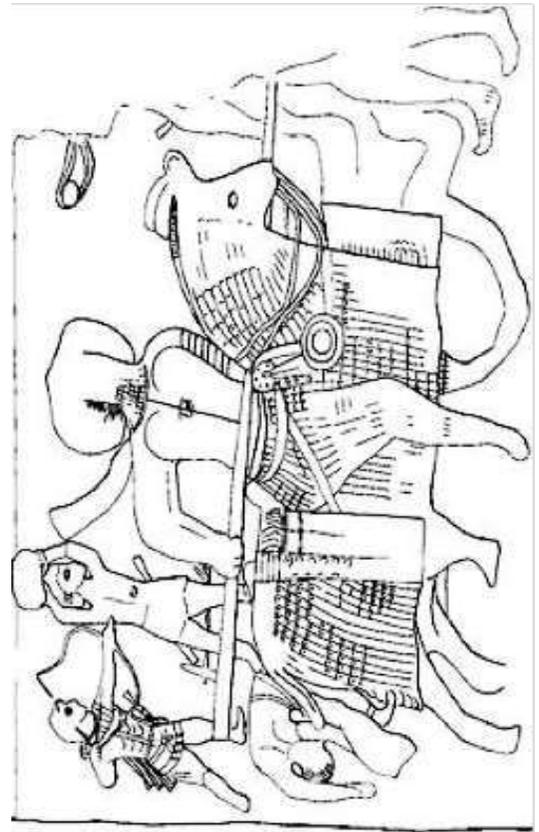


Pl. 13. Barding from Khalchayan frieze

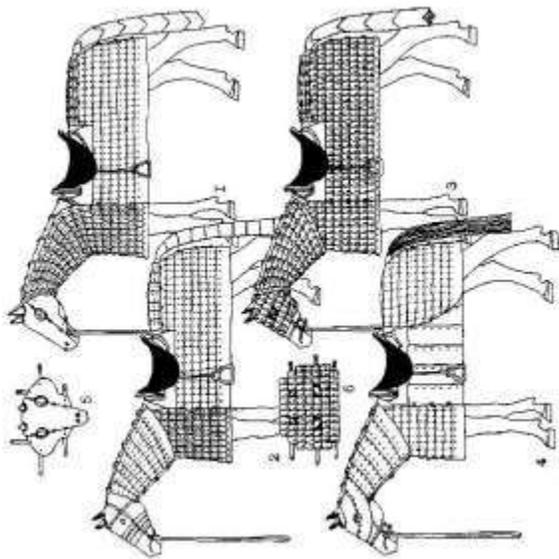


Pl. 14. Tang e Sarvak late Parthian frieze.

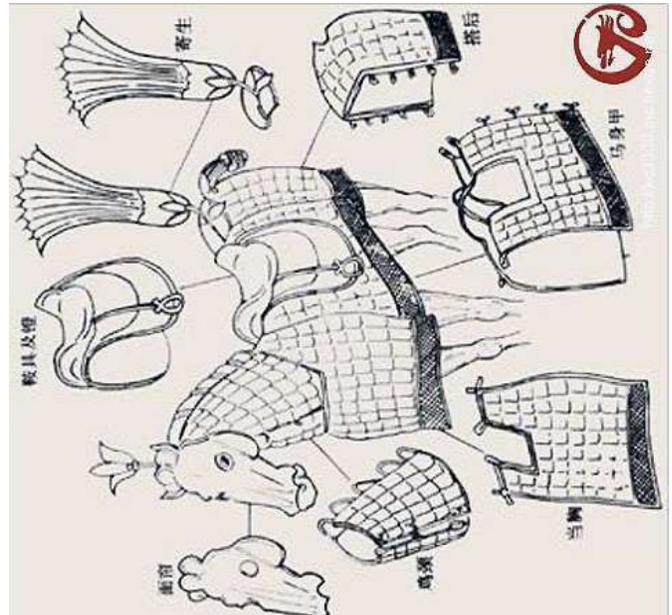




Pl. 14. Tang e Sarvak late Parthian frieze. Pl. 15. Gorbunov's reconstruction of old Turkic horse armor



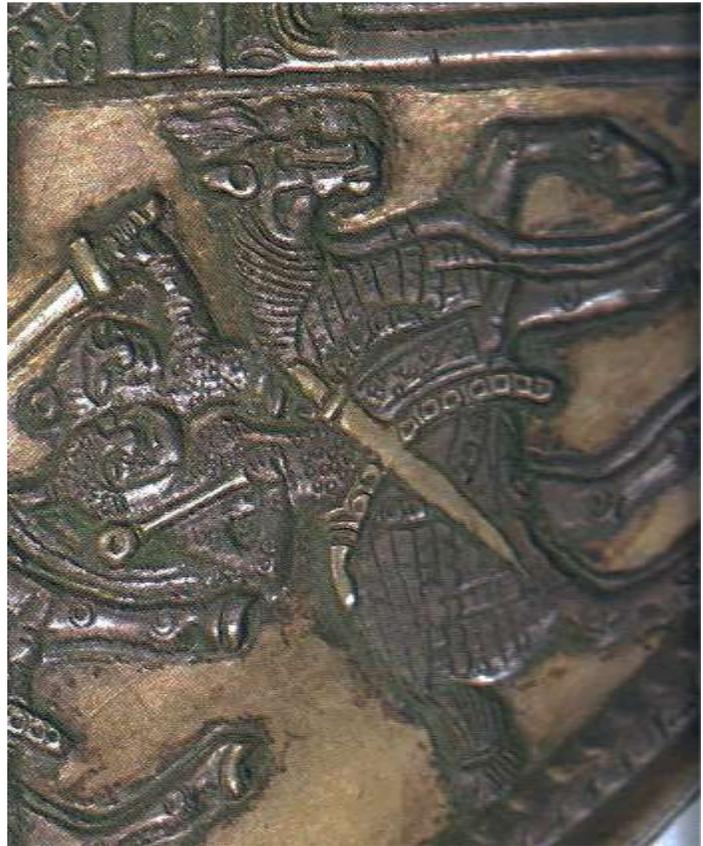
Pl. 16. Examples of Chinese peytrals reaching Pl. 17



Construction of classical Sung-Yuan 5-horses'



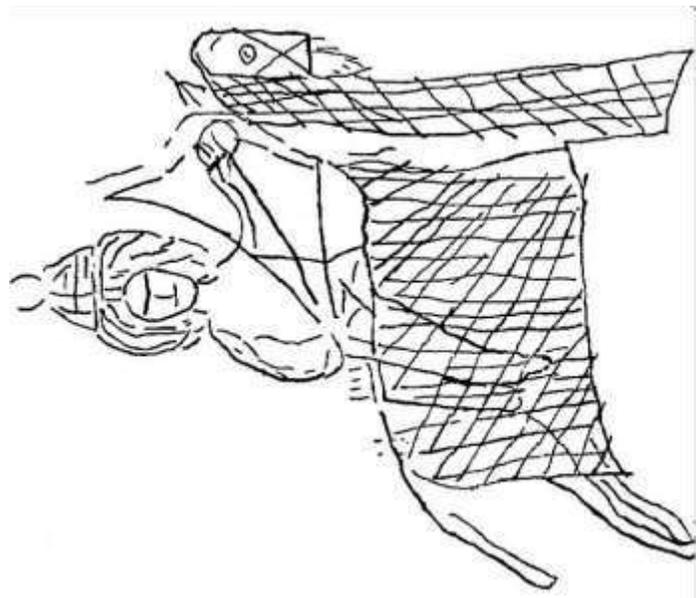
Pl. 18. Detail from Anikovskoe plate
Terracotta from British Museum showing barded horse



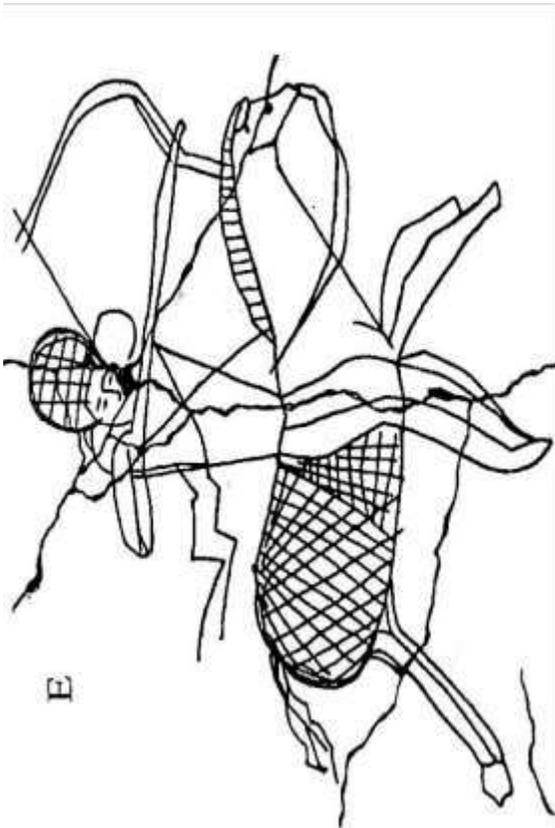
Pl. 19.



Pl. 20. Dura Europos armored archer mounted



Pl. 21. Dura Europos armored archer mounted on barded horse on barded horse with long peytral(?)



Pl. 21. Dura Europos armored archer mounted on barded horse on barded horse with long peytral(?)



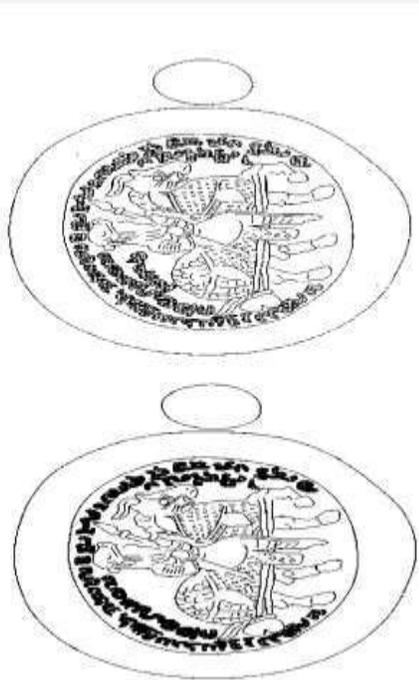
Pl. 22. Seal impression of Weh-Šabuhr



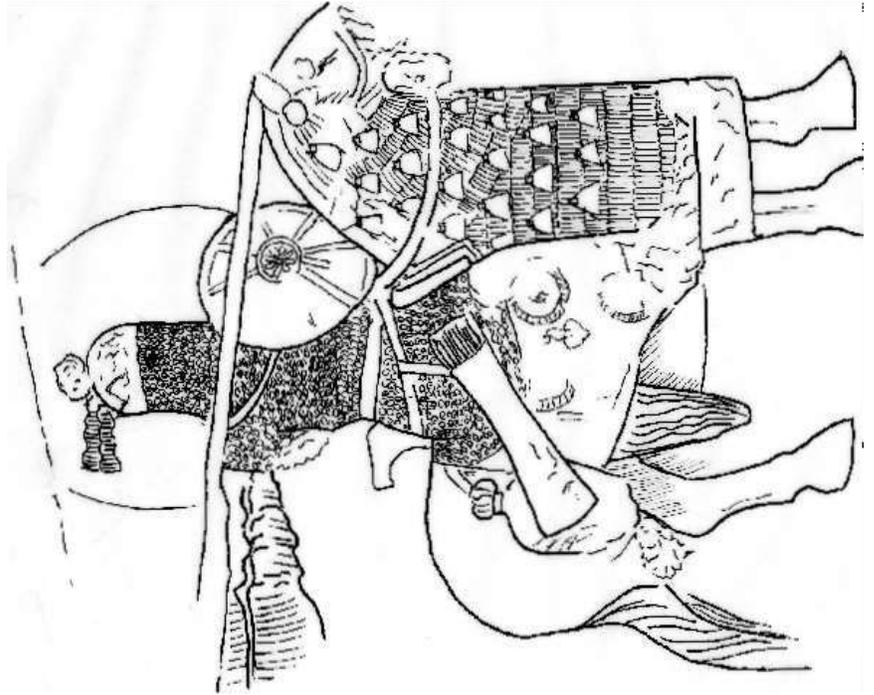
Pl. 23. Seal impression of GorGon
 24. Seal impressions of Sēdhōš



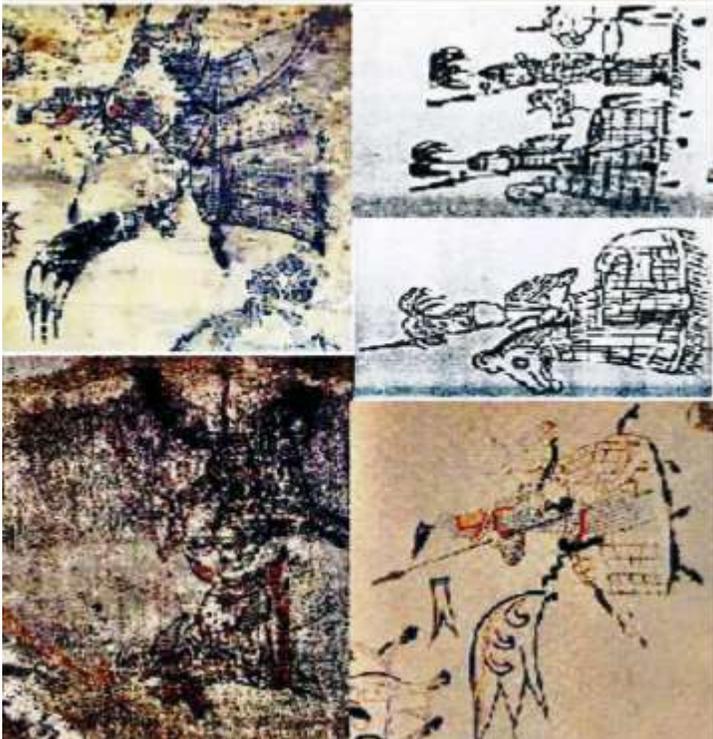
Pl.



Pl. 25. Seal impressions of Pirag



Pl. 26. Sculpture of the armored rider in Taq-e-Bostan



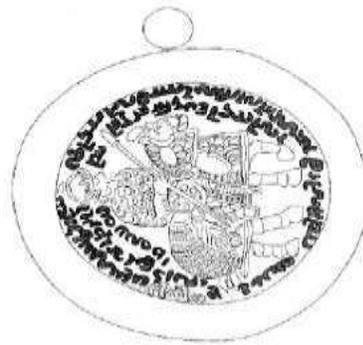
Pl. 27. Examples of Chinese bardings of the era combining crinet with peytral



Pl. 28. Seal impression of Cih-Burzen



Pl. 29. Seal impression of Dad-Burz-Mihr



Pl. 30. Seal impressions of Wahram



Pl. 31 Seal impressions of Wistaxm



Pl. 32. Seal impression of Ohrmazd Wuzurg





Pl. 33. Examples of Chinese laminar barding pre-Tang



Pl.34. Qing lamellar horse barding with combined one-piece crinet and peytral