

Función depuradora de los humedales I: una revisión bibliográfica sobre el papel de los macrófitos

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ABSTRACT

The artefacts found at numerous archaeological sites dated to the Bronze Age and Early Iron Age in the central parts of the Balkan Peninsula represent birds in 90% of all figurations, and approximately 90% of these are water birds, predominately ducks. These findings reveal long lasting interaction between the people and the wetland ecosystems on the Balkan Peninsula, symbolically and factually expressed through the numerous bird-chariots, bird-vases, bird-rattles, bird-pendants, bird-fibulae, etc. Reported here are the results of an attempt to identify particular birds in items that till now were observed only as objects of prehistoric art. A research approach, recently named ornitho-archaeology, may be considered complementary to the study of osteological bird remnants. Waterfowl, especially Anatinae ducks, obviously hold a dominant position among the motifs of the objects analysed. It seems to be a broadly distributed and important cult, whose point and individual rules are not known to us. A distant counterpart may be found within the monumental reliefs and paintings on the walls of Egyptian temples and tombs. The cult of ducks may have been the natural choice of peaceful human wetland dwellers living in habitations on water or close to it. This holds even today for settlements in deltas.

RESUMEN

En los artefactos encontrados en numerosos sitios arqueológicos de la Edad del Bronce y Edad del Hierro temprana en el centro de la Península Balcánica, aparecen aves en el 90% del total de representaciones figurativas, y aproximadamente el 90% de estas aves son acuáticas, predominantemente anátidas. Estos hallazgos revelan una antigua y duradera interacción entre el hombre y los ecosistemas de humedal en la Península, expresada simbólicamente y de hecho mediante numerosos carros, vasijas, sonajeros, pendientes y fíbulas en forma de pájaro. Exponemos aquí los resultados de un intento de identificar tipos particulares de ave en objetos que, hasta ahora, fueron observados sólo como piezas de arte prehistórico. Esta aproximación, recientemente denominada ornitoarqueología, puede considerarse complementaria del estudio de los restos óseos de aves. Las aves acuáticas, especialmente las anátidas, obviamente mantienen una posición dominante entre los motivos de los objetos analizados. Parece existir un importante y ampliamente distribuido culto cuyos punto focal y reglas individuales nos son desconocidos. Un caso equivalente y distante puede encontrarse en los relieves y pinturas monumentales en los muros de tumbas y templos egipcios. El culto de los patos puede haber sido la elección natural de los pacíficos habitantes de los humedales que vivían en moradas sobre o en medio del agua. Esto podría darse incluso hoy día en asentamientos en deltas.

INTRODUCTION

One of the best-studied ancient civilisations that developed on water resources was that of the Egyptians. It is assumed that many are familiar with the monumental reliefs and paintings on the walls of Egyptian temples and tombs. There, numerous examples of wetland plants and animals especially waterfowl, may be seen (HULIHAN & GOODMAN, 1986). Moreover, at least 14 different wetland birds have a distinct meaning in hieroglyph signs (GARDINER, 1976). Most fascinating are the reliefs on the tomb of Ti in Sakkara, from the 24th Century BC (ÉPRON et al. 1939; WILD, 1953), where about

twenty species of wetland birds are represented, many of which may be identified with great accuracy (Figure 1) a breeding colony in a papyrus grove. Some reliefs even present a very interesting "comic strip" or "wall manual" on water-birds management, including clap-net construction, stretching and use (Figure 2), and handling with captured birds, such as keeping (Figure 3), tending, feeding, (Figure 4), and ritual offering (Figure 5).

However, there is an almost unknown fact that, in approximately the same epoch, during the Bronze Age and Early Iron Age on the Balkan Peninsula, far from the shiny civilisation of Egypt, there were other rites

strongly based on birds, especially waterfowl. The artefacts found at numerous archaeological sites in the central parts of the Balkans represent birds in 90% of all figurations, and approximately 90% of these are water birds, predominately ducks. While ancient Egyptian waterfowl rites are explained sequence by sequence and described in details, the Balkan contemporaries are traced only fragmentarily, which does not mean that they were necessarily less sophisticated. The regularity of occurrence of ornithomorphic objects speaks in favour of the hypothesis that rites existed among wetland dwellers in which water birds had a very important role and significance. In any

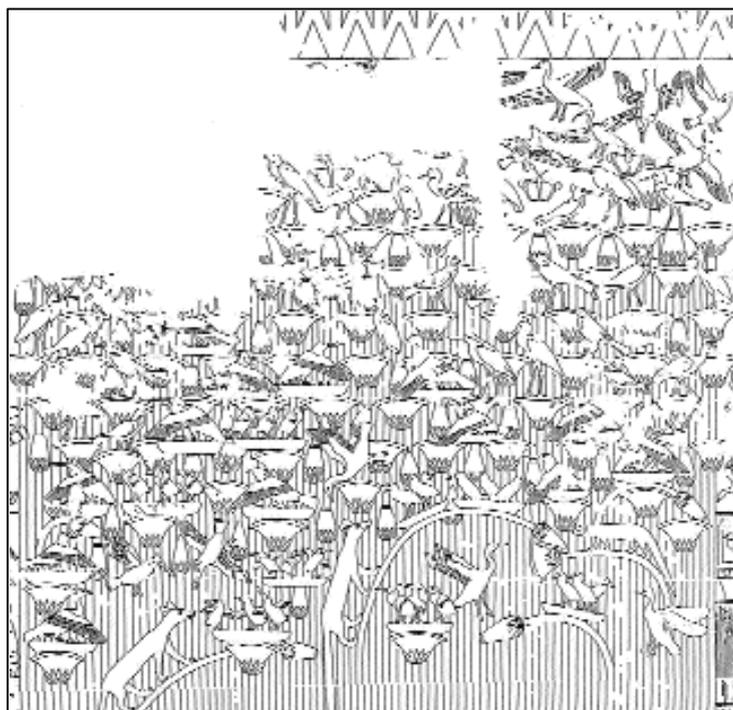


Figure 1: Water bird breeding colony in a papyrus grove, and its natural predators (tomb of Ti in Sakkara, in Egypt 24th Century BC; after ÉPRON et al. 1939)

case, these findings reveal long lasting interaction between the people and the wetland ecosystems on the Balkan Peninsula, symbolically and factually expressed through the numerous bird-chariots, bird-vases, bird-rattles, bird-pendants, bird-fibulae, etc. Here are the results of an attempt to identify particular birds in objects that till now were observed only as objects of prehistoric art. A research approach, recently named ornitho-archaeology (BOEV, 1992; BOEV, 1997), may be considered complementary to the study of osteological bird remnants (BÖKONYI, 1981; BLAZIC, 1988, 1989; BOEV, 1995a, 1996).

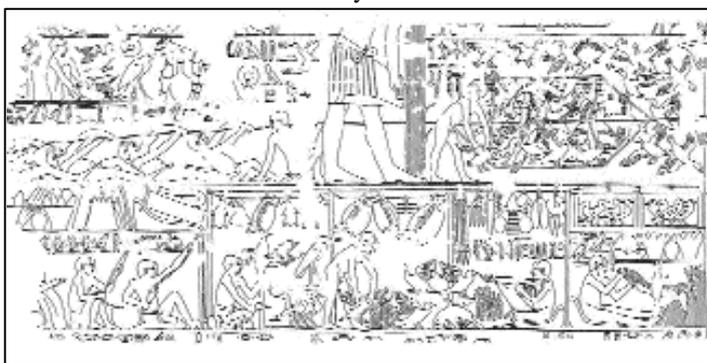
CHARIOTS

The oldest and one of the most famous among such objects, the three wheeled Dupljaja1 chariot shows

features of the Dubovac-Zuto Brdo cultural group of the Middle Bronze Age (PETROVIC, 1930; MILLEKER, 1930; KOSSACK, 1954; SPROCKHOFF, 1954; D. GARASANIN, 1951; M. GARASANIN, 1958, 1973, 1983). There are three birds, two pulling the chariot and a third, the smallest one, placed behind them may represent a chariot-rider (Figure 6). They are driving the deity figure placed behind them. The two birds in front (pulling unit) are symmetrically placed on the functional fork of the front wheel. There are distinct collars, in the form of ring-like furrows. The bills are typical duck bills, flattened, with a rounded front edge, and gently up-curved. The birds each independently, as well as in the group, radiate an air of triumphancy; they are passing slowly, as if in a celebration procession. The third bird is half the size of the other two, and is placed medially behind them, on the front edge of the plate-like chariot.

The general shape and posture of all three birds is characteristic of the order Anseriformes (waterfowl). The shape of the bill is a differential feature of the tribe of surface-feeding ducks Anatini and rules out all other birds. The collar rings of the two front birds point to the collar of the male Mallard *Anas platyrhynchos*. The Mallard is the most important of all ducks, and it may be assumed that it was chosen on purpose as a motif on the Dupljaja chariot, as well as the figural subject on a number of other Bronze and Early Iron Age artefacts from the Balkans and adjacent regions. The following basic facts support this assumption:

- Mallard *Anas platyrhynchos* has been throughout all times the most successful species of the order Anseriformes in the Northern Temperate zone. That is why it was chosen in the zoological nomenclature to be the type species of the genus of ducks *Anas*, which is itself a type genus of the tribe of surface-feeding ducks Anatini, the subfamily of ducks Anatinae, and the whole waterfowl family Anatidae.



- Mallard *Anas platyrhynchos* is an ecologically

Figure 2: Wild waterfowl clap-netting, and slaying and dressing kill (tomb of Ti in Sakkara, Egypt 24th Century BC; after WILD,

opportunistic species, able to exploit all kinds of wetland habitats, to use the most diverse food items and capable of withstanding habitat changes. Its population today is measured in tens of millions of individuals, it is the most numerous and the species with the greatest range. There is no reason to believe that its status was different at the time when the Dupljaja chariot was made.

- Mallard *Anas platyrhynchos* is a large duck, with an average weight of about one kilogram whose flesh and eggs are highly palatable, so it is a favourite everywhere and generally the most important game species of the wetlands. Eggs are a locally welcome addition to human diet even nowadays.

- Mallard *Anas platyrhynchos* is a migratory species with prominent regional changes in numbers, which are of cyclical phenological significance, especially in areas with a temperate continental climate. They apparently disappear at the beginning of the period of regular winter frosts (when still waters first freeze) and come back when the ice melts. In the southern and maritime parts of the Temperate Zone, the autumn brings hundreds of thousands of ducks from the north, which overwinter and leave in spring. Anyhow, their behaviour changes with the calendar, stereotypically repeating with the season shifts.

- Mallard *Anas platyrhynchos* is the ancestral species of all varieties of domestic duck of the Old World. Its weight was increased by artificial selection, it is naturally easy to tame, breeds easily and extensively and in the warm part of the year is able to find almost all

needed nutrients in village ponds. There may be up to twenty eggs to each clutch.

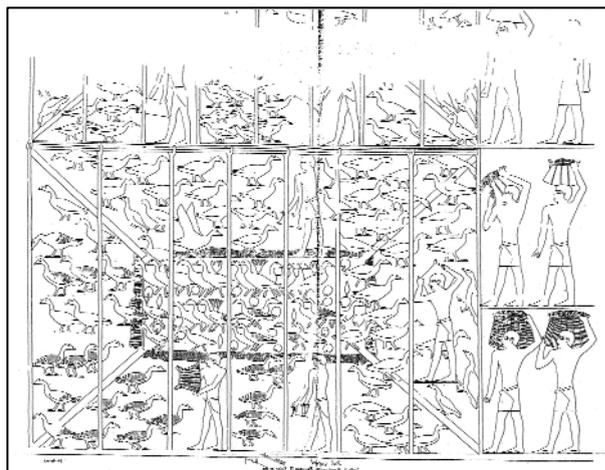


Figure 3: Artificial Geese pool (tomb of Ti in Sakkara, Egypt 24th Century BC; after WILD, 1953).

The standing figure ("deity") on the chariot seems to have an ornitho-morphic head, with conical-pyramidal and slightly upturned rostrum. However, this is not a bird head, as there are a pair of nostrils on the underside of the rostrum (nostrils in birds are on the upper side), the eyes are on the front of the head (in birds they are placed laterally), while the mouth is below the rostrum. These characteristics suggest the intriguing interpretation that this is a human mask representing a Sturgeon, *Hucho hucho* (a large fish

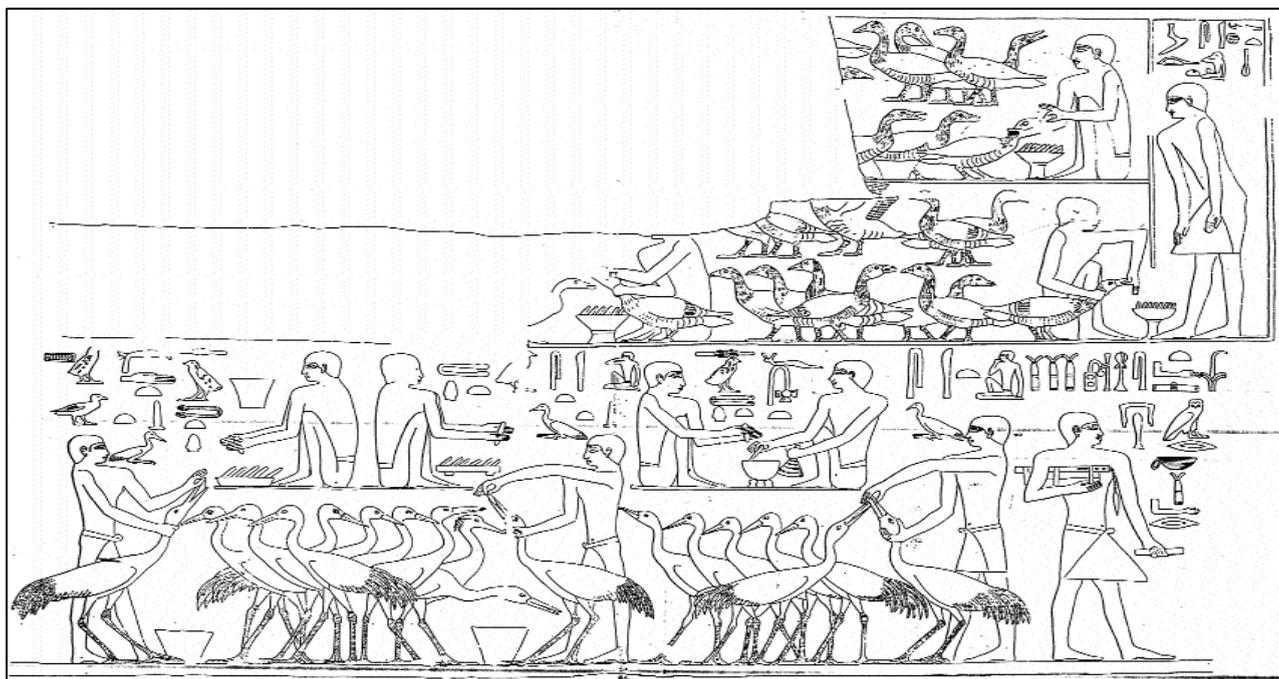


Figure 4: Captive Geese and Cranes feed by hand (tomb of Ti in Sakkara, Egypt 24th Century BC; after WILD, 1953).

with underside nostrils). The Sturgeon is a migratory fish with great social and economic importance and regular seasonal occurrence.

The whole composition gives the impression of slow, even movement. It is most lightly that it presents a virtual display of floating on water (a barcarole scene). The position of the ducks' bodies suggests this: if the duck were intended to walk, the body posture would have been different with the chest raised. The legs and wings are omitted. Chariots from other sites, which present four-legged land animals, always show the legs.

POTTERY AND CERAMIC PLASTICS

Statuettes, figurines, vases and rattles in bird shape appear throughout prehistoric times, in various cultural groups and time periods. On the Balkan Peninsula the objects can easily be alleged to belong to one of two



Figure 6: Two pulling Mallards: the chariot from Dupljaja (NE Serbia, Yugoslavia, 15th Century BC; photo National Museum, Belgrade).

clearly separated groups - vases and rattles. They not only had different functions, but the figural presentations had different meanings. The birds shown on vases are more clearly presented and more realistic, while the bird-rattles seem to belong to some other,



Figure 7: Vase with bulged eyes (Orsoya, NW Bulgaria, 14th Century BC; after BONEV, 1996).

fantastic world, quite obscured by magic, so it is much

more difficult to recognise the figural motifs on them. The heavily ornamented bird-rattles and vases were obviously included in some holy secrets, and their strange appearance seem to facilitate the passage from one reality into another, where they afford protection.

Vases

Ornitho-morphic vases are found in a limited area of the Middle Danube valley from the Iron Gate (NE Yugoslavia and SW Romania) downstream, to NW Bulgaria, where necropolis with several tens of the most diverse bird-vases have been excavated at Orsoya (FILIPOV, 1974, 1976; BONEV, 1996). Vases are as a rule handleless, have protruded bird heads and necks on the upper front side of the spherical recipient and gently accented rear, usually with short pointed or triangular tails. Some are tailless, but always have a marked steer (Figure 7). In the same necropolis (FILIPOV, 1974, 1976), ornitho-morphic vases always have lids in the form of shallow pointed hats with polygonal outer edges (Figure 7).

Necks are mostly slender, short or medium long, never long. The necks are usually in an upright or forward inclined position but, contrary to the necks of rattles, they are placed high on the pectoral protrusion. When not completely wingless, ornitho-morphic vases may have short (too short to be functional), horizontal fish-fin like winglets, placed sidewise. Eyes are commonly present, often bulbous (Figure 7), marked with concentric rings, sometimes even with eyelashes (Figure 8).

Bills vary in shape and size, but are always duck-like,



Figure 8: Vase with eyelashes (Orsoya, NW Bulgaria, 14th Century BC; after BONEV, 1996).

flattened, sometimes elongated, slightly up-curved and rounded on the tip, or shorter, straight, and broadened at the end, usually leveled or upraised, with the exception of a vase from Orsoya, where a high carried head has a lowered bill (Figure 9).

Rich, mostly geometrical ornamentation very often clearly outlines different anatomical parts of the bird:

head with neck, breast, and the rest of the bird body. Particular patterns often mark the chest (Figures 7, 8). A clearly different pattern on the pectoral area is characteristic on males in many duck species of the genera *Anas*, *Netta*, *Aythya* and *Clangula*, as well as on Black Geese of the genus *Branta*.



Figure 9: Vase with outlined duck bill (Orsoya, NW Bulgaria, 14th Century BC; after BONEV, 1996).

The forms and postures of bird-vase bodies, especially the horizontal, well-balanced buoyant carriage suggest swimming birds. Heads, necks and short tails indicate waterfowl, and bill shapes are characteristic of the subfamily of true Ducks *Anatinae*. Those vases are sometimes so harmoniously elaborated that they are rather vase-shaped birds, than bird-shaped vases (Figure 9).

One of the aberrant items is the Miniature vase from Mala Vrbica, Yugoslavia² (Figure 10). It is a small vase with horizontal fin-like wings turned backwards and a short tail with two lobes. This position of the wings suggests a swift swimming movement. The head and neck are missing, but the neck was probably short, as the contents of the vase, when poured, were to flow over the bird's head.

RATTLES AND ALLIED CERAMIC FIGURINES

A number of ornito-morphic rattles were found mainly in the localities of NE Serbia and SW Romania (D. GARASANIN, 1972; VUKMANOVIC & POPOVIC, 1996). Typical rattles are small objects with large, lens-shaped, horizontal bodies, drawn from the front into a relatively thin and long neck, at an angle of 45°, but unfortunately the head is almost always missing (Figure 11). Several noise making pebbles are usually preserved in the interior. The streamlined bi-convex body suggests a swimming bird, but more precise identification is not possible (Figure 13). At a quick glance, some roughly made rattles look even tortoise-like (Figure 14).

The ornamentation of rattles and similar figurines is usually more simple in comparison to that on vases,



Figure 10: Vase with symmetric spirals (Korbovo, NE Serbia, Yugoslavia, 14th Century BC; after M. GARASANIN, 1958).

and the most popular pattern seems to be pairs of symmetrical spirals on the back (Figure 15).

A strange example of a rattle in the form of a plucked bird (Figure 16) originates from Mala Vrbica (VUKMANOVIC & POPOVIC, 1996). Contrary to all other ornitho-morphic rattles and vases, the body is high, laterally impressed and angular, lacking smoothness and the streamline form that feathers give to a bird body. It looks generally like dressed chicken or duck prepared for catering (perhaps already cooked)



Figure 11: Miniature vase with winglets (Mala Vrbica, NE Serbia, Yugoslavia, 14th Century BC; photo National Museum, Belgrade)

or offering. A reminder of the dressed ducks and geese from the tomb of Ti (Figure 2) is more than inferred. The rattle is headless. The wings (broken) were apparently heavier than on any other ceramic bird objects of the epoch.

FIBULAE, APPLIQUÉS AND SUCHLIKE

Archaeo-ornithological studies started in Yugoslavia when for the first time a Late Bronze Age fibula with three birds (Figure 17) was examined by an ornithologist. The eleven centimeters long bronze

fibula originates from a bronze hoard found near Dobrinici 3, and represents a unique item. Its plastic bird figuration has no real parallel among other fibulae (R. VASIC, 1995, 1999; VASIC & VASIC, 2000). The three birds are set in a row, but each has a different bill shape, as well as some other characteristics, clearly indicating the compositional idea of three different bird species:

1. **The bird** in front has a characteristic spoon-like bill



Figure 12: Ornitho-morphic rattle (Korbovo, NE Serbia, Yugoslavia, 14th Century BC; photo National Museum, Belgrade).

and straight neck. The proportions of the head, neck and bill, especially the bill shape almost certainly point to Spoonbill *Platalea leucorodia*. No other European bird has such a bill.

2. **The middle bird** has a characteristic triangular, laterally flattened bill, with the lower edge implanted low on the neck. The neck is thrown back with the bill



Figure 14: "Tortoise" rattle (Vatin, Banat, Yugoslavia; 14th Century BC, photo National Museum, Belgrade).

upraised. The proportions of the head, neck and bill, especially the bill shape almost certainly point to Pelicans of the genus *Pelecanus*. The guller sack is clearly visible. No other bird has a similar bill.

3. **The bird at the back** has a shorter uncharacteristic bill but on the back of the neck has a sort of ridge, like a trimmed horse mane. Although it has no clear-cut differential characteristics as the first two birds have, one may presume that the third bird was also designed to have its own identity.

The unusual composition of three birds of different species, surrounded by spirals that suggests a water environment, might be associated today with an



Figure 15: Ornitho-morphic figurine (Mala Vrbica, NE Serbia, Yugoslavia; 14th Century BC; photo National Museum, Belgrade).

intention to display the richness and diversity of wetland bird life. Nevertheless this speculation can not be scientifically proved but the fact remains that two large, conspicuous white birds may be identified in all probability as Spoonbill and Pelican. These are real symbols of rich and productive wetland ecosystems, thriving with fish and other water food as well as



Figure 16: Decapitated figurine (Mala Vrbica, NE Serbia, Yugoslavia, 14th Century BC; photo National Museum Belgrade).

offering other resources. The site Dobrinici is located in an area that was formerly the widespread wetlands of the Sava River valley (I.B.A. nature reserve Obedska Bara is one of the remnants). It is easy to imagine that large white waterfowl were not only a very familiar sight to the inhabitants of Bronze Age Dobrinici, but might have had a special, spiritual meaning.

A number of pendants, appliqués, amulets (Figure 18, Figure 19; Figure 20) and various other bronze objects found at many archaeological sites of the Central Balkans have the obvious form of duck (NADJ, 1955; VINSKI, 1955; VINSKI-GASPARINI, 1973). These are mostly calm ducks, elegantly buoyant on the water surface.

BIRD-HEAD PENDANTS

Pendants in the shape of bird heads were distributed mainly in the Middle Danube and Lower Sava valleys, and seem to be a local product characteristic of the area. They are dated to the 8th and 7th centuries BC (D. GARASANIN, 1973). Their use was various. Several pieces tied to a large rings (Figure 21) may



Figure 17: Fibula with three birds (Dobrinci, NW Serbia, Yugoslavia; 12th Century BC, after VASIC, 1995).

have been utilised as part of horse equipment, while some may have been worn as collars or ornaments on clothes. All pendants are in the shape of keys with eyes at the rear to bead them on a ring or to fasten elsewhere (Figure 22). There are several types of birds. One cluster always bears only one type, so the type characteristics are mainly standardised.

Nevertheless, regardless of which type of stylization is used, all the pendants without any doubt represent ducks. The overall appearance and proportions, the shapes of bills, heads and necks, indicate the subfamily Anatinae, differentiating them from all other birds.

DISCUSSION AND CONCLUSIONS

The most obvious and interesting fact is that, with a few exceptions, all birds of the Bronze and Early Iron Age are represented either resting or in a non-flight position, showing no intention to take-flight. Most of these birds do not have even the vestiges of wings.



Figure 18: Duck with a thorn (Novi Becej, Banat, Yugoslavia, 12th Century BC; after NADJ, 1955).

This is not a feature unique to the Central Balkan area, but common to a broader area at that time. It is the direct opposite of birds as message bearers and intermediaries between widely separated places - heaven and earth - which can be found in other geographic areas and becomes a globally predominant way of interpreting only much later (even today). There is no evidence on the analysed objects to support the stereotype thesis on the universal and ancient meaning of birds and their common features "in all nations and all cultures". For many ornitho-morphic objects the idea exists that these are birds intended for sacrifice, or offerings intended to substitute the real sacrifices. But even if it is correct, it is only a less important part of the answer to the questions "Why a bird?" and "Why that specific bird?"

So these are by no means far away and inaccessible birds of the heavens, on the contrary quite familiar creatures with which human beings are in close touch and some of them seem to be in particular intimate relationships with humans. At least in some cases, the birds may be assumed to represent food items (Figure 16). The idea that those birds were not only worshipped but also used, as in Ancient Egypt, is very convincing.

The choice of motifs among the ornitho-morphic works of the Bronze and Iron Age in the Central Balkans and

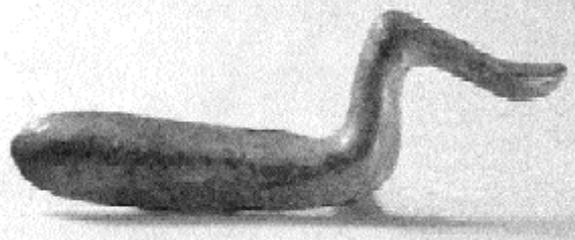


Figure 19: Appliqué in the form of a duck (Markovac-Grunjac, Banat, Yugoslavia, 12th Century BC; photo M. ARALICA, National Museum Vrsac).

neighboring areas is not very diverse. Waterfowl, especially Anatinae ducks, obviously hold a dominant position among the motifs of the objects analysed. It seems to be a broadly distributed and important cult, whose point and individual rules are not known to us. Yet the appearance of the Swan (Figure 23) by the very end of the period studied (6th Century BC) indicates the beginning of the more classical or modern meaning of bird figurations.

The cult of ducks may have been the natural choice of peaceful human wetland dwellers living in habitations on water or close to it, - such were most of the localities where the objects analysed come from (MARKOVIC-STRBAC, 2000), - but this phenomenon encompassed quite a large area, whose borders are not yet determined. Before the introduction of the rooster, that is, the domestic chicken, from the East, ducks and

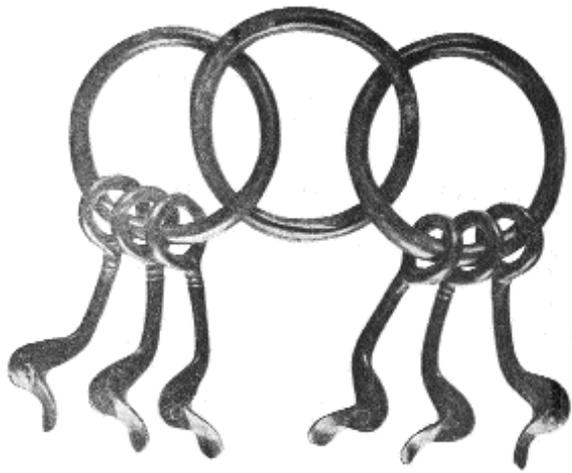


Figure 21: Pendants with Duck heads (Adasevci, NW Serbia, Yugoslavia, 8th Century BC; after VINSKI, 1955).

geese were the only or at least the most important poultry of the European natives (IVES, 1947; WOODGUSH, 1985). On the Balkan Peninsula (Greece), domestic ducks and geese are known from the period 1000-900 BC. In the wetland settlements on piles there are no adequate conditions for other poultry. This holds even today for settlements in deltas.

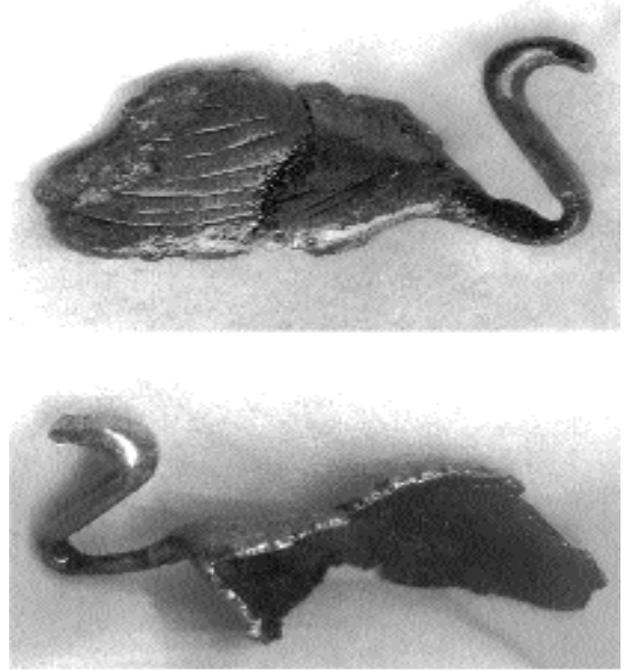
Maybe this explains the appearance of hundreds of duck and duck-like figurines in the Bronze and Iron Age in the Central Balkans and neighboring areas, but also over a wider area. The explanation for this may be found in the quite justifiable assumption that many of the birds shown were domestic birds (poultry) and that domestic duck was for a long time the only or basic species of domestic poultry in water-based settlements in this area, before the spreading of the domestic chicken (Figure 24) from the East in the 8th and 7th Century BC (BOEV, 1992a, BOEV, 1995).

In contrast to the material from Egypt, this material lacks representations of birds of prey (eagles, falcons), whose symbolic is often connected with some violent activities and meanings (hunt, warrior values and ruler's might).

Throwing light on the early roots of wetland-dweller culture through the fascinating representations of water birds on the artefacts of the Bronze and Early Iron Age



Figure 22: Pendant with a Duck head (Pancevo, Banat, Yugoslavia, 8th Century BC; after Vasic 1982).



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Figure 23: Bronze Swan (Mojsinje, Central Serbia, Yugoslavia, 6th Century BC; National Museum, Cacak, original scanned by B. IVANCEVIC, Natural History Museum; Belgrad).

can be used for present day valorisation of wetlands as our natural and original habitats and ecological frames. Interpretation of the harmony and the sustainability of human-wetland interaction expressed by the "waterfowl-morphic" objects of Balkan prehistoric times, through exhibitions, publications, making replicas and other ways of promotion may be important for a better understanding of the water habitat environment as a global and regional heritage. Through

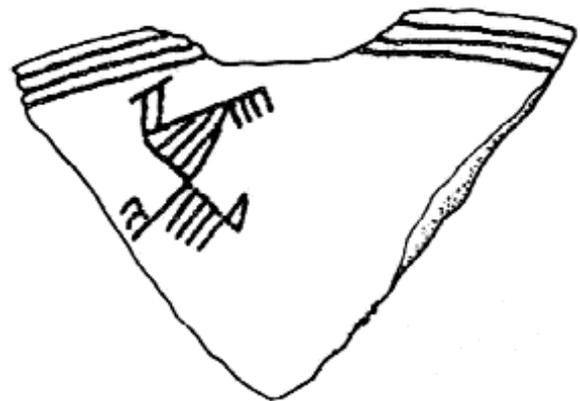


Figure 24: Early representation of domestic cock on a pottery fragment (Svojnovo, Jagodina, Central Serbia, Yugoslavia: Basarabi pottery, 8th Century BC; after STOJIC, 1986)

such enlightenment, the wetlands will no longer appear to us as swamps full of mosquitoes where no one can

breathe, but as areas of paradisiac richness, inspiring human imagination and art.

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