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Board structure and firm value: A review of literature

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Abstract

Under the Magdalenian culture, in the site of *Le Placard* there exist mysterious works on bone, named *bâtons de commandement*, appeared like smiling jackal at one end. It contains group of scratches on three sides. Upto present, these scratches have been counted on the aspect lunar periods. But in this paper these counts have been treated as life cycles of jackal. As the author thinks that at that pre-historic period, the man were not scientists and they tried to keep records on what they realise with the animals domestic to them.

Keywords: Magdalenian, jackal, life-cycle

1. Introduction

The *Magdalenian* epoch is represented by numerous sites. They used bone so, the period essentially a bone period. The fauna of the *Magdalenian* seemed to have included tigers and other tropical species along with reindeer, arctic foxes hares etc. *Magdalenian* humans appear to have been of short stature, dolichocephalic with a low retreating forehead and prominent brow ridges. *Magdalenian* are known for their elaborate work on bone to serve both functional and aesthetic purposes. Jackal was probably the first wild animal to be domesticated, and dogs have been found associated with Neolithic sites dating back more than 10,000 years. Some canines are important to the fur trade. At one time, a mutant form of the Red-fox called the Silver-fox formed a significant part of the fur-farming industry. Many canine species, especially the red fox, are susceptible to the rabies virus.

They need skins with furs. Cut marks and breakage on human bones of the *Magdalenian* consistent with cannibalism with both flesh and bone-marrow being consumed as some skulls were.



Fig 1: Base camp of Magdalenian

Cleaned of soft tissues and had the facial regions removed where shaping of skulls to produce skull-cups.

Materials and Method

Le Placard Bâtons de commandment (bone) and reading of scratches out of existing calculation.



Results

Life-cycle of jackal at prehistoric period has been calculated as per scratches.

Discussion

The archaeological record of Western Europe during much of the late glacial period was dominated by *Magdalenian*. This was truly a spectacular culture with abundant evidence of economic innovation, complex social interaction of elaborate artistic and ritual activity. On the basis of tools made by stones and bones a stylistic chronology of the *Magdalenian* has been developed. But in recent years, some problems with this chronology had been identified and this culture have been renamed as *Badegoulin*^[1]. The most sophisticated may have been the *Magdalenian*^[2] (tradition of Western Europe). It began about 17,000 years ago and lasted until the end of the last ice age around 10,000 years ago. *Magdalenian* portable art includes batons, figurines, and intricately engraved projectile points, as well as items of personal adornment including sea shells, perforated carnivore teeth (presumably necklaces), and fossils. The process of domestication began in the late Palaeolithic period. In early glacial period *Magdalenian* keep jackals as pet to use as scavengers of last part of hunted animals. At the end of last glacial period *Magdalenian* had domesticated dog which made consequences in hunting practices. Then in hunting, use of dogs, drive and chase of animals increased hunting success and efficiency. *Magdalenian* hunters armed and dogs made it more effective than the earlier groups.

With the beginning of the *Magdalenian* in France there was a large number of increases in sites as well as shift in the type and location of sites. During earlier *Magdalenian*^[3] 118 sites have been found. Colonisation out of the south-western refugium carried the *Magdalenian* culture far into the heart of Europe. Later *Magdalenian* sites was situated on the shores of large lakes. Huts and other were in large number sites. At the site of *Etiolles*^[4] in the Paris basin, a ring of six meters was formed of large stones surrounding a large hearth and a concentration of artifacts. Also in the Paris basin, site of *Pincevent*^[5] is well known for over hundred huts where most of the structures were circular or ovals of three meters diameter each having central hearth.

Regardless of specific patterns of migration postulated for reindeer, it has been assumed that reindeer was the single most important prey, that hunters intercepted the herds and made mass kills during the spring and fall migrations, that they stored meat for the winter and aggregated in large groups for the migration hunts and dispersed into smaller groups for summer and perhaps winter. Growing archaeological evidences suggest that this interpretation is true. Sites in the Paris basin, such as *Verberie*^[6], appear to have been situated so as to intercept migrating reindeer but sites were relatively small and briefly occupied with no indication that they were inhabited by large aggregations of people.

Most of the known portable art objects from Western Europe had been found in *Magdalenian* sites. Although art was common during the course of Upper Palaeolithic, the *Magdalenian* truly represents an explosion artistic activity. Ornaments were manufactured in profusion; utilitarian tools were decorated with great care and special objects were created in abundance. The variety of materials and forms used was enormous. Using bone, animal-teeth, scarce of mammoth ivory, beads and pendants were made for necklaces. Among the decorated tools were spear throwers intricately curved with three-dimensional figures of animals, bone spatulas with curved designed and sandstone lamps with engraved geometric decoration on handles, engraved fragments of animal ribs and shoulder blades etc.

They developed the attitude of domesticity^[7] and it depended on different parameters to lead the mobile hunter-gatherers a modified form. The late *Magdalenian* of the Paris basin preserved camps^[8] of short duration.

Reindeer (*Rangifer tarandus*) was the primary prey of the

¹ The Palaeolithic habitation during the Last Glacial Maximum (LGM) was dominated by the Badegoulian technocomplex, which has been dated to 18000-17000 BCE. The concept of the Badegoulian Culture is rather new in the French archaeology and has been the subject of confusion and many discussions. In the following paper, the emergence of the Badegoulian as an independent cultural phase is described together with a discussion of how we define the Badegoulian as an independent culture. Moreover, it is necessary to investigate the main characteristics within the Badegoulian concerning the climate aspects, faunal changes, site distribution, chronology, stratigraphy on key sites, lithic industry, bone studies, site structures and art. Hereby it should be possible to determine how the Badegoulian is both similar and different to the Late Aurignacian, Epigravettian, Solutrean and the *Magdalenian* covering the period of roughly 48,000 to 15,000 years ago. The tools of sharp-edged pointed bone / stone turned into harpoon.

² They had extensive cultural tradition extended from Northwest-Spain to Netherland, Southern & Central Germany and Western Switzerland. The Paris basin sites belong to late *Magdalenian* phase dated between fourteenth millennium and middle of thirteenth millennium BCE. Although *Magdalenian* tradition restricted to Western Europe during three millennia and it shared similar culture adaptive traits with many reindeer hunters-gatherers and more widely with hunter-gatherers preying on large herbivorous game in tundra, boreal forest and park grasslands.

³ Badegoulian and early Middle *Magdalenian* according to typological schemes.

⁴ *Etiolles* is a commune in the Essonne Department in Île-de-France in northern France, twenty-seven kilometres southeast of Paris.

⁵ *Pincevent* is an archaeological site in the commune of La Grande-Paroisse in France, near the town of Montereau-Fault-Yonne (Seine-et-Marne). It was excavated from 1964 onward by a team of the Centre des Recherches Préhistoriques of the University of Paris, led by André Leroi-Gourhan. Although there is evidence that the area was visited throughout the Late Pleistocene and Holocene, the site has become known for its *Magdalenian* remains, preserved in clays and silts deposited by the river Seine. These remains consist of stone artifacts and bone fragments, as well as numerous hearths, and are considered to point to repeated occupation by reindeer hunters.

⁶ *Verberie* is a commune in the Oise Department in northern France. It lies 7 miles (11 km) southwest of Compiègne on the main road to Senlis and Paris.

⁷ Domesticity is the process that make up the creation and sustaining of household. It must provide space for sleeping, storage, food preparation, cooking, eating education and play facilities for children, an area of gathering, everyday craft activities – These are basic components of society.

⁸ Hunter-gatherers' residence was organised within a logistical system with base-camp, hunting-camps, extraction settlement etc., only base-camp expressed domesticity where they created hearth.

Magdalenian pre-historic hunters where other species identified include Horse arctic ground Squirrel (*Spermophilus citellus*) (*Equus caballus*), Artic-Fox (*Alopex lagopus*), Mammoth (*Mammuthus primigenius*), Water-Vole (*Apodemus flavicollis*), Yellow-necked Mouse (*Arvicola terrestris*), Pied Lemming (*Dicrostonyx torquatus*), Skulled-vole (*Stenocranius gregalis*), Grass-frog (*Rana temporaris*), Willow-ptarmigan (*Lagopus lagopus*), Duck (*Anatinae*) and Goose (*Anserinae*).

They targeted Reindeer as because of fur skin, plenty of meat and bones for making artifacts, social representation on batons as per their thinking and they slaughter ^[9] in the following ways as picture below:

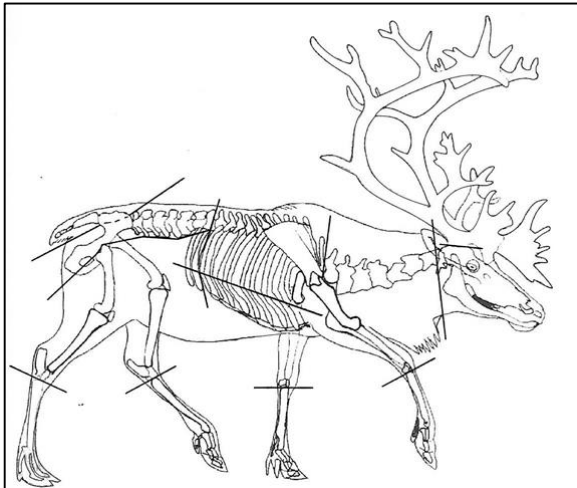


Fig 2: Slaughter of bones

In this picture we find indication of butchering in the *in-situ* articulations of carcass portions discovered during the excavation. Notable among them are the forementioned vertebral columns, ranging from four to ten vertebræ each, but there were also numerous examples of articulated distal radii and carpals, distal tibia, tarsals, phalanges, sesamoids, wrists, ankles and feet which were chopped off a discarded units without having been internally disarticulated. Butchering spots have indicated by straight lines (Picture – 2, Ref. – 19).

Micro-analysis of the baton has been considered. Here scratches on three sides of the baton have been demonstrated. From right expression on Female-jackal; Mating and pregnancy (Picture – 3, Ref. – 16)

1. Eye is partially open indicates the jackal is at pleasure of mating.
2. Symbol over whole indicates mating – 8 times mating, within the sign of jackal mating, to make pregnant.
3. 8 + 1 (small) scratches indicate it gave birth of offspring in 8 + weeks.
4. 13 (normal) + 3 (thick) scratches read within 13-weeks

3-offspring died.

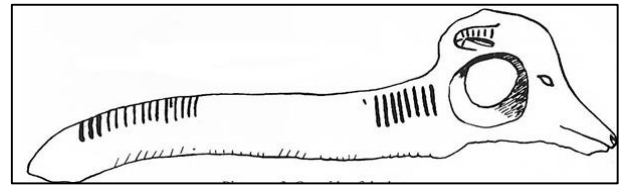


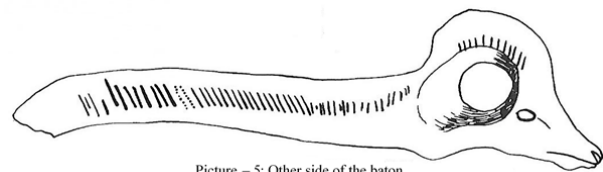
Fig 3: One side of the baton



Fig 4: Bottom of the baton

From right: From womb to semi-adult (Picture – 4, Ref. – 16)

1. In 9-Weeks offspring birth takes place.
2. Gave birth of 9-pups of these one is weak (by small mark).
3. Then 2-marks four times it changed the dens to protect pups from predators but in this process, one became ill and one died (indicated by feeble and dotted marks).
4. 5 – marks read pups started to have milk-teeth and come out of den to play.8 – deep marks
5. Indicate in 8 – months pups become old enough to leave the parents.



Picture – 5: Other side of the baton.

Picture – 5: Other side of the baton

From right: Prenatal period (Picture – 5, Ref. – 16)

1. Pups are born with their eyes sealed-shut where 12 – scratches above hole are symbol of opening eyes in 12 – days of age along with we see eyes are full open to see and the curve-line direction path of light.
2. 47 – scratches indicate pups became sexually matured in 47 – weeks but after 36 – weeks two jackal pups died – indicated by dotted lines where next 9 – scratches are indicative of in last 9 – weeks they intended for mating. In the first part of the scratches in the batons we see scratches are grouped in 2, 3 etc. means parent-jackals changes their dens in the prenatal period for safety of pups from predators.
3. Last three lines shows that only 3-jackals survived to maturity.

⁹ Wild and domesticise.

There are types of Jackals as

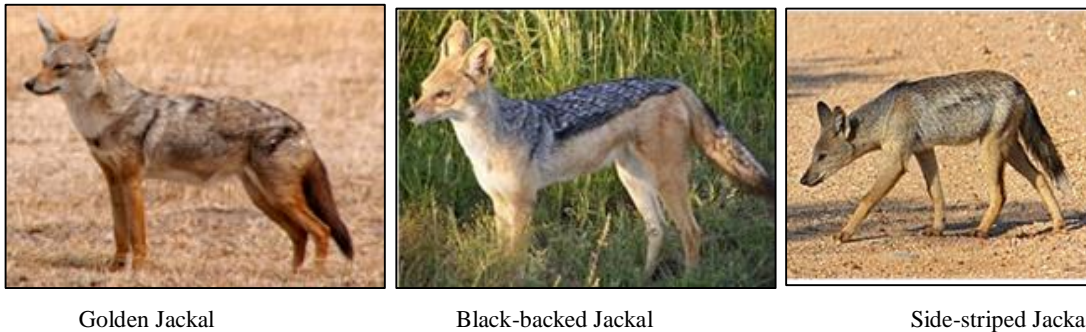


Fig 6: Types of Jackals

To conclude we must know about Jackals: Jackals are in the world's scavengers^[10] group of animals.

The scientific name of common jackal is *Canis aureus*^[11]. Other jackals are Black-backed jackal (*Canis mesomelas*) and Side-striped jackal (*Canis adusta*). Common jackal has a coat with mixture of yellow, brown and gold. It has pointed muzzle, big ears and long busty tail. Jackals have good sense of smell. They can detect odours as far as away one-half of a mile (nearly a kilometre). Jackals have sharp eyesight too. Key behaviours of jackal are diurnal^[12], nocturnal^[13], motile^[14], territorial, social^[15] and dominance hierarchies^[16] (Picture – 6).

In dry season carcasses^[17] provide plenty of food for jackals as this the hard time for youngest and oldest animals for survival when also weak animals die or become easy prey for predators and they left parts of dead body. Female Jackal spots vultures circling overhead and she heads in that direction when her mate follows her as the jackals know that vultures in the air mean carrion^[18] nearby on the ground. Then the pair uses their powerful sense of smell to lead them to the carrion. At the spot of carrion, many more vultures arrive during the fight for food, then growling^[19] and nipping^[20], the female jackal forces some of the vultures to take flight. But the jackals don't have big strong teeth to rip open tough skin.

So, the jackals have to gnaw^[21] through the skin first then peel^[22] the soft flesh from the bone and gulp^[23] it down. Male jackal pulls off a large chunk of carrion and carries it off to hole digs by him in sands for buries food to store. The pair return for dig it up for food but in some cases another or another scavenger sniff it out and dig it up before the pair returns. At dawn air is still night-time cool then female jackals wake up and stretch. She usually forages^[24] during the early morning, evening and night as these are the coolest part of the day in summer. They are omnivores^[25] i.e., eat birds, berries, plants, rabbits, frogs, fruits, poisonous snakes, small antelopes even decomposed and diseased flesh. They opportunist to find foods which they did not hunt or kill it.



Fig 7: Jackal is eating of dead animal surrounded by vultures



Fig 8: Jackal marking the territory

On territorialism: Jackals have scent glands near their tails that leave scent droplets with their urine. These personal markers announce to other jackals that this territory is already claimed. For them family's territory is the area where they find their food. On the basis scent marking other jackals know that they will be attacked if they are caught feeding on the family's home turf (Picture – 8).

The mating season of common jackal is from May to August. In mating of jackals, locking takes place (Picture – 9).

Each jackal species communicates through its own repertoire

¹⁰ Scavengers are the clean-up crews (together) who find and eat carrion (dead animals) in order to survive. Every-day animals are born and die. So, without scavengers, bodies of dead animals would rot away slowly as decaying flesh small bad to pollute environment to attract flies and disease-carrying insects. Scavengers play a crucial role to keep clean the environment by eating dead and dying animals before they have time to rot.

¹¹ The word is in Latin where *Canis* for dog and *aureus* for golden.

¹² Active throughout the day-time.

¹³ Active throughout the night.

¹⁴ Having the capacity to move from one place to another.

¹⁵ Associates with others of its species to form social groups.

¹⁶ Pecking order among members of a long-term social group where dominance status affects to mates.

¹⁷ Dead bodies of animals.

¹⁸ Flesh of a dead animal.

¹⁹ To utter a deep guttural sound of anger.

²⁰ Attempt to bite.

²¹ Remove by persistent biting.

²² To pull or strip of skin.

²³ To swallow.

²⁴ Searches for food.

²⁵ Eat both plants and meat

^[26] of calls i.e., using howls ^[27], growls ^[28], yipping ^[29] and even hooting ^[30] sounds.



Fig 9: Locking at mating of Jackal

The gestation period is 57 to 70 days. The female gave birth, in August ^[31], ranging from 1 to 9 but usually three to six pups in underground den where dens are made by both male and female together. New-born pups are very small and weighing 200-250 grams. They born with eyes sealed and getting nursing from their mother, then consume small amount of soft food ^[32] when they have milk-teeth. After ten days eyes open. At the age of two months, they begin to eat solid food. At the age of 3-4 months permanent teeth start replacing milk-teeth and the process completed within 6-12 months.

Although pups start emerging from den after the age of 3-weeks even they still spend most of the time in den up to the age of 7-weeks. Pups are vulnerable to attacks from Eagle, Leopards and Hyenas. To protect pups, mother changes litters to different underground dens in every two weeks to make predator to stay with scent of pups and pick up. On the above causes and others most of the pups do not survive to 14-weeks old ^[33]. Pups remain thickets for first few weeks, after that they venture outside to play with their litter-mates. Their first game play is quite clumsy with attempts at wrestling, pawing and biting and when they develop more coordination, they learn to ambush ^[34] and pounce ^[35] when begin to chase and play tug of war among themselves. After the age of six months, they stay with parents as helpers or disperse to establish their own territories. Helpers increase pup survival by regurgitating to the mother during the period in which she suckles ^[36] the pups and by feeding pups and helping to guard them while the parents are away. If needed pups are also fed by regurgitated to them. Helpers also play, groom ^[37] and help teach the pups to hunt. They eventually begin to learn hunting and territorial behaviour from their parents. Pups start hunting at around 6-months of age but mom and dad take care of them as long as they need it. Jackals become sexually mature within 6-11 months of age. Some jackals leave their parents at 11-months and some stay to protect and feed their

younger siblings. Ultimately, male and female of a mated pair ^[38] share parenting duties ^[39] equally. According statistical data on an average it has been found that only two pups survive to adult of a litter.

Jackals are monogamous ^[40]. In average jackals live up to 12-years in wild and 16-years in captive.

The young male continues to forage and travel alone throughout winter. In spring he meets a young female who is also foraging alone to form a pair-bond for their lifetime. Then they claim a territory which has not occupied by other jackals. Afterward they dig a den within the territory.



Fig 10: Pups are in den and pipping out

Conclusion

The *Magdalenian* occurred during the final phase of Pleistocene ^[41] following the Glacial Maximum about 18,000 BCE.

The *Magdalenian* settlements appeared over a wide variety of geological and topographical settings from limestone valleys of Périgord ^[42] to open exposed river valleys of Northern Europe. Earliest Magdalenian and Upper Palaeolithic had been concentrated sheltered valleys of the Périgord which featured caves and rock shelters. Due to very cold climate Magdalenian moved south into Pyrenees, northern Cantabrian Spain, north into Paris Basin & Rhine Valley and east into valleys of Jura in Switzerland, Germany. The cave and rock shelter sites were longer-time multi-sessional residential sites. The open-air sites in other regions were restricted and short-term seasonal camps. Archaeological excavation reveals that short-term hunting-camp, longer-seasonal residential sites were by lithic raw material procurement. Nomadic hunters had not invested heavily in permanent settlements or architecture. In hunter-gatherers' societies the hearth is considered to play the universal and central role in organisation of domestic space and these are the best indicators of analysing prehistoric domesticity and social organisation.

²⁶ Sounds of communication.

²⁷ To utter loud, prolonged, mournful cry as that of dog or wolf.

²⁸ To utter a deep guttural sound of anger or hostility (The dog growled).

²⁹ Expression of fright or surprise or pain.

³⁰ To utter similar sound.

³¹ Birth may occur from July to October depending on habitat and food availability.

³² Pups drink mother's milk up to 3-weeks and then regurgitated (voluntary or involuntary return of partly digested food from stomach to mouth) food.

³³ Most of the jackal pup deaths happen before they are 14-weeks as many are swooped up by Eagles and eaten.

³⁴ To act on an instant attacking unexpectedly from a concealed position.

³⁵ To swoop down suddenly.

³⁶ Nursing through breast.

³⁷ Carefulness.

³⁸ When female finds her mate then she lifts her head and yawns then male also do same behaviour to her life-time mate.

³⁹ Raring i.e., feeding and guarding.

⁴⁰ Having one mate throughout life i.e., male and female live together in their life-time and raise their pups together where they also hunt in pair.

⁴¹ As per International Union of Geological Sciences, Pleistocene had been regarded as 1.806 million before. The end of the Pleistocene corresponds to the end of the last glacial period and also with the end of Palaeolithic age. The name is a combination of Ancient Greek: *πλεῖστος*, *pleistos* means 'most' and *καινός*, *kainós* means 'new'.

⁴² It is a natural region and former province of France, which corresponds roughly to the current Dordogne Department, now forming the northern part of the administrative region of Nouvelle-Aquitaine.

Upper Palaeolithic tool traditions around the prehistoric world became sophisticated appeared in Magdalenian in Western Europe within Ice-Age ^[43]. In this period, they developed Spear-throw between 17,000-15000 BCE and invented bow-arrow nearly 12,000 BCE. They also used stone-tools in the form of blade-flake ^[44]. They used bone, antler and ivory to sewing needles, clothing fasteners, harpoons and to express different events of their life.



Fig 11: Magdalenian bone sewing needles from Gourdan cave, France



Pic 12: Magdalenian bone Harpoons with barbs



Fig 13: Magdalenian bone model: Swimming a gang of Reindeer of 13,000 BCE Magdalenian were predecessors of modern-man

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⁴³ 17,000 BCE to 10,000 BCE.

⁴⁴ These were thin, roughly parallel sided having cross-section triangular / trapezoidal by hammerstone.