
ARTICLES

BUTCHERY OF A SHEEP IN RURAL TUNISIA (NORTH AFRICA): REPERCUSSIONS FOR THE ARCHAEOLOGICAL STUDY OF PATTERNS OF BONE DISPOSAL

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Summary

The process of killing and butchering a sheep in a small, rural village in Tunisia, is described. The goal of this exercise is to trace the pattern of bone disposal from the abattoir to the butcher's shop, and eventually to individual consumers, as well as to identify the marks produced on bone during the butchering process. These data will serve as a reference for archaeozoological analyses. Aside from the method of killing and bleeding the animal, which is governed by Hallal principles, logical rules involving principles of least effort govern the processing of the carcass. The tools available, the manpower and the culinary traditions of the area govern many of the decisions made by the butcher. These data provide a basis for comparison with archaeozoological collections from similar cultural contexts, as defined in this paper.

Résumé

La découpe de boucherie d'un mouton dans une région tunisienne rurale (Maghreb) : conséquences pour l'analyse archéologique des processus de dispersion des os.

Les gestes d'un boucher qui égorge et dépèce un mouton dans un village rural en Tunisie sont décrits. Le but de cet exercice est d'identifier les traces produites sur l'os lors du dépeçage et de suivre la répartition des os depuis l'abattoir jusqu'aux consommateurs. Ces données serviront de base de référence archéozoologique. Les règles Hallal concernent la mise à mort et l'évacuation du sang. Tous les autres gestes du boucher entrent dans un système logique de découpe qui prend en compte d'abord l'effort qui doit être fourni et les outils disponibles, et ensuite les rapports avec le client. Les traditions culinaires locales gouvernent les décisions prises par le boucher et la découpe finale des os. Les outils du boucher restent aussi très traditionnels : un grand couteau et une feuille.

Key Words

Butchery, Archaeozoology, North Africa, Sheep, Ovis aries.

Mots clés

Boucherie, Archéozoologie, Afrique du Nord, Mouton, Ovis aries.

Introduction

The purpose of this project is to record the traditional process of sheep butchery in a small, rural village in Tunisia from an archaeozoological perspective. Emphasis is placed on tracing the pattern of bone disposal in a relatively small-scale, yet urban, meat distribution system, and on recording the type and location of butchering marks resulting from a well-recorded system of butchery.

The rules of *Hallal* essentially govern how an animal is slaughtered. The animal must be slaughtered by cutting its throat and severing the jugular. Sheep, goats and cows must be lying on the ground when they are slaughtered, and the instrument used must be sharp. The butcher should be a Muslim; or, failing that, one of the other "people of the book", that is a Christian, or a Jew. In the case of animals slaughtered for meat (i.e., not in the context of slaughter for

Manuscrit reçu le 15 octobre 1999, accepté le 30 janvier 2000.

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ANTHROPOZOLOGICA, 2000 N° 32

the feast of *Aïd*) the following recommendations are offered: the animal should be healthy; the animal be oriented towards Kaâba (Mecca); the butcher should mention the name of Allah (or say a prayer out loud); the knife (or other instrument) should be sharpened and the cut across the jugular should be made rapidly⁽¹⁾.

The process of butchering the carcass then follows a logical system primarily related to the amount of effort expended, the butcher's knowledge of anatomy and the tools available and secondarily, with relations between the butcher and his clientele as well as their culinary traditions. The data collected in this research should provide a useful comparison with archaeological fauna in the region (North Africa), whether or not the societies involved followed the rules of *Hallal*, provided the following conditions are met:

- the meat distribution system is small-scale and urban
- butchering was performed locally, that is, within the meat distribution system
- butchering was carried out by a professional
- the bones considered are of *Ovis aries*
- the tools of butchery include metal knives, cleavers and/or a machete
- local culinary tradition relied on boiling meat (stewing) rather than roasting⁽²⁾

Arguably, these conditions prevailed in North Africa during Roman and Byzantine times, prior to the Arab invasions, in a number of locations including ancient Lamta (*aka* Leptiminus).

To the author's knowledge, there exist no published descriptions of traditional, North African butchering practices from an archaeozoological perspective, although ethnological analyses of the ritual sacrifice of sheep during the feast of *Aïd*, in Algeria and in France (Brisebarre, 1989; Sidi Maamar, 1989), are published.

Methods

A trip was arranged to the small, municipal abattoir in Lamta (a village on the East coast of Tunisia, pop. 5,000) with a local butcher. The butcher was observed killing the animal and dressing the carcass. The process of butchering the dressed carcass was observed at the same butcher's

shop. Later in the day a second trip to another local butcher was made and discussion of the whole process took place, aided by diagrams. The next day a local housewife was interviewed and asked a series of questions about the purchase of meat and meat cuts, aided by the same diagrams. All conversations were held in French; in which all of the informants are fluent.

Results I: the abattoir

The abattoir in Lamta consists of a single, white-tiled room, about 7 m x 4 m, with large doors and a smaller side door at the back. The walls of the abattoir are lined with meat-racks at head-height. The tiled floor is pierced by grated drains running along all sides of the room. A boy is employed at the abattoir to continually hose the floor clean, flushing debris and blood into the drains. A compressed air pump is situated outside the building by the side door and a rubber hose from the compressor lies in the corner of the room. Several butchers can work in the room at any time (up to 4-5 men comfortably).

Early in the morning, the live animal is dropped off, trussed, outside the abattoir and a veterinarian visits and certifies the animal is healthy. The butcher arrives at 7 a.m. and takes his animal (in this case a male sheep about 10-11 months old) into the abattoir and begins working with his own knife (a butcher's knife with a blade approximately 25 cm long, freshly sharpened) and with the assistance of one of the two boys employed by the abattoir. The animal is positioned with its neck over the drain and the butcher stands over it and draws his knife across its throat, severing the jugular and carotid. After the throat is severed, the animal's heart is pierced to ensure that all of its blood is evacuated (which is discarded) before processing.

When the animal has been bled and convulsions have ceased, the butcher untrusses it and makes a long incision (about 20 cm long) in the right hind leg with his knife, along the metatarsal (without hitting bone). The compressor hose is inserted into the slit and air is pumped under the skin to aid in skinning. Another incision is made from the anus to the belly for the same purpose. At the same time the assistant, using a smaller knife with a blade about 15 cm long, removes the forefeet by inserting the knife between the proximal metacarpal and distal radius and twisting the feet off. The metacarpi are untouched and no marks were observed on the distal radii. The assistant then cuts the flesh

⁽¹⁾ Details of the rules governing *Hallal* slaughter provided by Sheikh Hosni Azzabi, who relied on the following sources: *Matn al Risallah*, by Ibn Aby Zeid Al Kairawani, and *Reliance of the Traveller* by Ahmed Ibn Naqib al Misri.

⁽²⁾ Roast meat is not considered "traditional" by my Tunisian informants, unless a whole or partial animal is roast on a spit for a feast-day, in which case a professional carver is invited to carve meat off the bone.

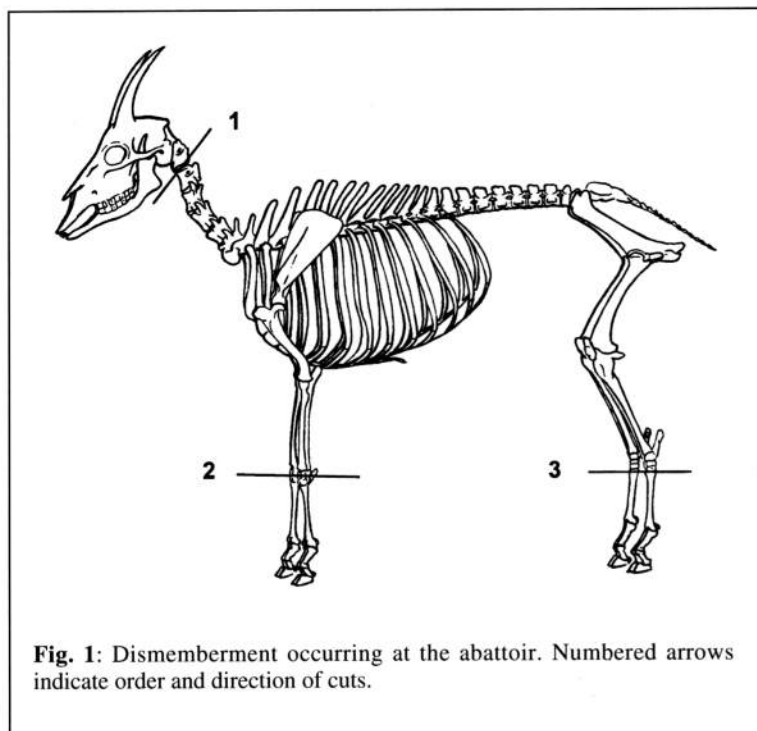


Fig. 1: Dismemberment occurring at the abattoir. Numbered arrows indicate order and direction of cuts.

around the animal's neck and inserts his knife between the basicranium and atlas, and swiftly and efficiently removes the head. No marks were observed on the basicranium, one or two shallow cutmarks were observed on the proximal articulation of the atlas. Meanwhile the butcher severs the skin and flesh on the anterior side of the hind leg and inserts his knife between the metatarsal and distal tibia cleanly, opening the articulation. The skin and tendon on the posterior side of the foot is kept intact and used to tie the hind legs together. The animal is suspended from its hind legs on meat hooks that line the walls to facilitate work.

The skin is stripped from the suspended carcass by the butcher; it will be sold to a tanner in a nearby community. The skin removed, the butcher inserts his knife into the chest, entering the chest cavity just below the sternum and pierces the heart (the blood flows directly into the drain). The vertical incision in the abdominal cavity is enlarged and two cuts along the caudal margin of the rib cage allow the thorax to be pulled open. The stomach and organs are drawn out but not entirely severed from the abdominal walls. The stomach is pierced with the knife and held over a wheelbarrow where it is emptied of its contents. A water hose is inserted into the stomach to flush out any remaining matter. The hose is then pushed into the anus and the intestines are washed. The stomach, lungs, heart and kidneys are removed and placed in a bucket. Only the liver

remains in the cavity, which is hosed down. The carcass is marked with the abattoir's certification (a green stamp) on all sides.

The head, feet and organs are placed in a plastic bucket, the carcass is placed in a white plastic bag and the operation moves to the butchers' shop. The initial dressing of the carcass produces very few, shallow cuts on bone (fig. 1). The entire operation took less than one half-hour.

Results II: the butcher's shop

Primary processing (quartering)

The butcher's shop is about 2 m wide and 3 m long. The space is divided into the clients' area at the front of the shop and the butcher's area behind a glass display-case which stands about shoulder-height. The butcher has a large wooden chopping block on his side of the display case - a tree stump about 40 cm in diameter, standing about 1 m tall. The wall behind him is faced with white tile and lined with meat

hooks. In a corner of the butcher's area stands a small table and scales. Here, the butcher works with both his knife and a machete.

The butcher now quarters the animal. First, he takes the machete and bisects the carcass caudo-cranially, chopping through the pubic symphysis, bisecting the sacrum and the entire vertebral column (figs. 2, 3). Next, he sponges the carcass down with a wet sponge and cuts through the flesh above the hindlimb (thigh) with a knife, not touching the bone, and chops through the lumbar vertebrae with a machete to detach the hind quarter (fig. 3). The forelimbs are removed by flexing the joint and inserting a knife between the proximal humerus and distal scapula and cutting the ligaments. This produces a small cutmark on the articular surface of the greater trochanter of the humerus. Lumbar vertebrae sustain the most damage during primary butchering (the dressing and quartering process), being subjected to both longitudinal and transverse chopping blows, while the remaining vertebrae, sacrum and pelvis are simply bisected (fig. 3). The shoulder is then detached by inserting a knife between the scapula and the ribcage, severing the connective tissues. The racks of ribs are subdivided into long ribs (plus the neck) and short ribs. A knife inserted between the ribs severs the intercostal muscles between long and short ribs and the machete is used to finish the cut, chopping through the thoracic vertebrae (see fig. 4). The quarters of meat, the



Fig. 2: The butcher bisecting the carcass in his shop with a machete.

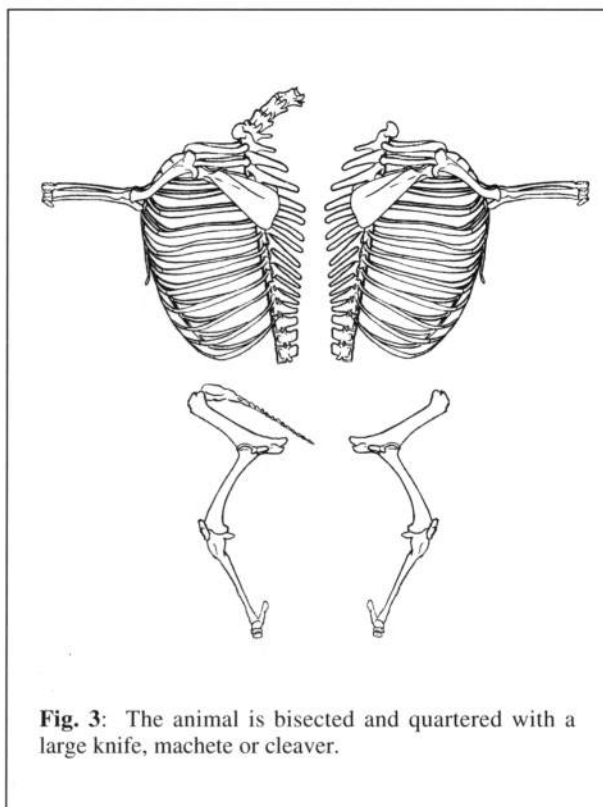


Fig. 3: The animal is bisected and quartered with a large knife, machete or cleaver.

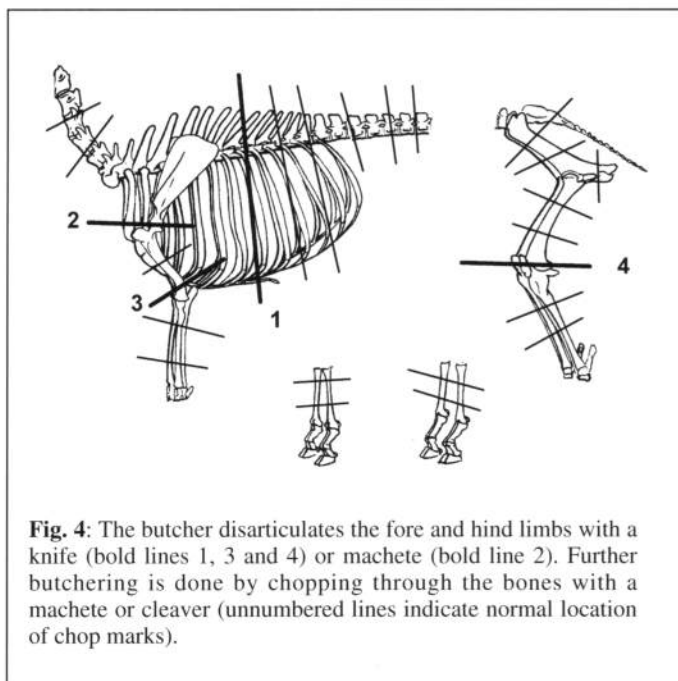


Fig. 4: The butcher disarticulates the fore and hind limbs with a knife (bold lines 1, 3 and 4) or machete (bold line 2). Further butchering is done by chopping through the bones with a machete or cleaver (unnumbered lines indicate normal location of chop marks).

shoulder, and the racks of ribs are hung on hooks waiting for clients.

At this point, further processing of the carcass depends upon the client's needs. A client may choose to purchase a whole quarter, which may be done in the case of a gift, for example. More often, the quarters and remaining carcass are subdivided further into "cuts", e.g., shoulder, ham, etc. (see fig. 5). Meat from these cuts is sold by weight. The pattern of secondary butchering of the carcass is described fully below.

The customer is charged a single fee per kilo for all meat except for the head and feet, which are sold at a fixed price⁽³⁾. To offset differences in meat-weight between certain elements a client is sold portions of each. For example, portions of neck (including cervical vertebrae) will be sold with portions from the shoulder cut; the short ribs are sold with portions of the back ribs (cutlets)...

⁽³⁾ The head and feet are usually sold together (though the housewife I interviewed indicated that this was not always the case) for a fixed price.

Secondary processing

Primary butchering of the fore- and hind-limbs left the elbow (radius-ulna and humerus) and knee (femur and tibia) in anatomical connection. During secondary processing, the forelimb is disarticulated at the elbow by chopping through the distal humerus⁽⁴⁾ (see fig. 4), potentially producing chop marks on the distal humerus and proximal radius and ulna. The hindlimb is disarticulated at the knee using a knife inserted into the flexed joint, producing no visible damage to bone. The long and short ribs are separated into two racks using a knife. As portions of these racks are sold, the tips of the ribs are chopped through and the chops are separated (typically into pairs) by chopping through the vertebrae dorso-ventrally with a machete or cleaver.

Now, as portions of each distinct "cut" of meat (see fig. 5) are sold, they are chopped up by the butcher. All of the informants stated that this is done in order to release marrow and produce a richer broth. The pelvis is chopped into three pieces (with machete or cleaver) by blows through the ilium and the ischium on either side of the acetabulum, the scapula is chopped into several pieces cranio-caudally and the cranium is split with a cleaver longitudinally and then laterally, from ear to ear. The butcher chops through the diaphysis of the long bones (fig. 4), once for lamb bone and two or three times for adult bone (depending on its size). The butchers, more accurate and better able to direct the force of their blows, cut through bone with one or two blows of the machete or cleaver, should produce a consistent pattern of damage to bone; their clients would presumably require more blows to chop the bones and lack consistency in the placement of their blows.

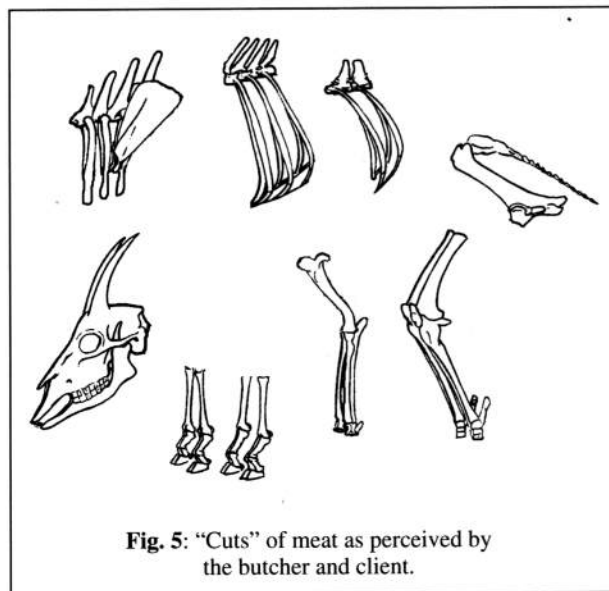


Fig. 5: "Cuts" of meat as perceived by the butcher and client.

Once the head and feet are spoken for, the horns may be removed by the butcher, who chops through the base of the horns and likewise chop off the hooves and discards them. Hooves and horns may simply be tossed out of doors (which was the case in this study) and are, in fact, the only bone waste produced by the butcher's shop. In effect, the butcher's shops observed in this study would probably not be detectable archaeologically by a pattern of bone refuse disposal.

Discussion and conclusion

In this study of sheep butchery in a traditional setting, dressing of the carcass and primary butchering (quartering and producing initial cuts of meat) is done following a logical, least-effort principle. A sharp knife inserted at the articulation points is used to disarticulate by severing tendons, rather than a more muscular strategy of chopping through bone. Disarticulation of the limb segments in this fashion leaves little or no trace and is a hallmark of a knowledgeable butcher.

Secondary processing of the carcass is done according to different principles, that is, the requirements of the local culinary tradition (the preparation of stews and boiled dishes) and the personal taste of clients, as well as their family meat requirements. It is at this stage that most of the bone sustains damage in the form of chop marks. In some cases, secondary butchering may be done by individual cooks but most of the visible butchering marks are made: 1) by the butcher, while bisecting the carcass (the vertebral column, sacrum and pelvis are bisected) and 2) by the butcher or more rarely, the cook, during secondary processing. In an archaeological context, the consistency of the placement of chop marks observed on bone, and the number of blows used to chop through the bones, should give important clues as to the identity of the person(s) processing the meat (i.e., professional butchers, or individual householders).

Finally, in the small-scale, urban meat distribution system described above, the entire skeleton of the sheep is distributed to individual consumers as meat on the bone. The only bones left undistributed are the horns and hooves, unless the client chooses to butcher feet and head themselves. The abattoir and the butcher's shop, therefore, would be undetectable archaeologically using faunal remains since no bone refuse is produced at either location. Kitchen waste in this context potentially contains all

⁽⁴⁾ This process was described to me.

of the anatomical elements of the sheep. Individual households may show preferences for certain cuts of meat (as a matter of taste and cooking skills) but all things are equal with respect to economic status, since all meat costs the same by weight and the butchers make sure meaty portions are sold with less meaty portions. This means that householder waste may not vary much in terms of bone element representation from house to house, irrespective of economic status. The quantity of bone refuse would probably be a better indicator of economic status in this context. Obviously, if householder wastes are disposed of communally bone refuse will yield little information about individual household economies.

It is interesting to compare the data collected in this study with data collected by Peck (1986) in his study of modern Western European butchery and butchering patterns from Roman Britain, as well as by Vallet (1989, 1996) in his studies of butchery in Roman Gaul. In a modern, industrial setting, with different tools (saws, cleavers) and differently skilled butchers, a more expedient (though arguably less energy efficient) partitioning of the carcass is performed. Articulations are sawn through or chopped rather than disarticulated with the aid of a knife. This stands in contrast to the system of butchery recorded in Roman villas geared towards local market production, which is similar to the system described in this study of butchery at Lamta, requiring more skill on the part of the butcher (Peck, 1986). Roman butchers, using tools similar to the tools used by the butchers of Lamta, i.e., a large knife and a cleaver (see Vallet, 1996), apparently addressed the carcasses of medium-sized animals in much the same way as described here (Peck, 1986; Vallet, 1989, 1996).

Archaeological case study: ancient Leptiminus

Ancient Leptiminus lies under the modern town of Lamta, and was a regional urban centre during late Roman and early Byzantine times (Stirling *et al.* 2000). Faunal assemblages from Leptiminus derive from various fill deposits, dated from the 4th to the 6th century AD. Cut and chop marks on sheep bone recovered from late Roman contexts in Leptiminus (at site 1, the Baths), are distributed in a manner consistent with the pattern described above (Burke, 2001). Cut marks noted on the articular surfaces are consistent with the pattern of disarticulation described in the modern study, above, and the sheep and goat carcasses were bisected and quartered in the same way (by chopping). Overall, the pattern of chop marks on sheep bone is similar to the modern sample. Fauna from other late Roman or Vandal/Byzantine sites in North Africa also

offer a similar pattern of damage to sheep bone (Reese, 1981; Schwartz 1994; Van Der Veen *et al.*, 1996).

The implications of the present study for the analysis of the Leptiminus fauna are that the people of ancient Lamta purchased meat from professional butchers, and were habitually preparing meat on the bone, possibly in the form of stewed dishes. The popularity of various sorts of casserole dish (Hayes forms 181 and 182, as well as other open rim vessels) among the coarse wares recovered from Leptiminus (J. P. Moore in Stirling *et al.*, 2000) would support this interpretation. Finally, interpretation of patterns of bone refuse disposal at Leptiminus are proposed (Burke, 2001) which take the findings of this study into account. The fact that in a relatively small-scale, urban setting nearly all anatomical elements of sheep (and presumably goat) are potentially disposed of as householder, or kitchen waste helps us interpret the nature of the mixed fills in site 1, the Bath House, as evidence for the dumping of household waste together with industrial refuse (Burke, 2001).

In conclusion, modern observation of sheep butchery and the distribution of bone refuse in a small-scale, urban system of meat distribution can offer a useful model for the interpretation of archaeological patterns of cut mark distribution and bone refuse disposal, provided the conditions outlined above are met and the functional and economic contexts for meat distribution are similar.

Acknowledgements

The author would like to acknowledge the valuable assistance and generous hospitality of Mme. Delilah Bousrih, M. Taofik Sgraer, and Mr. Mohammed Abdessalem without whom this research could not have been conducted. Dr. Lea Stirling and Dr. David Stone, co-directors of the Leptiminus archaeological project, also greatly facilitated this research in many ways. Details of the rules of *Hallal* slaughter were provided by Sheikh Hosni Azzabi, of Winnipeg, with the kind assistance of Mr. Yunus Lubega, Secretary of the Manitoba Islamic Association.

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