

**The bone and antler industry of Strandvägen (Motala, Sweden)**  
**Preliminary observations, the 5th and 6th of March 2013,**  
**on the material stored in Linköpin only (310 pieces examined )**  
**Report made by Éva David**





## Taphonomical background

Material yielded by a layer from the upper (dry) or the lower (wet) part of the site

Condition of preservation (dry) : isolated in boxes

Condition of preservation (wet) : in water, individualized in a plastic bag, in boxes and in the fridge

Taphonomical aspects :

- braunish color, non porous

- a few pieces fire-burnt (presence of fire place)

- a few pieces with specific marks related to rolled *in situ* (smooth-ends) or weathered (field of tiny dark dots)

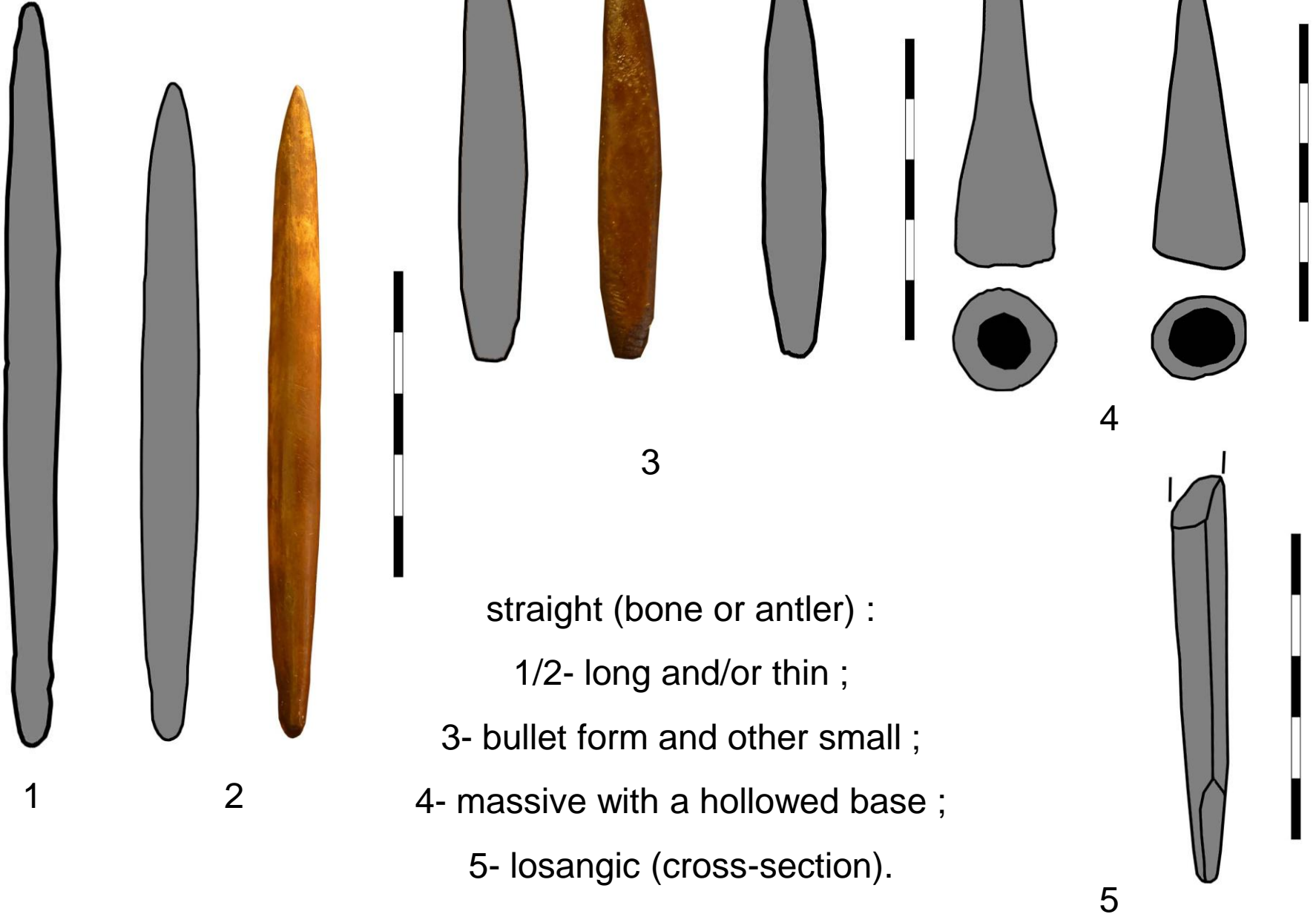
- entire pieces as well as fragments are represented

- a few marks made by rodent

- bony matter extremely well preserved, forms still containing pitch attached



# Arrowheads (1/2)



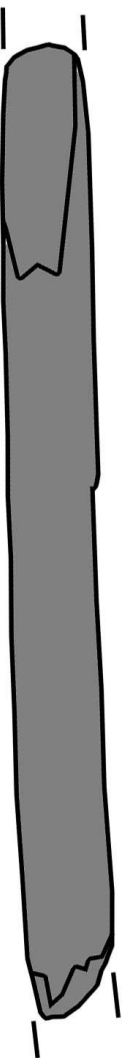
# Arrowheads (2/2)

with attributes (bone) :

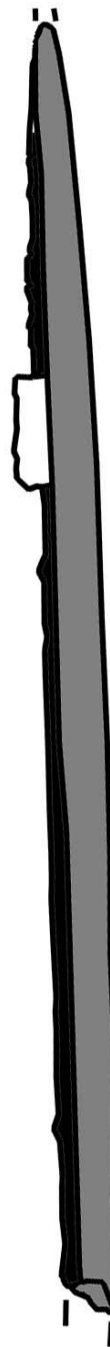
1- shouldered ;

2- slotted (unilateral,  
bilateral) ;

3- pseudo-slotted (not  
illustrated here).

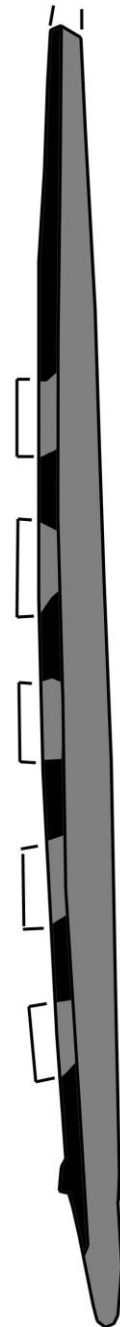


1



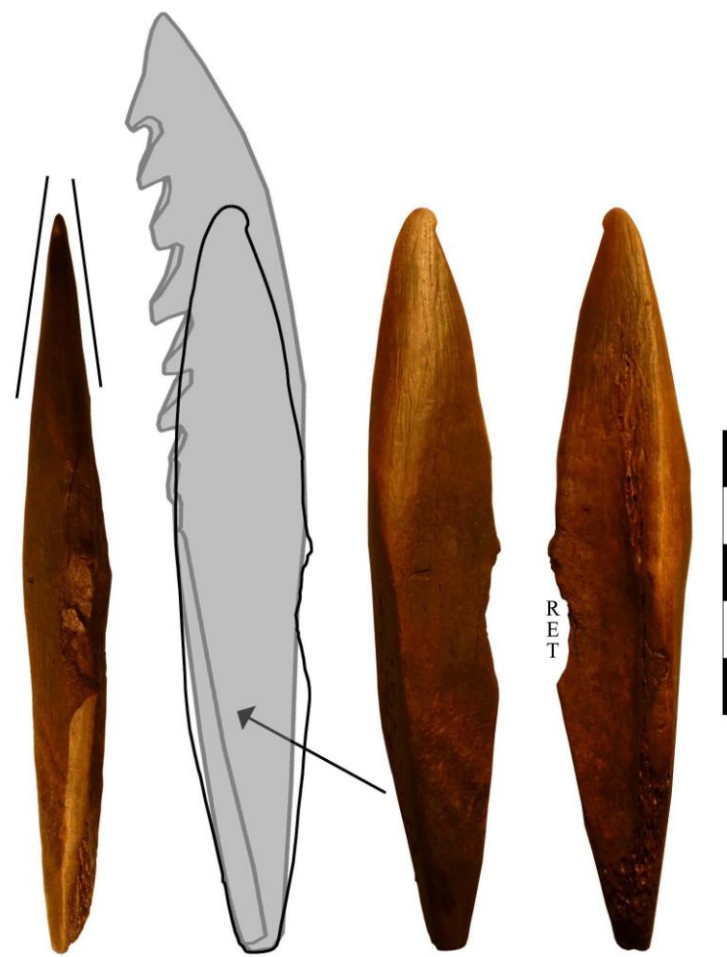
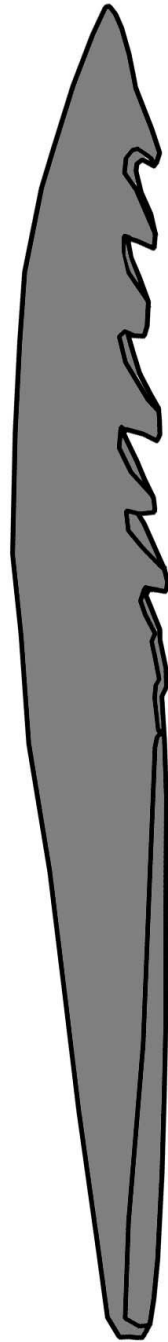
1

2



# Leisters (1/3)

Leister prongs (bone)



broken leister prong re-  
use as a navette

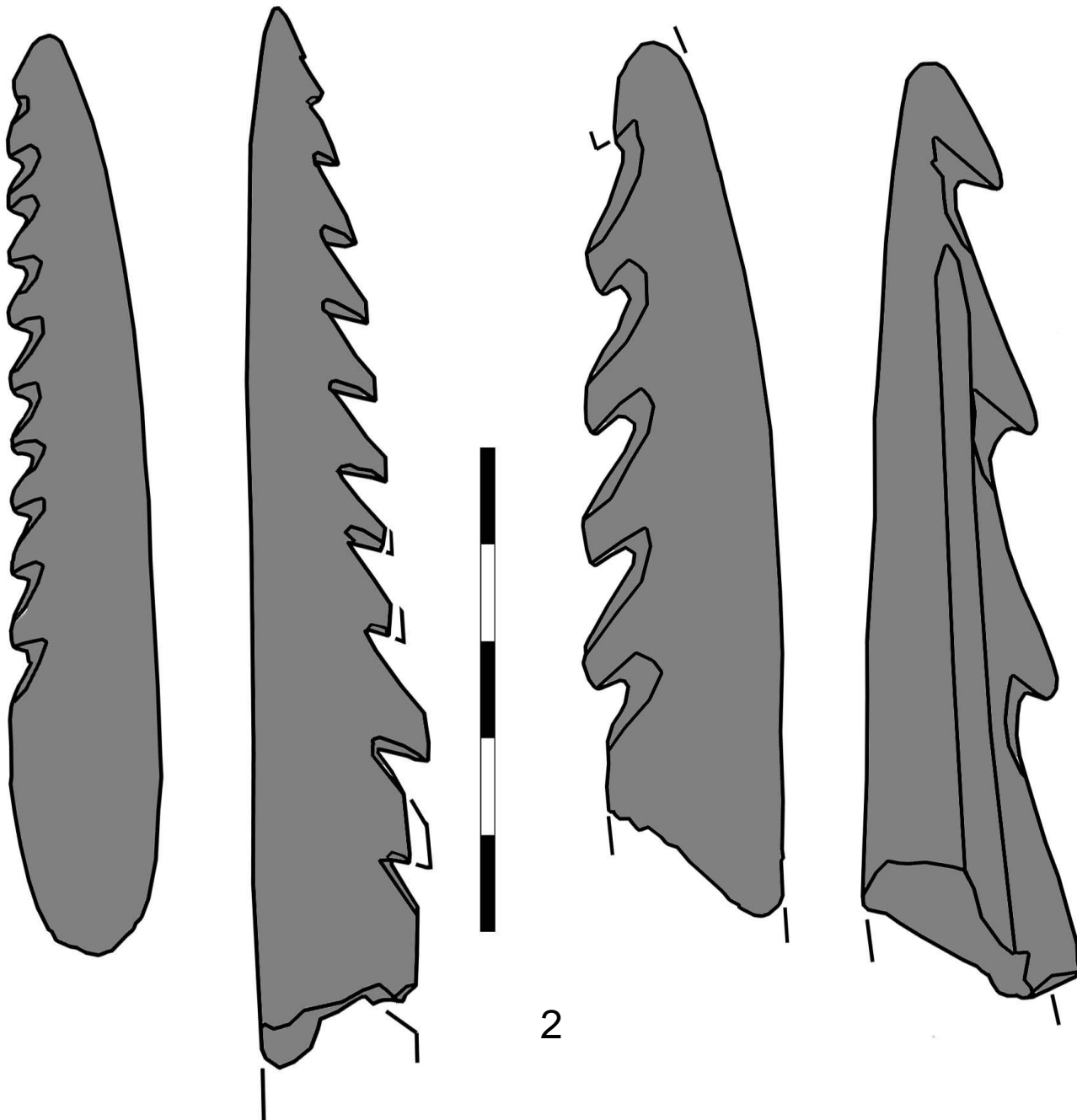
# Leisters (2/3)

straight with attributes  
(bone) :

1- notched (not  
illustrated here) ;

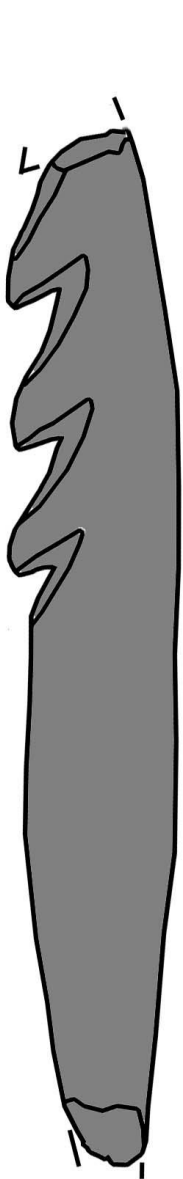
2- barbed (unilaterally) ;

3- barbed (unilaterally)  
with notches.

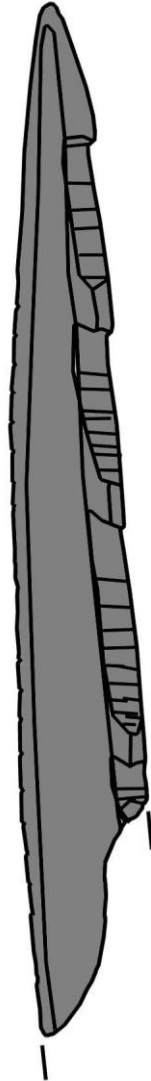
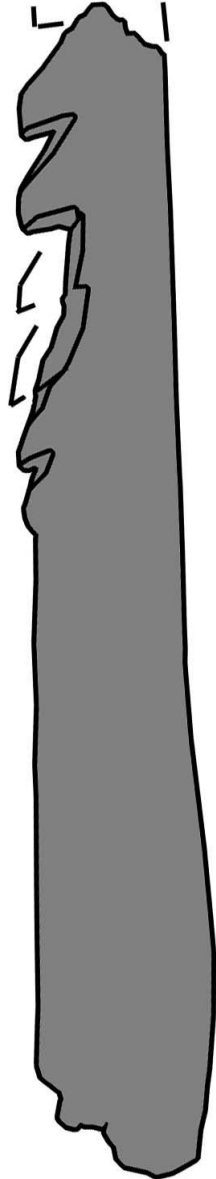




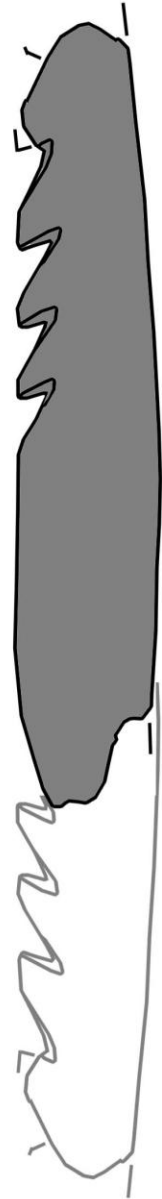
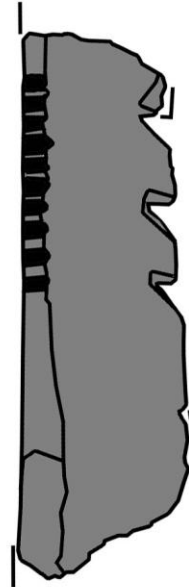
# Leisters (3/3)



2

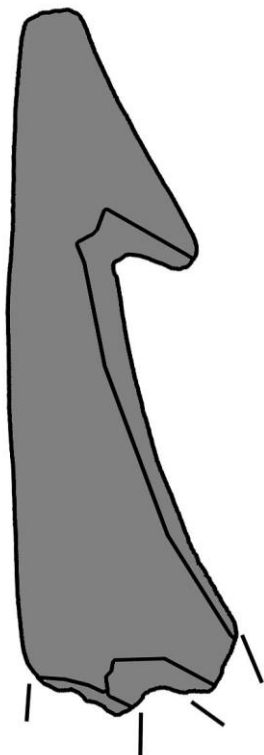
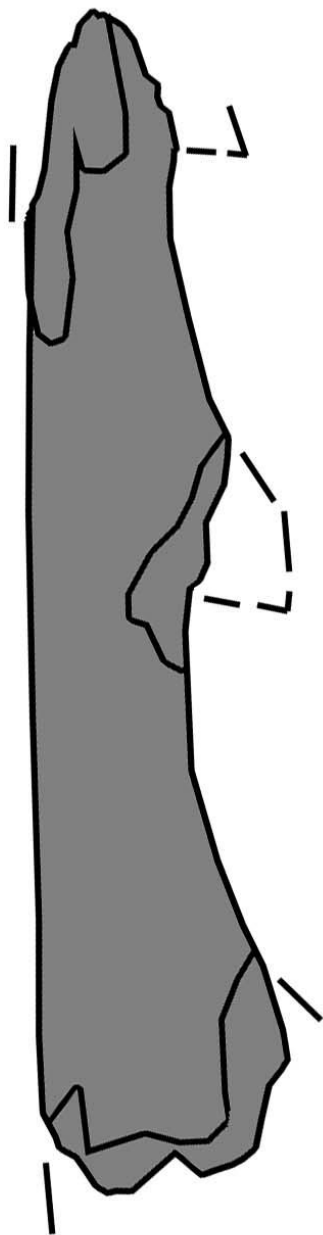


3

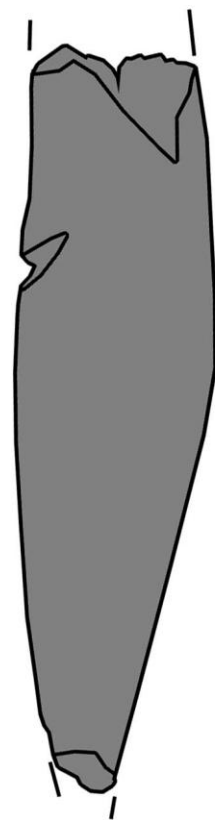
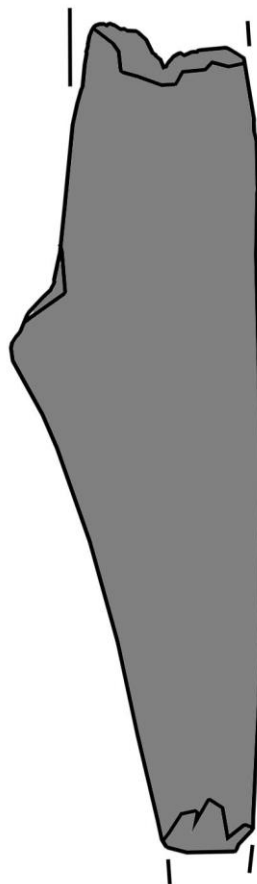


Re-shaped

# Harpoon-heads



with notched or  
shouldered base  
« embase » and/or with  
notched attribute (not  
represented here)  
(bone or antler)





**Awls**



(bone)

# Bevel-ended tools

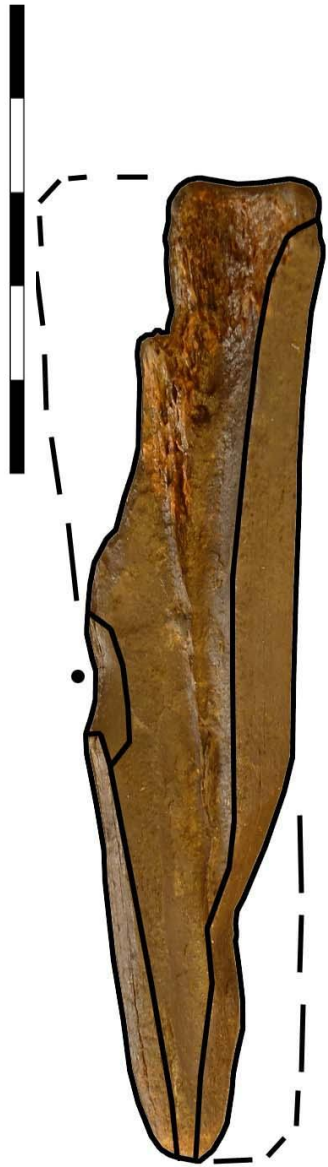


1

(tooth or bone or exceptionally antler) :

1- burin ;

2- chisel (straight pointed, mortise not illustrated here).

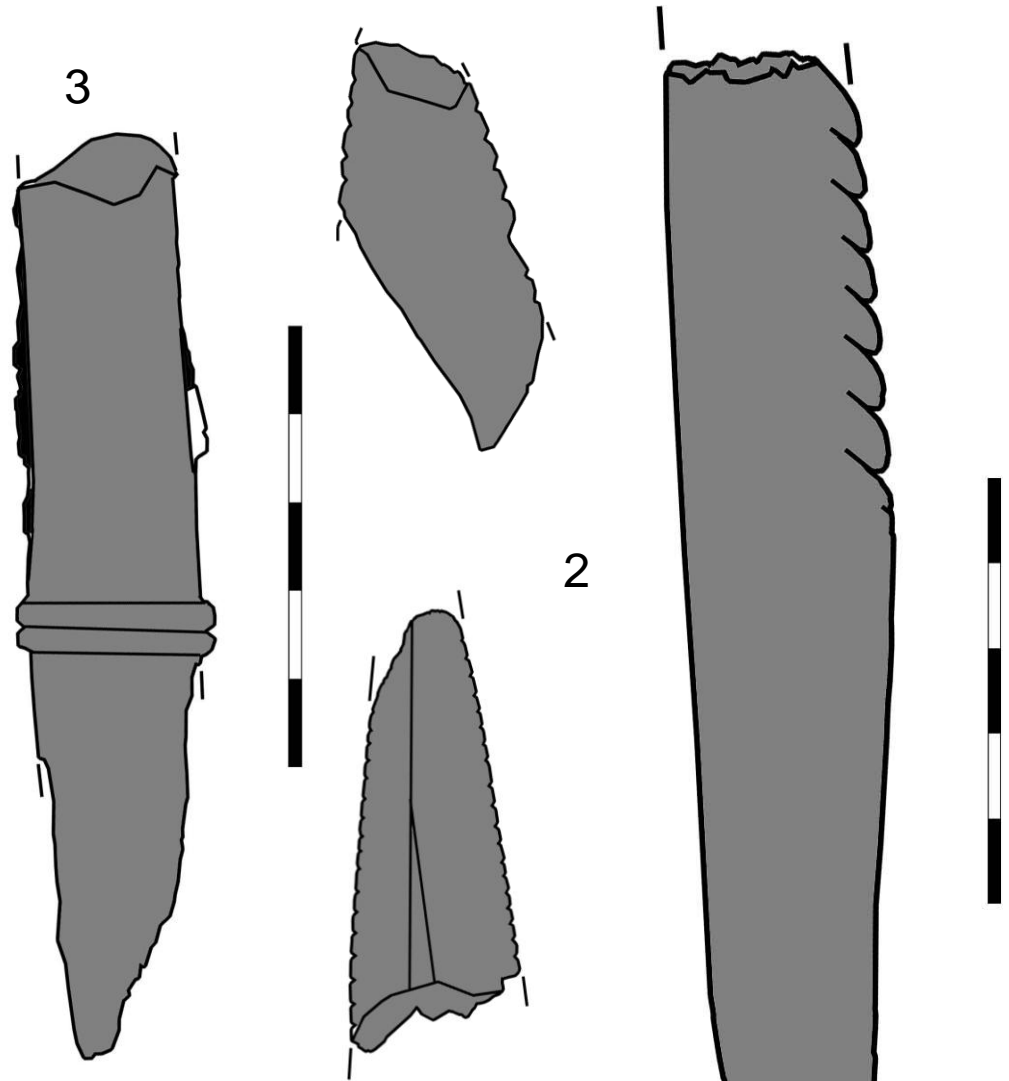


2





# Cutting-edged tools



(bone or antler) :  
1- lanceolate ;  
2- notched ; 3- slotted.

# Stone knapping tools



(antler or exceptionally bone) :

1- « percuteur » ; 2- punch ; 3- « compresseur » ; 4- « retouchoir » ; 5- « béquille ».

# Navettes

(bone  
or  
antler)



R  
E  
T

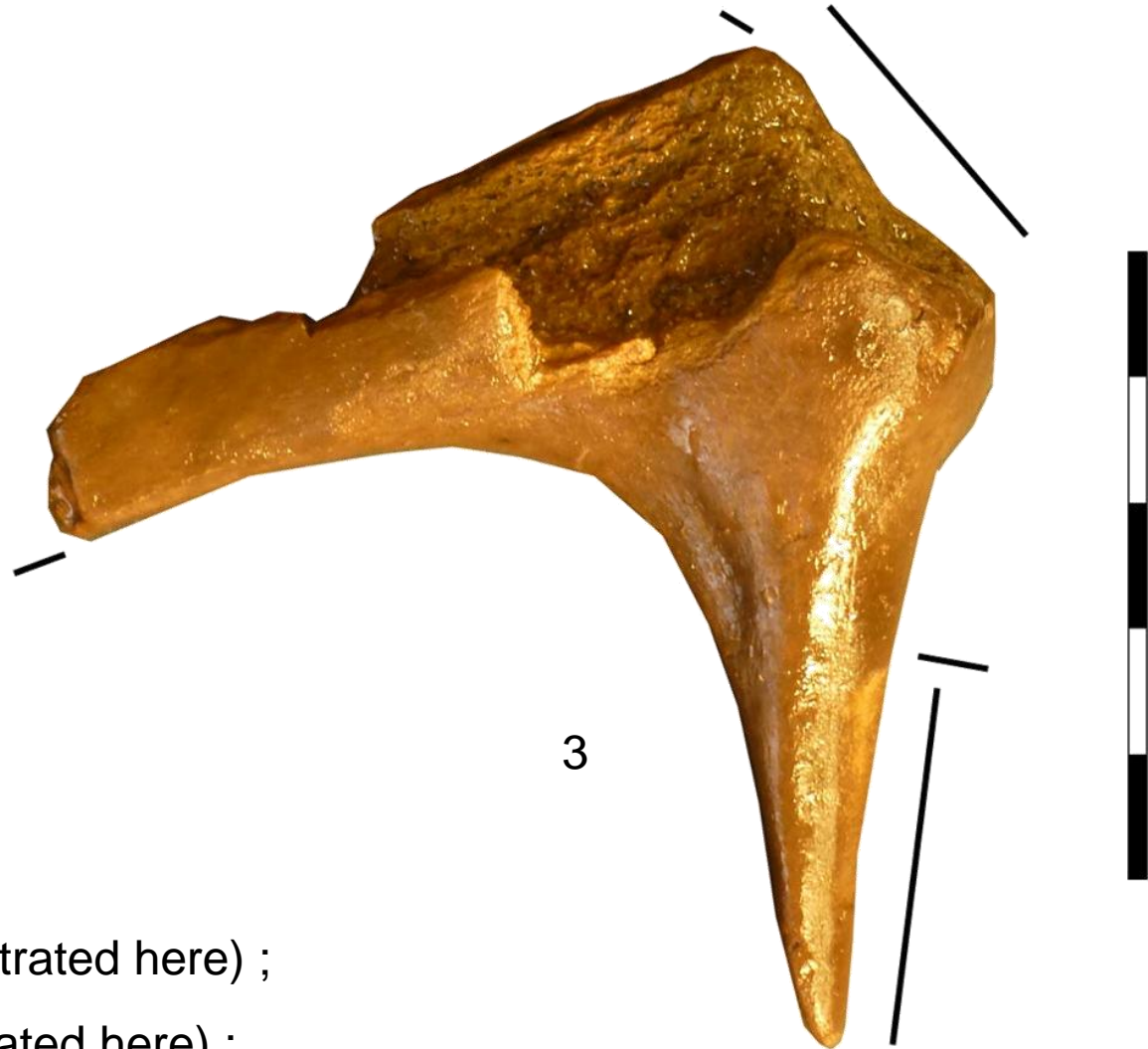


R  
E  
T

Re-Used harpoon head



# Sleeves and shafts



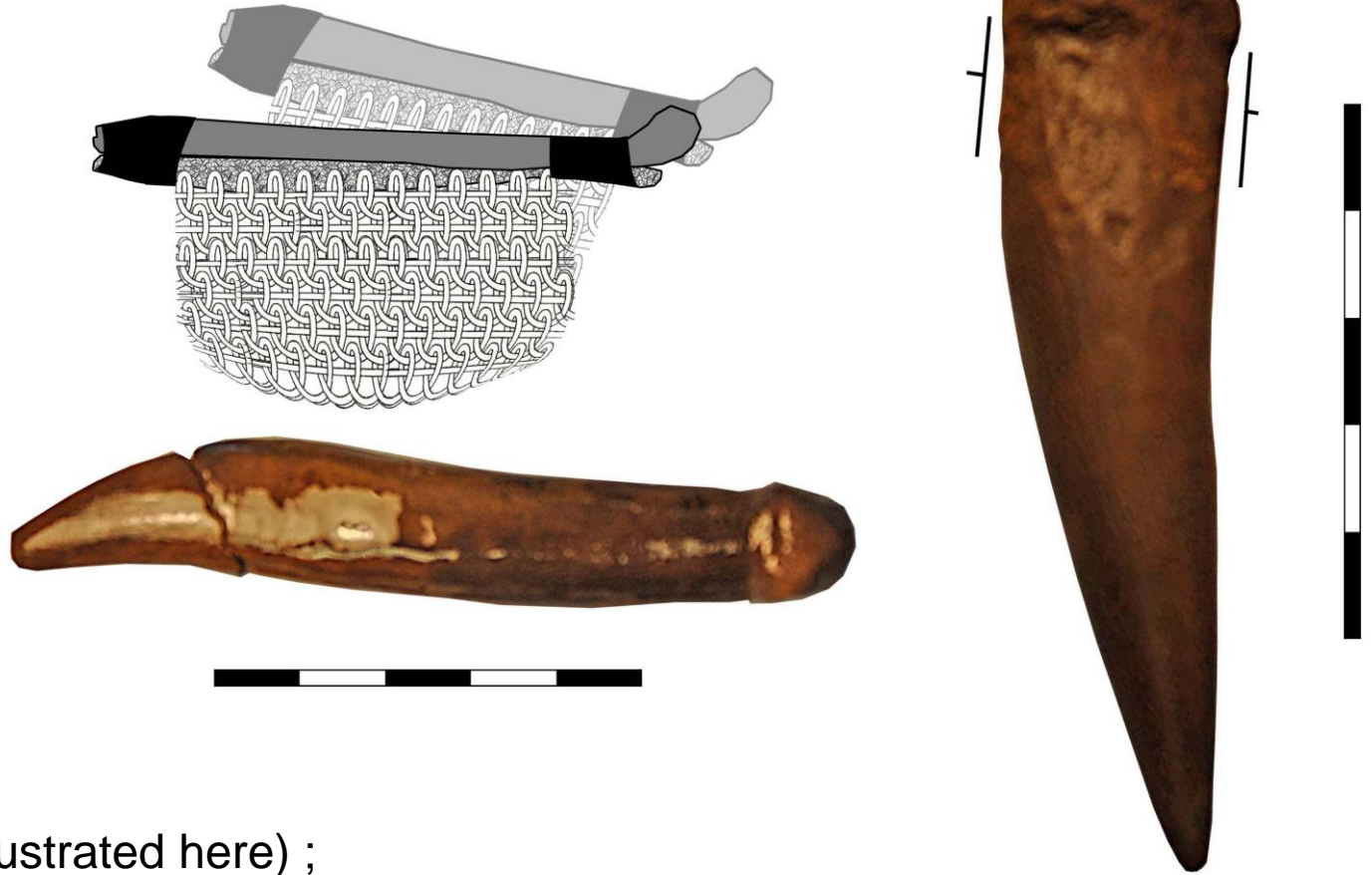
(antler)

1- sleeve (not illustrated here) ;

2- shaft (not illustrated here) ;

3- socket piece.

# Ornaments and other forms



tooth pendant (not illustrated here) ;

bone tubular pendant (not illustrated here) ;

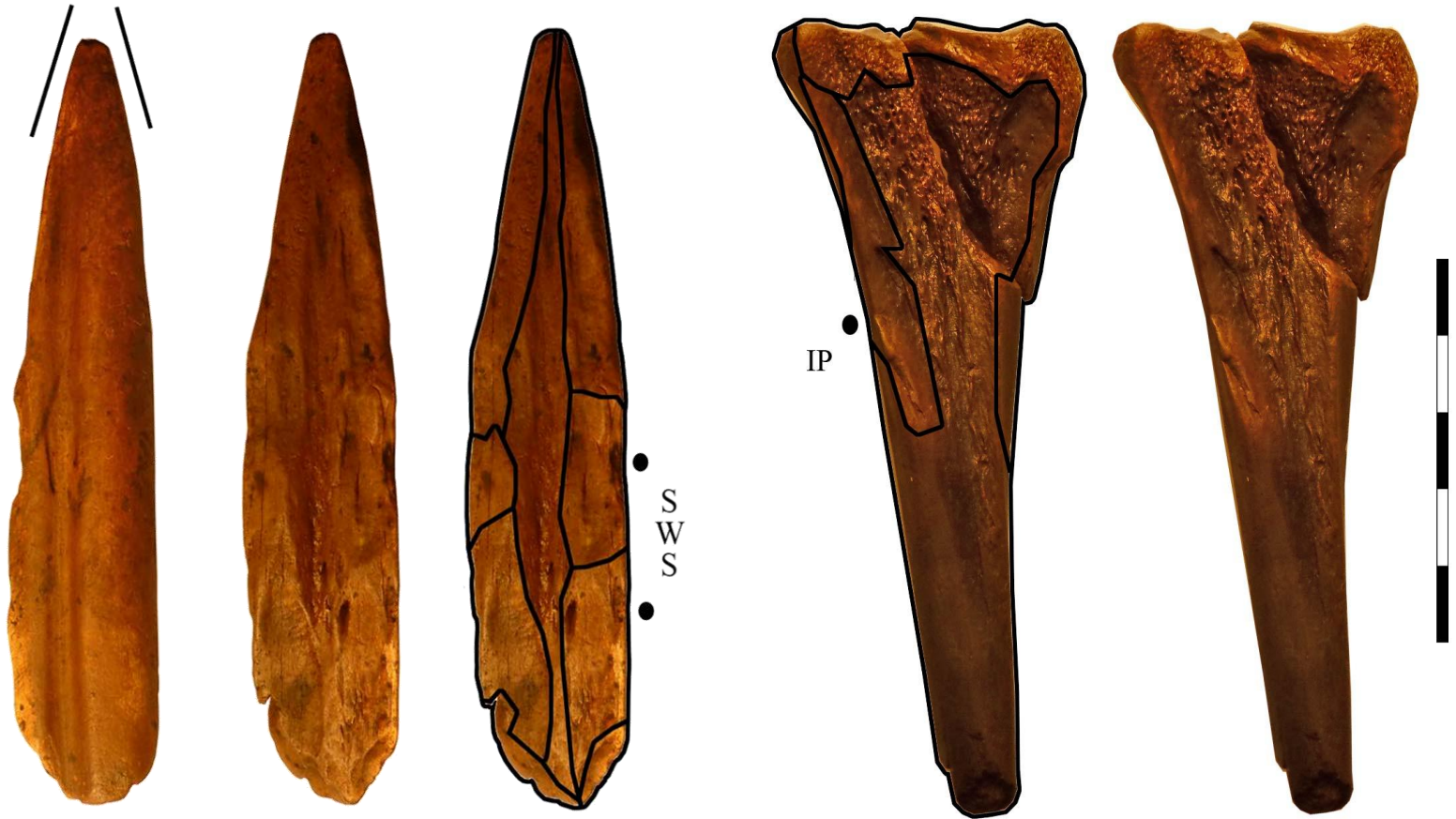
straight form (« labret ») (not illustrated here) ;

handle-like form (basket) ;

cork with a suspension system (« bouchon d'outre »).



# Recognized techniques (debitage)



IP : Indirect percussion (wedge-splitter)

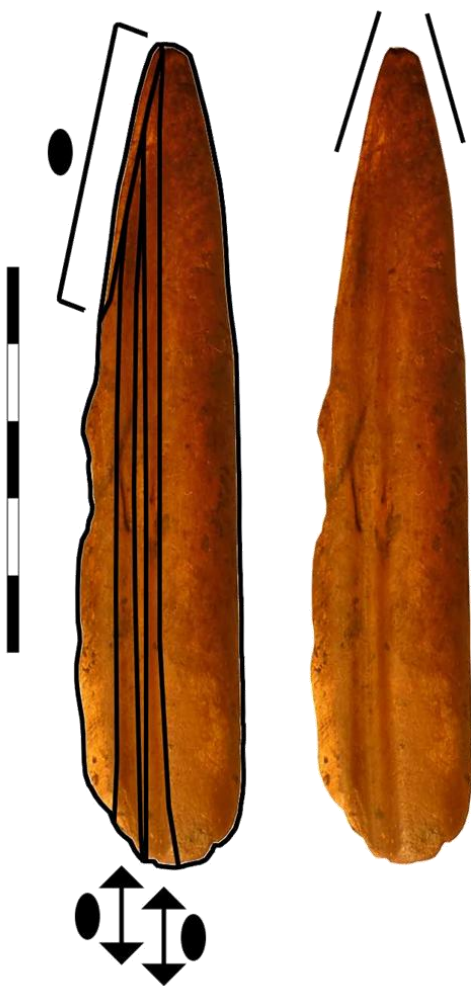
SWS : Indirect percussion (shaft-wedge-splinter)

# Recognized procedures (debitage and/or hafting system)

Sawing (before splitting) with a stone edge (not represented here see n°1629)

Grooving (for possibly re-splitting?) with a stone edge

Heat? (not represented here, see n°1532)



# Recognized techniques (fashioning) (1/2)

Technique for regularizing/shaping the blank :

Grinding with a stone

Nicking with a stone axe





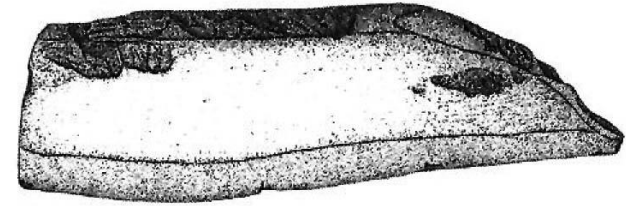
# Recognized techniques (fashioning) (2/2)

Technique for fashioning the attributes :

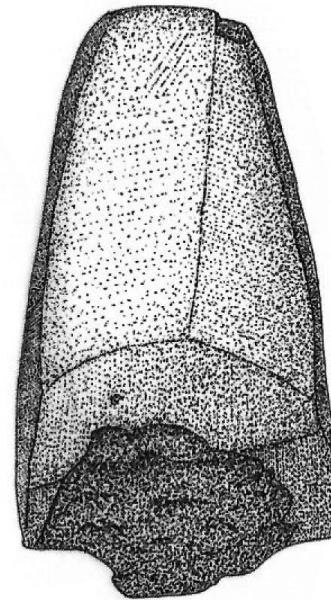
Grooving with a flint angle (burin like) for the slot  
(not represented here)

Nicking with the a stone axe for the embase (not  
represented here)

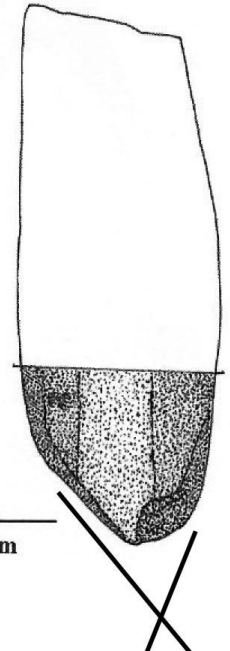
Carving with a « slab » or green stone edge for the  
barbs (mainly axially) and the notches (mainly  
axially, could also be convergent « both sided »)



12 cm



10 mm



# Recognized damage patterns (last use)

RET : retouch

Bifacial use wear « lisseur-like » (extremity)



RET

# Recognized anatomical parts/species



To get the long splinters, mainly :

Large cervids : elk, red deer (+a few roe deer)

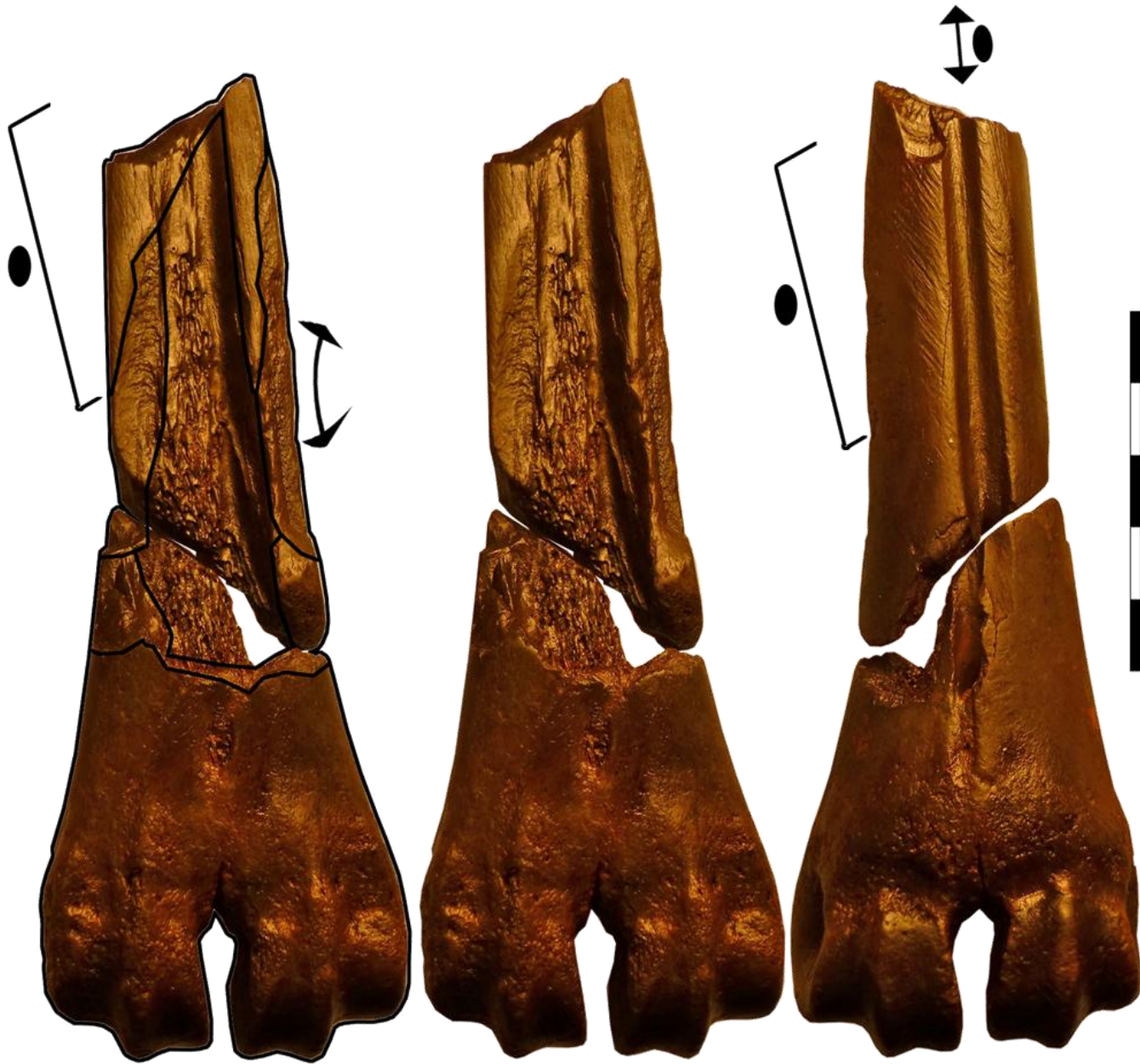
Limb bones : metapodials (metacarpus, metatarsus), radius, tibia, humerus, femur (+ basal end of jaws)

For the other blanks : cervid antlers (+wild boar incisors)





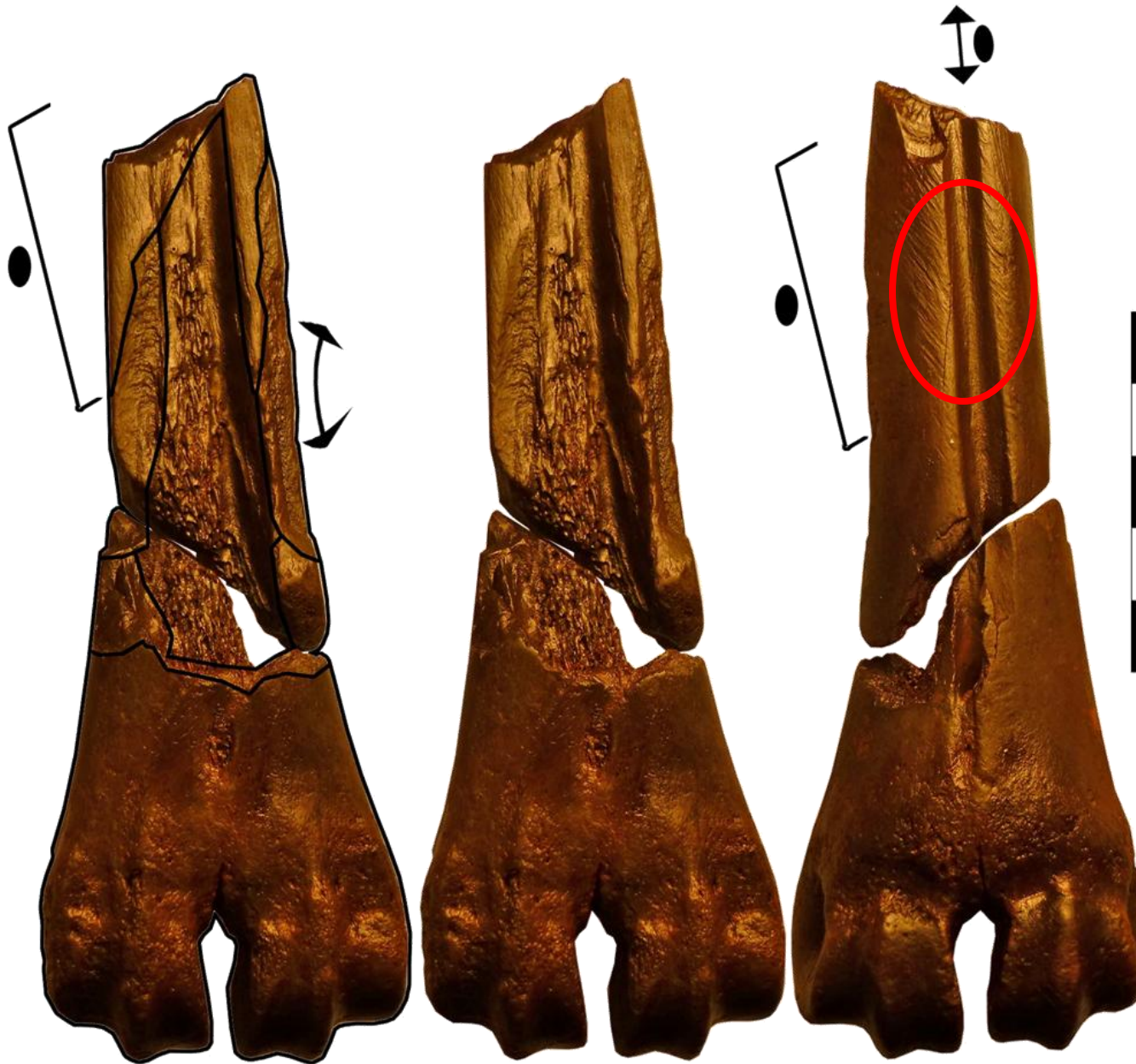
# Reconstructing the theoretical »chaînes opératoires »



On red deer  
metacarpal bone :



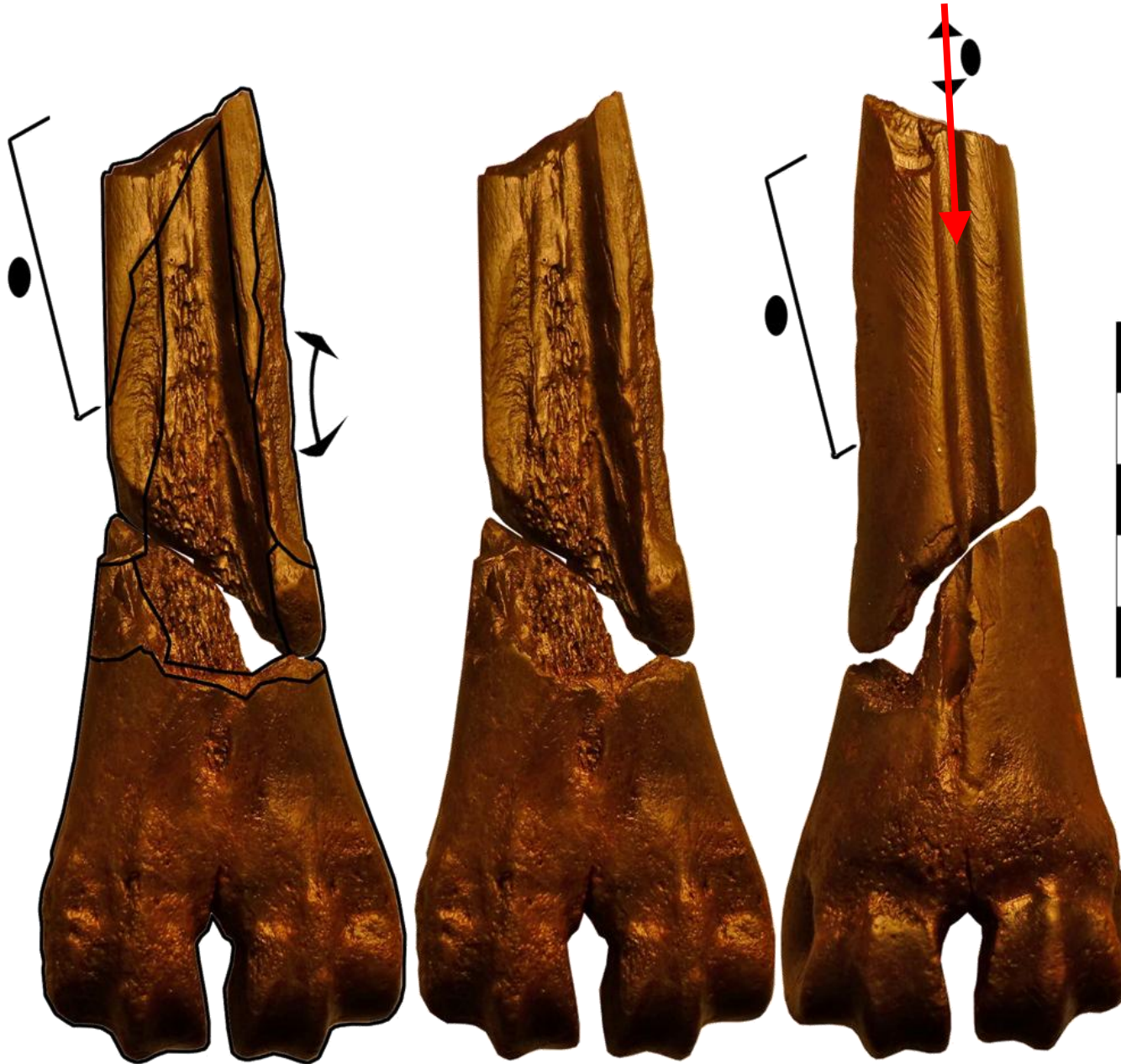
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On red deer  
metacarpal bone :

Step 1- Grinding the  
bone (reduction)

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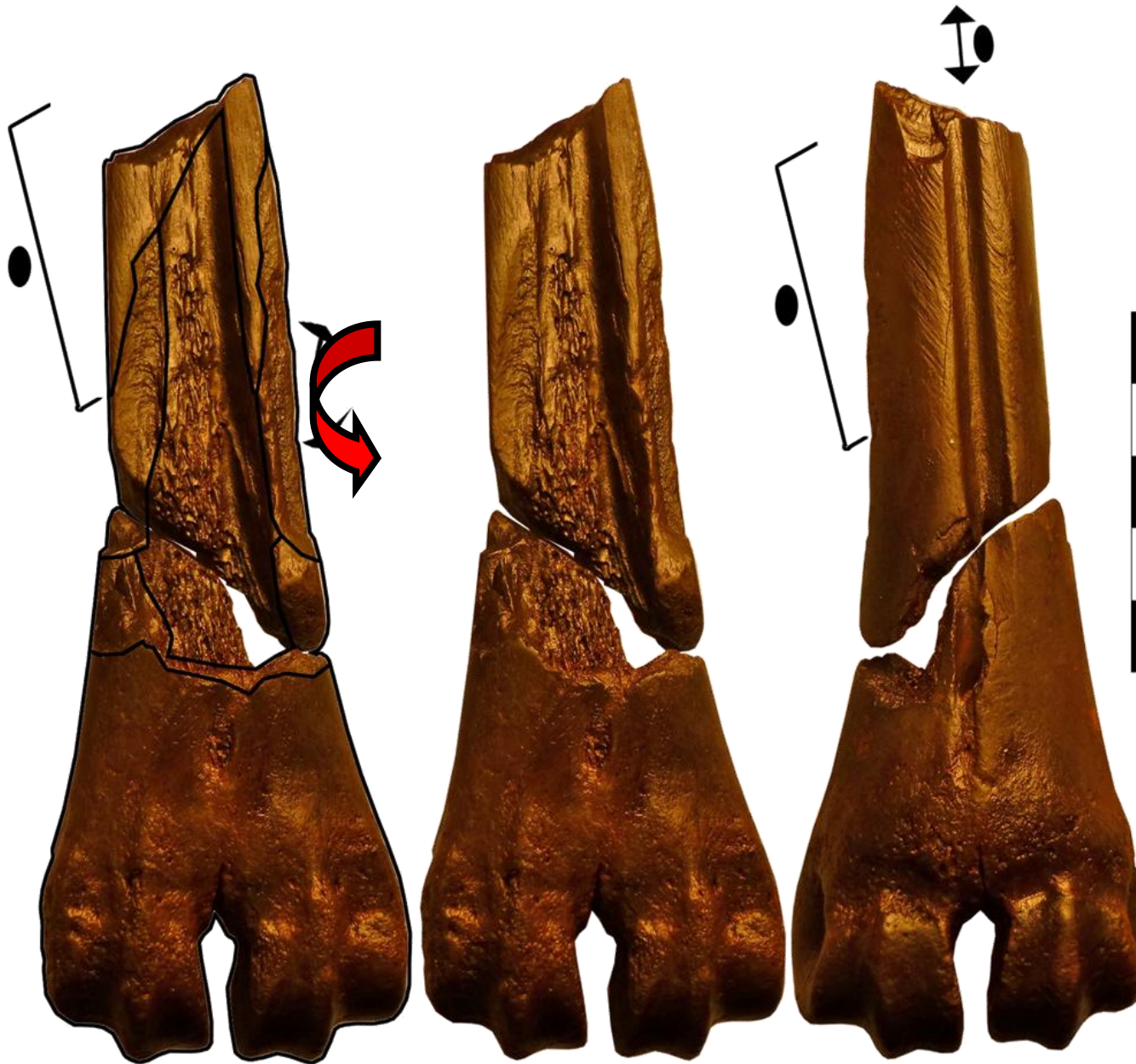
On red deer  
metacarpal bone :

Step 1- Grinding the  
bone (reduction)

Step 2- Grooving the  
dividedline lengthwise  
(procedure)



# Reconstructing the theoretical »chaînes opératoires »



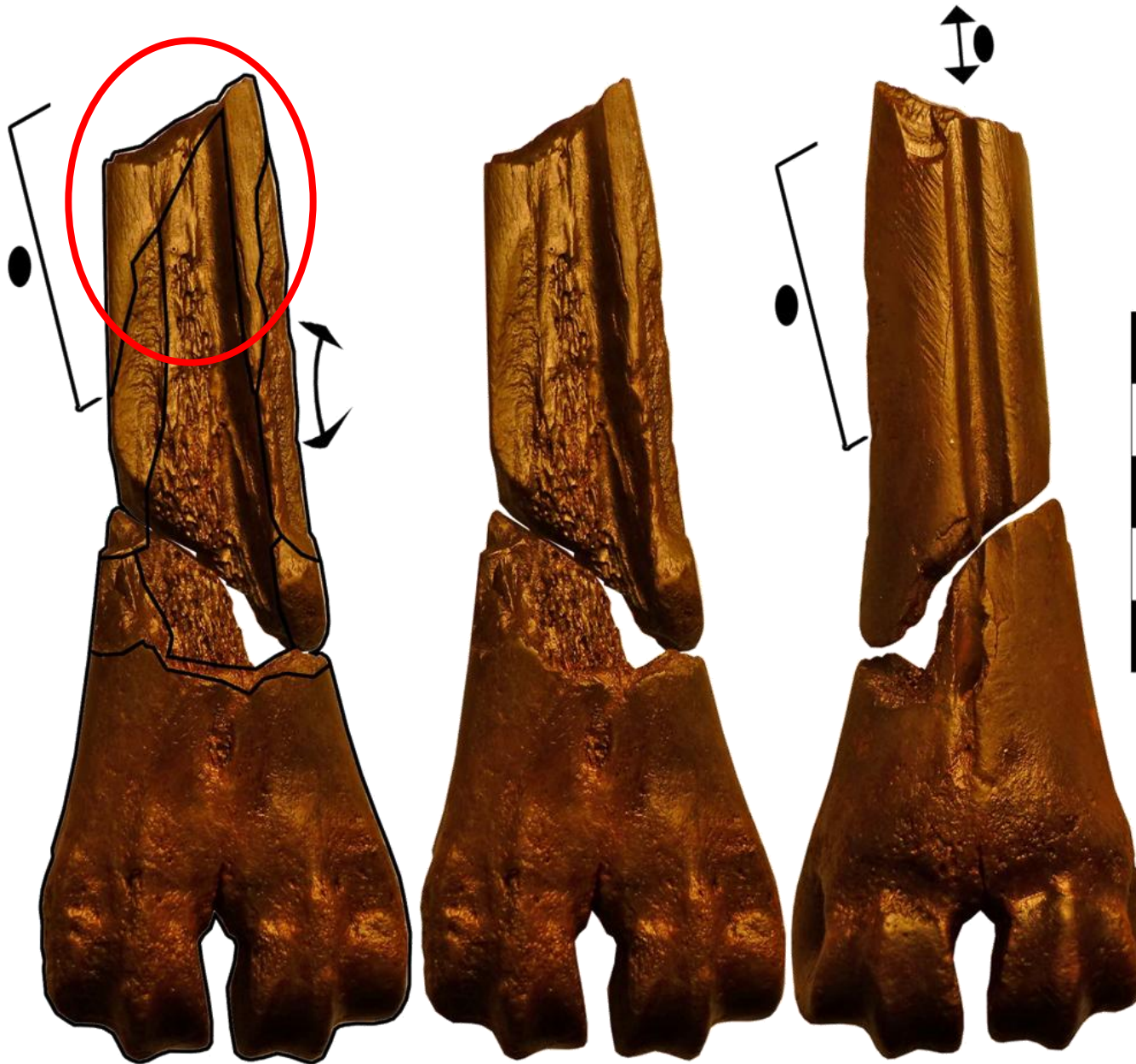
On red deer  
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(procedure)

Step 3- Splitting (IP)  
axially (debitage)

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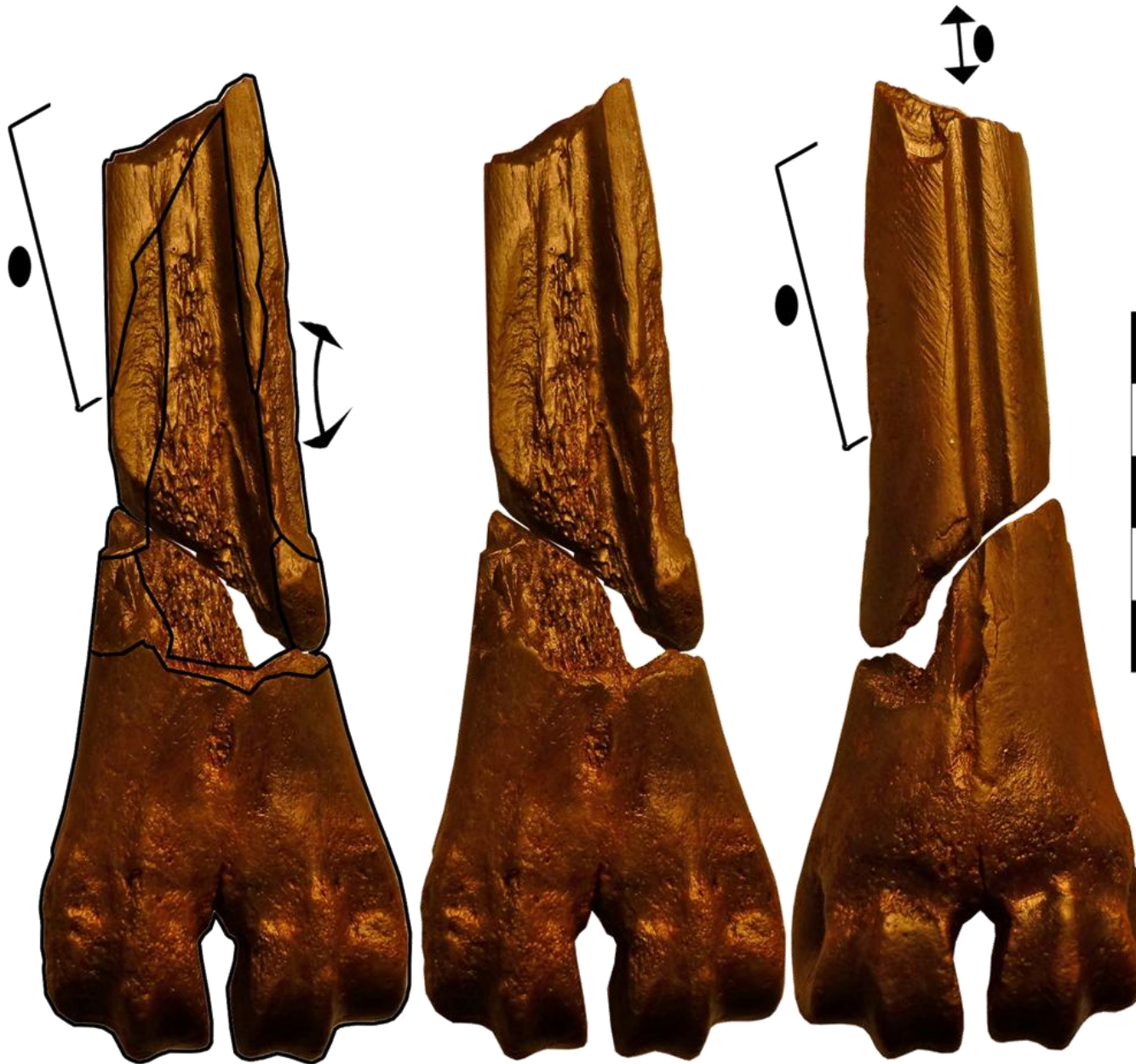
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Step 4- Grinding  
faces (fashionning)



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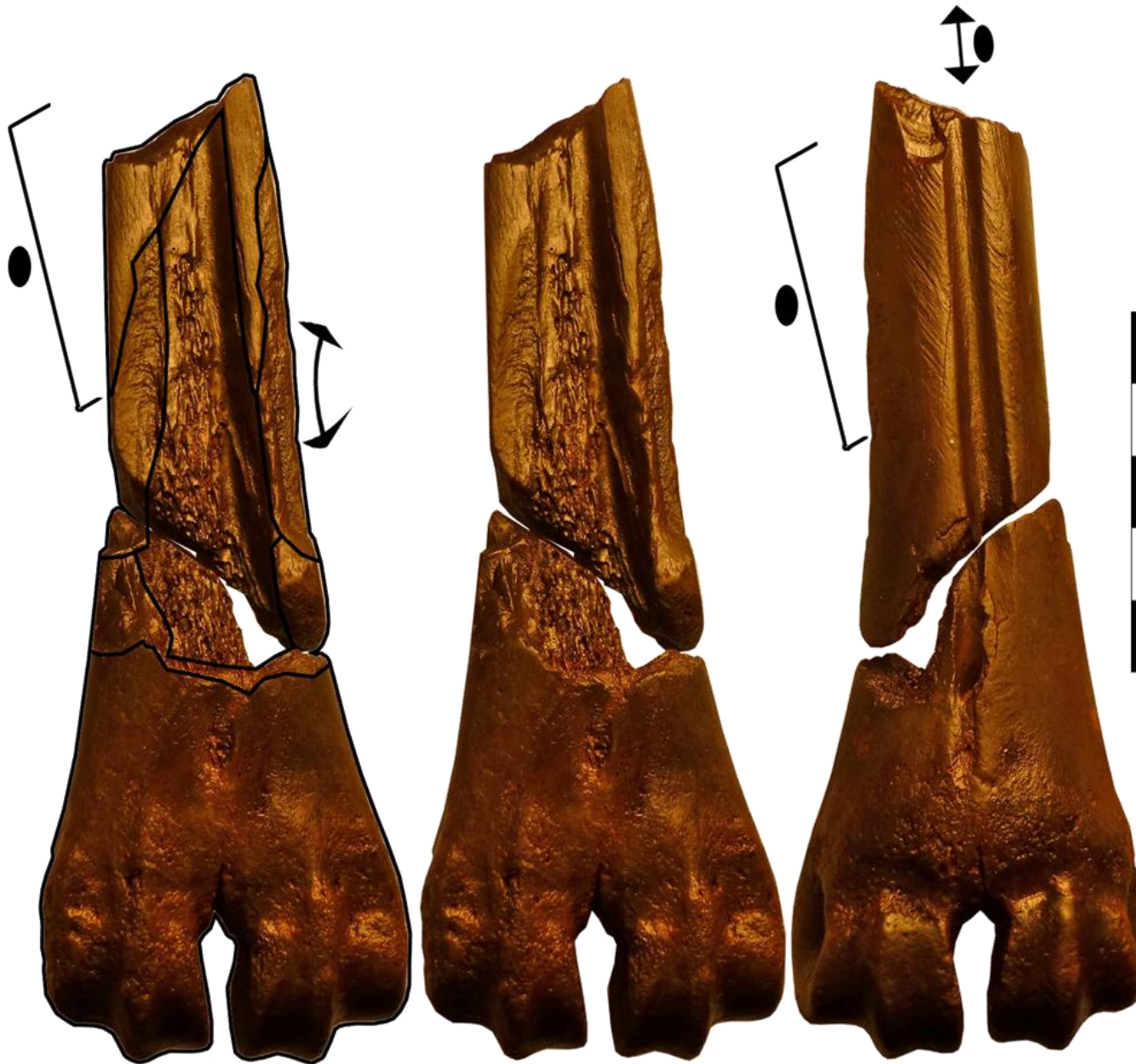
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Products : half axial-  
facial anat. blanks  
(palmar and cranial)

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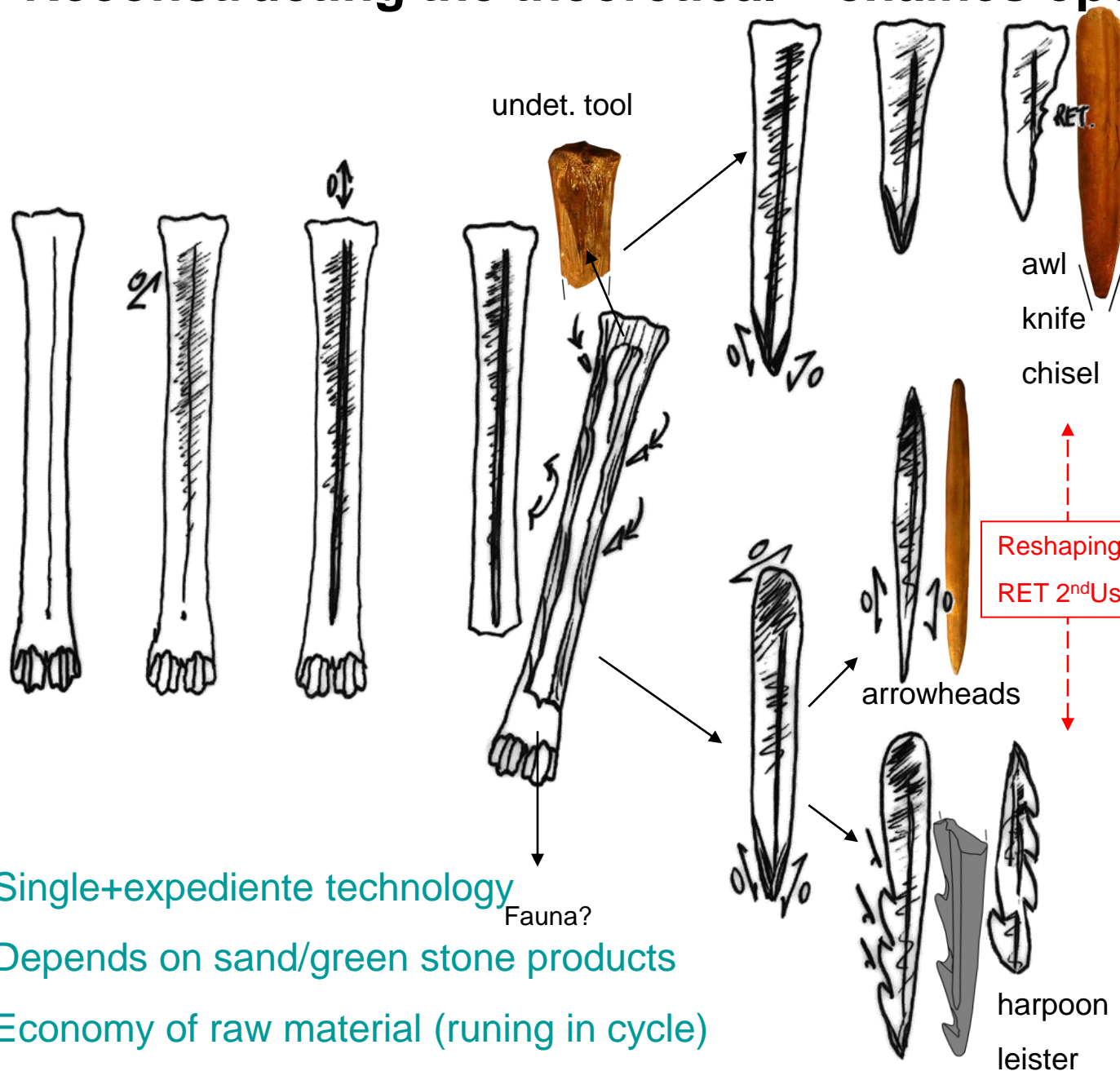
Corresponding tools :  
leister, chisel, points







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On red deer metacarpal bone :

Step 1- Grinding the bone (reduction)

Step 2- Grooving the dividedline lengthwise (procedure)

Step 3- Splitting (IP) axially (debitage)

Step 4- Grinding faces (fashioning)

Products : half axial-facial anat. blanks (palmar and cranial)

Corresponding tools : leisters and chisel

Single+expediente technology

Depends on sand/green stone products

Economy of raw material (runing in cycle)

Fauna?

Reshaping  
RET 2<sup>nd</sup>Use