AURORE VAL EPISODE - DISCOVERY OF CUTTING MARKS ON PREHISTORIC FELINE BONES IN SOUTHERN AFRICA

"Every time I start a day's dig, I think of all the things we could discover. South African sites are really interesting because the archaeological remains are so well preserved: there are lots of animal remains, but also charcoal and seeds that are sometimes tens of thousands of years old. It's true that when I'm digging I sometimes think that I'm standing on the spot where, 80,000 years ago, prehistoric men and women might have been cooking an antelope leg, and I find that quite moving. »

Credits

Introduction

How do you make a scientific discovery? What paths must be taken, and what role do time and chance play?

"Dans les pas d'Archimède" is a series of podcasts from Aix-Marseille Université in which some of its most eminent researchers tell the story of a discovery they have made.

In this episode, archaeozoologist Aurore Val takes us back to prehistoric South Africa, following in the footsteps of hunter-gatherers.

Episode

My name is Aurore Val and I'm an archaeozoologist at the Laboratoire Méditerranéen de Préhistoire Europe Afrique of the CNRS in Aix-en-Provence, which is attached to Aix-Marseille Université.

There are two categories of specialists interested in animal remains.

There are the palaeontologists, who are more interested in questions relating to the evolution of species, their appearance and disappearance, and the reconstruction of ecosystems, in other words the natural environment.

The second category is that of archaeozoologists. As the term suggests, archaeozoology means archaeology, so what we're really interested in is the nature of the relationships between human groups, in prehistory and other periods, and the animal kingdom, in terms of consumption and then in terms of exploiting all the resources offered by animals: feathers, skin, bones, etc.

So we're going further than simply reconstructing diets; we can look at the place of animals in iconography in more recent times, and in prehistory too in questions relating to cave art. It's quite a broad discipline, but I'd say that palaeontology puts the animal at the centre, whereas archaeozoology puts human groups at the centre.

Musical interlude

I study the interactions between human groups and animals in prehistoric southern Africa. In 2019, I was at the University of Cape Town in South Africa to study archaeological material from the Diepkloof Rock Shelter site. The archaeological material I was interested in is associated with a particular culture of South African Prehistory, which is called the Howiesons Poort after the name of an eponymous site.

The Howiesons Poort was a period of cultural and technological innovation, during which new types of stone tools - and certainly weapons - were produced, thanks to a considerable mastery of adhesives (i.e. glue) and fire. During this period, hunter-gatherers adopted

symbolic behaviour, perhaps to mark their membership of a particular group. Hundreds of fragments of ostrich eggs decorated with geometric motifs have been found at Diepkloof.

We still don't have a clear understanding of all the factors that explain this phase of cultural innovation; we could be dealing with demographic pressures, for example, which could be linked to climatic changes, and which would create tensions between these human groups.

On the other hand, we could be dealing with a period of greater connection or connectivity between these human groups and, in both cases, there is a need to mark one's identity.

In the context of demographic pressures, and in my case as an archaeozoologist, there could be a reduction in the animal resources that are usually present in the environment, and one possible adaptation by groups of hunter-gatherers is to turn to resources that are usually neglected. In the context of southern Africa, these animal resources are smaller animals such as hares and 'damans', a species of marmot found in the region.

It was this hypothesis that I wanted to test in 2019. At the time, I had a question in mind: could we document the fact that at Diepkloof, at the time of the Howiesons Poort, human groups had begun to consume more of these small species? Finally, I'm going to make a completely different discovery.

Musical interlude

In archaeology, there are two main types of excavation.

There are open-air excavations, where all the archaeological remains are on the surface. This is material that has been preserved by sediment, i.e. soil, which has subsequently been removed by erosion, wind and rain.

There are also excavations in rock shelters. These are sites at the entrance to caves or at the foot of cliffs. In southern Africa we have many of these rock shelter sites where we find an accumulation of archaeological layers, one on top of the other, which, in theory, correspond to different moments in history.

In these shelters in southern Africa, the excavation areas are very small. We only work on a few square metres, and we go very slowly. We brush and expose the material more than we excavate it; we take a lot of photos, we record the position of the objects, and we make a lot of photographs of all these objects in their archaeological levels. The objects are then cleaned and given a number that corresponds to their exact position in the site. The objects are then placed in boxes, which are then stored at the university or the museum associated with the project for study.

Musical interlude

In 2019, I went to the University of Cape Town to study the remains of this small fauna from the Diepkloof Rock Shelter site. There, I spent several weeks opening dozens of boxes and, somewhat by chance, began to notice feline bones that bore cutting streaks.

An isolated bone with a cutting streak is exciting for an archaeozoologist, but it doesn't say much in itself. On the other hand, the repetition of this pattern on two, three or more of these bones becomes a signal and becomes interesting. It was a very exciting discovery!

As luck would have it, I'd done a dissertation on the skinning of carnivores in prehistoric times a few years earlier, so I quickly linked these cutting striations to the removal of fur. From then on, I completely left damans and hares to concentrate on carnivores and felines in particular.

What was particularly surprising here was that the cutting marks were found on the skull and leg bones of leopards, caracals and wild cats, i.e. solitary, nocturnal and rather dangerous animals whose food consumption was not a priority for hunter-gatherers.

At no point can we rule out the possibility that these carnivores were also eaten for their meat, but from the bones I was studying, we can clearly see that the cutting practices were quite careful and the way in which the furs seem to have been removed whole, presumably for later use.

After this initial moment of excitement, I entered the tedious phase of selecting, describing and checking the remains. I went back to the fifty or so boxes that I had studied, one by one, to extract the remains of carnivores in a fairly systematic way and try to understand what this diagram was telling us.

I looked at the bones under a microscope and then went to Pretoria, where there is a large Natural History Museum with modern collections of South African mammal skeletons, to confirm that they were indeed the remains of leopards, caracals and wild cats.

Musical interlude

When you work alone on material, I think we all go through periods of doubt. Doubt is even the daily experience of my work: have I made a mistake? Do I have the right skills to answer the questions I'm asking myself? Am I in the best position to look at this material and draw the right conclusions? Maybe it's a bit feminine, but it's true that the imposter syndrome plays a big part, in the lives of female researchers at any rate. What helps is teamwork, because the team confirms that this is an interesting discovery. There's not much I can do on my own anyway: prehistoric research only works if it's collaborative.

I quickly shared my discovery with my fellow researchers responsible for the Diepkloof excavation. These were not archaeozoologists, but other specialists, particularly in stone tools, who brought their own knowledge and experience to bear on understanding this discovery. Together, we considered the implications of this discovery, both in relation to the site and to the wider context of South African prehistory, in an attempt to understand what these striations tell us about the way of life of prehistoric hunter-gatherers.

Because we're talking about carnivores here, because this is a site where we have a whole range of clues, and because this is a moment in South African prehistory where we know that symbolic practices developed, we can imagine that these feline furs may have been used as clothing, as an element of adornment, and perhaps to mark certain individuals in relation to others. In general, at least in our publications, we stop there in terms of interpretation because we will never have the definitive answer. After that, I like to imagine something that might be linked to rites of passage, for example.

Musical interlude

The discovery itself is not enough. A great deal of energy is then needed to continue the work and present the data in detail, so that it can be understood and appreciated by the rest of the scientific community. So you have to immerse yourself in the literature that already exists on the subject, on the region, on the period, but also elsewhere in the world and on other periods, which brings us back to the long-term nature of research.

I also went through yet another verification phase. I went back to the Natural History Museum to check my interpretations one last time, and I looked at the bones under the microscope one last time.

The idea is that, when I publish my data, we should be convinced that it is valid, at least at a given moment, and that it is useful to the scientific community. It's quite rare for someone to come and check the validity of these data, so I'd say that there's a certain responsibility at the time of publication of this work.

Musical interlude

This discovery reinforced my idea that during this period of South African prehistory, new phases of experimentation and interaction between hunter-gatherers and the animal world were taking place.

It may pave the way for other similar discoveries, which point to these other ways of interacting with the animal world in general, ways other than simply acquiring food.

I think that's one of the reasons why we do this job: to make a small contribution to a more global understanding of prehistory, of these hunter-gatherer groups in southern Africa in my case. I think that other archaeozoologists studying animal remains at other sites might have this discovery in mind. In archaeology, having an idea in mind when you look at material and when you excavate can help you look at things differently.

Researchers are increasingly being assessed on their ability to produce and, in particular, to publish. I regret this because research actually needs a lot of time: to prepare the ground, to make mistakes, to develop skills and to explore avenues that seem to lead nowhere but are never wasted time, because they allow you to ask new questions and sometimes open other doors.

You have to hang in there. There's a lot of competition, especially in Europe. But on the other hand, I think we're very lucky to be doing research in France. I'm going to be paid for the rest of my career to think about what human groups did in southern Africa with animal remains, and that's a real privilege.

We can draw a parallel between researchers and artists: from a capitalist point of view, focused on production and consumption, what we do is not necessarily essential. But what makes the human species interesting is the time we spend doing other things: our interactions with each other and our creativity.

Our job as archaeologists is to try to grasp the changes in the history of past human groups in order to understand who we are today, how we have evolved and to shed light on our understanding of our contemporary societies. In the current context of globalisation and global warming, I think this is vital.

Conclusion

You have just listened to (or read) "Dans les Pas d'Archimède", the podcast series revealing the scientific discoveries of Aix-Marseille Université researchers.

This episode was recorded on the premises of the Aix-Marseille School of Journalism and Communication (EJCAM). It was written, directed and edited by Charlotte Henry de Villeneuve and Merry Royer. The music was composed by Hdv, who also handled the mix. Many thanks to Aurore Val for her contribution.