

The art of reading footprints: How indigenous knowledge supports science

Indigenous knowledge can broaden the findings of science. This was shown during a research project where archeologists from Europe and members of the San tribe from Namibia, Africa, worked together. Their research object: The interpretation of prehistoric footprints in caves in France. Where the researchers only could measure the tracks, the San were able to tell the stories of the footprints due to their extraordinary abilities.

How do you recognize if a footprint is from a man or from a woman? "By the differences," was the answer of Tsamkxao Ciqae from the San tribe from Namibia. Together with two further members of his tribe, C/wi /Kunta and C/wi G/aqo De!u, he participated in the research project "Tracking in Caves". The San were supposed to support European researchers to correctly interpret human tracks in prehistoric caves.

17 000 years old are the tracks preserved in some caves in France. A long time ago their exact length and width was measured and documented by archeologists. But who used to live in the caves and what happened there, the scientists could not interpret up to now.

The knowledge of the San, one of the few African tribes able to read tracks and to interpret them – a skill passed on from hunting fathers to hunting sons until today – was supposed to help here. For millennia it has been vitally important for them to reliably distinguish tracks from wild animals and to read from the prints how old the track is – of the animals that are hunted, but also of animals that are best avoided, such as for example a leopard or a venomous snake. The San can even assign tracks to individual animals – a vital ability for hunters often following their prey over long distances. Still today the San go hunting or offer their abilities to other hunters.

The San use their ability to read tracks also for footprints of humans. For them a footprint is almost like a fingerprint, individual for every person. Not only from the shape, but also from the way a foot touches the ground and

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(2. fr. left) and
Tilman Lenssen-Erz
(r.) examined footprints in prehistoric caves together with three hunters from the Santribe in Namibia.



rolls and from the toe position they can recognize family members, neighbors or friends. From a footprint the San can also recognize the age and sex and also if a person was scuffing, jumped or carried weight. The feet of women are recognized mainly from their slimmer, delicate shape. First of all the position of the toes reveals the owner of the track. If you want to hide something – a theft or an escapade – be sure to walk on your heels only. From the toe position the San also recognize the age of the person. The older, the stiffer the toes, the more sand is shoveled backwards while walking. And from the depth of the prints and its shape the San can deduct the weight, the running speed and the body posture.

New interpretation of old footprints

The unusual cooperation between European archeologists and African trackers was the idea of Andreas Pastoors from the Neanderthal-Museum in Mettmann, Germany, and Tilman Lenssen-Erz from the University of Cologne. Both have researched stone-age cultures for many years, Pastoors

in Europe, Lenssen-Erz in Namibia. It was there where Lenssen-Erz got into contact with the San and their extraordinary talents. In 2011 they started their common research project, but two more years passed until they could explore the first caves in France. It was the first time that archeologists cooperated with indigenous partners.

"The tracks can be easily recognized, we can measure and count them, but we cannot read and understand them", Tilman Lenssen-Erz says. The San revived the tracks and the European researchers were flabbergasted about the new findings. The people 17 000 years ago thus not only left rock-paintings in the stone-age cave complex of Fontanet in France, but also 100 footprints. The San managed to distinguish prints of 17 people: eleven men, two women, one boy and three girls. Also the age of the people could be deducted from the footprints by the San.

Due to their knowledge passed on over generations – and maybe due to the similarity of their lifestyle – they could reconstruct what happened in the caves way before common era. Where researchers so far have assumed

Difficult task for the trackers from Africa: They had to find the stories behind the footprints that were left in the caves 17 000 years ago. (Photos: Tracking in Caves)



that the caves were used for initiation rites with dances, the tracks indicated completely normal life in the cave. Tracks from children to older people could be found there. Also in the cave "Tuc d'Audoubert" the San's explanation for the 200 footprints was much simpler than the researchers' theory. In this cave two adobe sculptures of wisents could be found. The San identified tracks of a man and of a teenager and could show that they went twice to the clay-pit in order to get material for their sculptures. They could recognize from the depth of the footprints on the way back from the clay-pit that the adobe they carried was heavy.

Also the discovery of the track of a shoe in the cave had to be denied by the San. When they looked closer, they could recognize the contours of toes in the print. The assumed glacial wearer of shoe was walking barefoot just like everybody else.

The fact that tracks can be recognized and allocated with knowledge,

has already been studied and confirmed in scientific studies. What really amazed the archeologists was the San's quasi scientific approach. They strictly adhered to facts, thus to something that could be seen without any doubt. Only on this basis the interpretation followed.

Hereby they often discussed the interpretation of the tracks at a single spot for an hour and talked about the smallest details before they made a statement. Then this always was a clear statement. In case of uncertainties, the San preferred to be silent.

First the San could not phrase how they reached their conclusions. They were forced to reflect their practical knowledge passed on for generations, and to explain what cannot be measured with a measuring device. Knowledge passed on from generation to generation cannot be found systematically in a textbook. This is also the answer to the initial question how to recognize women's feet. For the San it was obvious, outsiders were not able

to relate to it. Where the San see the differences in the tracks and what method they use, is thus part of a research project. In order to better understand how the San work and what criteria are essential for their findings, their conversations and discussions in the caves were recorded. The aim is to integrate indigenous knowledge in research not as an exotic addition, but to develop a serious interdisciplinary technique from it. ■

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Knowledge from experience does count

When I first read about the trackers from Africa and their cooperation with the archeologists, immediately the analogy to pedorthics came into my mind. On the one hand science, measuring exactly, on the other hand knowledge that has developed over years and that has been passed on from generation to generation.

It is not unusual that an expert from pedorthics knows exactly how to work a foot orthotic so that it not only fits but also has a functional effect due to his knowledge and experience.

But similar to the African trackers he may have difficulties in explaining to outsiders how he reached his decision and why the foot orthotic has to be exactly this way and not any different.

As opposed to the archeologists that resort to indigenous knowledge for the reading of footprints, pedorthists are challenged by science to verify their knowledge with scientific methods. Nobody will doubt that this makes sense and broadens the findings. Modern analysis methods additionally provide more possibilities to

collect important data. But this should not mean to forego knowledge gained by experience. Often this knowledge gained by experience by far exceeds everything that can be technically measured today. And every experienced practitioner will confirm that many data can only be sensibly interpreted with the necessary experience. The research project with trackers from Africa shows that knowledge can also stand its ground in a scientific context if integrated sensibly.

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