

Hippos in Holland – an interview with Bert Boekschoten (October 2008)*

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If it were up to Bert Boekschoten, he would take a plane right away and fly off to Kenya, to do research on the diet of our chimpanzee-like ancestors within a fossilised beach deposit. However, his fascination for fossils also lies just around the corner. The sand used for building close to his laboratory at the Vrije Universiteit is chock-a-block with shells of Eemian age, suction dredged from the Amsterdam subsoil. Bert also considers the Winterswijk Muschelkalk quarry as a fossil hunting ground.

How did you become engaged in geology?

When I was a kid, my parents presented me a lens, for which I am grateful to the present day. On a walk across the heath near Laren (I was nine at the time), I noted imprints of small, cubic crystals, pyrite, in a cobble that the River Maas (Meuse) had transported to the Netherlands. I was immediately hooked.

Do the Netherlands represent an interesting country for a geologist?

Our country is marvellous. Here you will come across a multitude of rock types. These have been brought here from Belgium by the River Maas (Meuse) as well as from Germany, by the River Rhine. And 800,000 years ago another river, the Eridanos, contributed sand, boulders and cobbles from Finland, Estonia and Russia. Those deposits can be found everywhere in the Dutch subsoil. They can be seen at the surface in gravel pits across Twente, Drenthe and eastern Groningen; they yield small, beautifully petrified sponges that are at least 480 million years old. Our ancestors thought they were petrified nutmeg nuts. Yet other rock types and fossils were washed here by precursors of the rivers Maas (Meuse) and Rhine. And during the Ice ages large boulders were transported from Scandinavia by glaciers.

Are such fossils just lying around, ready to be picked up?

The problem is that nowadays many places are not easily accessible. This used to be different in the past. Then there were numerous gravel, loam and clay pits that you could go to. The Limburg subsoil contains amazing deposits, but no one can see them. Formerly there were the collieries with magnificent petrified plants, but those are now closed. The ENCI chalk quarry will soon cease to be. Near Valkenburg there is a forest-covered clay layer which contains 40 million-year-old sea shells. And, along the railroad track near Maastricht 10-million-year-old shark teeth can be found; these are the remains of the last sea that covered southern Limburg. People should be able to view fossils within the levels that contain them, literally *in situ*. Such is much more informative than an already-boxed up shark tooth. Or a picture on telly, because that will not provide any excitement.

Is it not a good thing then that BBC series such as 'Walking with Dinosaurs' and 'Walking with Caveman' depict the life of prehistoric animals and man?

I never watch telly, nor DVDs. I lack the patience. I have an aversion to that medium. It is too passive for me. Genuine curiosity is not ticketed, nor does it fuel me to go on. Have you ever met a person who got a twinkle in his or her eyes from watching a TV programme on geology? Instead, that is what you will get when returning home with a bag full of rocks. Or when you see fossils in the pavement slabs along the Leidsestraat in

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Amsterdam. Only the real thing is convincing. It is always fantastic to see students find their first fossil. Having consulted many books on fossils they finally find something by themselves. That supplies a level of liberty that telly can never provide. It is as if your kid crosses the dunes and sees the sea for the first time.

Did you ever think that you chose the wrong profession?

I am 75 now, yet I am still as astonished and fascinated by nature as when I was nine. In my childhood it was like a journey of discovery. Now it is my job to tell students about it, but the journey continues.

Does it make a difference what age your students are?

Most students whom I teach hope to earn a living in this field. For instance, they will use their knowledge to study earthquakes, find water or discover mineral deposits. To study for a profession differs from delving deeper into a subject matter for insight and joy. But we do need oil explorers, who contribute to a better understanding of the structure of sedimentary rocks. For an oil company the story ends when no oil is found, no matter what magnificent fossils are there to be found.

Underneath the VU building, where you work, are found sand levels dating from the Ice Age, closer to the surface than in the centre of Amsterdam ...

Correct, in flowerbeds you even can find fossil shells of Eemian age, a warmer period in between the ice ages. This 100,000-year-old sand has been suction dredged from a depth of 20 metres, to be used all over Amsterdam-Buitenveldert for building purposes. During the Eemian it was much warmer than

today. Hippos lived in the River Vecht in the province of Utrecht. At night, these animals left the water to graze on the riverbanks. The River Vecht was quite unlike the River Rhine which had a more stable water level, and thus more extensive forests on its banks.

Which geological period fascinates you the most?

Especially the Permian-Triassic boundary is impressive. It marks the largest extinction event that the earth has ever witnessed. Animals that you can find in Amsterdam pavements slabs died out at that time. Times during which lots of things happened fascinate me the most, e.g. the beginning of the Cretaceous Period, when modern seed plants started to develop. As did the animals that fed on them. The late Neogene and the Ice ages, starting two million years ago, are particularly interesting, because man appears on stage.

At present, are we living in the Anthropocene?

I am beginning to fear that we do in fact live in the Anthropocene at present, the more so because it becomes more and more obvious that we are even changing the climate. Incidentally, that term was coined a century ago by the German nature conservationist Hermann Löns, who was aware of ecology long before this subject was first studied at universities. Later the Russians used the term again and more recently Paul Crutzen, the discoverer of the thin ozone layer, reintroduced it.

Were you born in a time favourable for palaeontology?

I am happy with the present time. It is nice when gaps in our knowledge are closing.



Fig. 1. Bert Boekschoten (on the right) visiting the Hațeg Basin (Transylvania, Romania) in October 1998, together with his students Anne Schulp (left) and Eric Mulder (centre left), Douwe de Graaf, then director of the Natuurhistorisch Museum Maastricht (centre right) and Marcin Machalski (Instytut Paleobiologii, Polska Akademia Nauk, Warsaw; behind Bert), looking for dinosaur fossils near the estate of the illustrious vertebrate palaeontologist Franz Baron Nopcsa (1877-1933). Photograph courtesy of John W.M. Jagt.

Would you not have preferred to have been a contemporary of Darwin?

It is not nice to be controversial. In Darwin's time, the larger patterns in evolution were in fact recognised, but theories could not be fleshed out. The greatest advantage in the eighteenth and nineteenth centuries was that there were many rich and curious people, who took an interest in fossils, but their research did not need to pay off. Darwin was his own boss and used his own capital. In our time most research has to have a direct goal, and invariably all kinds of committees need to judge proposals. Personally, I think that scientific research benefits from open questions that have no predetermined outcome.

In your opinion, what subject should receive more attention?

I am very interested in the question how humans evolved from their chimpanzee-like ancestors. At the moment, such research is marginalised. Worldwide only a few hundred people are involved. In particular, the impact of diet on evolution fascinates me. We would love to screen a two-million-year-old Kenyan coast line, now inland. Primitive man walked around there. This appears exciting to me, but such kind of research is difficult to initiate. In earlier days, people like Darwin would have embarked on such studies, using their own money and working hard.

Who are people like Darwin?

Someone like Jacques Boucher de Perthes, one of the first to prove that man was older than six thousand years. He did so in 1847. Nobody believed it at the time. He was completely ignored by the French Academy of Sciences and ridiculed by everyone. But he bluntly continued and printed his own books. He was of noble birth and had lots of money, allowing him to travel and amass a large collection of fossils. He had time to think. Had he not been a nobleman and not been stubborn, he would have been more sensitive to the established opinion. Fifteen years later he was proved right. Everyone started to be convinced that man had a long history.

Which scientist fascinates you the most?

That would be Buffon, an eighteenth century French count who also had troubles on account of his ideas. He considered man to be an animal-like creature and even thought that there might be life on other planets. At the time, such was unheard of. The Sorbonne University was of opinion that his writings should be burnt and that he should be punished for his ideas which were in conflict with the Church. Mind you – Sorbonne University! Buffon may be described as a 'complete scientist', with a broad interest. He loved beautiful buildings, paintings, good food and interesting conversations.

So you need to belong to nobility and be rich to make great discoveries?

No, not at all. People lacking special education – unbiased so to speak – but with great dedication in particular may reach great heights in science. In this profession, amateur palaeontologists are indispensable. For instance, the late Felder brothers in southern Limburg: they contributed a lot to our knowledge of fossils from the Late Cretaceous and of the use of flint by primitive man, some 250,000 years ago. Another example is the German bicycle maker Rust, who biked all the way to the Middle East to carry out excavations all by himself.



Fig. 2. Bert close to being devoured by a T. rex at Krasiejów Dino Park (Opole area, southwest Poland; May 2013). Photograph courtesy of Pim Kaskes.

But finding fossils is something quite different than inventing a new theory, is it not?

Those things cannot be seen separately. If you find new objects, then discussion will arise. You will need such a discussion in order to obtain new ideas. The great disadvantage of the present time is that the established sciences are stimulated, while there are hardly any genuine opportunities for people outside the 'inner circle'. However, the present time is exciting, because many discoveries are being made. Yet many of these discoveries are not made thanks to established science, but rather in spite of it.

Did you make remarkable discoveries yourself?

On Cyprus we found petrified skulls of a pygmy hippo. That was the most exciting moment in my career. They were just lying there in front of a cave. Nobody had ever touched them. Our Turkish guide told us that dragons lived in that cave.

What is the most beautiful fossil you have ever seen?

That was a bear's skull. In the canines you still could see this animal's huge anger. And in the eye sockets there must have been enormous, fiery eyes. The oldest reconstructions are the funniest. In the early days these creatures were depicted as huge eerie beasts. This can be seen also in reconstructions of the mosasaur. It is what people make of it. At present, Neanderthals are portrayed as rather trivial creatures, while nineteenth century renditions show them as impressive figures.

At a personal level, what did you learn from palaeontology?

The importance of an individual and the importance of a species are not the same. Important to man as a species is fast reproduction, but essential to human beings as individuals is to enjoy life with others.