



From left: Prof. Gonen Sharon and Sergey Alon in the trench at Gesher Benot Ya'akov; Prof. Sharon at the Gesher Benot Ya'akov dig; and Yanina Orchinsky sifting material from the fall dig. *Gonen Sharon; Gil Eliyahu; Gonen Sharon*

On a quest for million-year-old culture in northern Israel

A newly unearthed giant elephant tusk, piles of animal bones and stone tools, and 'pregnant' mollusks come to light

Ruth Schuster

Elephants aren't what they used to be. They were bigger, paleontology has shown. Now it's shown again by a remnant from a monster elephantid that died over 700,000 years ago at Gesher Benot Ya'akov: a tusk about 6.5 feet (2 meters) long.

If the elephant had been killed and consumed by the hominins living in what is today northern Israel, we cannot say. We can say that it was there and so were they. Archaeology, including at Gesher Benot Ya'akov itself, has shown that early humans ate elephants, as well as the other animal types whose bones heaped up at the site.

The tusk, an extraordinary density of animal bones and a wealth of stone tools were unearthed this fall, in the first return to Gesher Benot Ya'akov in about 30 years.

The new excavation is being directed by Prof. Gonen Sharon of Tel-Hai Academic College (which is in the process of turning into a university), following the groundbreaking discoveries there under Prof. Naama Goren-Inbar in the 1980s and '90s.

Why now, of all times, revisit an open-air hominin site in the far north of Israel, under the rockets' red glare and the white trails of missile interceptions? There isn't even a lousy cave in which to take shelter if one is so inclined. These hominins lived outdoors almost a million years ago. Maybe it couldn't wait for peace in the Middle East, but if returning waited 30 years, couldn't it wait 31, or 32?

For Sharon, the time had come. "I'm standing on the shoulders of giants," he says, referring to Goren-Inbar. He worked here under her direction, decades ago. "It took me 30 years to come back because this is holy ground – the most important [hominin] site in the world."

He immediately qualifies: "Among the most important [hominin] sites in the world."

In fact, he spent the last two years working a few hundred meters upriver on a site contemporary with Gesher Benot Ya'akov, alluringly named "NBA – North of Bridge Acheulian." It is associated with the same culture, he says – from almost a million years ago.

It isn't that they're necessarily breaking new ground at Gesher Benot Ya'akov or are looking for more pachyderm remains. Or even hominin bones – none of which have been found there so far. It's that new technologies and analytical abilities have emerged.

"We aspire to answer the questions from Naama's excavation," he says. The tiny area of the excavation, all of about 5 meters (16 feet) long, is densely packed with animal remains, which are preserved to an absolutely extraordinary degree.

"What does it all mean?" Sharon asks, adding that he hopes to answer that one day.



Basalt hand-axe from 720,000 years ago. *Ruth Schuster*

A foot on the Arabian plateau

We stand at Gesher Benot Ya'akov, the morning sun mitigated by eucalyptuses and the autumnal breeze ruffling our hats. Frogs frolic in the shallows.

In fact, Sharon explains, we are standing on the Arabian continental plate, which extends all the way to Saudi Arabia. The other side of the river, a few meters away (this is not a big river), is the Sinai subplate, which is part of the African plate. Gesher Benot Ya'akov lies smack in the vast fault between the African and Arabian plates, in the section of the Great Rift Valley called the Dead Sea Transform.

This explains the region's geological violence, featuring both prehistoric volcanism and also ancient and latter-day earthquakes. The layers of sediment the archaeologists are happily uncovering aren't horizontal, but are tilted from ancient upheavals of the land. The stone tools the local hominins made were almost all made of the local volcanic basalt.

What was it like here a million years ago, or when they lived here?

Not a riverbank. The pastoral scene is as natural as a rubber duck. Ditto the trees. This section of riverbed by the bridge called Gesher Benot Ya'akov was dug out by tractor to reroute the Jordan River and drain wetland (tractors were dredging the riverbed as late as 1999, Sharon says).

Prof. Gonen Sharon: 'Were early humans hunting? How? You can't hit a 10-ton elephant with a handax. He might get angry at you.'

How much damage infrastructure works did to hominin research is hard to say. But based on the density of finds surviving on the ersatz riverbank, the archaeologists are sad. "They kept digging the riverbed and dumping the debris," Sharon mourns. "Disaster."

The eucalyptuses shading researchers and reporters alike aren't and never were indigenous to the Middle East.

No, the hominins and elephant et al. didn't live by the river. Multidisciplinary analysis concludes that this site was the shore of paleo-Lake Hula. It was paradise.

Hippopotami sported in the water, elephants slaked their thirst, and herbivores and other animals abounded. Over the last million years there have been about 10 ice ages, and glaciation never did reach this area; at worst, the temperatures would be cooler. The hominin layers under investigation date Gesher Benot Ya'akov to about 800,000 to 700,000 years ago. Various human species likely lived there before and continue to live in the area to this very day, but that is the span under investigation.

Hominin who?

So. The megafauna and hominins were frisking on the shore of a lake, and that shore has been waterlogged ever since. Yes, the sediment has been wet throughout almost a million years, creating the conditions for extraordinary preservation – even wood has been found there from the hominin period. Wood. Not fossil.

Wooden hominin tools that we can't find because they rotted away are all the rage in some archaeological circles. Asked if it might have been a tool made of wood, Sharon elaborates: "It's wood made of wood. It's been waterlogged for 720,000 to 700,000 years. The conditions were anaerobic and it was preserved, not fossilized. The preservation conditions are so good that microscopic analysis should even be able to tell what species of wood it is" (definitely not eucalyptus).

Gesher Benot Ya'akov lies directly on the hominin path of exit from Africa. One wonders which hominins were there exactly. Was it Homo erectus, whom some think was our ancestor but actually there is no evidence either way? Someone else entirely? More than one? How many types of hominins exited Africa anyway?

Sharon is not wondering about Homo gesher benot yaakovus. It doesn't matter, he avers. When an ancient skeleton gets found, anthropologists argue over the angle of the jaw or the shape of the molar – was it erectus or habilis, or did habilis even exist or ... let them have at it.

"What did it do? What was its technology? Why did they do it? I don't care much about human bones – bones are sexy and get grants, but what can we learn from them? Almost nothing about the hominins' cognitive abilities," Sharon says.

"We can learn so much more from a stone they shaped, how they did it, why they did it, what led them to make it, why they chose that stone. What matters isn't who they were," he continues. "What matters is what the evidence of their activity can tell us about their culture, whoever they were, almost a million years ago."

A brooding mollusk

In any case, no human remains have been found to fight over at Gesher Benot Ya'akov. The evidence of human activity is stone tools, mostly made of local basalt and some of flint of uncertain origin, and marks on animal bones.

And controlled fire. Nira Alperson-Afil and Goren-Inbar, the archaeologists from 30 years ago, and Sharon today argue the scene sports the earliest ever evidence outside Africa for controlled fire, from about 780,000 years ago.

The evidence lies in concentrations of burned flint (which changes color over a certain heat). If the stones had been burned by random brushfire, they'd be randomly scattered all over the place. But they're not.

It isn't that the hominins used the same hearth over the 100,000-year sequence under investigation. However, at different points in time over that sequence, they created and maintained hearths at specific spots on the site, Sharon explains. Not necessarily always the same spot over the eons.

"A concentration of burned flint is a fireplace," he sums up.

What about the argument that maybe they "harvested" fire from a wildfire, and maintained it? You can't keep a brushfire running for 50,000 years, he answers. "The fact that you find fire in these places means they controlled fire – they knew how to start, keep it, use it. This is the earliest evidence outside Africa." (In Africa the earliest claimed evidence for controlled fire is a million years ago at Wonderwerk Cave in today's South Africa.)

Whether they cooked the animals found at Gesher Benot Ya'akov is unclear, but animals abounded. The 2-meter tusk isn't the first sign of elephant found there. In 1989, the archaeologists found the butchered skull of a straight-tusked elephant and deduced that the hominins extracted its brain to eat.

Nobody is saying the new tusk is from the same animal. During the earlier excavation, Goren-Inbar's team identified the (shattered) bones of two elephants, a hippo, at least two large bovids, at least seven deer, goats and a bear, and a giant 2.5-meters-long fish – in a dig less than 5 meters in length. The stratum is also absolutely stuffed with shells, including of extinct viviparous mollusks (first reported in 2010).

Yes, the shell creature would birth not eggs like most mollusks but live babies, just like we do. Shaking one of the ancient lady shells produces rattling. That isn't micropebbles, it's embryonic mollusks inside, so well preserved that zooarchaeologists identified not one species of viviparous mollusk at Gesher Benot Ya'akov but two: *Viviparus apameae galileae* and *Bellamya sp.*

Did the hominins live permanently at this paradisiacal site? Was it a hunting camp? "Was this home base or not?" Sharon sums up the question. We don't know. The evidence gets weaker with each passing year, and a million of them have passed. Even asking if they hunted is a huge question. Could you hunt an elephant or a hippo with a stone ax?

"To say they were 'hunting' an elephant using bifaces – it's not a little elephant like we have now. It's a big one. Who is the biggest elephant on Earth? Yossi. He lives at Ramat Gan Safari. He's 6.5-7 tons. This one was 10 tons. You can't hit a 10-ton elephant with a handax. He might get angry at you. 'Hunting the elephant' is a huge thing to say. It's a huge argument. Can I prove that the elephant here was hunted? If you ask me, I'm sure they did. But I can't prove that."

They couldn't have lived on meat (and fat) alone. They also ate vegetable matter, and the preservation is so extraordinary that we may have a clue what it was. For example, we know figs and plums existed there while carobs didn't. There were also a lot of nuts, which the hominins would have eaten with the help of nutcrackers the archaeologists have identified at the site.

What is a million-year-old nutcracker? Basically, anvils. Stones with concavities: place the nut in the pit, bash it with another stone and you have a cracked nut. Monkeys use nutting stones, Sharon says; no reason to think the hominins couldn't.

'I don't care much about human bones,' says Sharon. 'Bones are sexy and get grants, but what can we learn from them? Almost nothing about the hominins' cognitive abilities.'

"We are going back to the most important site on Earth to open up a large area, to use new technology, to try to answer the many questions that arose from the amazing excavations," he says, summing up their new quest in what had once been paradise.

For instance: "We have tons of meat here. How many people do you need to eat all this meat? What does it mean about the size of the group, for example? Did they hunt all these animals? Did they cook them? Did they have language? Can you hunt an elephant without language? Can you make a biface without language? What was the combination of the groups – women and men and children? Older and younger individuals?"

A group of mixed ages is plausible, he continues, because they find evidence of a wide variety of activities – leaving out the possible hunting, we have butchering, nutcracking, firemaking, toolmaking, tool using. Societies tend to be characterized by division of labor, he points out. "Does this go back to our hominin base? What was their way of life, their behavior?"

We may have changed over the last million years. We like to go home to a home base. But did they even think in such terms a million years ago? Did they think when out foraging that they would be going home?

"This is the site to look for answers because of its richness and locality – we are on the main path out of Africa. This is the Rift Valley. This is where people were going out, this was the only land bridge between Africa and the world. We are in *the* place and the preservation is amazing."

How was it originally found almost a century ago, one wonders. No telltale caves, no sign saying "Homo erectus slept here." Eucalyptuses sway in the breeze. The river trickles on and the sun burns. All you see is vegetation, dirt and rocks.

It was the tractors, Sharon says, whose work was being supervised by inspectors of the British mandatory authorities, one of whom said "Wait a mo, something's there. What is that?"

"There's always a story of a tractor and an inspector," Sharon concludes. Always.



Orchinsky using newfangled tech, last month. *Gil Eliyahu*



Brooding mollusks with baby mollusks inside, from about 720,000 years ago. *Ruth Schuster*

www.ifat.com 03-5615166 פקס. 03-5635050 טל. 67138 תל אביב 96-98 דרך מנחם בגין
יפעת מידע תקשורתי