Spectacular art works adorning a remote rock shelter in northern Australia have stunned the archaeological world and are reconnecting an ancient people with their ancestry.

Elizabeth Finkel is given rare access to a recent discovery that’s rewriting human prehistory.

As stunning as the Sistine Chapel: the ceiling of the recently rediscovered Gabarnmung rock shelter is adorned with elaborate paintings, some of which extend down sandstone columns. Arnhem Land’s 91,000 km² of Aboriginal-owned land is rich with ancient art sites and this could prove to be the most significant.

A SMALL ABORIGINAL woman peers through the microscope at the sliver of rock. Perched precariously on a stool, her feet barely touch the ground. “Do you want us to go on, Auntie?” asks archaeologist Bruno David. “Yes,” she says emphatically in a low quiet voice. “I want my grandchildren to know about our culture.”

Dreamtime cave

Arnhem Land

As stunning as the Sistine Chapel: the ceiling of the recently rediscovered Gabarnmung rock shelter is adorned with elaborate paintings, some of which extend down sandstone columns. Arnhem Land’s 91,000 km² of Aboriginal-owned land is rich with ancient art sites and this could prove to be the most significant.
elders have told anthropologists over the
years that they have seen the same spirit-beings. To
recognise different spirit-beings. Among these,
mark clan territories, since different clans
have different traditions and beliefs. Important
art. Archaeologists
have been excavating the
cave for over five decades,
be learned about this
rock art. Archaeologists
are uncertain about
the age of the paintings and their precise
age. Determining the age of the paintings is
essential for understanding their cultural and
historical significance. The ancient
artistic expressions are often
dated to more than 50,000 years.

The charcoal cross on this tiny sliver
of quartzite – shown here to scale –
represents the artistic endeavours
of a person who lived
millennia ago. Under
a microscope its treasure
of centimetres per millennium.
Elsewhere, in the lowlands,
artefacts are buried at a rate
of metres per millennium.
In mid-2011, six months
prior to the
Monash University gathering, Barker
fished that fragment out of
an excavation trench just 50
centimetres below the floor of the
cave. When he had wiped off the dust
to reveal the black cross, he realised he was
holding archaeological gold. Now it’s
been realised that a tiny bit of the pigment can be extracted
from the painted cross in an attempt to
get a carbon date. The process will partly
destroy the tiny painting but, for Margaret
Katherine, it will be worth it.

A LOT IS RIDING on this little rock art
fragment. It’s clearly very important for
Margaret Katherine and the rest of her
people. Science is helping the Jawoyn
flush out their deep history. In the few
months of seasonal digging at the
cave, which commenced in May 2010, the
international team headed by David
has made extraordinary finds. “We are
rewriting human prehistory,” Ian McNiven,
the international research program at
Chauvet Cave, where dynamic charcoal
paintings of ponies, rhinos, ibex and lions
evoke the technical mastery of a Japanese
shibuike artist. Human eyes had not
viewed this labyrinthine gallery for tens
of thousands of years until 1992 when a trio
of cave explorers felt an updraft in the cliffs of the
Ardeche river canyon in southern France,
and lowered themselves in. A steel door now
protects the cave from the public and each
year only a handful of researchers may enter,
under Geneste’s direction. Among Chauvet’s
treasures is the world’s oldest known
painting, depicting two battling rhinoceroses.
Tiny scrapes of charcoal pigment gave it
a carbon date of 36,000 years old.

But people lived at Gabarnmung for
thousands of years before Chauvet was
occupied. charcoal deposited above the very
bottom layers of the Arnhem Land cave has been
carbon-dated at 48,000 years old. For Europeans
this is the stuff of pre-history –
they have no direct connection to this era.
Not so for the Jawoyn. The paintings, tools,
spears, ochre-anointed skulls and bones,
are their history.

The 2010 dig at Gabarnmung also
unearthed a piece of a basaltic stone axe
4cm long and 2.5cm wide, lying about
50cm below the cave floor. It was not
so startling to find a stone axe. Ancient
people have been smashing two rocks
together to produce stone tools for more
than two million years. What was different
about this axe was that someone had sat
down with a stone and skilfully ground it
until a sharp edge was made. Under the
microscope the parallel striations wrought
by the patient toolmaker are evident.
Stone toolmaking was, like writing, one of
those technological milestones that evolved
independently in different civilisations. But
the Gabarnmung axe supports evidence that
it was people in Eastern Asia, New Guinea
and Australia who got
there first. Throughout
Australia ground
axes are found at ages
greater than 20,000
years; in Europe, Africa and West Asia, the
oldest ground axes are 8,000–9,000 years old.
Perhaps the Gabarnmung axe was used
to chop pieces of goanna for the cooking
fire. When its owner left the cave for the
season, the axe must have slipped into the
charcoal – the same charcoal now carbon-
dated to 35,000 years old. This is a very, very
**very old ground axe – older than ancient ground axes previously found in New Guinea, China or Japan. It is, in fact – for nine – the world's oldest ground axe. The Jawoyn ancestors were the innovators of their time. In 2011, returning to the Gabarnmung dig in July – after that time it became impossible hot or impossibly wet – the archaeologists excavated a trench on the opposite side of the cave and unearthed the painted rock fragment we’re now looking at in the Mmang Ulun lab. The charcoal layers which bookended it have been dated at 20,000-30,000 years old. Genesee, who knows a thing or two about ancient rock art – having spent 35 years dating the charcoal pigments at Chauvet Cave – thinks it might be something very special. The Chauvet rhyolite axe is, so far, the world’s oldest record of modern human beings “socialising their environment”. Genesee explains: But he suspects some of the Gabarnmung art is likely to be as old, probably older. **

**FOR THE JAWOYN, putting scientific flesh on the bones of their ancestral beliefs – their Dreamtime – is compelling. Like elders of every culture, they are consumed by the responsibility to pass their knowledge to the next generation. The Jawoyn Association – established in 1985 to develop unity and economic independence for the Jawoyn – is one of Australia’s most successful indigenous business operations. Even so, this next generation is at risk. The remaining holders of traditional knowledge – fractured and fading as it is – are few and dying. And the Jawoyn youth still run the gauntlet of ills that beset all marginalised Aboriginal communities – drugs, alcohol, violence and the easy slide into welfare dependence. Community leaders believe science will help form a bridge for the next generation, helping connect the ancestral Dreamtime to modern times and, in the process, nurture self-esteem and ambition. “We want our kids to grow up to be archaeologists, geologists, helicopter pilots,” says the Jawoyn Association’s CEO, Preston Lee. And if science can offer something to the Jawoyn, the Jawoyn have something to offer science. Genesee explains by phone from his 300-year-old stone cottage in the opposite side of the cave and unearthed the painted rock fragment we’re now looking at in the Mmang Ulun lab. The charcoal layers which bookended it have been dated at 20,000-30,000 years old. Genesee, who knows a thing or two about ancient rock art – having spent 35 years dating the charcoal pigments at Chauvet Cave – thinks it might be something very special. The Chauvet rhyolite axe is, so far, the world’s oldest record of modern human beings “socialising their environment”. Genesee explains: But he suspects some of the Gabarnmung art is likely to be as old, probably older. **

**ALAN FINKEL **

**To date, this is the oldest-known art in the world – painted on a wall in Chauvet Cave, in southern France, and featured in the documentary, Cave of Forgotten Dreams. A purport of charcoal from the fighting rhinos in the foreground has been carbon-dated at 36,000 years old.**

The paintings extended up and down 36 remarkable sandstone columns that, like the pillars of a temple, appeared to support the cave. It might mean lost of human bottoms have graced them, perhaps for a ceremony involving art. Whear and Morgan have some spectacular finds – like an ochre painting of Genyornis, a giant flightless bird that’s been extinct for 45,000 years. Could the painting itself be that old? So far, there has been no way to date it. This time, Whear and Morgan once again spotted some rock shine. They soared in to find that chopper face to face with six top-hatted gentlemen gazing at them from the deck of a clipper ship. The matte-high white ochre painting formed part of a gallery of sailing boats, baramundi, emu, yam figures, dynamic figures, X-ray kangaroos and crocodiles, rainbow serpents and the now extinct Tasmanian tiger! But the real prize awaited them. Back in the chopper they trained their eyes on the surrounding area and some five kilometres away noticed an unusually large rock shelter. They landed and walked into one of the richest collections of Aboriginal art ever found. Like the Sistine Chapel, the ceiling of the expansive rock shelter was a mural of breathtakingly vivid and bold works of art – hundreds of them. And the paintings extended up and down 36 remarkable sandstone columns that, like the pillars of a temple, appeared to support the cave.

**BRUNO DAVID **

**I MET DAVID IN October 2011 during a tour of the Gabarnmung cave when I was privileged to join a select handful of visitors who have so far had that honour. David has an adventurous, athletic look. He wears hiking gear, is of medium athletic build, has slightly receding long dark curly hair, olive skin and luminous blue-green eyes. I’m guessing 40-something. His accent is hard to pick. It turns out he is highly eroded French but you’d be hard pressed to figure out his nationality. David could be a native of many places. What strikes you most about him is his gentleness. It’s no surprise that Margaret...**
But as Geneste tells me, “This Australian rock art being up to 40,000 years old reveals claims for the big prize, the one that would put it on the map of the world.” And because it has lain in the ground for thousands of years, it is well preserved as the charcoal pigment that inscribes the rhinoceros at Chauvet Cave. A mere pinpoint of charcoal was required to get the date on that rhino. Perhaps a mere pinpoint of charcoal will also suffice from Gabarnmung fragment? Unfortunately, it’s rarely so easy. There are many pitfalls waiting to ensnare the archaeologist who dares to date rock art. And David is determined not to be ensnared. He wanted an OSL date on a pinch of charcoal that he had collected from Gabarnmung. But nothing was simple. Microbes make organic compounds, such as calcium oxalate, that will corrupt the true carbon date of the charcoal pigment. That’s why colleague Mark Eccleston has brought to court a vitamin-flavonoid mixture that can detect the calcium from calcium oxalate.

Eccleston trains the shiny steel gun just above the rock art and if there is light, the gun delivers a verdict. There is no doubt that it’s a piece of a painting,” says David. It is very finely drawn. It could have been part of a ‘dynamite figure’ – the local stick-figure style that resembles Kimberley art styles like the Brachiopod Paintings. Says Roberts: “Having the dating evidence comes with a soured enthusiasm. There is a clear image. ‘No-one doubts that it’s a piece of a painting,” says David. It is very finely drawn. It could have been part of a ‘dynamite figure’ – the local stick-figure style that resembles Kimberley art styles like the Brachiopod Paintings. Says Roberts: “Having the dating evidence comes with a soured enthusiasm. There is a clear image. ‘No-one doubts that it’s a piece of a painting,” says David. It is very finely drawn. It could have been part of a ‘dynamite figure’ – the local stick-figure style that resembles Kimberley art styles like the Brachiopod Paintings. Says Roberts: “Having the dating evidence comes with a soured enthusiasm. There is a clear image. ‘No-one doubts that it’s a piece of a painting,” says David. It is very finely drawn. It could have been part of a ‘dynamite figure’ – the local stick-figure style that resembles Kimberley art styles like the Brachiopod Paintings. Says Roberts: “Having the dating evidence comes with a soured enthusiasm. There is a clear image. But if you’re art history student, you’d get the date on that rhino. Perhaps a mere pinpoint of charcoal will also suffice from Gabarnmung fragment? Unfortunately, it’s rarely so easy. There are many pitfalls waiting to ensnare the archaeologist who dares to date rock art. And David is determined not to be ensnared. He wanted an OSL date on a pinch of charcoal that he had collected from Gabarnmung. But nothing was simple. Microbes make organic compounds, such as calcium oxalate, that will corrupt the true carbon date of the charcoal pigment. That’s why colleague Mark Eccleston has brought to court a vitamin-flavonoid mixture that can detect the calcium from calcium oxalate.

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