Geographical

Nic Flemming

has spent decades working as an oceanographer while indulging his passion for underwater archaeology

Now, as the subject is finally being considered a serious and worthwhile field of research, he talks to *Olivia Edward* about what the remains of human settlements on the sea floor can tell us about the spread of humans around the globe

Between leaving the military and starting at the University of Cambridge, I joined the British Sub Aqua Club and learnt to dive civilian-style with aqualungs, which had just become popular thanks to Jacques Cousteau. Afterwards, I took a Club Med diving holiday in Greece. It was a new organisation at the time, and you really did live in thatched huts and pay for things with coloured beads – it was great fun.

I found the diving quite easy, so I was often sitting on the seabed watching the others. One of the places we trained was a terrace ten metres underwater with large caves opening onto it. It was the first of my 'light-bulb moments'. I knew there wasn't anything under the water that could carve out these strange landforms, so it made me wonder how they had come to exist.

At university, two friends and I founded the Cambridge University Underwater Exploration Group. And in 1958, we went to Libya to map Apollonia, an underwater Greek city that had been spotted by a British helicopter pilot. When I came back, I tried to find out if such cities were underwater because the land had gone down or the sea had gone up.

For decades, researchers had been struggling to separate out the effects of earthquakes in the Mediterranean from the sea-level changes caused by the ice ages. This was the second of my light-bulb moments. I could use diving and the evidence of submerged ruins and ancient shorelines to get at the truth.

During the glacial periods, the growth of ice caps caused the sea level to drop,

enabling people to live on areas of the continental shelf now covered with water. Scientists had been piecing this together since the early 1900s, but they still had very little evidence from the sea floor.

I became fascinated by finding older and older underwater archaeological sites. In 1958, I mapped Apollonia, which was about 2,600 years old, and had submerged because of earthquakes; and then sites of increasing age until we found a 45,000-year-old site off Corfu during the mid-1980s. Then, in 1995, just before I was about to give a lecture in South Africa, Bruno Werz came up to me and showed me one of three Acheulean hand axes he had found while diving nearby. It was half a million years old.

This was exciting because it showed that human artefacts could survive being transgressed numerous times by sea-level changes during multiple glaciations. This contravened a coastal geomorphological rule – known as Bruun's rule – which likens the rising sea level to a combine harvester that comes crunching up the beach, breaking and shredding everything in its path. But it clearly doesn't apply in all circumstances; many artefacts survive.

Now we've set up a European network called SPLASHCOS. It's pulling together all of the geomorphological and prehistoric data that already exists in universities and agencies, and using it to recreate the drowned landscape. We're also focusing on taphonomy – the science of the burial of archaeological materials. Two factors affect whether a prehistoric site will survive: the shape of the landscape and the surrounding wind, waves, currents and sediment movements.

New acoustic systems can map the seafloor with unbelievable precision, showing depths at one-metre grid intervals (compared to one or two miles 30 years ago) but it doesn't help us directly spot prehistoric sites. What you're looking for are fragments of bone or charcoal or stone tools the size of a walnut. There's still no adequate detection system, which is why taphonomy is so important, combined with survey and excavation by divers.

I've just returned from Monte Verde in Chile, a site that's 12,000–30,000 years old. It's thought that humans made their way into the Americas overland from Asia via the Bering Strait. Monte Verde proves that people were already living in the far south of the Americas very early, pushing back the date of the earliest crossing and suggesting that migration southwards was along the drowned coast.

Now we're moving from the phase of local study and 'chance finds' – when mammoth tusks and archaeology were brought up intermittently by fishermen, dredgers and pipe layers – to systematically searching for sites. It's a slow process and it's going to take a long time. In many ways, it's just the beginning. We know it's all worth working on now, but we need to fill in the details. It's as if we're building a Roman mosaic that has tens of thousands of pieces and currently we've placed 100 of them on the board. There are still some huge questions to be answered.

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