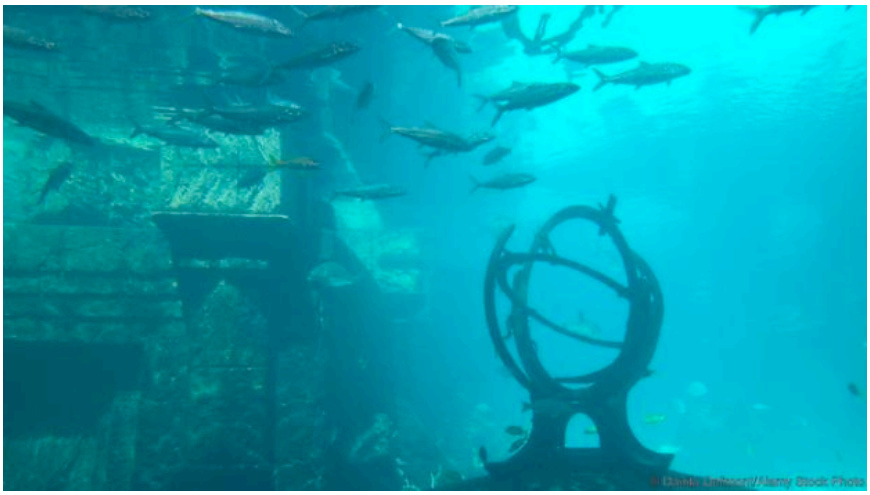
The Atlantis-style myths that turned out to be true

By Jane Palmer 19th January 2016

Local legends often tell of cities or islands that have been lost to the waves. Nowadays we are sceptical of these tales, but some of them really happened

In one cataclysmic night, the gods sent a battalion of fire and earthquakes so intense that the Utopian kingdom of Atlantis sank deep into the ocean, never to be found again. So tells Plato's infamous myth, which has captivated audiences for more than 2,300 years. Many people have subsequently floated theories about exactly where Atlantis was: in the Mediterranean, off the coast of Spain, even under Antarctica. A popular idea is that the Atlantis myth is associated with the fate of Thera, now the Greek island of Santorini, which was partly destroyed by a volcanic eruption about 3,600 years ago. But many, if not most, scientists think we will never tie Atlantis to a real location.



"I don't think there's any question that the story of Atlantis is a myth," says Patrick Nunn, a geologist at the University of the Sunshine Coast in Queensland, Australia. But Atlantis is not the only legend of a sunken city. Similar tales are told around the world, and it now seems that some of them are true.

Plato was living in a volcanically and tectonically active part of the world where massive earthquakes and tsunamis were not unusual. "He observed what was going on and he used details from these observations to make his narrative about Atlantis sound more credible," says Nunn. "But, I think, there's no way that we could consider Atlantis as a particular place." Despite Nunn's scepticism about this ill-fated kingdom, he is one of a growing band of geologists who have begun to take an interest in similar myths in the belief that some really can shed light on ancient geological events.

In 1966, the scientist Dorothy Vitaliano coined a name for the discipline: geomythology. It is, she said, the science of "seeking to find the real geological event underlying a myth or legend to

which it has given rise". "Myths are largely event-based, in that they are triggered to a large part by an event, or combination of events, that catastrophically impact society," says Bruce Masse, an environmental archaeologist, who co-edited a volume on the subject. "Then these myths provide a window upon those events that can be recovered, retrieved and even dated."

A close inspection of such "geomyths" has revealed valuable information – a date for the most recent eruption of the volcano Nabukelevu in Fiji, for example. And scientists have no shortage of myths, or geological events, to ponder: stories of volcanoes and earthquakes abound, as do tales of catastrophic floods and lands submerged under the sea.

When Nunn heard the story of another lost island, Teonimanu in the Solomon Islands of the South Pacific, he was instantly intrigued. "It was high land, it wasn't a low atoll or reef island just made of sand that could be easily washed away," Nunn says. "It was a substantial island that disappeared."

The tale tells of the cuckolded husband Roraimenu, whose wife Sauwete'au went to live with another man on the island of Teonimanu. An enraged Roraimenu purchased a wave curse to seek his revenge and travelled to the island of Teonimanu, with four waves attached to the front of his canoe, and four on the rear. Once ashore, he planted two taro plants, kept another and beat a hasty retreat to his own island of Ali'ite. The curse stated that when the leaves sprouted on his taro plant, the onslaught would start. On that day, Roraimenu watched from a mountaintop as the eight waves surged on Teonimanu, one by one, until it sank, never to be seen again.

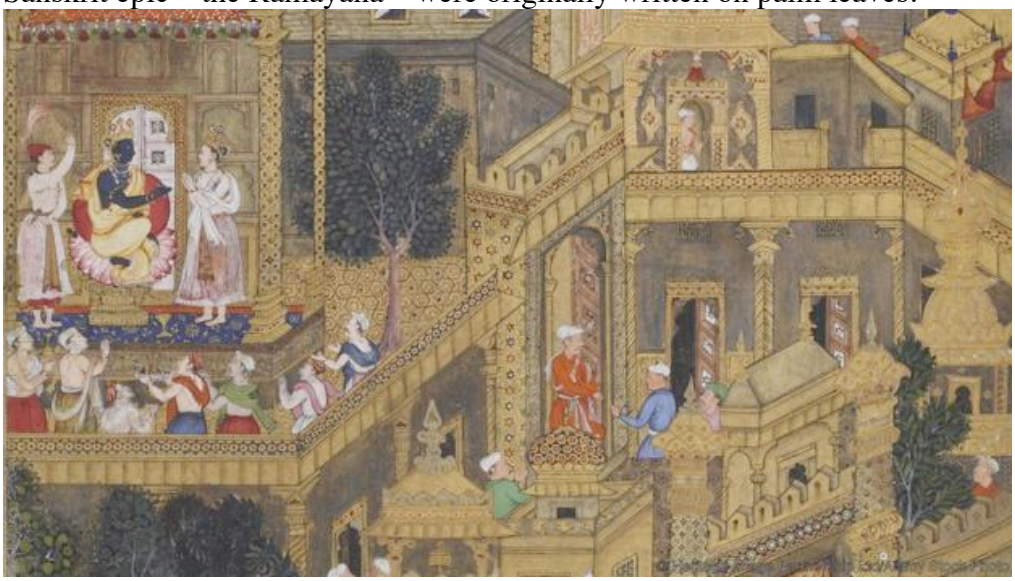
Nunn interprets the waves in the story as a description of a tsunami train – many tsunamis consist of a series of waves. "But of course, waves can't wash away islands, particularly islands that are high and volcanic," Nunn says. It was actually a sea-floor earthquake that geologists believe took the island, which had always teetered on the edge of a steep, undersea slope. Once the tremors shook the foundations, a large landslide carried Teonimanu underwater, which likely generated a tsunami train in the process.

For the people that survived, and lived to tell, and retell, the tale, the waves and the island's destruction are inextricably linked. "So you actually get the island subsiding, or sinking, abruptly at the same time as the waves are generated," Nunn says. "For an uninformed observer, of course, it's logical to connect the two."

Nunn had encountered similar myths, but he had interpreted them as descriptions of lost populations of people who had lived on the islands – not the literal loss of the islands themselves. In fact, there is still some scientific scepticism about the ability of entire islands to slip beneath the sea in the way that Nunn thinks Teonimanu did. But Nunn points out that the volume of material in an island such as Teonimanu is still a lot less than the amount that moves in large terrestrial landslides. What's more, surveys conducted of the sea floor in the region have revealed submerged debris that could be evidence of the loss of a number of islands, with older islands further down the slope. "This made it clear to me that entire islands could disappear," Nunn says.

No less dramatic are ancient stories of coastal cities being lost to the waves. Several are described in ancient Sanskrit texts, including the Mahabharata, a 4000-year-old poem that has

the honour of being the longest epic narrative in world literature. The Mahabharata and another Sanskrit epic – the Ramayana – were originally written on palm leaves.



A tale in the Mahabharata tells how Lord Krishna, following a battle victory, decided to leave the city of Dwaraka for his heavenly abode. The Arabian Sea then submerged it. Although long believed to be no more than a mythical kingdom, a 1963 archaeological investigation discovered Dwaraka intact, under the sea, on India's Saurashtra coast.

Similar stories exist about the city of Poompuhar and ancient ruins at the city of Mahabalipuram. Both are also now known also to have existed: the Mahabalipuram ruins "reappeared" after the 2004 Indian Ocean Tsunami. "When you look at these places, they're all saying the same thing," Nunn says. "That large waves came on land and washed away the places that people were living in."

But Nunn believes that tsunamis alone don't account for the submergence and subsequent abandonment of such cities. Instead he believes that the steady creep of post-glacial sea level rise slowly claimed the coastal lands and the tsunamis merely finished off the job. "If the sea level is rising, and you have these kinds of extreme waves superimposed on a rising sea level, then clearly one day those waves are going to have an effect that they wouldn't have if the sea level wasn't rising," he says.

But tales about these less glamorous, tortoise-paced inundations are few and far between. "We humans like disaster stories but adapting to gradual change doesn't sell so well," says Martin Bates, a geoarchaeologist at University of Wales Trinity Saint David.

That is, unless you are an Aborigine living on the coast of Australia. Around 20,000 years ago, at the coldest time of the last ice age, the sea level was about 120 metres below its present level. But as temperatures rose, huge masses of ice started to melt and pour waters into the world's oceans. During the next 13,000 years, sea levels gradually rose to reach their current levels. "We think Australia was abuzz with talk about this as it would have been a major concern," says Nicholas Reid, a linguist at the University of New England in Australia.

http://www.bbc.com/earth/story/20160118-the-atlantis-style-myths-of-sunken-lands-that-are-really-true

Aboriginal societies have probably existed in Australia for around 65,000 years, isolated until the European colonisation in 1788. Australia was undoubtedly a hard environment to live in, and survival through the generations depended on passing down information about food, the landscape and the climate from one generation to another.

Reid teamed up with Nunn, and between them they searched through documented Aboriginal Australian stories for tales describing times when sea levels were lower than today, or rising. They found 21 such stories from different locations around the Australian coast describing landscapes that had become submerged, never to re-emerge. In regions of Australia where the coastal land had a low topography, even a small rise in sea level would have claimed large chunks of land relatively quickly.

"People must have been aware that every year the sea was on the rise," Reid says. "And they must have had stories from their fathers and grandfathers, and great-grandfathers, that the sea used to be out even further." Some of these stories are pragmatic descriptions of a time when sea levels were lower, such as memories of the loss of kangaroo hunting grounds around Port Phillip Bay near Melbourne.

Others are more figurative. In one such story an ancestral character, Ngurunderi, chased his wives who attempted to flee to Kangaroo Island on foot. In his anger, Ngurunderi summoned the seas to rise, separating the island from the mainland and turning the women into rocks that now jut out of the water. By connecting each story with the specific geological event it describes, the researchers believe they could date some of the narratives as between 7,000 and 10,000 years old. "If you are talking about 10,000 years you are really talking about 300 to 400 generations," Reid says. "The idea that you can transmit anything over 400 generations is extraordinary."

Scientists have previously thought that the accuracy of such stories could not persist for much more than 800 years without being written down. But Reid believes a key feature of Indigenous storytelling culture – a "cross-generational cross-checking" process – could explain the stories endurance through the millennia. In this process, a father will pass down the story to his children – and their nephews and nieces are responsible for ensuring the children know those stories correctly.

"This mechanism constitutes a scaffolding across generations that makes the replication of story telling with high degrees of accuracy possible," Reid says. The researchers believe that the sheer isolation of Australia may also have played into the stories' ability to survive intact. In terms of the movement of people Australia has been a stable continent, and there have been no invading armies. "These stories do describe a time when the sea came up, inundated the continental shelf so that people lost land that they had previously lived on," Reid says. "These stories are the responses to that and they are still being told in 2015."

But whether stories that have endured for 7,000 years or more will continue to be told is an issue that concerns Nunn. In aboriginal and Pacific Island communities, some members of the younger generation are not learning their native languages and they are less interested in cultural traditions. "They prefer downloading a new ringtone, or something similar, to listening to their grandparents' stories that don't sound credible anyway," Nunn says. "What I fear is that if we don't collect these narratives in the next 20 years or so, then they will completely disappear."

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That cell phones can arrest the spread of stories that have stood for millennia is rather galling, and for geomythologists it could mean the irretrievable loss of vital information. It might also have a detrimental impact on island and coastal communities, because Nunn believes that cultural myths relating to sea level rise could help galvanise local participation in adaptation strategies to current climate change. Sea level rise myths might even contain clues about the kinds of adaptations that could help coastal communities.

Perhaps, most importantly of all, myths can provide a form of validation for geological events that simply cannot be confirmed by current scientific methods. "As geoscientists, we look back into the past and infer that things happened but we can't prove that they happened," Nunn says. "But if someone says, 'I saw this happen and this is how it happened', that's incredible. It's the best corroboration that you can get."

Unit 6 Reading Journal questions: answer each question with at least 4 sentences

1. Which geomythology in this article intrigues you the most? Why?
2. What's an example of geomythology in Chinese culture? Explain.
3. Do you think these kinds of traditions and myths should continue to be passed down to future generations? What value do these stories have in modern society?