## The Guardian

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## Most Australian Indigenous languages came from just one place, research claims

Burketown, Queensland, named as origin of dominant Pama-Nyungan family of languages

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Wed 14 Mar 2018 14.24 AEDT



Albert river near Burketown on the Gulf of Carpentaria. Burketown is the origin point for 90% of Australia's Indigenous languages, according to one study. Photograph: Auscape/UIG via Getty Images

Most Indigenous languages in Australia likely originated from a remote spot in far north Queensland as recently as 4,000 years ago, before slowly spreading across the country, a new study has claimed.

The paper, published in the journal Nature on Tuesday, mapped the origins of the Pama-Nyungan family of languages, which encompasses about 90% of the continent. It traced the dominant family of languages back to an area near an isolated place known today as Burketown.

"All the languages from the Torres Strait to Bunbury, from the Pilbara to the Grampians, are descended from a single ancestor language that spread across the continent to all but the Kimberley and the Top End," wrote co-author Claire Bowern, professor of linguistics at Yale University. "Where this language came from, how old it is, and how it spread, has been something of a puzzle."

The researchers, from Yale and the University of Auckland, tested several theories to explain

the spread of language across time and space, ranging from 4,000 years ago - the "rapid replacement hypothesis" - to more than 50,000 years ago with the initial colonisation of the continent from the north.

The latter was judged to be unlikely "because languages are thought to change too quickly to preserve family resemblances over such a long timescale".

The researchers used an adapted computer model originally designed to map the spread of viruses, and built a family tree of "cognates" – identical or similar words across multiple languages. Pama-Nyungan is one of 28 Aboriginal or Torres Strait Islander language families. In contrast, Europe had four such families.

The results traced Pama-Nyungan back to a site south of the Gulf of Carpentaria, and indicate it emerged in the mid-Holocene period 4,000 to 6,000 years ago and rapidly replacing the existing languages.

It also aligned with archaeological discoveries in the region, including tool technologies which could explain the expansion across the continent, as could changes in ceremonies or marriage customs, the paper said.

The spread also mirrored other findings by the team which showed movement of people was shaped by access to resources, with groups moving slower through coastal or waterway areas, and faster through the desert.

"We've got a clearer picture now of when and where things started expanding, but there remains this question about exactly what drove it," co-author Prof Quentin Atkinson of Auckland University's school of psychology told Guardian Australia.

"What could possibly have happened to allow this group - initially one language - to spread across 90% of Australia and replace everyone else?"

Atkinson said the revelations were fascinating because other languages across the world spread with the advancement of farming, a practice not considered to be widely used on the Australian continent until the 18th century.

"One of the things in the paper was that it tells us about the history of this language group that was the [source for] the majority of Australia's linguistic diversity, but it also tells us more about hunter-gatherers and how they interacted, and the dynamics of hunter-gatherer competition. The fact that one group was able to colonise so much of the territory."

A growing body of research shows Indigenous people were not only hunter-gatherers but also practised agriculture and aquaculture.

Atkinson said while Pama-Ngungan speakers likely didn't have "full-blown agriculture" there may have been other developments, such as seed-grinding technologies and land management through fire "that allowed some groups to expand at the expense of others".

"Whilst these are not the same as agriculture, they may have been the first steps in that direction, and, regardless, represent important changes in how groups were obtaining food. This could indeed help explain the vast scale of the Pama-Nyungan expansion."

Of the more than 250 Indigenous languages that existed, fewer than half remain in use and many are considered endangered.

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