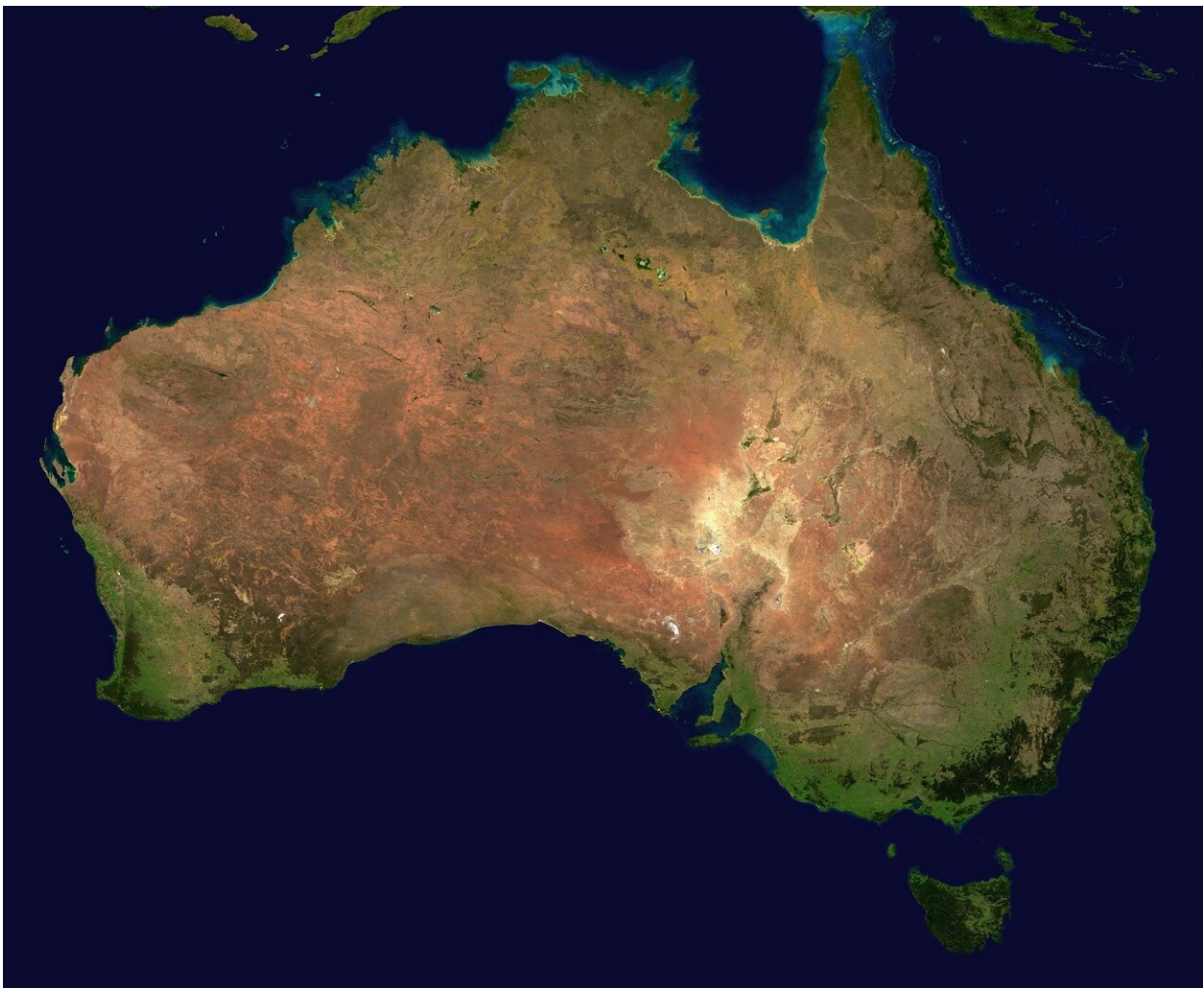


New evidence confirms Indigenous languages have a common source, but how they spread remains a mystery

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Have you ever wondered how Australia's many Indigenous languages relate to one another and how far back the connections go?

The Australian continent has been settled by Indigenous people for [at least 50,000 years](#), but just how old are the languages spoken today and where did they originate? Our research provides some answers to these questions—and the answers throw up new and interesting puzzles.

There is a [long-standing proposal](#) that all the Indigenous languages of continental Australia come from one language, called Proto-Australian. This hypothesis is based on observations, going back to the 19th century, that many Indigenous languages show similarities in grammar and vocabulary.

However, without proper testing, it is not possible to know whether these similarities are best explained as inheritances from a single ancestor language or in some other way, such as borrowing, which would not require a single ancestor language.

Our [recent research](#)—the first evaluation of the Proto-Australian hypothesis—shows it is supported. Proto-Australian was most likely spoken about 6,000 years ago in the Top End of the Northern Territory. When it spread across mainland Australia, it displaced all the other languages spoken before.

One big question is how this spread took place. Language spread is usually associated with population movements or economic and [technological change](#). But there is no clear evidence for population movement or economic and technological change in the past 10,000 years.

This suggests we need to develop new models of how language spreads, and of Australian prehistory.

Language families

Relationships between languages are established by finding similar or shared words. Languages that share similar forms are members of a language family; languages that do not share those forms are not part of that family.

Language families can be grouped into hierarchies of mother and daughter language families. Within Australia, [Proto-Pama-Nyungan](#) (PPN), one of the daughter families of Proto-Australian is much more widespread than the others. It occupies 90% of the continent.

The other daughter languages of Proto-Australian are called [Non-Pama-Nyungan](#) (NPN). Some of these form small families. Others, with no close relatives, are isolates.

The area with the most isolates has the greatest diversity. Within Australia, that area is the Top End. As a general principle, the area with the greatest diversity is the most likely homeland for a proto-language. Therefore, the Top End is the most likely homeland for Proto-Australian.

Though there is considerable diversity, we find similar words across both Proto-Pama-Nyungan and Non-Pama-Nyungan. In Proto-Pama-Nyungan, for example, the word for hand is *marla*. In Non-Pama-Nyungan languages, we find several variations:

- Amurdak: mara
- Bardi: marla
- Gajirrabeng: marla
- Ganggalida: marl
- Gija: marla
- Gooniyandi: marla

- Kayardild: marl
- Lardil: marl
- Ngandi: mar
- Nyulnyul: marl
- Yawuru: marla

Finding similarities does not provide exact timelines for when the proto-language was spoken as a single language, but there are no reliable examples dating back more than 10,000 years.

Diversification is an inherent feature of language. With sufficient time, all similarities will be lost. Given that the continent has been continuously occupied for at least 50,000 years, the prediction is that there would be many unrelated languages across Australia.

This prediction is borne out in two critical cases: Tasmania, which separated from the mainland 14,000 years ago, and the Tiwi Islands, which separated 6,000 years ago, thereby preventing language spread to either of these islands after these dates.

Neither the Tasmanian nor Tiwi languages are related to the mainland languages. This accords with the prediction from standard rates of language diversification that similarities should be lost.

Standard rates of diversification predict there should be many unrelated languages on the mainland. But this is not the case. This means that Proto-Australian must have spread continent-wide after the separation of the Tiwi Islands.

A big question

Why and how one language spread with such success is a big question. Accompanying language spread, there would usually be evidence of

social change. This social change might be [population increase](#) or movement; it might be economic or technological change. But there is no direct evidence for this.

Hypotheses about population movements can be evaluated against genetic studies, while hypotheses about population increase or economic and technological change can be evaluated against the archaeological record.

There is considerable variation in the genetics literature, but no suggestion of significant changes in the last 10,000 years.

[One theory](#) is that there was a single founding population, which differentiated between 33,000 and 10,000 years ago, with gene flow from the north-east to much of the rest of the continent during the last 10,000 years.

[Another theory](#) proposes a founding group at 50,000 years ago, which spread rapidly to all coastal areas by 45,000 years ago. This rapid spread was followed by ongoing in-situ diversification, with no evidence for significant population movements.

[Yet another theory](#) proposes divergence 26,000–35,000 years ago, with little evidence of migration.

There are also differing interpretations of the archaeological record. Variation in climate may have had effects on population levels, with significant [increases during the last 10,000 years](#). But while the evidence supports significant fluctuations in land use over the last 10,000 years in various regions, it has also been argued that the evidence does not generally support either synchronized continent-wide fluctuations or unidirectional change.

The one example of a continent-wide change that offered an [economic advantage](#) was the [introduction of the dingo](#) 4,000–8,000 years ago. But it is very unlikely that one economic change would lead to continent-wide language replacement. Further, dingoes are native to the Tiwi Islands, suggesting that the spread of the dingo does not correlate with the spread of Proto-Australian.

A final puzzle is that language spread does not automatically lead to a total eclipse of pre-existing languages. In Europe, where Indo-European languages spread through trade and military might, some languages from before that time are still around—Basque and Sámi, for example. There are also traces of older languages in [words and place names](#).

But in mainland Australia, there are only languages that are daughter languages of Proto-Australian. That is quite unusual. Therefore, we have a good question, but no good answers, which means our models need revision.

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