

Study shows concept of high numbers varied over time in indigenous Australian languages

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(Phys.org)—A pair of researchers with Yale University has found that the concept of numbers greater than five varied over time in indigenous Australian languages. In their paper published in *Proceedings of the Royal Society B*, Kevin Zhou and Claire Bower, describe a study they conducted on the many indigenous languages of Australia and their focus on how the concept and use of numbers changed over time depending on

circumstances.

Australia's [indigenous population](#) was quite diverse, developing approximately 350 to 400 unique languages. Bovern, who graduated from the Australian National University, has been studying such languages and as part of that research has built a database over an eight year period that includes over 750,000 words from those languages. The database allows for discovering differences and commonalities between languages, and for helping to define language families, one of which is the Pama-Nyungan—it includes approximately 70 percent of all the [indigenous languages](#) in that country and 90 percent of its land area.

By applying analytical techniques to the data, the researchers were able to create evolutionary maps of the [language](#) family and because of that were able to follow the way the people that spoke those languages used numbers over a period of time. They noted that many of those languages had no concept of infinite numbers, and indeed many of them had no notion of numbers greater than five. The average, they found, was three. They found also that the upper limit of numbers used by people tended to vary depending on where in the country they lived and that upper limits tended to come and go depending on how useful the information was that they described.

The researchers suggest their data shows the true variability of Aboriginal languages, and shows that instead of being too simple for use in a modern society, languages with low [number](#) limits were instead complex and changing over time to address needs as they arose. They note also that many of the languages that did have higher limits tended to link those numbers with certain objects—a boomerang, for example, with one side much longer than the other was used to represent the number seven.

More information: Quantifying Uncertainty in the Phylogenetics of

Australian Numeral Systems, *Proceedings of the Royal Society B*,
[rspb.royalsocietypublishing.org1098/rspb.2015.1278](https://rspb.royalsocietypublishing.org/doi/10.1098/rspb.2015.1278)

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