

Locative polyfunctionality in Australia

Function distribution is not predicted by phylogeny or contact

Jayden Macklin-Cordes The University of Newcastle
Mitchell Browne Macquarie University
Thomas Ennever Surrey Morphology Group, University of Surrey
Maria Copot The Ohio State University



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA



MACQUARIE
University
SYDNEY • AUSTRALIA



UNIVERSITY OF
SURREY

smg



Outline

Background

- Typology of spatial case
- Research question

Methodology

- Australian locatives dataset
- Areal vs phylogenetic signal

Results

- Survey results, descriptive statistics
- Phylogenetic vs areal model comparisons

Discussion

Conclusion and future directions

Background

- Semantic cases can vary widely in functional range (Blake 2001)
- The ablative case has stood out in the literature in terms of their high degree of polyfunctionality and ability to perform structural roles (Creissels 2008; Rice & Kabata 2007; Blansitt 1988; Lakey 2016)

Background

- The locative case has not featured the same way
 - Though cf Forker 2010
- To date, there has been no cross-linguistic study of the locative case in Pama-Nyungan languages
 - Dixon 2002 notes its widespread occurrence (also cf. Simpson 2023)
 - Types of functions
 - Distribution/frequency of those functions

Research Questions

RQ1: What functions of the locative are exhibited across Pama-Nyungan languages, and to what extent?

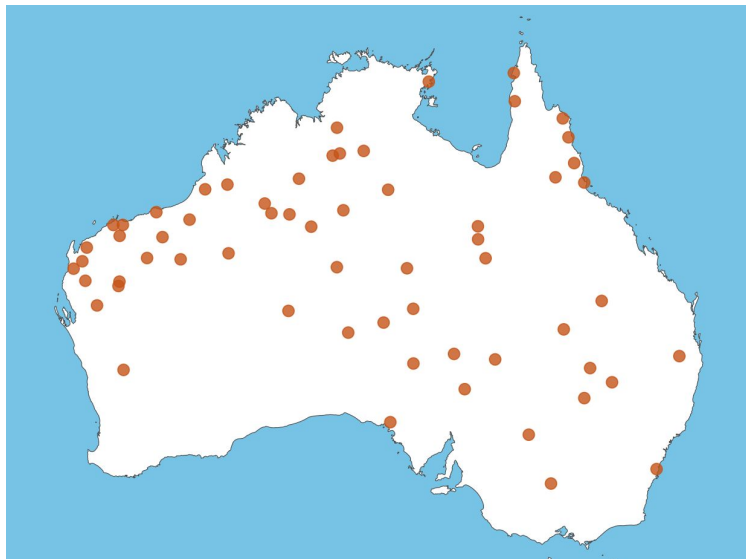
RQ2: Are there correlations between the occurrence of different functions?

RQ3: To what extent does the distribution of locative functions reflect phylogeny and/or areal distance?

Methodology

Data

- 57 Pama-Nyungan languages (selected based on data availability)
- Coded presence/absence of 25 LOC functions



Data

- 57 Pama-Nyungan languages (selected based on data availability)
- Coded presence/absence of 25 LOC functions

| Theme | Locative functions |
|---------------|---|
| Spatial | Accompaniment, instrument, intermediary, goal of motion, goal of transfer, source |
| Socio-spatial | Addressee of locution, mode, recipient (literal), recipient (metaphorical), perceptual, obstruction |
| States | Temporal, circumstantial, activity |
| Cognitive | Fear, shame, anger, desire, other mental states |
| Logical | Comparative, selective attribution, ground |
| Grammatical | Agent of passive, subordinator |

Phylogenetic vs areal signal

- Bayesian regression
- For each LOC function, three models:
 - **1) Phylo model:** $\text{LOC} \sim \text{phylogenetic distance}$
 - **2) Areal model:** $\text{LOC} \sim \text{geographic distance}$
 - **3) Combined model:** $\text{LOC} \sim \text{phylogenetic} + \text{geographic distance}$
- Follows Guzmán Naranjo & Becker 2022; Macklin-Cordes 2024

Phylogenetic vs areal signal

- Bayesian regression
- For each LOC function, three models:
 - **1) Phylo model: LOC ~ phylogenetic distance**
 - 2) Areal model: LOC ~ geographic distance
 - 3) Combined model: LOC ~ phylogenetic + geographic distance
- How strongly does the distribution of LOC functions correlate with phylogenetic distance between languages?
 - If stronger than chance, it suggests the distribution of LOC functions is (at least partly) the outcome of **inheritance**
 - Phylogenetic distances taken from independent reference phylogeny inferred from cognate data (Macklin-Cordes & Round 2022)

Phylogenetic vs areal signal

- Bayesian regression
- For each LOC function, three models:
 - 1) Phylo model: $\text{LOC} \sim \text{phylogenetic distance}$
 - **2) Areal model: $\text{LOC} \sim \text{geographic distance}$**
 - 3) Combined model: $\text{LOC} \sim \text{phylogenetic} + \text{geographic distance}$
- How strongly does the distribution of LOC functions correlate with geographic distance between languages?
 - If stronger than chance, it suggests the distribution of LOC functions is (at least partly) the outcome of **language contact**
 - Geographic distance modelled as two-dimensional Gaussian process

(Guzmán Naranjo & Becker 2022)

Phylogenetic vs areal signal

- Bayesian regression
- For each LOC function, three models:
 - 1) Phylo model: $\text{LOC} \sim \text{phylogenetic distance}$
 - 2) Areal model: $\text{LOC} \sim \text{geographic distance}$
 - **3) Combined model: $\text{LOC} \sim \text{phylogenetic} + \text{geographic distance}$**
- How strongly does the distribution of LOC functions correlate with both phylogenetic and geographic factors?
 - What is an upper bound on the contribution of inheritance and contact processes on the current distribution of LOC functions?

Phylogenetic vs areal signal

- Bayesian regression
- For each LOC function, three models:
 - 1) Phylo model: $LOC \sim \text{phylogenetic distance}$
 - 2) Areal model: $LOC \sim \text{geographic distance}$
 - 3) Combined model: $LOC \sim \text{phylogenetic} + \text{geographic distance}$
- **Why three models?**
 - Phylogenetic and areal signals are likely highly correlated with each other
 - Comparing phylo model to combined model gives indication of how much variance is explained by areality alone, or vice versa

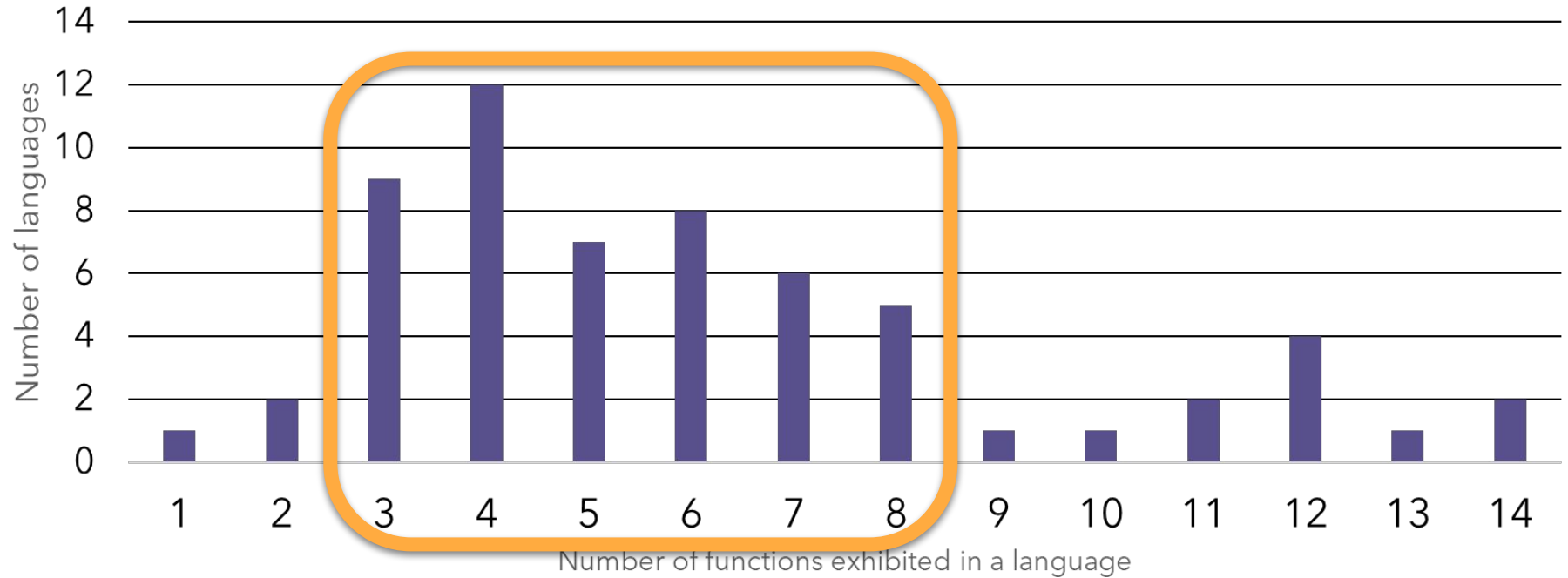
Results

Results: descriptive stats

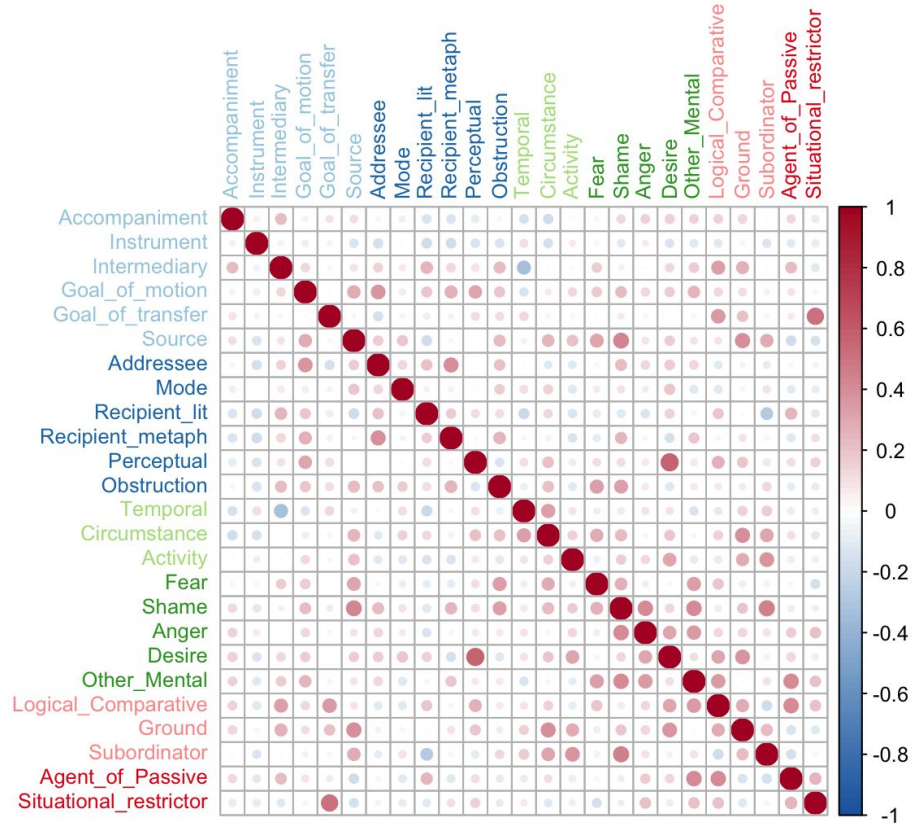
LOC functions:

- Most frequent: temporal (95% of languages)
- Mean frequency: 25% of languages
- Least frequent: situational restrictor (5% of languages)

Results: descriptive stats



Results: descriptive stats



Results: Bayesian regression

- For each LOC function, three models compared using residual squared error (RSE), a measure of model fit
- For all 25 LOC functions:
 - Little difference between phylo and areal models (<0.05 difference in RSE)
 - Combined model $>$ phylo model, but only just (<0.05 improvement in RSE)

Results: Bayesian regression

- R^2 used to assess overall amount of information phylogenetic and areal factors contribute to the model
- Average R^2 of all 25 combined models:
 - **18% [95% CI: 0.04, 0.42]** of variance explained by phylo + areal factors
 - Not insignificant, but leaves much variance to be explained by other factors
 - General universal/cognitive tendencies in way LOC functions tend to be extended?

Discussion

Discussion

This study:

- First typological survey of the locative case in Pama-Nyungan
 - Types of functions and their frequency
 - Interactions between functions
 - Influence of phylogeny and/or areality on their distribution

Discussion

We found:

- High LOC polyfunctionality is the norm rather than the exception in Pama-Nyungan
- Relatively small amount of variance in the distribution of LOC functions is explained by phylogeny or geography

Conclusion

Locative polyfunctionality is extensive throughout the Pama-Nyungan family

- ..but the distribution of these functions is **not** especially well explained by inheritance or contact
- This suggests the relative importance of **ahistorical processes** driving the distribution of LOC case functions in Pama-Nyungan languages

References

- Blake, Barry J. (2001): *Case* (Cambridge Textbooks in Linguistics). 2. edn. Cambridge: Cambridge University Press. doi:10.1017/CBO9781139164894.
- Blansitt, Edward (1988): Datives and allatives. In Michael Hammond, Edith Moravcsik & Jessica Wirth (Hrsg.), *Studies in Syntactic Typology*, 173–191. Amsterdam: Benjamins.
- Creissels, Denis (2008): Spatial Cases. In Andrej L. Malchukov & Andrew Spencer (Hrsg.), *The Oxford Handbook of Case*, 609–625. Oxford: Oxford University Press. doi:10.1093/oxfordhb/9780199206476.013.0043.
- Dixon, Robert M. W. 2002. *Australian languages: their nature and development*. Cambridge: Cambridge University Press.
- Forker, Diana. 2010. Nonlocal uses of local cases in the Tsezic languages. *Linguistics* 48(5). 1083–1109.
- Guzmán Naranjo, Matías & Laura Becker. 2022. Statistical bias control in typology. *Linguistic Typology*. De Gruyter Mouton 26(3). 605–670.
- Lahey, Holly A (2016): *The Grammar of Fear: Morphosyntactic Metaphor in Fear Constructions*. University of Oregon.
- Macklin-Cordes, Jayden L. 2024. Towards a phylogenetic typology of Australian nominal classification. *Langues & Langage à la croisée des Disciplines (LLcD 2024)*. Sorbonne University, Paris.
- Macklin-Cordes, Jayden L. & Erich R. Round. 2022. Challenges of sampling and how phylogenetic comparative methods help: With a case study of the Pama-Nyungan laminal contrast. *Linguistic Typology*. 26(3). 533–572. <https://doi.org/10.1515/lingty-2021-0025>.
- Rice, Sally & Kaori Kabata (2007): Crosslinguistic grammaticalization patterns of the ALLATIVE. *Linguistic Typology* 11(3). 451–514. doi:10.1515/LINGTY.2007.031
- Simpson, J. (2023). Semantic case. In *The Oxford Guide to Australian Languages* (pp. 226–242). Oxford University Press . <https://doi.org/10.1093/oso/9780198824978.003.0021>.

Contact



Dr Jayden Macklin-Cordes

The University of Newcastle

jayden.macklin-cordes@newcastle.edu.au

X @JaydenC



Dr Mitchell Browne

Macquarie University

mitchell.browne@mq.edu.au



Dr Tom Ennever

Surrey Morphology Group, University of Surrey

t.ennever@surrey.ac.uk



Dr Maria Copot

The Ohio State University

copot.1@osu.edu

X @CopotMaria

