

Research Statement

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I am a historical linguist whose research is centered around language change and the documentation of the languages of Indigenous Australia. Since completing my Ph.D. at Harvard in 2004, I have been developing a research program covering both synchronic and diachronic analyses of language. Most of my pre-tenure work focused exclusively on Australia. Following tenure, I have continued and expanded this program in two ways: by using Australian languages to study patterns of change and make inferences about diachrony in human society more generally, and by working on the documentation and revitalization of Native languages in Australia and the USA. My research program can be summarized as investigating the consequences of taking an ‘evolutionary’ view of language change: that is, treating *language* as an evolutionary system with the same properties as other evolutionary systems (such as biological organisms). This research program is described here.

I use computational phylogenetic methods in conjunction with traditional comparative linguistic methods to investigate language history. Such computational methods are new in linguistics (see Holden (2002) and Gray et al. (2009) for early applications) but are the natural extension of earlier research that addressed questions of language relationship by using quantitative data. Phylogenetic methods have allowed progress in questions both of linguistic evolution (beyond relationship) and of specific details of Australian prehistory (Bower 2010b). In Bower and Atkinson (2012), I present the results of a Bayesian phylogenetic analysis of 200 words of basic vocabulary in 195 Pama-Nyungan languages. Work on Pama-Nyungan over the last hundred years has assumed that higher relations in the tree are not recoverable, due to a combination of extensive language contact, rapid language change, and poor data quality. I show that higher structure is recoverable and present the first fully articulated tree of Pama-Nyungan languages. This work built on four years’ investigation into language relationships based on traditional methods in historical linguistics, particularly the comparative method, and several years of work investigating the potential for applying phylogenetic methods to language.

Subsequent papers have built on this original phylogeny (Haynie et al. 2014, Zhou and Bower 2015) to study change in subdomains of language. For example, Zhou and Bower (2015) examined the evolution of numeral systems. Australian language systems are typically low-limit (that is, include words for one, two, three, four, but do not extend infinitely), but the upper limits vary. We looked at the internal structure of these low-limit systems and tested the extent to which the formation of higher numerals are dependent on lower ones. A further paper is currently under review (Haynie and Bower under review) that investigates the phylogenetics of color systems in Pama-Nyungan. Previous work on color, including Berlin and Kaye (1969), Kay and Maffi (1999) and Kay and Regier (2007) (among many others), concentrates on perceptual and cognitive constraints on

color naming. We show that these systems are also subject to phylogenetic pressure, and that the evolutionary predictions of previous work do not fully account for the actual data. In this way, this work connects historical linguistics to cognitive science, and historical linguistics provides crucial insight into the structure of systems of this type. I take the view that modern languages have the properties they do because of a) the constraints of physiological and cognitive constraints on language production; b) prior language states (that is, the structures that were already present in prior stages of the language); and c) aspects of language transmission. These papers show that while cognition constrains linguistic systems, other changes (such as semantic variation between items of a particular color and the name for the color itself) lead to the real range of typological systems being more varied than one might expect.

Further extensions of this phylogenetic work use findings from linguistics to look at evolution of culture and society, co-evolution with genetics, and the ways in which ecology interacts with the evolution of subsistence and land tenure. With colleagues in geography, ecology, and anthropology, I am Co-PI on a large grant from the National Science Foundation's SBSS grant program to investigate questions of cultural change, both related to language (such as how many languages might have been spoken by paleolithic hunter-gatherers before large agricultural expansions) and cultural and societal change (such as how agricultural practices develop and spread) (Kirby et al. Under Review). I have also recently partnered with geneticists (Malaspinas et al. in press) to investigate the coevolution of language and genes in Australia; this paper is in press at *Nature*. A further major research grant in this area (on which I am a co-PI) is currently under review with the Australian Research Council.

Australia's 400 Indigenous languages are significantly under-studied compared with languages in other parts of the world. The languages were described late; extensive documentation efforts date only from the 1960s (although there is material from earlier). The field of historical linguistics in particular has been hampered by an unconstrained approach which has favored very general theories of change which make little reference either to the details of the languages or to known tendencies of change from elsewhere in the world. My work shows conclusively that Australian languages change like any other.

The vast majority of Australia's languages are either moribund or highly endangered, and detailed description is urgent in many parts of the country. My work on Bardi has involved recording narratives, songs and song language, and eliciting grammatical and lexical items. Community-oriented results of the fieldwork have included a 2000-word supplement (Bower 2003) to the published Bardi dictionary (Aklif 1999), an electronic dictionary, three books of narratives (Bower 1999, 2002, 2004), a learner's guide (Bower et al. 2010), and basic classroom materials for use in the One Arm Point School's Bardi language program. Research protocols on Australian Indigenous endangered languages require a strong component of community participation and community-oriented results and so I have spent some time in making research materials available to community members. An 866-page reference grammar of Bardi was published with Mouton de Gruyter (Bower 2012). I have also published articles on the language (Bower 2008a,b, 2009, 2010c, in press).

This work has also extended in two directions: to work with other Australian groups, and to work in Native North America. My recent work on Australian languages includes archival work with fieldnotes collected by others (a grammar of Ngalia, for example, has been accepted for publication with Asia Pacific Linguistics) and work on a 800,000 word database (Bower 2016). I

have also collaborated on other grammars (Tjupan, Cundeelee Wangka, Kuwarra) and a dictionary (Yugambeh). At a more general outreach level, I am the regional curator for the Australian section of the online catalog of endangered languages at endangeredlanguages.com, the infrastructure of which was provided by Google. Work with Yolŋu languages from Arnhem Land is ongoing. Within Native North America, I have recently begun a long-term collaboration with members of the Shinnecock, Unkechaug, and Mohegan Nations of Connecticut and Long Island. Currently, we are identifying materials which contain examples of the languages, with the aim of creating a grammar of the language for use by linguists and community members.

My fieldwork in Aboriginal Australia has led me to publish on field methodology, most notably Bower (2008c), Bower (2010a) and Bower and Warner (2015). My book *Linguistic Fieldwork* was published in 2008 (reviews have appeared in *Language*, *Linguistic Typology*, and the *Australian Journal of Linguistics* and have been positive); in it I strongly advocate an integrative approach to documentation that combines the insights from ethnography and observation with structured and theoretically motivated data collection. A new edition was published in 2015.

Thus in summary, my post-tenure work has considerably expanded the scope of my earlier research by elucidating the histories of language and culture in Australia and beyond. I retain a program that is grounded in the comparative method but which capitalizes on the power of phylogenetic methods. I combine theoretical work with empirical investigation of specific phenomena. This varied approach has proven to be a valuable way to gain insight into human prehistory, and one that I plan to continue.

References

- Aklif, Gedda. 1999. *Ardiyooloon Bardi ngaanka: One Arm Point Bardi dictionary*. Halls Creek, Western Australia: Kimberley Language Resource Centre.
- Berlin, Brent and Paul Kaye. 1969. *Basic color terms: their universality and evolution*. Berkeley: University of California Press.
- Bower, Claire (ed.). 1999. *Bardi jawal: stories in Bardi from One Arm Point, by Jessie Sampi, Bessie Ejai, David Wiggan and Nancy Isaac, compiled for the One Arm Point School Bardi literacy program*. Western Australia: One Arm Point School.
- Bower, Claire. 2002. *Jiba nganman jawal: Stories in Bardi and English from the elders of One Arm Point and Sunday Island*. Transcriptions and translations of narratives collected under AIATSIS Grant G2001/6505, awarded to Claire Bower and Bessie Ejai. MS, Yale University, circulated at One Arm Point School.
- Bower, Claire. 2003. Supplement to *Ardiyooloon Bardi Ngaanka: One Arm Point Bardi dictionary*. MS, Rice University.
- Bower, Claire. 2004. Bardi stories from the Laves collection. Prepared for One Arm Point School in collaboration with Nancy Isaac, Jessie Sampi, Bessie Ejai and Maggie Davey.
- Bower, Claire. 2008a. Agreement and referentiality in Bardi discourse. In Brett Baker and Ilana Mushin (eds.), *Discourse and grammar in Australian languages*, 59–85. Amsterdam: John Benjamins.
- Bower, Claire. 2008b. The diachrony of complex predicates. *Diachronica* 25(2). 161–185. doi: 10.1075/dia.25.2.03bow.
- Bower, Claire. 2008c. *Linguistic fieldwork: A practical guide*. Basingstoke: Palgrave Macmillan.

- Bowern, Claire. 2009. Naming Bardi places. In Luise Hercus, Flavia Hodges and Harold Koch (eds.), *Aboriginal placenames: Naming and renaming the Australian landscape*, chap. 14, 327–345. Canberra: Pacific Linguistics.
- Bowern, Claire. 2010a. Fieldwork and the IRB: a snapshot. *Language* 86(4). 897–905. doi: 10.1353/lan.2010.0048.
- Bowern, Claire. 2010b. Historical linguistics in Australia: trees, networks and their implications. *Philosophical Transactions of the Royal Society B* 365. 3845–3854. doi:10.1098/rstb.2010.0013.
- Bowern, Claire. 2010c. The typological implications of Bardi complex predicates. *Linguistic Typology* 14(1). 39–70. doi:10.1515/lity.2010.002.
- Bowern, Claire. 2012. *A grammar of Bardi*, Mouton Grammar Library. Berlin: Mouton.
- Bowern, Claire. 2016. The Chirila database of Australian languages. *Language Documentation and Conservation* 10. 1–45.
- Bowern, Claire. in press. Language and land in the Northern Kimberley. In Peter Austin, Jane Simpson and Harold Koch (eds.), *Language, land, and song*. London: EL Publishing.
- Bowern, Claire and Quentin Atkinson. 2012. Computational phylogenetics and the internal structure of Pama-Nyungan. *Language* 88(4). 817–845.
- Bowern, Claire, Laura Kling, Linda Lanz and David Katten. 2010. A learner's guide to Bardi. One Arm Point School.
- Bowern, Claire and Natasha Warner. 2015. Lone wolves and collaboration: A reply to Crippen & Robinson. *Language Documentation and Conservation* 9. 59–85.
- Gray, Russell; D., Alexei Drummond and Simon Greenhill. 2009. Language phylogenies reveal expansion pulses and pauses in Pacific settlement. *Science* 323. 479–483. doi: 10.1126/science.1166858. URL ://WOS:000262587900035. 5913.
- Haynie, Hannah and Claire Bowern. under review. A phylogenetic approach to the evolution of color term systems. *PNAS*.
- Haynie, Hannah, Claire Bowern, Catherine Sheard, Patience Epps, Jane Hill, Barry Alpher and Patrick McConvell. 2014. Loan and inheritance patterns in hunter-gatherer ethnobiological nomenclature. *Journal of Ethnobiology* 34(2). 195–227.
- Holden, Claire Janaki. 2002. Bantu language trees reflect the spread of farming across sub-Saharan Africa: a maximum-parsimony analysis. *Proceedings of the Royal Society B: Biological Sciences* 269(1493). 793.
- Kay, Paul and Luisa Maffi. 1999. Color appearance and the emergence and evolution of basic color lexicons. *American Anthropologist* 101. 743–760.
- Kay, Paul and Terry Regier. 2007. Color naming universals: The case of Berinmo. *Cognition* 102(2). 289–298.
- Kirby, Kathryn R, Russell D Gray, Simon J Greenhill, Fiona M Jordan, Stephanie Gomes-Ng, Hans-Jörg Bibiko, Damián E Blasi, Carlos A Botero, Claire Bowern, Carol R Ember, Dan Leehr, Bobbi S. Low, Joe McCarter, William Divale and Michael Gavin. Under Review. A global database of cultural, linguistic and environmental diversity. *PLoS One*.
- Malaspinas, Anna-Sapfo, Michael C Westaway, Craig Muller, Vitor C Sousa, Oscar Lao, Isabel Alves, Anders Bergstroöm, Georgios Athanasiadis, Jade Y Cheng, Jacob E Crawford, Tim H Heupink, Enrico Macholdt, Stephan Peischl, Simon Rasmussen, Stephan Schiffels, Sankar Subramanian, Joanne L Wright, Anders Albrechtsen, Chiara Barbieri, Isabelle Dupanloup, Anders Eriksson, Ashot Margaryan, Ida Moltke, Irina Pugach, Thorfinn S Korneliussen, Ivan P Levkivsky, J. Víctor

MorenoMayar, Shengyu Ni, Fernando Racimo, Martin Sikora, Yali Xue, Farhang A Aghakhanian, Nicolas Brucato, Søren Brunak, Paula F Campos, Warren Clark, Sturla Ellingvaåg, Gudjugudju Fourmile, Pascale Gerbault, Darren Injie, George Koki, Matthew Leavesley, Betty Logan, Aubrey Lynch, Elizabeth A Matisoo-Smith, Peter J McAllister, Alexander J Mentzer, Mait Metspalu, Andrea B Migliano, Les Murcha, Maude E Phipps, William Pomat, Doc Reynolds, Francois-Xavier Ricaut, Peter Siba, Mark G Thomas, Thomas Wales, Colleen Wall, Stephen J Oppenheimer, Chris Tyler-Smith, Richard Durbin, Joe Dortch, Andrea Manica, Mikkel H Schierup, Robert A Foley, Marta Mirazón Lahr, Claire Bowern, Jeffrey D Wall, Thomas Mailund, Mark Stoneking, Rasmus Nielsen, Manjinder S Sandhu, Laurent Excoffier, David M Lambert and Eske Willerslev. in press. The genomic history of Australia. *Nature*.

Zhou, Kevin and Claire Bowern. 2015. Quantifying uncertainty in the phylogenetics of Australian numeral systems. *Proc. R. Soc. B* 282(1815). 20151278.