

Topography and Frame of Reference in the threatened ecological niche of the atoll

Bill Palmer¹, Alice Gaby², Jonathon Lum² & Jonathan Schlossberg¹

University of Newcastle (Australia)¹, Monash University²

bill.palmer@newcastle.edu.au

This paper reports on extensive field-based research testing the Topographic Correspondence Hypothesis (Palmer 2015). TCH proposes predictable correlations between topographic environment and both spatial Frame of Reference choice and details of Absolute systems. These correlations demonstrate a process where response to salient environmental features and human interaction with those features prompts construction of a spatial conceptual representation, which then motivates cross-modal spatial behaviour including linguistic structure. Cultural and linguistic manifestations of conceptual representation then reinforce elements of conceptualisation. For example the calm accessible lagoonside of atoll islands prompts settlement on that side, reinforcing cultural perceptions of the lagoonside as within social control (e.g. Hoëm 1993).

We test TCH, applying the Environment Variable Method (Palmer 2015) in the ecological niche of atolls (Palmer 2007): holding environment constant but varying language by comparing atoll-based Marshallese (Austronesian, Marshall Islands) and Dhivehi (Indo-European, Maldives); and holding language constant but varying environment by comparing Marshallese on atolls, on non-atoll islands, and in urban Springdale Arkansas, using maximally comparable data from established and newly-devised experimental tasks (Levinson et al 1992; Levinson & Wilkins 2006; Wilkins 1993; Lum & Schlossberg 2015; Schlossberg et al 2015).

In both languages, intrinsic strategies are widely used. In Marshallese, Absolute FoR is common on islands, with a primary terrestrial (*i*)*ar-lik* axis crossed by a cardinal axis. (*I*)*ar* typically translates as ‘lagoon side’, but on non-atoll islands refers to the leese side, suggesting underlying reference to an island’s accessible side. *Lik* translates as ‘ocean side’, but ‘back’ in Intrinsic contexts, suggesting underlying reference to the side opposite that affording interaction. Relative strategies are available but rarely used in island Marshallese. In Springdale, however, Relative FoR dominates and Absolute is not used. In all environments, reference to landmarks were tightly integrated. However, while large scale landmarks predominated in islands, even in tabletop space, in Springdale immediate landmarks (windows, TVs) were common in elicitation tasks.

In Dhivehi distribution of available strategies varies according to demographic variables including age, gender, and home island. Absolute cardinals

are common among older speakers, men, and residents of fishing islands, while younger speakers, women, and residents of non-fishing islands tend to use Relative FoR, suggesting FoR preference influenced by interaction with environment, rather than environment alone. Less common strategies include an Absolute inland-beachward axis, and reference to landmarks including lagoon and ocean shores.

These findings show a preference for Relative over Absolute in urban environments (see Majid et al 2004; Pederson 1993), and Absolute systems correlating with key environmental features, but preference for cardinals versus terrestrial systems varying between languages. They also show choice of FoR and nature of Absolute depending on interaction with environment, both degree of interaction (Dhivehi fishing versus non-fishing communities correlating with FoR choice), and affordance and nature of interaction (Marshallese accessibility/calmness interpreted as lagoonside on atolls and leaside on non-atoll islands). We conclude these findings weakly support TCH.

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