Flores Languages

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The Austronesian languages of Flores, in southern Indonesia, all belong to the Central Malayo-Polynesian grouping, and can be divided internally into three groups, roughly western, central, and eastern. There are 11 western languages, prominent among them Manggarai and Ngad'a, which are more closely related to Bima than to the languages of the rest of Flores. The three eastern languages, Sika, Lamaholot, and Lewotobi, are related to the languages of the Solor archipelago as far as Alor. The five central Flores languages, most prominently Ende and Li'o, are the most isolating and show a chaining relationship, with the southwestern languages changing incrementally into the northeastern varieties. The languages of Flores typically employ prenasalized and imploded/preglottalized consonants, sometimes in contrast to voiced stops. Most commonly, the languages have a five vowel system with epenthetic schwas separating illicit consonant clusters. Because these epenthetic vowels do not receive stress, the epenthesis results in apparent exceptions to the penultimate stress rule. In Palu'e ['lama] 'rice' appears to contrast in terms of stress placement with [lə'ma] 'tongue,' but the difference is better analysed as an underlying difference between /lama/ and /lma/.

The languages of Flores lack extensive verbal morphology to mark voice. This is part of the general isolating tendency, although the eastern languages have verbal agreement, and most languages show varying degrees of cliticization, which show degrees of development toward agreement and case marking. The eastern language Sika, for instance, shows a full set of agreement prefixes on verbs, whereas Palu'e in the center has only one proclitic, *ak* = '1sg.subj'. The recent grammaticalization of this clitic is attested in the inability of an independent pronoun to occur in the same clause as the clitic, and the optionality of the clitic: *Aku ka lama* 'I eat rice,' or *Ak=ka lama*, but not **Aku ak=ka lama*. There are no other subject clitics in Palu'e, but there are four genitive enclitics that are used in nominalized clause: *ka=gu lama* 'my eating of the rice.' The central and western languages show voice alternations. Manggarai shows an alternation in voice that is morphologically marked in word order and the choice of VP-final subject clitic. Palu'e has an active/passive alternation with only AVP and PAV word orders marking the difference, but a variety of morphosyntactic tests showing the changed status of the A and the P. Thus, the AVP sentence *Kita ka lama wa'a* 'We ate that rice,' contrasts with PAV in *Lama wa'a kita ka* 'That rice was eaten by us.' Tests for subject, such as modification by floating quantifiers, makes this unambiguous: the clause-final quantifier *teti'ón* 'all' in *Kita ka lama wa'a teti'ón* can only modify the subject: 'We all ate that rice,' whereas in *Lama wa'a kita ka teti'ón* can only be interpreted as 'We ate all of that rice.' Other tests support this analysis of the A in a PAV construction as oblique, and the P as subject.

Symbolism and metaphor are present in both ritual and everyday speech. This is licensed by an unusually large number of homophones, partly because of constrained phonotactic possibilities. For instance, in Palu'e the fortuitous coming-together of PAN *bənua > *nua* 'house' and *nuSa > *nua* 'island' is used to enforce the sense of belonging to their island home. Another factor is the extensive precategoriality of lexical roots, such as *kti*, which has the referential sense 'knife,' the predicative sense 'cut off,' and the modificational sense 'severed, loose.'

See also: Austronesian Languages: Overview; Indonesia: Language Situation; Malayo-Polynesian Languages.

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fMRI Studies of Language

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Introduction

Functional neuroimaging has fundamentally changed the types of information that can be acquired about the relationships between neural structures and behavior, and this has been particularly important in the study of human language. Reviews of language/brain relationships are typically organized around hypothetical linguistic processes and the brain regions where they occur. From such a perspective, research questions might include the functional localization of processes related to discourse coherence, past tense affixation, phonology, pragmatics, production, prosody, reading, semantics, sentences, syntax, and words.

However, it is unlikely that the brain makes these distinctions as clearly as we linguists and psychologists do. In the current review, we turn this approach inside out, so to speak, and focus on the variety of different linguistic tasks that produce neuronal activity in a given location. This approach does not make assumptions about what is 'done' in an area and allows a picture to emerge of the mechanisms underlying language function throughout the brain, as opposed to trying strictly to localize it. From this point of view, we discuss not only traditional auditory linguistic perceptual tasks but also nontraditional but more ecologically valid tasks (e.g., audiovisual speech perception). Furthermore, we view language production and perception not as functionally separable processes but instead as lying on a continuum. Thus, tasks involved in language production are discussed with the understanding, as illustrated by work in the visual system (see, e.g., Jeannerod, 1997), that in order to understand the mechanisms of perception, we must simultaneously understand the mechanisms of production. Finally, we identify and describe a number of nonlinguistic tasks that produce reliable neuronal activity in some of the same regions that process linguistic material.

This approach serves to highlight new findings that have emerged from the neuroimaging literature. The emerging model differs somewhat from the standard view, that left Wernicke's area performs receptive functions and left Broca's area performs expressive functions (e.g., Geschwind, 1965b). Neuroimaging studies have demonstrated that in addition to these 'classical' areas, other more distributed bilateral brain areas play a role in language processing. It seems that each of the regions implicated in language processing plays a role in other, nonlinguistic processing as well, making it more likely that language emerged phylogenetically from existing processing mechanisms, rather than formed *de novo* to create a dedicated language mechanism in these 'classical areas.' Certainly understanding these mechanisms will help us understand language function. Finally, neuroimaging studies suggest that language processing is 'embodied'; aspects of processing both 'lower-level' speech sounds and 'higher-level' word meanings appear to involve brain areas that would be used both to perceive and to produce those sounds or meanings. As described, the intent is to illustrate these points by brain region. First, however, we