Santa Barbara Papers in Linguistics

VOLUME 13

Proceedings from the fifth
Workshop on American Indigenous Languages

April 26-28, 2002

Jeanie Castillo, Editor

SANTA BARBARA PAPERS IN LINGUISTICS

may be ordered from:

Papers in Linguistics
Linguistics Department
University of California, Santa Barbara
Santa Barbara, California 93106-3100
U.S.A.

Checks in U.S. dollars should be made out to UC Regents with $5.00 added for overseas postage.

If your institution is interested in an exchange agreement, please write the above address for information.

Volume 1:	Korean: Papers and Discourse Date	$13.00
Volume 2:	Discourse and Grammar	$10.00
Volume 3:	Asian Discourse and Grammar	$10.00
Volume 4:	Discourse Transcription	$15.00
Volume 5:	East Asian Linguistics	$15.00
Volume 6:	Aspects of Nepali Grammar	$15.00
Volume 7:	Prosody, Grammar, and Discourses in Central Alaskan Yup'ik	$15.00
Volume 8:	Proceedings from the first Workshop on American Indigenous Languages	$20.00
Volume 9:	Proceedings from the second Workshop on American Indigenous Languages	$15.00
Volume 10:	Proceedings from the third Workshop on American Indigenous Languages	$15.00
Volume 11:	Proceedings from the fourth Workshop on American Indigenous Languages	$15.00
Volume 12:	Recent Studies in Empirical Approaches to Language	$15.00
Volume 13:	Proceedings from the fifth Workshop on American Indigenous Languages	$15.00

Foreward

It is with great pleasure that we present the proceedings of the fifth Workshop on American Indigenous Languages (WAIL 2002). In continuing a tradition begun with the student discussion group on North American Indigenous Languages (NAIL), the evolving membership wishes to pay tribute to Marianne Mithun and Wallace Chafe for their consistent encouragement and support. We hope that this fifth volume of the Working Papers represents another step in the development of WAIL as a forum where we may all share our discoveries, both descriptive and theoretical, concerning these increasingly endangered languages.

Paul Barthmaier	Dan Hintz
Greg Brown	Kirk Miller
Kelsi Camp	Petra Shenk
Jeanie Castillo	Jennifer Van Vorst

CONTENTS

The Phonetics of Mixtec Glottalization[1]

J.C. Brown
California State University, Fresno

1. Introduction

The goal of the present research is to investigate the phenomenon of glottalization across dialects[2] of Mixtec, an Otomanguean language spoken in southern Mexico. There's a rather large debate about glottalization in Mixtec concerning what type of phonological unit is involved. The problem is that most treatments of the language have handled glottalization in terms of phonological rules, leaving phonetic aspects largely ignored. For instance, the history of the issue can be characterized as a debate over whether glottalization is most accurately represented as a glottal stop consonant or a creaky voiced vowel. Only recently have analyses surfaced which treat glottalization as a floating [constricted glottis] feature (Macaulay and Salmons 1995).

Perhaps analyses have been so divergent simply because there is a great deal of phonetic variation across dialects. For instance, in Coatzospan Mixtec, glottalization is only implemented as creaky voicing on vowels (Gerfen 1999). Contrasted with this is Proto-Mixtec, which Rensch (1976) has reconstructed as having only glottal stops, and no non-modal voicing on vowels. This variation is interesting in the sense that a firm unified phonological analysis may be elusive simply because phonetic aspects are actually being misinterpreted as language-specific phonological entities.

The goal of this paper is to show that dialectal differences are not phonological differences, but rather differences in phonetic implementation. Once dialect-specific phonetic rules (cf. Kingston and Diehl 1994) are determined, a fully predictable phonological principle will account for glottalization across dialects of Mixtec. This approach is an attempt to reinforce more recent phonological treatments of glottalization in the language, which will be revised slightly, by accounting for dialectal differences through phonetic rules.

2. Distributions

As noted by Pike (1948), the bimoraic root or "couplet" holds a special status in terms of phonological processes in Mixtec. One such process is glottalization, which affects only roots, and never affixes or clitics. The couplet canon of Santiago Asunción Mixtec, which includes the distribution of glottalization, is shown below.

(1) Santiago Asunción Mixtec

VV	ĩĩ 'one (numeral)'
VʔV	ũʔũ 'NEG'
CVV	meõ '1 pl inclusive', kua 'COP'
CVʔV	diʔi 'short', koʔo 'plate'
CVCV	tina 'dog', hiku 'tall'

CVʔCV	sạma 'to smoke', kạβa 'to read'
VCV	iba 'bitter', ebe 'two'
VʔCV	įni 'hot'

As is illustrated by the diacritic differences, in Santiago Asunción Mixtec glottalization surfaces as a glottal stop preceding vowels and as creaky voicing preceding consonants. Instrumental analyses (Brown and Flores 2001) show that the duration of glottal adduction for a VʔV sequence approximates the durations for other voiceless stops (Henton et al. 1992). This mixed C/V pattern for glottalization is also attested in other languages of North America as well (see Peterson 2001 for a similar treatment of Blackfoot). Presumably the same is true for Chalcatongo Mixtec, which has a similar root canon:

(2) Chalcatongo Mixtec (Macualay and Salmons 1995)[3]

VV	uù 'two', uậ 'bitter
VʔV	úʔu 'hurt', îʔa 'saint, god'
CVV	tʃàá 'man, saù 'rain'
CVʔV	bàʔà 'good', báʔù 'coyote'
CVCV	kɪtɨ 'animal', katu 'make tortillas'
CVʔCV	kóʔlo 'turkey', bíʒa 'nopal'
VCV	inì 'inside', úna 'eight'

In contrast to this pattern, Coatzospan Mixtec displays more phonetic uniformity across prosodic positions. In this dialect, glottalization only surfaces as creaky voicing on vowels, and never as a fully realized glottal stop (Gerfen 1999). Take the sets of minimal pairs below:

(3) Coatzospan Mixtec (adapted from Gerfen 1999)

ʃii	'taboo'	ʃịi	'door'
ʃee	'new'	ʃẹe	'hit'
ʃaa	'ash'	ʃạa	'chili pepper'
ʃoo	'moon'	ʃọo	'rope, cord'
ʃuu	'stone'	ʃụu	'mouth'
ʃɨ	'husband'	ʃɨ̣	'raw'

The effect of glottalization in Coatzospan can be characterized as "the interruption of modal vowel production by a brief period of laryngealization or creaky voicing" (Gerfen 1999:51).

    Extrapolating from the data above, a dichotomy can be drawn between dialects which exhibit creaky voicing only, and those which allow prosodic variation of creaky

voicing and glottal stop. Thus far, glottalization has also been limited to positions prior to the second vowel of a couplet. This will become important in developing a phonological account of the phenomenon.

A potential third distinction in phonetic implementation can be postulated based on what has been reconstructed for Proto-Mixtec and Proto-Mixtecan. Longacre (1957), Mak and Longacre (1960), Rensch (1976) and Dürr (1987) have reconstructed Proto-Mixtec to include glottal stops, but no creaky voicing. Although there has been expressed some notion that laryngeals do not play a straightforward role in the reconstructed forms (see any of the works cited above), there are reasons, most notably related to tone, to postulate glottal stops in certain positions where creaky voicing would normally be expected (Dürr 1987). I therefore assume that there is favorable evidence for considering Proto-Mixtec to have glottal stops.

Taking the Proto-Mixtec reconstructions into consideration, there can exist a three-way dimension in which dialects vary: those with creaky voicing only, those with both creaky voicing and glottal stop, and those with only glottal stops.

3. Phonetic Rules

Given the three-way distinction above, each dialect must employ its own phonetic rules for glottalization (cf. Cohn 1990). Stated plainly, these are as follows:

(4)   CREAK: [cg] must be implemented as creaky-voice phonation on vowels

(5)   STOP: [cg] must be implemented as complete adduction of the vocal folds, the duration of which approximates other voiceless stops

(6)   BOTH: [cg] can be implemented as creaky-voice phonation on vowels OR as a voiceless stop; the prosodic environment will dictate which is appropriate

These phonetic rules predict that: CREAK dialects will implement [cg] as creaky voicing on vowels regardless of whether implementation precedes a consonant or a vowel; STOP dialects will implement [cg] as a glottal stop in any given environment, even if it results in a closed syllable (all other codas are prohibited in Mixtec); and BOTH dialects will implement [cg] as creaky voicing on vowels when preceding a consonant, and as a glottal stop preceding a vowel.

We can see that Coatzospan is a CREAK dialect, Proto-Mixtec is presumably a STOP type, and Santiago Asunción Mixtec is a BOTH type of dialect. These phonetic rules simply dictate the timing of glottal closure in a way which is directly related to the phonology. Once established, these dialect-specific phonetic rules can feed the phonological realization of the glottalization feature. By showing that the variation lies within the methods of phonetic implementation, a phonological framework can be devised that will be unified for all dialects of Mixtec.

4. The Phonology of Glottalization

There is a rather large historical debate as to what exactly glottalization is in Mixtec[4]. Early accounts posited glottal stop consonants (a more contemporary account is adopted in Piggott 1992) or creaky-voiced vowels (Bradley 1970) in the phoneme inventory of the particular dialect that was being documented. More recent accounts have adopted a prosodic analysis for glottalization. Gittlen and Marlett (1989; cited in Macaulay and Salmons 1995) have proposed that glottalization is a feature of syllables,while Macualay and Salmons (1995) have resorted to a larger domain, suggesting that glottalization is a feature of the couplet.

Assuming the notion that glottalization is represented as a floating [constricted glottis] feature (Macaualay and Salmons 1995), the task at hand is one of delimiting domain. For most dialects, it suffices to depict [cg] as docking to the initial vowel of the couplet (Macaulay and Salmons 1995, Gerfen 1999). This representation derives all of the dialects discussed above if the phonetic rules are already in place. For instance, CREAK will derive only creaky voice phonation roughly corresponding to the initial vowel, STOP will derive only glottal stops as codas to the initial syllable of the couplet, and BOTH will derive a creaky voiced vowel preceding a consonant, and a glottal stop preceding a vowel. The association rule can be formalized as follows:

(7) Association of [constricted glottis] (adapted from Macaulay and Salmons 1995, Macaulay 1996)

     (a) LEXICAL ENTRY FOR 'TO SMOKE'
     /sama/
     [constricted glottis]

     (b) GLOTTAL ASSOCIATION
     Associate the feature [constricted glottis] to the timing slot corresponding to the leftmost vowel of the couplet

     (c) output of (b)
     /sama/
       |
     [constricted glottis]

There are, however, exceptional dialects which require discussion. According to Pankratz and Pike (1967), Ayutla Mixtec has couplet-final glottalization. This is supported by Josserand (1983), which also lists Zacatepec as an additional dialect with couplet-final glottalization.

(8) Ayutla Mixtec (adapted from Pankratz and Pike 1967)
     tùtù   'paper'   tùtuʔ 'firewood'
     namà 'wall'   namàʔ 'soap'

Presumably Proto-Mixtecan patterned in much the same way. Longacre (1957) asserted that Proto-Mixtecan lost its final glottalization in the transition to Mixtec, the only exception being where it becomes CVʔV. Dürr (1987) has similarly concluded that couplet final glottal stops existed in Proto-Mixtec based on aspects of tonogenesis and tone sandhi conditions. It is thus plausible that Ayutla and Zacatepec pattern together in an archaic way along with Proto-Mixtecan in retaining couplet-final glottalization, which has been suggested by Pankratz and Pike (1967).

If the association rule in (8) above were shifted into a general licensing principle, [constricted glottis] could be prosodically licensed by some constituent of the phonological foot (cf. Macken and Salmons 1997 on the importance of the foot as a template in Mixtec diachrony). In this case, [cg] is licensed by the rhyme of the foot, whereby the prosodic constituency of the foot is composed of the initial onset and the rest (rhyme) of the foot (Bills and Golston 2001). This constituency allows for all segments except for the initial consonant (or onset cluster in marginal dialects) to be potential hosts for the docking of [cg].

(9) Prosodic Licensing of Glottalization:
    [constricted glottis] is licensed by the rhyme of the foot

This licensing principle, which is a first attempt at a global phonological principle for Mixtec dialects, allows glottalization to surface in any position except initially[5]. This domain is big enough to account for the variation between Ayutla, which has final glottalization and other dialects that don't, but it is also restrictive enough to prohibit couplet-initial glottalization, an unattested pattern.

The general phonological licensing principle coupled with the language-specific phonetic rules will result in cross-linguistic variation. The phonology provides the prosodic environment within which the phonetic rules operate. Furthermore, reliance on higher level prosodic units such as the phonological word (Pankratz and Pike 1967, Hunter and Pike 1969)[6] in order to account for glottalization is no longer necessary.

5. Conclusion
The variation in which dialects phonetically implement glottalization is probably the cause behind much misunderstanding and difference in analysis within Mixtec. This has led several authors to characterize glottalization as either a consonant or a vowel in the language's inventory. By comparing dialects though, there emerges a typology of the way different dialects phonetically implement glottalization. This type of dialect variation exhibits a range from strictly creaky voicing on vowels to strictly glottal stops, with a mixed implementation in between. The analysis is that what's being observed is not a difference in segmental structures per se, but rather a single feature that gets phonetically implemented in highly variable ways according to prosodic position across dialects. The phonological licensing condition is strong enough to account for all attested positions of glottalization. This allows for a unified phonological account across dialects

of Mixtec. This also lets the phonetic rules dictate the consonantal or vocalic nature of glottalization.

From this, we can begin to stipulate what types of constraints are interacting (following Gordon 1998), and how a typology of constraint rankings will achieve the result of accounting for dialect variation along a fixed dimension. This is, however, beyond the scope of the current paper, and a direction for future research.

Notes

[1] Thanks go to the audience at Santa Barbara, as well as Charles Ettner, Chip Gerfen, and my Santiago Asunción Mixtec consultant, Adolfo Flores. Special thanks go to Chris Golston for reading and commenting on an earlier version of this paper, in addition to facilitating the project and the fieldwork that supported it.

[2] The languages of the Mixtec family exist on a dialect continuum. What are typically termed 'dialects' of Mixtec are probably more properly understood as mutually unintelligible languages. Following the custom of Mixtecanists, I have retained the term 'dialect'.

[3] Diacritics for Chalcatongo have remained faithful to what was originally presented in Macaulay (1996) and Macaulay and Salmons (1995).

[4] A comprehensive review of the literature and the issue of glottalization can be found in Macaulay and Salmons (1995).

[5] Pike (1944) transcribes several glottal-initial couplets for San Miguel El Grande Mixtec, such as ʔisò 'rabbit', ʔəən 'one', and ʔátʃí 'say'; however, there do not seem to be any contrastive forms without the initial glottal stop.

[6] Although they don't explicitly attribute the effects of glottalization to the phonological word, Pike and Cowan (1967) employ the prosodic unit and the framework that they work in would not exclude such an analysis.

References

Bradley, C. Henry. 1970. A linguistic sketch of Jicaltepec Mixtec. Norman: Summer Institute of Linguistics.

Bills, Shannon and Chris Golston. 2001. Prosodic and linear licensing in English acquisition. Proceedings of WECOL, Seattle, WA.

Brown, J.C. 2002. Licensing and glottalization in Mixtec. Paper presented at CLS 38.

Brown, J.C. and Adolfo Flores. 2001. Prosodic licensing and glottalization in Mixtec. Ms, California State University, Fresno.

Cohn, Abigail C. 1990. Phonetic and phonological rules of nasalization. Ph.D. dissertation, UCLA.

Dürr, Michael. 1987. A preliminary reconstruction of the Proto-Mixtec tonal system. Indiana 11:19-62.

Gerfen, Chip. 1999. Phonology and phonetics in Coatzospan Mixtec. Dordrecht: Kluwer.

Gittlen, Laura and Stephen A. Marlett. 1989. Northern Tlaxiaco Mixtec phonology. Ms.

Gordon, Matthew. 1998. The phonetics and phonology of non-modal vowels: a cross-linguistic perspective. BLS 24:93-105.

Henton, Caroline; Ladefoged, Peter; and Ian Maddieson. 1992. Stops in the world's languages. Phonetica 49:65-101.

Hunter, Georgia G. and Eunice V. Pike. 1969. The phonology and tone sandhi of Molinos Mixtec. Linguistics 47:24-40.

Josserand, Judy Kathryn. 1983. Mixtec dialect history. Ph.D. dissertation, Tulane University.

Kingston, John and Randy L. Diehl. 1994. Phonetic knowledge. Language 70:419-454.

Longacre, Robert E. 1957. Proto-Mixtecan. International Journal of American Linguistics 23.4:1-195.

Macaulay, Monica. 1996. A grammar of Chalcatongo Mixtec. Berkeley: University of California Press (volume 127).

Macaulay, Monica and Joe Salmons. 1995. The phonology of glottalization in Mixtec. International Journal of American Linguistics 61:38-61.

Macken, Marlys A. and Joseph C. Salmons 1997. Prosodic templates in sound change. Diachronica 14:31-66.

Mak, Cornelia and Robert Longacre. 1960. Proto-Mixtec phonology. International Journal of American Linguistics 26:23-40.

Pankratz, Leo and Eunice V. Pike 1967. Phonology and morphotonemics of Ayutla Mixtec. International Journal of American Linguistics 33:287-299.

Peterson, Tyler. 2001. Floating features, degenerate syllables and the distribution of the glottal stop in Blackfoot. Ms, University of British Columbia.

Piggott, G.L. 1992. Variability in feature dependency: the case of nasality. Natural Language and Linguistic Theory 10:33-77.

Pike, Eunice V. and John H. Cowan. 1967. Huajuapan Mixtec phonology and morphophonemics. Anthropological Linguistics 9:1-15.

Pike, Kenneth L. 1944. Analysis of a Mixteco text. International Journal of American Linguistics 10:113-138.

Pike, Kenneth L. 1948. Tone languages. Ann Arbor: University of Michigan Press.

Rensch, Calvin R. 1976. Comparative Otomanguean phonology. Bloomington: Indiana University.

The emergent 'substitutive' construction in Quechua[1]

Daniel J. Hintz
UC-Santa Barbara and SIL, Intl.
djhintz@umail.ucsb.edu

1 Introduction

The genitive construction in Quechua has a wide range of functions.[2] In this paper we examine a particular use of the genitive construction that has not appeared in the Quechua literature, referred to here as the 'substitutive' construction. Unlike other genitive constructions that function as core arguments or obliques, the substitutive functions as an adverbial clause. The emergence of the substitutive sheds light on the development of other adverbial clause markers via a pathway of grammaticization, where nominalizations in a genitival relationship with certain lexical nouns give rise to adverbial clause markers.

After initially illustrating the substitutive construction, we step back to review the structure of the Quechua genitive and the nature of the semantic relationships it expresses. We then examine in greater detail the grammaticization of the substitutive, comparing it to genitive construction NPs and to other adverbial clause types.

2 Grammaticalized 'substitutive' construction illustrated

Observe in (1) the underlined phrase *marka-man aywa-na-yki-pa ranti-n*, which means 'instead of your going to town.' In this paper I make a three-fold claim about phrases of this type in Quechua:

- *ranti*, a lexical noun meaning 'trade', has been reanalysed as a grammatical morpheme,
- grammaticization involves other elements of the genitive construction where *ranti* is the possessed element,
- specifically, VP-*na*-POSS-*pa ranti-n* functions as an adverbial clause, with *-pa#ranti-n* becoming fused as a postposition adverbial clause marker.

(1) Genitive construction with *ranti* (substitutive)

Kánan-qa **márka-man áywa-na-yki-pa   rantí-n**-mi
now-TOP   town-GOAL go-NOM-2POSS-GEN trade-3POSS-DIR

pápa-ta   alla-shún-na.
potato-OBJ dig-12FUT-NOW

'Today, **instead of your going to town,** we will harvest potatoes.'

Whereas the genitive construction typically functions as an NP, the substitutive instantiation of the genitive construction functions as an adverbial clause, and is syntactically parallel with other adverbial clauses in Quechua. Just as other adverbial clauses are formed by attaching an inflectional suffix to the verb, the substitutive forms an adverbial clause by attaching the sequence *-pa#ranti-n.* As Thompson and Mulac (1991: 325) stress a point made by Du Bois, "Grammaticization involves not just the reanalysis of lexical material as grammatical material, but also the reanalysis of a discourse pattern as a structural pattern."

3 Garden variety genitive construction functions as NP

The genitive construction has the bipartite form in (2), where the possessor *Juan* is followed by the genitive linker *-pa,* and the possessed element *tsuri* 'son' is followed by the third person possessive marker *-n.* The possessive marker is coreferential with the person of the possessor.[3] This periphrastic construction makes use of grammatical morphemes together with lexical nouns and pronouns, and is itself a syntactic NP requiring a case marker.

```
(2)   possessor-pa possessed-POSS

      Juan-pa   tsurin-n
      John-GEN  son-3POSS              'son of John'
```

Weber (1983: 254-9) discusses five categories of semantic relationship expressed by genitive constructions, that is, the relationship between the possessor and the possessed:

- General
- Components of a whole
- Spatial
- Temporal
- with Quantifiers (never occurs with possessor)

These uses of the genitive construction are illustrated in (3-6) with examples from South Conchucos Quechua:

```
(3)   General use

      Tsáy-no:-lla   tsápa-yku-nki nóqa-pa kasta-:-tá-pis.
      that-SIM-JUST cover-IN-2FUT I-GEN   relative-1POSS-OBJ-EVEN

      'Like that please protect my family as well.'

(4)   Components of a whole

      Tsá  tsé:-pita-sh átoq-pa   shími-n-ø      lliki-ká:-na:.
      Then that-ABL-REP fox-GEN   mouth-3POSS-subj stretch-PASS-NARPST
```

`Then after that **the fox's mouth** was stretched.'

(5)   Spatial

Tsá   **kátri-pa   síki-n**-cho:-qa   punu-kú-na:,   ári.
Then **bed-GEN   butt-3POSS**-LOC-TOP sleep-REF-NARPST indeed

`Then he slept at the **end of the bed** (on the floor).'

(6)   Temporal

Tsáy-pita-qa **dómingu-pa wáray-nin**-cho:-pis
that-ABL-TOP **sunday-GEN tomorrow-3POSS**-LOC-EVEN

mi:sa-rku-shún-na-m.
attend.mass-UP-12FUT-NOW-DIR

`After that, on **the day after Sunday** (i.e. Monday) we will go
to mass again.'

Although spatial and temporal relationships are expressed between the possessor and possessed in (5) and (6), the genitive construction itself functions as a nominal, not an adverbial. Notice that each example in (3-6) bears a case marking suffix relating it to a verb as a core argument or oblique. The entire genitive construction falls within the scope of the case marker, not just the word to which it is attached.

The genitive suffix *-pa* sometimes does not occur for discourse-pragmatic reasons. For example, in (3) *noqa kasta-:-ta-pis* is perfectly grammatical. Similarly, the entire possessor plus *-pa* is optional. This is not surprising since person of the possessor is inflectionally co-referenced on the possessed element.

The genitive constuction can precede or following the verb. In addition, the genitive construction can be split. In that case, both the genitive marker and the case marker are copied to the separated part. (7a) and (7b) have the same meaning.

(7)   a. Hatun wamra-pa pelo:ta-n-ta   rika-:.   (Weber 1989: 231, Huallaga)
         big   boy-GEN   ball-3POSS-OBJ see-1

      b. ø   **Wamra-pa pelo:ta-n**-ta   rika-: **hatun-pa**-ta.
            boy-GEN   ball-3POSS-OBJ see-1   big-GEN-OBJ

      `I see the big boy's ball.'

Observe that the possessed element in each genitive construction illustrated in (3-6) receives initial stress. This contrasts with penultimate stress in the possessed element of the substitutive.

To summarize, the typical genitive construction has the following grammatical characteristics. These characteristics are also found in the lefthand column of Table 1 below.

- any person marker on possessed element (head)
- requires case marker on possessed element
- optional genitive marker *-pa* on possessor
- optional possessor *-pa* prior to possessed element
- can be discontinuous
- possessed element can receive initial stress
- functions as NP

4 Substitutive construction functions as adverbial clause

We now consider the genitive construction where *ranti* is the possessed element or head as in (1) above, and the possessor is a deverbal clause. This is the 'substitutive' construction, meaning 'instead of possessor, MATRIX', where MATRIX minimally includes a nonfinite verb whose subject is not the substitutive construction itself. The form of the substitutive is given in (8), followed by a brief description of each element. The bolded elements in brackets preceding *-pa* correspond to the possessor in (2), while *ranti* alone is the possessed element. The outer brackets enclose the entire substitutive (genitive) construction.

(8)   Substitutive construction (with deverbal possessor)

    [[**(args)**   **V-…-na-POSS**]-*pa*   *ranti-n*]-(EVID) MATRIX

    -na   nominalizer 'irrealis'
    POSS   subject of V (expressed with possessive following nominalizer)
    EVID   evidential/topic clitic (not a case marker)

South Conchucos Quechua has nine nominalizing suffixes, but *-na* 'irrealis' occurs in the substitutive construction over 99% of the time.[4] This is not surprising since irrealis corresponds semantically with the notion of substitution. Significantly, the substitutive is the only context in which *-na* is followed by *-pa* 'genitive'. The co-occurrence of *-na* with *-pa ranti-n* is significant in that *-na*-POSS-*pa ranti-n* functions almost as a discontinuous morpheme, with internal possessive inflection for the subject of the verb. This is exemplified in (1) with *-na-yki-pa ranti-n*, where *-yki* is second person possessive. Discontinuous morphemes have not been reported in grammars of Quechua languages.

Elsewhere *-na* is followed by the case markers *-pa:* 'purpose' and *-ta* 'object'.[5] Likewise, *ranti* in the substitutive construction is only inflected for third person, because the possessor is a deverbal clause.

The discourse suffix *-qa* and evidential suffix *-mi* occur after the substitutive construction with the frequencies *-pa ranti-n-qa* 68% and *-pa ranti-n-mi* 13%. *-pa ranti-n occurs with neither* 19% of the time. Elsewhere, the combination of adverbial clause marker plus *-qa* tends to function as a conditional, while adverbial clause marker plus *-mi* affirms or validates a situation.[6]

The substitutive in (8) contrasts in many ways with the typical genitive construction illustrated in section 3. The substitutive construction requires third person possessive, forbids case markers, requires the genitive linker -*pa*, requires the possessor, cannot be discontinuous, and is the only environment in which -*na* and -*pa* co-occur. Initial stress cannot occur on the head, and the genitive marker -*pa* often reduces to -*p*. Furthermore, the substitutive does not function as an NP argument or oblique, but instead as an adverbial clause. These contrasts are summarized in Table 1.

Table 1: Contrasts between typical genitives and the genitive with ranti *as head*

Typical Genitive Construction	Substitutive Construction (*ranti* as possessed element)
a. any person marker on head	3PERS -*n* only
b. requires case marker on head	forbids case marker
c. optional -*pa* 'genitive' on possessor	requires -*pa*
d. optional possessor-*pa*	requires possessor -*pa*
e. can be discontinuous	cannot be discontinuous
f. N/A	-*na* 'irrealis' followed by -*pa* 'genitive'
g. initial stress possible on head	initial stress not possible on *rantinmi*
h. no phonological reduction	phonological reduction -*pa* ~ -*p*
i. function as NP	functions like other adverbial clauses

Other adverbial clauses are postposed for discourse-pragmatic reasons about 1/3 of the time. By contrast the substitutive construction almost always precedes the matrix clause, but it can be postposed as illustrated in (9). Syntactic independence, though infrequent, is evidence for further grammaticization of the substitutive.

(9) Aybes-ta-qa,   mas aswa-ta   upu-rku-r
     sometimes-OBJ-TOP more corn.beer-OBJ drink-UP-ADVSS

     pelya-ya-n   o diskuti-ya-n fyesta-cho:
     fight-PLUR-3 or argue-PLUR-3 fiesta-LOC

     kushi-ku-ya:-na-n-pa   **ranti-n.**
     happy-REFL-PLUR-NOM-3POSS-GEN **trade-3POSS**

     'Sometimes after drinking a lot of corn beer, they fight or
     argue at the fiesta **instead of being happy.**'

It appears that the substitutive is not just a construction, but is, in the terminology of Bybee (1998: 7), "a processing unit that produces a clause when specific lexical material is supplied for the more open slots in the construction." In just this way, the substitutive functions in Quechua as an additional type of adverbial clause, with -*pa#ranti-n*, or possibly even the discontinuous -*na*-POSS-*pa#ranti-n* becoming fused as a postposition adverbial clause marker, similar to the more well known markers -*pti*, -*qti*, -*shti*, -*kpi*, -*r*, and -*shpa*.[7]

As touched on above, there is also phonological evidence of grammaticization in the substitutive construction (Table 1g and 1h). In South Conchucos Quechua stress is often initial, but penultimate on the final word in an intonation unit. In (6) the final word of the genitive construction, *wáraynincho:pis*, has initial stress because it is not the final word in its IU. But in (1) the final word of the substitutive, *rantinmi*, has penultimate stress, indicating that the IU ends with the substitutive. This corresponds with the usual stress pattern found in other adverbial clauses. Penultimate stress suggests that the substitutive is becoming a single grammatical unit. This corresponds quite well with the observation in Bybee 1998, "Grammaticalization occurs when a new construction or a **specific instance of an old construction** becomes a processing and storage unit" (ibid: 6, emphasis mine).

Individual segments of *-pa#ranti-n* are also eroding. For example, the initial vowel tends to be pronounced as a transition [p^{a}rantiŋ], and not a full syllabic vowel. In fact, in many Quechua languages, the genitive marker *-pa* alternates with *-p* in the typical genitive construction as well. Thus, via the hypothesis of unidirectionality, one might predict that *-pa#rantin* will in time collapse segments, forming a one or two syllable suffix. This corresponds with the fact that all other Quechua suffixes have at most two syllables.

5 Frequency and distribution of genitive construction types

Thompson and Mulac 1991, among others, consider increased frequency in discourse a strong type of evidence for grammaticization. With respect to the genitive construction, we would expect a noun that has greatly increased in frequency in this construction to have grammaticized. Evidence from divergence shows us exactly that. The original lexical noun *ranti* was recently replaced by *troki*, a Spanish loan. The grammaticalized form *ranti*, which is now bound to this construction, is 20 times more frequent than *troki*.[8]

Table 2 summarizes the distribution of possessed nouns in the unreduced genitive construction. In the South Conchucos data there are 3,715 tokens of the periphrastic, i.e., unreduced, genitive construction. The substitutive formed with *ranti* accounts for 6.8% of the total with 252 tokens. All but *ranti* are case-bearing genitive constructions. They are arranged in Table 2 from highest to lowest frequency.[9]

Table 2: Distribution of possessed nouns in the unreduced genitive construction

Head (possessed element)	Gloss	Tokens	Percent of total
willa-ku-y	message	512	13.8%
ranti	**trade**	**252**	**6.8**
tsuri	son/daughter	249	6.7
ño:pa	front	248	6.7
huti	name	216	5.8
muna-y	control (will)	206	5.5
palabra	word	182	4.9

kontra	opposition	106	2.9
willa-ku-q	messenger	106	2.9
manda-ku-q	ruler	95	2.6
wamra	child	65	1.7
wayi	house	57	1.5
maki	hand	55	1.5
poder	control (physical)	48	1.3
yarpa-y	thought	45	1.2
disi:pulu	disciple	41	1.1
mandu	control (authority)	37	1.0
aya	corpse	34	*
apostul	apostle	33	*
kasta	relative/family	31	*
warmi	woman	25	*
uma	head	22	*
mama	mother	21	*
yawar	blood	20	*
yachatsi-ku-y	teaching	20	*
qepa	back	19	*
wawqi	brother	19	*
marka	town	18	*
u:su	custom	18	*
wawa	child	17	*
kwerpu	body	17	*
wak-tsimpa	other side	17	*
anjil	angel	17	*
shonqu	heart	16	*
jutsa	sin	16	*
awto:rida:	authority	16	*
mandamyentu	commandment	16	*
cho:pi	center	16	*
papa:	father	14	*
shimi	mouth	13	*
N/A	(all others)	753	20.3
		3715 total	100%

As discussed in section 4, the substitutive construction means 'instead of possessor, X', where X is the matrix clause. Another construction in competition for this semantic space is *sino:qa*, from Spanish *si no*, plus the topic marker *-qa*. *Sino:qa* occurs 268 times, slightly more frequent than *-pa#rantin*. If *sino:qa* is a recent borrowing, as seems likely, this would skew the observed frequency of *-pa#rantin* downward. In other words, before borrowing *sino:qa*, the frequency of the substitutive might have been significantly higher than the 7% observed in the data.

6 Lexicalization or grammaticalization?

The synchronic analysis of the substitutive construction gives rise to another theoretical issue: Is this an instance of lexicalization or grammaticalization? Since *-na-POSS-pa#ranti-n* does not originate in a single lexical item, one could consider this a case of lexicalization. However, there is another use of *ranti* in the genitive construction

where the possessor is anaphoric. The demonstrative *tsay* 'there' can substitute for the entire deverbal clause that corresponds to the possessor, as in (10).

```
(10) Tsay-pa    ranti-n...
     that-GEN   trade-3POSS

     `Instead of that...'
```

Similarly, in rare cases like (11) the possessor is a pronoun (here *noqa* 'I') and the possessive marker following *ranti* agrees with the person of this pronoun.

```
(11) Noqa-P RANTI-:-qa        don Edilbertu-na-m    kacha-yki      ka-nqa.
     I-GEN  trade-1POSS-TOP   sir gilberto-NOW-DIR  sent.one-2POSS be-3FUT

     `Instead of me, Edilberto will now be your representative.'
```

The substitutive (genitive) constructions in (10) and (11) cannot be case-marked as arguments or obliques. Thus, these continue to function as adverbials. In other words, they do not function like garden variety genitives. Yet they are different from the substitutive construction we have seen until now. Instead of *-na*-POSS-*pa#ranti-n* with fossilized third person *-n*, the construction with a pronoun as the possessor is *-pa#ranti*-POSS. This type of substitutive inflects for person following *ranti*. These open slots in the construction are evidence against lexicalization.

7 Genitive NPs and the development of Quechua adverbial clause markers

The emergence of the substitutive construction sheds light on the development of other adverbial clause markers in Quechua. In some ways, (11) resembles the highly grammaticized, high frequency switch reference adverbial clause markers, such as *-pti*, *-qti*, and *-shpa*. For example, notice the similarity between -P RANTI in (11) and the switch reference marker -PTI in (12). Furthermore, the substitutive in (11) is inflected for person from the possessive set, and not the verbal set, reflecting its NP origin. Likewise, the switch reference adverbial clause markers in (12-15) are inflected for person from the possessive set, suggesting an NP origin.

```
(12) Tsay-no: chura-ku-yku-PTI-:-qa          atska wata-pa:-mi
     that-SIM put-REF-IN-ADVDS-1POSS-TOP     many  year-PURP-DIR

     mikuy-ni:-kuna   ka-nqa.
     food-1POSS-PLUR  be-3FUT

     `If I put it aside like that, my food will be for many years.'
```

The proposal here is that the different subject adverbial clause marker *-pti*-POSS was formed by the genitive *-pa* followed by a lexical item *ti*. There are currently attested forms with *ti* that include the meanings 'sequence', 'link', and 'turn'.[10] These correspond semantically with the notion of switch reference.

As shown in (13), Southern Quechua languages have reflexes of *-qti (not *-pti). Not surprisingly, it is precisely these languages that have the alternative genitive form -q. In those languages with reflexes of *-pti, the genitive is -pa and its reduced form -p. These and other facts support the proposal of pre-proto forms **-q plus **ti and **-p(a) plus **ti for the Quechua switch reference marker.[11]

(13) <u>different subject</u> adverbial clause marker

       -pti-POSS   genitive in Central Quechua reduces to -p after
                          vowel in word final position
       -qti-POSS   genitive in Southern Quechua -q after final vowel,
                          -pa elsewhere

A similar proposal holds for the origin of the same subject adverbial clause marker -shpa-POSS. In (14) and (15), the genitive -pa is preceded by the morpheme **sh, which also forms the initial part of the participle -shqa ~ -sha ~ -sh, and the sequential event marker -shti.[12] Presumably, the head noun, whatever it once was, became redundant when the nominalizer plus genitive was reanalysed as marking the same subject as the matrix clause. In fact, -shpa occurs uninflected for person, i.e. without POSS, in most dialects that have -shpa. After acquiring the same subject meaning, person marking became redundant, just as the head noun became redundant.

(14) <u>same subject</u> adverbial clause marker

       -shpa-POSS   -shpa (also nominalizer -shqa) is attested
                          elsewhere in reduced forms -sha and -sh

(15) Maqa-rka-ma-**shpa-n**   hayta-shu-ra-yki.   (Weber 1989: 298, Huallaga)
     hit-UP-1OBJ-**ADVSS-3POSS** kick-2OBJ-PAST-2

     'After **he** hit me, **he** kicked you.'

Another adverbial clause marker that involves the genitive linker is the suffix combination -y 'infinitive' followed by -pa 'genitive', illustrated in (16) and (17). As Weber observes, "This mechanism for forming adverbial clauses via substantivization has given rise in Huallaga Quechua to **another same subject adverbializer**: -y...-pa without a possessive suffix." (1989: 308, emphasis mine). Notice that the grammaticizing adverbial clause marker -y-pa in (16) and (17) bears a strong resemblance to the same subject adverbial clause marker -shpa in (15).

(16) <u>manner</u> adverbial clause marker

       -y-pa   'infinitive' plus 'genitive' beginning to mark
                same subject

(17) Chura-naku-**y-pa**   empeñu ashi-ya-y.
     put-RECIP-**INF-GEN** rapidly seek-PLUR-2IMP

     '**Putting** yourselves in agreement rapidly, search for it!'

Unlike the substitutive construction, *-y-pa* probably did not arise from the genitive construction discussed in section 3, i.e., it appears there was not a head noun. Another difference is that *-y-pa* encodes same subject reference, whereas the substitutive does not.

Evidence for the NP source of adverbial clause markers includes the following. This discussion is further developed in Hintz 2002.

- person markers are taken from the nominal set, not the verbal set
- adverbial clause markers are sometimes case-marked as obliques
- adverbial clause markers sometimes take the nominal plural marker *-kuna*
- both unattached NPs and unattached adverbial clauses occur in natural conversation
- the substitutive construction, which clearly has an NP source, shows us the mechanism for the development of adverbial clause markers

8 Conclusion—the genitive NP pathway of grammaticization

We examined the substitutive construction in Quechua synchronically and discovered strong evidence for grammaticization in progress. What was once a low frequency lexical phrase now frequently co-occurs with particular morphemes in a relatively fixed pattern. These changes have become routinized through frequent use. There is evidence of functional change as well as phonological reductions, both prosodical and segmental. There is also evidence for unidirectionality of the change, decategorialization, specialization (Table 2), divergence (original form *ranti* replaced by *troki*), and layering. The original three-fold claim of this paper appears to be confirmed, namely, that: 1) *ranti*, a head element, was reanalysed as a dependent element, 2) grammaticization simultaneously involves other elements of the construction where *ranti* occurs, and 3) the construction itself has taken on a life of its own as an adverbial clause marker.

The emergence of the substitutive provides evidence for the following pathway of grammaticization in Quechua:

```
(18) deverbal in genitival relationship
     with lexical noun head          > adverbial clause marker
```

This finding sheds light on the development of other adverbial clause markers in Quechua. Until now we have not been able to explain why switch reference adverbial clause markers take possessive rather than verbal suffixes. Similarly, the origins of the highly grammaticized, highly frequent adverbial clause markers has been a mystery. Conscientious application of the Comparative Method and Internal Reconstruction, while indispensable as groundwork, has not proven sufficient for reconstructing these adverbial clause markers. After laying out the relevant data from all the dialects, it simply has not been possible to determine the origins of adverbial clause markers because we could not identify the internal pieces. The theoretical framework afforded by grammaticalization,

with its focus on evidence of grammaticization in progress within synchronic constructions, provides an important vantage point from which to view the emergence of Quechua adverbial clause constructions and the grammatical morphemes that mark them.

Further research is needed to confirm whether the line of development in (18) is attested cross-linguistically, that is, to determine the extent to which genitive constructions are a fruitful source for adverbial clause markers in other languages. This would include languages that are typologically and structurally similar to Quechua, such as Eskimo and Korean, as well as dissimilar languages such as Indo-European. One such study could begin with the substitutive, which is already known to involve the genitive in English *instead of*, Spanish *en lugar de*, and Ishthmus Zapotec *lugar de* (no case). Further studies of these languages may well confirm (18) as a general cline of grammaticalization.

Another direction of study to further our understanding of language change processes is to discover what lexical items (e.g. *ranti* and *ti*) and what grammatical morphemes tend to participate in the grammaticization of adverbial clause markers. Is semantic change idiosyncratic, or can we identify likely sources? For example, the following are a few attested sources for adverbial clause switch reference markers:

conjunction or nominalizer:	Papuan (Haiman)
nominal reduplication:	Late Japanese (Shibasaki)
participial ending:	Pomo, Yokuts, Maidu (Jacobsen)
case marker:	Muskogean, Yuman (Jacobsen), Newari (Genetti),
	Old Japanese (Akiba), Ecuadorian Quichua (Hintz)
genitive marker:	Quechua (Hintz)

The ongoing discovery of cross-linguistic tendencies in diachronic semantics benefits research in all languages, and especially those that do not have a long history of written documents.

Notes

[1] The examples in this paper are taken from the South Conchucos Quechua corpus unless otherwise indicated. I have found the genitive-based substitutive construction in several Central Quechua languages in the departments of Ancash, Huánuco, and Pasco, and also in Cajamarca, a Quechua language of North Peru.

[2] See for example Levinsohn 1976, Parker 1976, Cerrón-Palomino 1987, Weber 1989, among others.

[3] This characterization is true for the North Peruvian, Central, and Southern sub-families of Quechua. Northern Quechua languages, spoken primarily in Ecuador, have lost the possessive person markers.

[4] The nominalizer *-nqa* occurs less than 1% of the time.

[5] In the corpus, irrealis co-occurs with *-pa:* 'purpose' approximately 3600 times, with *-ta* 'object' 106 times, and with *-pa* 'genitive' (thus also with *ranti-n*) 252 times.

[6] By way of comparison, the switch reference adverbial clause marker *-pti* occurs with the same markers with the following frequencies: *-pti-n-(na)-mi* 44%, *-pti-n 20%*, *-pti-n-qa 18%*, and *-pti-n-pis 18%*. *-pti-n-pis* functions semantically as a concessive. **pa ranti-n-pis* does not occur in the data.

[7] These adverbial clause markers are documented in various grammars of Quechua, though no more than two or three are typically cited per language.

[8] The substitutive occurs only a dozen times in the spoken texts. In order to obtain frequency results, I included a written text, the South Conchucos New Testament. *Ranti* occurs there 252 times (only in the substitutive construction), while *troki* occurs 11 times. The transitive verb *ranti-* 'trade, buy' occurs 128 times.

[9] The most frequent items in Table 3 merit further discussion, but are beyond the scope of this paper.

[10] These include *-nti*, 'accompany', *-shti* 'event sequence', *kuti* 'return', *tikra* 'turn around', *ranti* 'trade', *ti-* 'remain'.

[11] For a complete treatment of the genitive marker and adverbial clauses in Quechua, see Hintz 2002.

[12] *-shti* is composed of this *sh* morpheme followed by the same *ti* as in the switch reference markers *-pti* and *-qti*. **sh is probably cognate with *sha-* 'come' and *usha-* 'finish'. According to Bybee et al 1994, both 'come' and 'finish' are well attested cross-linguistically as sources for resultatives and completives.

Abbreviations

12FUT	1st person inclusive future	INF	infinitive
1POSS	1st person possessive	JUST	just, only
2	2nd person verbal	LOC	locative
2FUT	2nd person future	NARPST	narrative past
2POSS	2nd person possessive	NOM	nominalizer (irrealis)
3	3rd person verbal	NOW	now
3FUT	3rd person future	OBJ	object
3POSS	3rd person possessive	PERS	possessive person marker
ADVDS	adverbial different subject	PLUR	plural marker
ADVSS	adverbial same subject	PURP	purpose
DIR	direct evidential	REFL	reflexive
EVEN	even, too	SIM	similitude
EVID	evidential clitic	SUBJ	subject
GEN	genitive	TOP	topic
GOAL	goal	UP	directional
IN	directional in		

References

Bybee, Joan. 1998. The emergent lexicon. CLS 34: 421-35.

Bybee, Joan, Revere Perkins and William Pagliuca. 1994. The evolution of grammar. Chicago: University of Chicago Press.

Genetti, Carol. 1991. From postposition to subordinator in Newari. Approaches to Grammaticalization, Vol II, ed. by E. Traugott and B. Heine, 227-55. Amsterdam: John Benjamins.

Hintz, Daniel J. 2002. Grammaticization of adverbial clause markers in Quechua: The genitive connection. ms.

Hopper, Paul J. and Elizabeth Closs Traugott. 1993. Grammaticalization. Cambridge, England: Cambridge University Press.

Mithun, Marianne. 1993. Clause combining in Central Pomo. International Journal of American Linguistics 59: 119-36.

Thompson, Sandra A. and Anthony Mulac. 1991. A quantitative perspective on the grammaticization of epistemic parentheticals in English. Approaches to grammaticalization, Vol. II (Typological Studies in Language No. 2), ed. by Elizabeth Closs Traugott and Bernd Heine, 313-29. Amsterdam: John Benjamins.

Weber, David J. 1989. A Grammar of Huallaga (Huánuco) Quechua. University of California Publications in Linguistics, Vol. 112. Berkeley: University of California Press.

The "*s*"-ence of Pima

Eric Jackson
University of California, Los Angeles

1. Introduction

This paper examines the morphological, syntactic, and semantic properties of a verbal and adjectival prefix in Pima, a language of the Tepiman branch of Southern Uto-Aztecan.[1] Pima and its close relative Tohono O'odham (also called Papago), both spoken in areas of southern Arizona, have been described as dialects of a single language, O'odham (*e.g.* Saxton 1982). Although Tohono O'odham has been previously documented, less has been done to characterize Pima specifically; this paper focuses on Pima, but refers to Tohono O'odham facts as well.

One puzzling morpheme shared by Pima and Tohono O'odham is a prefix with the phonological form [*s*], which occurs in certain syntactic environments on many adjectives and a small set of verbs. This morpheme has been only briefly described for Tohono O'odham, but appears to behave similarly in Pima. The best generalization in Pima is that this morpheme occurs only on predicates with stative lexical aspect, but is also sensitive to polarity; similar claims have been made for Tohono O'odham.[2] For instance, Zepeda (1983) has claimed that the presence of the *s*- on a verb indicates that the verb is stative, and that it is absent for some speakers when the verb it appears on is negated. Saxton (1982) describes it as a positive polarity item indicating the affirmative for an arbitrary class of stems.

The class of stative predicates in Pima, however, as hypothetically indicated by this morpheme, differs from classes of stative predicates which have been argued for in other languages. In Pima, non-volitionality and non-controllability of a predicate are less important in determining the grammaticality of the *s*- on a predicate than is stative lexical aspect (or non-eventive-ness). Although Zepeda's observed correlation with stativity (stative lexical aspect) does hold for many stems in Pima, the grammaticality of the *s*- sometimes does not coincide with stativity, and its presence may be arbitrarily determined for a small number of stems. The behavior of this prefix, with its many exceptions to the generalization regarding stativity, may motivate a synchronic analysis in which the *s*- merely expresses a lexicalized feature, as in Saxton's description. An analysis in this spirit which treats the *s*- prefix as an expression of a lexicalized feature of certain vocabulary items within the framework of Distributed Morphology (Halle and Marantz 1993, 1994)—a non-Lexicalist framework—is not straightforward, however (Jackson 2002). Because of the linear location of the *s*- prefix, associating the relevant feature with a lexical root or derivational suffix requires that the feature percolate at least as high as the projection which mediates object agreement.

2. Pima clause structure

Before examining the behavior of the *s*- prefix, it will be helpful to understand the structure of typical clauses in Pima. Word order within a clause is relatively free; in simple transitive sentences, ignoring other grammatical elements, all six possible orders of subject, object, and verb are judged by speakers to be acceptable (Munro 1984). Most

indicative sentences include a second-position auxiliary, marked for subject agreement, aspect, and modality and evidentiality. Object agreement is indicated by a prefix on the main verb. (Agreement has no expression for third person singular subjects or objects.)

(1) **First position**   **Auxiliary**
     Ha-pad:-c   'a-n-t   heg heñ   gook kakalit.
     3p:OBJ-bad-CAUS:PFV A-1s:SUB-PFV DET 1s:POSS two RED:car[3]
     'I wrecked my two cars.'

Elements which may occur before the auxiliary include (but are not limited to) full argument DPs, postpositional phrases, adverbials, verbal complexes (verb, floated quantifier + verb, adverb + verb, incorporated postposition + verb), complementizers, and certain grammatical particles (*e.g.*, the focus particle *ge*,[4] clausal negation *pi*, the positive intensifier *si*, and deictic particles such as *'am*). Pima, unlike Tohono O'odham, does not allow object agreement markers alone to occur in first position.

3. Where the *s-* is preferred

A certain set of verbs and adjectives, in simple, indicative, non-negated sentences, are preferred with the *s-* prefix. The sentences below show the *s-* on the adjective *'oam* 'yellow, brown' in both predicative (2) and attributive (3) uses, and on the transitive verb *heegam* 'be jealous of' (4). Note that in (4), the *s-* prefix is separated from the stem *heegam* by the second person singular object agreement prefix *hem-*.

(2) Hega'i gogs 'o   ge   s-'oam.
     that   dog IMP FOC ST-brown
     'That dog is brown.'

(3) Hega'i s-'oam   gogs 'o   koosh.
     that   ST-brown dog IMP sleep
     'That brown dog is sleeping.'

(4) S-hem-heegam   'a-n-t.
     ST-2s:OBJ-jealous A-1s:SUB-PFV
     'I am jealous of you.'

Stems which show a preference for the *s-* prefix maintain this preference even within certain more complex morphologically-derived forms, as shown by the attributive use of the verb *heegam* 'be jealous of' in (5), and its adverbial use in (6).

(5) Mary 'a-t   baga-t   heg 'e   s-heegam-k   kun   wui.
          A-PFV angry-PFV DET 1:REF:POSS ST-jealous-IL husband to
     'Mary got angry at her jealous husband.'

(6) Microsoft 'o si   s-heegm-am   ñuukud heg 'e   'a'agidag.
               IMP very ST-jealous-ADV guard   DET ¬1:REF:POSS RED:secret
     'Microsoft very jealously guards its secrets.'

The set of morphologically simple stems which license the *s-* prefix in this way mostly coincides with the set of stative predicates as discussed by Vendler (1967) or Dowty (1979)—adjectives and non-active verbs, mostly with experiencer subjects.

(7) **Adjectives:**[5]

s-'a'agig 'secret', *s-ape* 'good', *s-baga* 'angry', *s-balvañ* 'grooved', *s-bihug* 'hungry', *s-biitagi* 'dirty', *s-ceedagi* 'blue, green', *s-cug* 'black', *s-doa* 'alive', *s-eepid* 'cold', *s-gaki* 'skinny, dry', *s-geevkog* 'tired', *s-gevk* 'strong', *s-giig* 'fat', *s-hasig* 'difficult', *s-heegig* 'happy', *s-hottk* 'quick', *s-huug* 'warm', *s-'iovi* 'sweet', *s-juhagi* 'stretchy', *s-juuk* 'deep', *s-keegaj* 'beautiful', *s-mohogid* 'itchy', *s-moik* 'soft', *s-namkig* 'expensive', *s-ñenashan* 'energetic', *s-'oam* 'yellow, brown', *s-pad:ma* 'lazy', *s-peheg* 'easy', *s-sheliñ* 'straight', *s-tadañ* 'wide', *s-toa* 'white', *s-toñ* 'hot', *s-tonom* 'thirsty', *s-'uam* 'nasty, vile', *s-'uuv* 'having an odor', *s-veec* 'heavy', *s-vegi* 'red', *s-vohom* 'correct', *s-wuilogi* 'albino', etc.

Intransitive and Reflexive verbs:

| *s-baabgii* | AS INTRANSITIVE: 'go slow' | AS REFLEXIVE: 'be careful' |
| *s-cuhugi* | AS INTRANSITIVE: 'go dark' | AS REFLEXIVE: 'faint, pass out', etc. |

Transitive verbs:

s-'amicud 'understand', *s-'eebid* 'fear', *s-heegam* 'jealous', *s-hoohid* 'like', *s-kaim* 'be interested in', *s-ko'ok* 'be pained by', *s-maac* 'know', *s-naak* 'like the taste of', *s-ñeñed* 'watch over', *s-'oohod* 'reject, separate oneself from', etc.

At least a few of these predicates, however, appear to be non-stative, contradicting Zepeda's observation. These include *s'e-cuhugi* 'faint'—literally 'go dark on oneself'— and *s'oohod* 'reject, separate oneself from', which appear to indicate a change of state, and so would be considered non-stative.

Before continuing to examine the complex behavior of the *s-* prefix, it will be helpful to briefly review the concept of stativity and other lexical aspects employed by the authors just mentioned. Dowty (1979) relates a semantic decomposition of predicates within Montagovian semantics to Vendler's (1967) classification of predicates into four lexical aspects: STATES, ACTIVITIES, ACCOMPLISHMENTS, and ACHIEVEMENTS (the following examples of each class are taken from Dowty 1979; not all characteristics for each class are presented here). A STATE is loosely characterized as an inactive property which holds over an interval of time. States can be used with adverbials like *for an hour*, but not with adverbials like *in an hour*. In English, states do not typically have habitual or frequentative interpretations when occurring in the simple present tense, and may not occur in the progressive. Any individual-level predicate, as argued by Kratzer (1995), must necessarily be stative, though stage-level stative predicates also exist. Examples of states include the predicates *be red, be like X, know X,* and *be located at X* (where 'X' indicates an open internal argument position). An ACTIVITY is an action which, like a state, holds over an interval of time, without a natural climax or endpoint. Activity predicates, like states, can be used with *for an hour*, but not with *in an hour*; in English, activities generally cannot occur in the simple present without a habitual or frequentative interpretation. Examples of activities include the predicates *be brave, be a hero, roar, run,* and *seek X.*[6] An ACCOMPLISHMENT is an action which again holds over an interval of time, but culminates in an instantaneous event. Accomplishments can be used both with adverbials like *for an hour* and *in an hour*. Examples of accomplishment predicates

are *uncover the book, build a building, run a mile, paint the house.* Lastly, an ACHIEVEMENT is simply an instantaneous event; such predicates can be used with adverbials like *in an hour*, but not *for an hour*. Examples of achievements include *reach the summit, notice the problem, awaken,* and *realize the truth.*

It is important to note that the same verb may have different senses which belong to different classes. In addition, constituents apart from a verb's external argument can cause the entire predicate to fall into a different class—*run* with no object is an activity predicate, while *run a mile* and *run to Phoenix* are accomplishments. Similarly, *paint the house* is an accomplishment predicate, while *paint houses* is an activity. The examples just shown appear to manipulate the telicity (the natural endpoint) of a predicate, and only involve changes from activities to accomplishments, or vice versa. Other morphemes, however, may derive other classes from states, or states from other classes. It is sufficient here to note that the morphologically simple forms shown in (7) all appear to be states—inactive properties holding over an interval of time. The class of states will be examined in more detail in section 5.

In addition to the morphologically-simple stems that appear to license the *s*-prefix in Pima, there are at least six derivational morphemes which attach to potentially non-stative stems, yet license the *s*- on the stems they form. Many of these, in agreement with Zepeda's observation, do result in stems with the meaning of inactive properties.

The first is the suffix *–dag*, which attaches to verbs to make verbs of the same transitivity meaning 'be able to *verb*' (as in (9)); it apparently also attaches to nouns to form verbs meaning 'be *noun*-like' (as in (11)). The derived meanings both have the sense of an inactive property, and in both cases the *s*- prefix is preferred on the derived stem, even when it was not licensed on the original verb or noun. Additionally, its use with verbs produces an individual-level (and therefore necessarily stative) predicate.

(8) Hega'i 'o'odham 'o   med:.
     that   man   IMP run
     'That man is running.'

(9) Hega'i kalit 'o   **s-mel-dag**.
     that   car   IMP ST-run-able.to
     'That car is fast.' (*lit.* That car can run.)

(10) 'Oola 'o   s-namkig.
     gold IMP ST-expensive
     'Gold is valuable.'

(11) Vashai 'o   ge   **s-'oola-dag**.
     grass   IMP FOC ST-gold-like
     'The grass was golden.'

The next affix which licenses the *s*- prefix is the desiderative suffix *–imk* (or *–amk* following *t, d,* or *m*). This suffix attaches to verbs to make verbs of the same transitivity meaning 'want to *verb*', as seen in (13).

(12) Hega'i 'o'odham 'o-m   hema heñ-'aagid heg ha'icu 'aaga.
     that   person   IMP-DXM one 1s:IO-tell DET thing story
     'A wise person told me a story.'

(13) M-a-ñ   s-hem-'aagid-**amk**   heg   'aaga.
     COMP-A-1s:SUB   ST-2s:IO-tell-DSD   DET   story
     'I want to tell you a story.'

Another suffix which licenses the *s-* prefix on stems on which it would not otherwise appear, is the suffix *–g* (*–ig* or *–ag* following a consonant). This suffix attaches to nouns to make verb-like predicates with an interpretation similar to English existential *there* sentences. In (14), *toobi* 'rabbit' is a noun, as indicated by the presence of the determiner *heg*. With the *–g* suffix in (15), it becomes a clausal predicate; its lack of nominal status is indicated by the absence of the determiner *heg* and the presence of just the auxiliary *o* (the copula associated with predicate nominals is *od:*). In addition, these predicates, along with other verbs, can attributively modify nouns with the addition of a nominalizing suffix *–dam*.[7] As with the preceding affixes, the meaning resulting from the application of this suffix—existence—appears to be an inactive property.

(14) M-a-ñ   ñeid heg toobi.
     COMP-A-1s:SUB   see   DET rabbit
     'I saw the rabbit.'

(15) M-o   ge   s-totobi-**g**   kui   veeco.
     COMP-IMP FOC ST-RED:rabbit-VB   tree under
     'There are rabbits under the tree; it is rabbity under the tree.'

In addition to these suffixes, two prefixes also license the *s-* prefix on the stems they form. The first of these is a prefix *cu-*, which attaches to a verb to produce an intransitive verb denoting a typical subject of the original verb; the former direct object becomes an optional oblique (the verb no longer shows agreement with it). This is similar in effect to anti-passive voice in ergative languages, but with the additional modal meaning of a 'typical' subject. These predicates differ in meaning from the indefinite non-specific object construction, which uses the indefinite DP *ha'icu* 'something'.

(16) S-heegam 'a-n-t   heg Brook.
     ST-jealous A-1s:SUB-PFV   DET
     'I am jealous of Brook.'

(17) Ma-liiya kun   'o   ge   **s-cu**-heegam-k.
                husband   IMP FOC ST-INDEF:OBJ-jealous-IL
     'Mary's husband is (typically) jealous.'

The other prefix which licenses the *s-* in Pima is the counterpart of *cu-*: the prefix *ta-* attaches to a verb to produce an intransitive verb denoting a typical object of the original verb; in this case, the former subject becomes an optional oblique (neither the auxiliary nor the verb agrees with it). This is similar to passive voice in accusative languages, with the addition of the modal meaning 'typical'. The passive construction in Pima, however, is a distinct construction (see Kim, this volume).

(18) Shannon 'a-t   heñ-e'es   heg heñ   tash-ga.
               A-PFV   1s:IO-steal   DET 1s:POSS clock-GA
     'Shannon stole my watch from me.'

(19) Heñ   kalit   'o   **s-ta-'ees-im-a**   heg pi   'ap   'o'odham.
     1s:POSS car   IMP   ST-INDEF:SUB-steal-ADV-VB DET NEG good person
     'My car is the kind typically stolen by a bad person.'

Since both of these prefixes result in individual-level predicates which predicate an inactive property of their subject, rather than an action or an event, their association with the *s-* is expected under Zepeda's proposal.

One other affix which appears to license the *s-* prefix does not have a clear association with stativity, however. The suffix *–im* appears on many verbs when used as manner adverbials, as in (22); in such cases, the *s-* prefix is preferred on the stem, even when the verb by itself does not license the *s-* prefix.

(20) Ñe'i   'o   si   gigivk.
     music IMP   very waver
     'The music was really wavering.'

(21) * Ñe'i 'o   s-gigivk.

(22) Celine Dion 'o   s-gigivk-**im**   ñe'e.
                       IMP ST-waver-ADV sing
     'Celine Dion sings waveringly.'

(23) ?* Celine Dion 'o gigivkim ñe'e.

4. Where the *s-* is dispreferred

The strongest claim in Zepeda (1983) is that any verb which licenses the *s-* prefix is a stative verb; this is weaker than the very strong claim that stativity and the *s-* are always correlated. Although the other component of this strong claim—that verbs which do not license the *s-* prefix are non-stative—at first appears to be true, closer examination reveals that this strong claim cannot be correct.

As seen in the examples in (24) and (25), the *s-* prefix is dispreferred on verb stems in almost all non-stative predicates: activities, achievements, and accomplishments.

(24) Hegai 'o'odham 'o   med:.
     that   man   IMP   run
     'That man is running.'

(25) * Hegai 'o'odham 'o s-med:.

Certain words which do not license the *s-* prefix nevertheless appear to be stative, as shown below.

(26) Hegai voog 'o   'aj-ij.
     that   path IMP   narrow-VB
     'That path is narrow.'

(27) * Hegai voog 'o s-'ajij.

There does not seem to be any systematic characteristic shared by the stative predicates which disallow the *s-* prefix. For example, although the adjectives in (28) tend to describe shapes and spatial relations, many shapes and spatial relations do allow the *s-*; consider the adjectives *s-juuk* 'deep' and *s-tadañ* 'wide'. Likewise, several of the adjectives which do not license the *s-* require a suffix to be used predicatively, but there

are other adjectives which require the same suffix, yet do license the *s-*; consider the pair s-*keeg-aj* 'beautiful' and *'aj-ij* 'narrow'.

(28) **Adjectives:**
'ajij 'narrow', *'al (ha'as)* 'little, few', *cevaj* 'long', *coadk* 'tall', *ge'ej* 'big', *hekia* 'pure, whole', *komad:k* 'spread-eagled', *komalk* 'flat', *sho'ig* 'poor', *shopolk* 'short', *'uug* 'high', etc.

Verbs:
daha 'be sitting', *keek* 'be standing', *tatcua* 'want', etc.

In addition to these stems which simply do not license the *s-* prefix, the *s-* is dispreferred on many stems which would otherwise require it when those stems occur within the scope of negation—either clausal negation or a negative quantifier in the external argument—as the following paradigm shows.

(29) S-hem-hoohid   'a-ñ.
     ST-2s:OBJ-like   A-1s:SUB
     'I like you'

(30) *? Hem-hoohid   'a-ñ.

(31) Pi   'a-ñ   hem-hoohid.
     NEG   A-1s:SUB   2s:OBJ-like
     'I don't like you.'

(32) * Pi 'añ s-hem-hoohid.

(33) Pi   hed:ai   'o   hoohid   hegai.
     NEG   someone   IMP   like   that
     'No one likes that one.'

(34) * Pi hed:ai 'o s-hoohid hegai.

This dispreference for the *s-* does not extend to attributive predicates in an argument of a negated verb, nor to predicates in an embedded clause when a higher clause is negated.

(35) 'Uupio 'a-sh   pi   tatcua heg s-cuk   kii.
     Skunk A-HSY NEG   want   DET ST-black house
     'Skunk doesn't want a black house (so I'm told).'

(36) John 'o   pi   sha'i   maac m-o   heg Mary 'am   s-hoohid hega'i.
           IMP NEG really know COMP-IMP DET   DXS ST-like   that
     'John doesn't know that Mary likes that one.'

The *s-* prefix therefore appears to be a positive polarity item in Pima, as Saxton (1982) observed for Tohono O'odham, with certain restrictions on locality. It is not immediately clear what connection, if any, stativity and positive polarity would have.[8]

As would be expected if the *s-* prefix were associated with stativity, it is also dispreferred on many stems which would otherwise require it when those stems occur in change of state contexts—namely, as inchoatives or causatives (*cf.* (11)).

(37) Vashai 'a-t   ge   'oola-dag-t.
     grass A-PFV FOC   gold-like-INCH
     'The grass became golden.'

(38) Tash 'a-t   'oola-da-c   heg vashai.
     sun A-PFV   gold-like-CAUS:PFV DET grass
     'The sun made the grass golden.'

5. Pima stativity cross-linguistically

A claim that the *s*- prefix indicates stative lexical aspect should be supported by evidence which independently indicates which predicates are stative. In his discussion of Vendler's (1967) categories, Dowty (1979:55-6, 60) presents these characteristic properties of stative predicates in English.

(39)   a.   Stative predicates may not occur as complements of *force* or *persuade*.
        b.   Stative predicates may not occur as true imperatives.
        c.   Stative predicates may not occur with the adverbs *deliberately* or *carefully*.
        d.   Stative predicates may not occur in the progressive.
        e.   Stative predicates may not occur in the pseudocleft construction.
        f.   Stative predicates may occur in the simple present without a habitual or
             frequentative interpretation.
        g.   Stative predicates may occur with time adverbials like *for an hour*, in such
             cases, it is entailed that the predicate is true at all times during that interval.
        h.   Stative predicates may not occur with time adverbials like *in an hour*.

Unfortunately, none of these characteristics clearly indicates which predicates of Pima are stative. Items *g* and *h* distinguish states and activities from accomplishments and achievements, but not from each other. Items *d, e,* and *f* are difficult to apply to Pima, since it lacks a parallel to the English progressive and pseudocleft construction; since Pima does not mark tense, neither states nor activities are forced to have a habitual or frequentative interpretation in the (present) imperfective. Items *a, b,* and *c* indicate predicates which are non-volitional or non-controllable, but not stative *per se*; predicates in Pima which license the *s*- may be entirely voluntary and controlled (*e.g. s-nakosig* 'noisy' and *s'e-baabgiim* 'careful(ly)' can both be predicated of volitional agents).

If tests are unable to distinguish the set of stative predicates in Pima, a definition of stativity could also serve to pick out stative predicates. Dowty attempts to provide such a definition, since his analysis requires that the predicates that are states be limited.

(40) "for each stative predicate there is a region of logical space [*i.e.* a many-
      dimensional space whose dimensions correspond to all possible measurables] such
      that at each index [indicating a possible world at some interval of time], an
      individual is in the extension of that predicate at the index if and only if the
      individual is assigned to a point within that region of space." (Dowty 1979:127)

He admits, however, that since his definition accounts only for measurable properties, it may not easily be extended to all states (*e.g.* adjectives like *beautiful*, or verbs like *know*).

Another potential way to identify states would be by their lack of internal temporal structure. Dowty claims that states entail no change in the arguments of the predicate, rather than "definite or indefinite change" entailed by non-states. (Dowty 1979:184) The following definition attempts to make this concept precise:

(41) A predicate is stative just in case the following implication holds: if the predicate is true for some interval of time, it will be true in exactly the same way for any arbitrarily small portion of that interval.

For a stative predicate like *be green*, if it is true of a given interval, it is true in the same way for any subinterval of that interval. An activity predicate like *be running* would fail this test because of its inherent internal change; for a short enough interval of time, the activity could be decomposed into pushing off with one foot and landing on the other. Unfortunately, under this definition a predicate like *be sleeping* would be just as stative as *be asleep*, as would other activities like *be smiling* and *be a rascal*, despite the fact that *be sleeping*, *be smiling*, and *be a rascal* all pattern like non-stative predicates in the tests in (39). The fact that predicates like *be sleeping* and *be asleep* can describe identical situations yet differ in stativity indicates that the meaning of a predicate may not be sufficient to determine whether it is stative or not; some degree of arbitrariness may be present in the stative/non-stative distinction (as discussed by Mithun 1991, for example).

Although no clear independent indicator of stativity is forthcoming, the grammaticality of the *s-* prefix does not correlate well with distinctions other than stativity. The stage-level/individual-level distinction cannot fully define the set of stems which license the *s-*, since the list in (7) includes both temporary and permanent properties (some, like *s-heegam* 'jealous', can be both transitory and non-transitory, in both cases licensing the *s-* prefix). Non-volitionality or non-controllability—options which determine agreement selection in languages like Creek, Crow, and Lakhota (Martin 1991, Mithun 1991)—also cannot fully define the set of stems which license the *s-*, since the list in (7) includes both volitional and non-volitional predicates, and controllable and non-controllable predicates (*s-nakosig* 'noisy' is controllable and volitional, while *s-'eepid* 'cold' is often neither of these); moreover, non-volitional and non-controllable predicates occur without the *s-* (*e.g.*, *geesh* 'fall', which can be non-volitional and non-controllable, does not license the *s-*). The distinctions relevant to the acceptability of the Pima *s-* resemble the distinctions relevant to agreement selection in Guaraní (as discussed in Mithun 1991) in that stative lexical aspect, given the limitations of the tests and definitions above, is required for the *s-* to be licensed on a stem.

Although the association with stativity is strong, the arbitrariness of Saxton's (1982) analysis of the *s-* as a stem class marker cannot be avoided completely. As mentioned earlier, certain predicates which do not have stative meanings appear to idiomatically license the *s-* prefix—verbs which are apparently active like *s'oohod* 'reject, separate oneself from' and *s'e-cuhugi* 'faint'—and some predicates which have stative meanings idiomatically disallow the *s-* prefix—like *'aj* 'narrow'. It is therefore instructive to consider the boundary condition—how an analysis of the *s-* prefix as a completely arbitrary verb class marker would be constrained.

6. A non-Lexicalist analysis of the *s-*

The analysis to be discussed here is formulated within the framework of Distributed Morphology (hereafter *DM*, outlined in Halle and Marantz 1993, 1994 and Marantz 1995, 1997), a non-Lexicalist framework which assumes among other things: (1) that there is no traditional "lexicon" in which to store lexicalized forms; (2) that

phonological and other idiomatic features are inserted late in the derivation; and (3) that there is one structure-building component responsible for the structure within words and within phrases.   In this framework, phonological strings express features or feature bundles, and must correspond to terminal nodes (though the operations FISSION and FUSION can increase or decrease the total number of terminal nodes). All exceptional behavior of elements of the language must be due to the idiomatic phonological realization of certain morphemes in the context of other morphemes, the action of morphological rules which can manipulate the morphosyntactic structure, and to idiomatic features which are inserted along with phonological features after the syntactic derivation—such features may therefore be only indirectly relevant to syntax.   This places severe restrictions on the nature of idiomatic specifications of particular lexical items, as appear to be active in the occurrence of the Pima *s-* prefix.   A full presentation of this analysis can be found in Jackson (2002).

Several of the earlier observations regarding the *s-* prefix appear to be particularly relevant to its structural and semantic analysis. First, the *s-* occurs on words of several categories, in distinct contexts—adjectives (used attributively and predicatively) and verbs.   Also, the grammaticality of the *s-* prefix most closely coincides with the stative lexical aspect of a predicate, though a few stative predicates lack it, while a few non-stative predicates license it. The grammaticality of the *s-* is also sensitive to the presence of other morphemes within the word (inchoative or causative morphemes, and derivational affixes) and within the phrase (negative scope). The presence or absence of the *s-* also typically affects the grammaticality of a sentence, but not the meaning.

In addition to its presence on words of several grammatical categories, other observations of the *s-* prefix are particularly relevant to its structural position. First, the *s-* occurs to the left of the object agreement markers and the *cu-* and *ta-* prefixes, and is not included in a stem's left-edge material for the purposes of reduplication. Further, unlike many other preverbal particles, the *s-* is unable to occur before the auxiliary alone.

An analysis of the *s-* prefix must also address several puzzles. If the *s-* is an arbitrary stem class marker, its sensitivity to inchoativity, causativity, and negative scope is unexplained. Further, if the *s-* is a marker of stems, even possibly derived stems, there is no explanation for its independence from the stem—its separation from the stem by the object agreement markers, and its failure to reduplicate with the stem itself. If verbs and adjectives in Pima truly do constitute distinct grammatical categories, do these categories share some syntactic structure in their extended projections in both predicative and attributive positions, such that the *s-* may occupy the same structural location when it occurs on both? Or, does the *s-* occur in several structural positions? Are there in fact several distinct prefixes with the same phonological form *s-*? The analysis here will assume that there is a single *s-* prefix, in a single syntactic location, which expresses the same feature on a verbal or adjectival stem. The conclusions which can be drawn from each of these observations will now be discussed in turn.

The fact that the *s-* prefix occurs on both morphologically simple adjectives and verbs may indicate that these categories have at least one element in common in their extended projections. One candidate for such an element in common is the intensifier. Although the Pima intensifier *si-* is the likeliest historical source for the stative *s-* prefix,

the two cannot occupy the same structural position in the synchronic grammar, since they may both occur simultaneously, as seen in (42).

(42) Heñ   miitol-ga 'o   si   s-ape.
     1s:POSS cat-GA   IMP   very   ST-good
     'My cat is very nice.'

Other elements of structure which might be shared by both adjectives and verbs might include the time argument of Kennedy and Levin (2002), which they argue is present based on the semantics of gradable adjectives. Although all verbs certainly include reference to times, it is not clear what might be unique to the way stative verbs (and not activities) refer to the interval of time over which they hold.

Another relevant observation, noted many times above, is that the *s-* prefix generally occurs on stative predicates, but with many exceptions. The grammaticality of the *s-* therefore cannot be accurately predicted solely by the lexical aspect of a stem, so presumably some stems must be marked, presumably with some feature. It is unclear whether this feature is associated only with the exceptional cases, negatively marking just those states which do not license the *s-* and positively marking the non-states which do license it, or if all morphemes which license the *s-* are marked positively. Although specifying all verbs of this class by a feature would allow the class to be entirely arbitrary despite the strong tendency toward stativity which is observed, it will be assumed that the association of this feature with stativity occurred as it was lexicalized to each vocabulary item (a possible mechanism for its association with positive polarity, as well).

The position of the *s-* prefix to the left of object agreement and stem reduplication indicates that, although the grammaticality of the *s-* depends on the choice of stem (either the root or an affix in the stem), the *s-* must be structurally distinct from the stem—further from the stem than object agreement and whatever constituent is relevant for reduplication. The proper analysis of the *s-* therefore depends on the analysis of object agreement in Pima. Proposals for object agreement have variously involved a specifier-head relationship within a dedicated AGRO phrase (*e.g.*, Harley and Noyer 1997), and more recently, a non-local relationship between a light verbal head and a target (*e.g.*, Chomsky 1999). If the presence of the *s-* is triggered by a feature of the stem, this feature must be able to percolate beyond the projection which mediates object agreement for the *s-* to be located to the left of the agreement morpheme. This feature percolation may be similar in principle to the percolation of noun class features within a DP—particularly if the *s-* indicates an arbitrary class of verbs in the same way that gender indicates an arbitrary class of nouns. This percolation can only occur after the idiomatic features (phonological and otherwise) of the relevant stem morpheme are inserted (*i.e.*, after syntactic derivation is complete), but before insertion has been completed for the phrase as a whole, since it is this feature which triggers the insertion of the *s-* itself. Object agreement in Pima and Tohono O'odham may differ structurally, since some of the object agreement morphemes in Tohono O'odham may occur in first position, while none may in Pima; the location of the *s-* in these languages may therefore differ.

That the *s-* prefix in Pima, like the object agreement prefixes, is unable to occur in first position by itself also indicates that its status is distinct from other grammatical particles like the intensifier *si* and negation *pi*. Arguing that phrasal status is the criterial

property for occurrence in first position, Smith (2001) has proposed that negation in Pima is a phrasal constituent occupying the specifier position of a clausal functional head, rather than being such a head itself. It should be noted, however, that no independent evidence exists for the phrasal status of negation, the intensifier particle *si*, the focus particle *ge*, or any other preverbal particles that occur in first position. By Smith's reasoning, however, an indirect argument may be made for the status of the *s-*: if the *s-* were a phrasal constituent, it might be expected to occur in first position apart from the stem which licenses it. The fact that the *s-* cannot do so means that the *s-* is not a phrasal constituent, or that there is some other factor preventing it from moving to first position.

The sensitivity of the *s-* to other morphemes may suggest other analyses, as well. For example, since the *s-* is not normally grammatical on inchoative and causative forms of stems which normally license it, Avelino (2001) proposes that the *s-* may compete for the same structural location that these other morphemes occupy, based on an analysis by Hale (2000) for inchoatives and causatives in Tohono O'odham. This proposal is difficult to extend to occurrences of the *s-* on attributive adjectives, however. Rather than representing competition for the same structural location, their incompatibility may represent an operation of feature IMPOVERISHMENT—deletion of a feature in a certain context (here, within the morphological scope of an inchoative or causative). The same rule of impoverishment would also account for the absence of the *s-* within the scope of negation; since negative scope must be evaluated within syntactic structure, however, this further implies that the absence of the *s-* is not the result of a phonological rule insensitive to syntactic structure.

Also relevant to the analysis of the *s-* is that its presence or absence typically affects the grammaticality of a sentence but not the meaning. This is quite amenable to treating the *s-* prefix as an arbitrary marker of a verb class, rather than as a morpheme which conveys semantic content, such as lexical aspect. For some stems, however, the presence or absence of the *s-* is associated with a different semantic interpretation, though the accompanying semantic change does not appear to be consistent.

(43)   Coadk   'a-ñ.
       tall   A-1s:SUB
       'I am tall.'

(44)   S-coadk   'a-ñ.
       ST-tall   A-1s:SUB
       'I am big-boned.', * 'I am tall.'

(45)   M-o   va   doa heg Melissa.
       COMP-IMP   SHD alive DET
       'Melissa is still alive (as you know).'

(46)   M-o   va   s-doa   heg Melissa.
       COMP-IMP   SHD ST-alive DET
       'Melissa is well (as you know).', * 'Melissa is still alive (as you know).'

This alternation also implies that the *s-* is not added by a post-syntactic phonological rule since the presence or absence of the *s-* is relevant for semantic interpretation; the difference in meaning which results, however, does not seem related to stativity. In these examples, the shift in meaning also does not appear related to the stage-level/individual-

level distinction, controllability, volitionality, or any other meaningful property conceivably associated with the *s-*. Such cases may further indicate the idiomatic nature of the *s-*, and may actually favor an analysis as expressing an arbitrary feature.

7. Conclusion

The grammaticality of the *s-* prefix in Pima seems at first to be based on the stative lexical aspect of verbal and adjectival stems. Despite this correlation, the grammaticality of the *s-* appears to be arbitrary in some cases, since a significant number of stative stems to not license the *s-* prefix, and a small number of non-stative stems do license it. In the extreme case, if every occurrence of the *s-* is licensed by an idiomatic feature of a stem, then several difficulties arise if one intends to analyze this behavior in a non-Lexicalist theory (like DM) which requires idiomatic material to be inserted very late in a derivation. Specifically, for the *s-* to occur in the proper linear order with object agreement prefixes, the feature licensing it must percolate higher than the object agreement head; moreover, this percolation must occur after insertion of the root or affix which licenses the *s-*, yet before the *s-* itself can be inserted.

Notes

[1] All data in this paper has been graciously provided by Mr. Virgil Lewis, a native speaker of Pima from the Gila River Indian Community, who deserves many thanks. I also thank Pamela Munro, Carson Schütze, Tim Stowell, and Marcus Smith, as well as the audiences at several UCLA American Indian Seminars and the 2002 WAIL conference, whose comments and ideas have made this presentation more than it could have been otherwise. I cannot fail to thank the other members of the 2000-01 UCLA Field Methods course for sharing their insightful comments and annotated notes: Heriberto Avelino, Rebecca Brown, Jill Gilkerson, Sahyang Kim, Brook Lillehaugen, Haiyong Liu, Suzanne Riggle *née* Lyon, Shannon Madsen, Pamela Munro, Jason Riggle, Shabnam Shademan, Marcus Smith, and Melissa Tai. All errors remain my own.

[2] Descriptions of the Totoguañ dialect of Tohono O'odham in Hale (1959) and Mathiot (1973) include a verb prefix *s-* which is described not as a marker of stativity or a polarity item, but only as an intensifier. The *s-* in Pima and in other dialects of Tohono O'odham, as indicated by Zepeda (1983) and Saxton (1982), does not have this meaning.

[3] Data is written in the orthography used by the UCLA Pima group. Many orthographic symbols represent a phoneme with the same value as the corresponding IPA symbol, with a few exceptions: /d/ and /t/ are voiced and voiceless dental plosives; /d:/ is a voiced alveolar plosive; /l/ is a voiced alveolar lateral flap; /c/ is a voiceless alveopalatal affricate; /sh/ is a voiceless alveopalatal fricative; /ñ/ is a voiced palatal nasal; and /e/ is a high, back unrounded vowel. All Pima examples, unless otherwise indicated, are taken from the annotated notes of the 2000-01 UCLA Pima Field Methods class and continuing work. A colon is used in glosses where morphemes are not readily segmentable. Where glosses are not one-to-one, multiple words are joined with '.'. Abbreviations: 1s = first person singular, 2p = second person plural, etc., ¬1 = non-first person; A = filler vowel in auxiliary, ADV = adverbial, CAUS = causative, COMP = complementizer, DET = determiner,

DSD = desiderative, DXM = deictic particle meaning 'far, facing away', FOC = focus, GA = alienable possession, IL = individual level, IMP = imperfective, INCH = inchoative, INDEF = indefinite, IO = indirect object, NEG = negative, NOM = nominalizer, OBJ = direct object, PFV = perfective, POSS = possessive, RED = reduplicated, REF = reflexive, SHD = shared knowledge, ST = stative (hypothetical—this gloss is only used for the *s-* prefix), SUB = subject, VB = verbalizer.

[4] Here I follow Shademan (2001) in glossing *ge* as FOCUS.

[5] The grammatical categories of adjectives and verbs are defined here in morphological terms: words which can occur unsuffixed as sentential predicates but which require a suffix to attributively modify nouns are assumed to be verbs; words which appear unsuffixed in attributive position but require a suffix to be used predicatively are assumed to be adjectives; words which can be used in both positions without requiring affixes are assumed to be adjectives which require a zero predicative suffix. This option lacks direct evidence but coincides with assumptions made by authors writing on Tohono O'odham.

[6] Dowty (1979) is undecided as to the proper aspectual classification of predicate nominals; he places them either with activities or with states (see his discussion on pp185-6). More recent authors, however, such as Rothstein (1999), note that the semantic contribution of the copula is not insignificant, and that care is required in dealing with predicates of different categories. For example, it may be that simple predicate nominals are only found in the class of states, and that these predicates are more complex when they occur as activities. For instance, *John is a hero* may denote a state, while the more complex *John is being a hero* may denote an activity. Other authors have also considered assigning all predicate adjectives, even those which are grammatical in the English progressive, to the class of states.

[7] Attributive modification of nouns by verbs may therefore be more similar to noun-compounding than to attributive modification of nouns by adjectives.

[8] Negated sentences certainly do not seem eventive, but the connection may in fact be indirect. A prime candidate for the historical source of the *s-* prefix is the intensifier *si*. In at least the Totoguañ dialect of Tohono O'odham, this intensifier has a reduced form *s-* (see, for example, Mathiot 1973). This intensifier appears to be sensitive to polarity, as the negative intensifier has the form *sha'i*. The polarity of the intensifier could have been inherited diachronically by the stative-indicating *s-* prefix.

References

Avelino, Heriberto. 2001. Pima Causatives. Paper presented at the UCLA Pima Linguistics Conference, 19 March 2001.

Chomsky, Noam. 1999. Derivation by Phase. Cambridge, MA: MIT ms.

Dowty, David. 1979. Word meaning and Montague grammar. Dordrecht: D. Reidel Publishing Company.

Hale, Kenneth. 1959. A Papago Grammar. Bloomington: Indiana University Ph.D. diss.

Hale, Kenneth. 2000. A Uto-Aztecan ('O'odham) Reflection of a General Limit on Predicate Argument Structure. Uto-Aztecan: Structural, temporal, and Geographical Perspectives, Papers in Memory of Wick R. Miller by the friends of

Uto-Aztecan, ed. by E. H. Casad and T. L. Willet, 155-169. Hermosillo: Universidad de Sonora.

Halle, Morris and Alec Marantz. 1993. Distributed Morphology and the Pieces of Inflection. The View from Building 20: Essays in Linguistics in honor of Sylvain Bromberger, ed. by K. Hale and S. Keyser, 111-176. Cambridge: MIT Press.

Halle, Morris and Alec Marantz. 1994. Some Key Features of Distributed Morphology. MIT Working Papers in Linguistics 21, ed. by A. Carnie, H. Harley, and T. Bures, 275-288.

Harley, Heidi and Rolf Noyer. 1997. Mixed nominalizations, short verb movement, and object shift in English. Paper presented at NELS 28.

Jackson, Eric. 2002. The Stative s- Morpheme in Pima. Los Angeles: UCLA M.A. thesis.

Kennedy, Chris and Beth Levin. 2002. Telicity Corresponds to Degree of Change. Presented in Topics in the Grammar of Scalar Expressions, UCLA, 11 January 2002.

Kim, Sahyang. 2002. Passives in Pima. Presented at the 4th Workshop on American Indigenous Languages, 26-28 April 2002, University of California, Santa Barbara.

Kratzer, Angelika. 1995. Stage-level and individual-level predicates. The Generic Book, ed. by G. Carlson and J. Pelletier. Chicago: University of Chicago Press.

Marantz, Alec. 1995 'Cat' as a phrasal idiom: Consequences of Late Insertion in Distributed Morphology. Cambridge: MIT ms.

Marantz, Alec. 1997. No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon. University of Pennsylvania Working Papers in Linguistics, 4.2, Proceedings of the 21st Annual Penn Linguistics Colloquium, ed. by A. Dimitriadis, I. Siegel, et al., 201-225.

Martin, Jack. 1991. The Determination of Grammatical Relations in Syntax. Los Angeles: UCLA Ph.D. diss.

Mathiot, Madeleine. 1973. A Dictionary of Papago Usage, vol. 1. Bloomington: Indiana University Press.

Mithun, Marianne. 1991. Active/Agentive Case Marking and its Motivations. Language 67.510-546.

Munro, Pamela. 1984. Floating Quantifiers in Pima. Syntax and Semantics 16.269-287.

Saxton, Dean. 1982. Papago. Studies in Uto-Aztecan Grammar, Volume 3, Uto-Aztecan Grammatical Sketches, ed. by R. Langacker, 95-266. Dallas: Summer Institute of Linguistics.

Saxton, Dean , Lucille Saxton and Susie Enos. 1983. Tohono 'O'odham/Pima to English, English to Tohono 'O'odham/Pima Dictionary. R.L. Cherry, ed., second edition. Tucson: University of Arizona Press.

Shademan, Shabnam. 2001. To *ge* or Not To *ge*? Investigating Properties of Pima *ge*. Paper presented at the UCLA Pima Linguistics Conference, 19 March 2001.

Smith, Marcus. 2001. Musings on Clausal Structure. Talk given for the UCLA Pima Group, 1 June 2001.

Vendler, Zeno. 1967. Verbs and Times. Linguistics in Philosophy, 97-121. Ithaca: Cornell University Press.

Zepeda, Ofelia. 1983. A Papago Grammar. Tucson: University of Arizona Press.

Urarina word classes

Knut J. Olawsky
Research Centre for Linguistic Typology, Melbourne

1.   Introduction

Urarina is an isolate spoken by ca. 3,000 speakers in Northwestern Amazonia, Peru, on the tributaries of the Rio Chambira. The data for this article are from the Rio Espejo dialect. The typological profile of Urarina involves an OVA/VS constituent order, mainly agglutinative morphology, prenominal demonstratives, numerals, possessors, and quantifiers. This paper focuses on word classes, which represent some typologically unusual characteristics. While nobody has any doubts that most languages have nouns and verbs, I will show that Urarina has virtually no independent class of adjectives, as the words in question are subtypes of verbs or nouns. In addition, it will be demonstrated that the class of adverbs is restricted to one specific type of subcategory. Another interesting feature is the fact that some of the functional word classes occur only in derived form. Determining the class a word belongs to is further complicated by inflectional suffixes that can be attached to members of the "wrong" word class. Some words that represent unusual semantic concepts encoded into verbs conclude the image of categorial "confusion" in the language. This, together with the other unusual features of word class assignment, demonstrates that Urarina is a language in which nouns and verbs play a particular role, whereas all other categories are secondary.

2.   Lexical word classes

All languages distinguish between lexical and functional classes. From a cross-linguistic perspective, the first type typically includes nouns, verbs, adjectives, and adverbs in underived form. In most languages, these are open classes, i.e. new words can be added to them, whereas the functional classes are typically closed. I will demonstrate that in Urarina, the classes of adverbs and adjectives are radically underrepresented. In opposition to many other languages, Urarina adverbs represent a particular case, as the small group of underived adverbs represents a closed class. In contrast, ideophones appear to form an open word class along with nouns and verbs. Verbs function as the head of a (transitive or intransitive) clause. Nouns can function as the nominal head, as copula complement, as an argument of a postposition, or as a noun modifier in certain isolated cases.[1] There are some other sets of words that are often associated with separating word classes in other languages, but which are subtypes of nouns in Urarina. These include some pronouns (*aka* - 3sg, but *aka-ɯrɯ* - 3pl), demonstratives (*nii* 'that', *nii-tɕɯrɯ* 'those'), and some numerals, as will be shown in section 3.2

2.1 Adverbs

Adverbs can be categorized into five types, being related to time, place, manner, degree, and epistemics. Some isolated words that do not fit into these subclasses may not be regarded as separate subtypes of adverbs if they have only one member; Examples for such words are 'only' and 'also'. I list these under "Others".

2.1.1 Adverbs related to time

Urarina has only a limited number of underived adverbs, almost all of which are time-related. Most typically, these occur in preverbal position.

(1)	*ena*	'now'
	raka	'yesterday'
	eresi	'tomorrow'
	kofwano	'the next day'
	ɲaē	'already'
	hajti	'still'
	haɯria	'first/earlier'
	tabiitҫa	'finally'

Interestingly, all other types of adverbs are derived. This includes some other time- or frequency-related words, which are verbs or show signs of verbal derivation/inflection. Most commonly, these adverbs contain a gerund suffix, /-ɨ/, which is a very frequent form and otherwise occurs with verbs. Its function is widespread and it could also be described as a participle or a converb, making the function of the affected verb adverbial. Some of the examples below represent fossilized forms: though the structure of their composition can be recognized, the components do not occur in isolation.

(2)	*kwajte-ɨ*	'again'	(= 'repeat' + GER)
	kara-ha-ɨ	'long (time')'	(= 'long' + DUR + GER)
	baja-hiri-ɨ	'soon after'	(= 'after' + DIM + GER)
	iɲoae-lɯ	'before'	(= 'earlier' + REM)

2.1.2 Adverbs related to place

The complex morphological structure of adverbs can also be illustrated with the group of place-related adverbs, such as 'here' and 'there'. These are combinations of demonstratives (which are a subtype of noun) with locative suffixes.

(3)   *kaa* (close to the speaker), *nii* (close to the listener), *taa* (not close to any of the two)
       ka-ʉ ('here'), *kʉ* (in narratives)
       nii-lej ('in/to that area there')
       ta-eloõ ('towards that direction over there')

Urarina has no underived place-related adverbs. Other concepts related to location or direction are expressed by locational nouns such as 'outside' or 'opposite'.

2.1.3   Adverbs related to manner

All adverbs of manner are morphologically complex. Again, most of them contain the gerund suffix, which is evident from the selection in (4).

(4)   *rauto-hwe-ĩ*   'calm(ly)'   ('be calm'-DUR-GER)
       ni-toane-ĩ   'so/like that'   ('that'-'compare'-GER')
       suru-ti-ri-ĩ   'suddenly'   ('run'-RAP-GER)
       kawatça-ĩ   'well'   ('be good'-GER)
       hinii-ki-ĩ   'together'   ('count'-DER-GER)

The word for 'alone' *helaj* is probably underived and can have both adverbial and adjectival function for 'separate'. However, also occurring as a copula complement, it may occur in the same environment as a noun.

(5a)   *nii*   *eene*   *kʉ*   *helaj*   *neda-e*
       that   woman   there   alone   stay-3ps   'That woman stayed there alone.'
(5b)   *kahe*   *amʉ-ĩ*   *helaj*   *ne-ʉ-tçe*
       from   go-GER   alone   be-IMP-PL
       '(Ye) be separate from (them)' (NT: 2.Corinthians 6,17)

2.1.4   Adverbs related to degree

The intensifier *hataaĩ* has some peculiarities, which make it difficult to decide what word class it belongs to. It can occur with verbs (in preverbal or postverbal position) and with adverbs. Interestingly, it is also attested for its co-occurrence with a noun (cf. (6d)); however, the fact that it also ends in /-ĩ/ supports the assumption that it is a form derived from a verb (even though the meaning of its root cannot be given).

(6a)   Preverbal position:
       hataaĩ   *ahi-a*   *ne*   *haʉ*
       very   get.drunk-3sg   SUB   because
       'because she was very drunk'

(6b) Postverbal position
    i ɲadera-ʉr-e   *hataaĩ*   *katça-ʉrʉ*
    be.sad-PL-3ps   very   man-PL
    'The people were very sad'

(6c) With adverb:
    hataaĩ   *ena*
    very   now
    'very soon'

(6d) With (adjectival) noun:
    ɲaẽ   *hataaĩ* *biiɲa*   *ni-a*   *nesajhjeĩ*
    already   very   old   be-3ps   although
    'although they were very old' (NT: Hebrews 11, 12)

2.1.5 Epistemics

Urarina has only a few adverbs that function as epistemics, as these concepts are also expressed by evidential clitics. The complex adverb *heriane* (and its variant *herjane*) expresses a positive probability of an event to happen or have happened and can be used with present, past, or future meaning. Much depending on the context it may be translated in the range between 'maybe' (referring to 'hope') and 'probably' (more regarding a suspicion).

(7a)   *heriane*   *ni-a*
      maybe   be.there-3sg
      'Maybe it is there'

(7b)   *heriane*   *te*   *ʉ-re-ĩ*
      probably   TOP   come-FUT.3ps-ASS
      'He will probably come'

(7c)   *nii* *haʉ*   *heriane*   *enanihja*   *itça-kʉrʉ-i-lʉ*
      that because probably   canoe   make-PL-NEG.3sg-REM
      'Therefore, they probably did not make canoes'

The word *ɲatona* ('surely/certainly/exactly') indicates the positive probability of an event or action. As no specific internal structure is recognizable, *ɲatona* might be the only underived example for an underived adverb outside the class of temporal adverbs.

(8)   *ɲatona*   *te*   *aka*   *ne*
    certainly   TOP   3sg   be-3sg   'Certainly it was him.'

There are two more candidates for being adverbs. One is the word *esiɲae* 'really', which may be used in adverbial function (9a) or as the noun for 'truth' (9b,c).

(9a)   *esi ɲae*   *kawatça-ĩ*   *kana+kwaaɯn-era*   *sakɯ-i*
        really   be.good-GER   1pl+create-AG   follow-NOM
        'someone who follows God really well'

(9b)   *esi ɲae*   *ajto-i*   *ne*   ...   *raa-ni-ɯ*
        truth   say-2sg   CND ...   bring-DIR-IMP
        'If you are telling the truth, go and get her!'

(9c)   *kana+kwaaɯn-era*   *te*   *esi ɲae*   *rauta-e*
        1pl+create-AG   TOP   truth   like-3sg
        'God loves the truth.'

However, 'really' can also be expressed by *rauihidĩ*, which is morphologically complex and composed of the noun *raui* 'right' and suffixes for durative aspect and gerund. In many instances, the two words are used in combination (in any order).

(10a)   *rauihidi-a*
         be.right-3sg   'It is right.'

(10b)   *ka=raj*   *ajto-o*   *esi ɲae*   *rauihidi-i*
         1sg=for   say-IMP   truth   be.right-NOM
         'Tell me the truth that is right!'

(10c)   *hataaĩ*   *esi ɲae*   *rauihidi-ĩ*   *kɯ*   *kana+kwaaɯn-era*   *sakɯ-i*
         very   really   be.right-GER   there   1pl+create-AG   follow-NOM
         ne-nakaɯrɯ
         be-those.who.are
         'those who really very much in truth are followers of God'

2.1.6   Others

'Also' is expressed by the clitic *(n)etonaj*, which is attached to a noun or pronoun. There is another expression for 'also', *nemaahḗj*, whose status and difference to *(n)etonaj* is unclear.

(11a)   *aka-ḗtonaj*   *aka-ɯrɯ*   *kaaihje*   *ini-a*   *kɯ-e*
         3ps-also   3ps-PL   behind   climb-NTR   go-3sg
         'She also climbed up behind them.'

(11b)   *aka-ɯrɯ*   *raj*   *sitçu*   *nemaahḗj*   *te-j* ...
         3ps-PL   for   line   also   give-GER
         'also giving them lines ...'

In a similar way, 'only' is realized as a suffix /-atça/ (or allomorphs), most typically attached to nouns (12a), but also found on postpositions and verbs (12b,c). It has an emphatic function and can also be translated as 'self' in some examples (but note that there is a separate reciprocal form).

(12a) *hjane-etҫa ke hetau te ne-rua-kur-e*
achiote   APPL HRS   TOP REF-rub/smear-PL-3ps
'They rubbed themselves with achiote only.'

(12b) *lureri kuane-etҫa na=ra ne-betaka-na here-ü*
house inside-only TOP.1sg=EMPH REF-relax-INF want-1sg
'I want to relax only in the house'

(12c) *lenone-etҫa-u*
eat-only-IMP
'Just eat!' (emphatic, impolite)

2.2   Adjectives

Dixon (1982), identifies adjectives as referring to four major types of semantic content from a typological perspective: dimension, age, value, and color. However, while these semantic concepts are typically represented by adjectives in other languages, they are mainly expressed by nouns or verbs in Urarina (sometimes by special types of nouns or verbs). Urarina has a few words that can take adjectival function, but their use is restricted. Most words cannot function as noun modifiers and as copula complements; typically, they are either noun-like or verb-like, which leads to the conclusion that they are special subtypes of nouns and verbs. The first two examples in (13) are regular stative verbs; the third example (*baaso* 'bad') is a noun that can be used as a noun modifier.

(13) *nohwia*   'be hard' (fully inflectable as a verb)
ahaarutoa   'be warm' (fully inflectable as a verb)
baaso   'bad person/thing' (inflectable as a noun)

All color terms are represented by stative verbs. For their use in adjectival function, they are derived by the nominalising suffix /-i/, to form a noun modifier. Alternatively, they can be inflected with the gerund suffix /-ï/, (which can be applied to any verb) to form a modifying clause (e.g. 'a horse, being red', cf. (14c)).

(14a) *lana-ri-tҫa-ï*
be.red-FUT-3sg-ASS
'It will be(come) red'

(14b) *lana-ʔa-i*
be.red-NEG-NEG.3sg
'It is not red'

(14c) *kabarju lana-ha-ï / lana-ha-i*
horse   be.red-DER-GER / be.red-DER-NOM
'a red horse' (NT: Revelation 12,3 / Revelation 6,4)

Other words that fit the semantic concepts mentioned above are nouns. The word for 'old' is a noun literally referring to 'old person' in Urarina. In (15a) it clearly functions as a nominal head. Its use in modifier function, even occurring with an inanimate noun, is illustrated in (15b). Example (15c, = 6d) shows that it can also be used with the intensifying adverb *hataaj*.

(15a)   *tɯrɯ-a*   *biiɲa*
         arrive-3ps   old
         'The old (person) has arrived.'

(15b)   *lureri*   *biiɲa*
         house   old
         'old house'

(15c)   *ɲaẽ*   *hataaj*   *biiɲa*   *ni-a*   *nesajhjej*
         already   very   old   be-3ps   although
         'Although they were very old' (NT: Hebrews 11, 12)

However, Urarina has two words that are different from the two types listed above. Both match the semantic concept for dimension, *sẽeohwa* 'big' and *laauhwiri* 'small', which confirms Dixon's (1982) hypothesis that these belong to the core categories typically represented by adjectives.[2] These words lack at least one nominal feature in that they cannot function as head of a noun phrase; they are also not verb-like, as they do not take any verbal inflection. They resemble each other in that they occur as noun modifiers only. However, all three are noun-like in that they can take a plural form otherwise suffixed to nouns (plural concordance with the noun they modify is possible, but not obligatory).

(16a)   *bute*   *sẽeohwa*   *itɕa-e*
         boat   big   make-3sg
         'He made a big boat'

(16b)   *kanaanaj*   *laauhwiri*
         child   small
         'little child'

On the other hand, it must not be assumed that these three words form a homogenous, small class of adjectives, as little differences between these three exist. *laauhwiri* differs from the others in that it can take a distributive marker, which is otherwise found on verbs.[3]

(17)   *ate*   *lau-ɲaa,*   *hiririɲo*   *lau-ɲaa,*   ...
        fish   small-DSTR   'bagre'.fish   small-DSTR   'small fish, small *bagres*'

Further evidence for the fact that lexical items that take adjectival function in Urarina do not represent a uniform word class is provided by the word for 'good', which has be characterized as 'multi-functional'. The root *kaua-* (never occurring in this form by itself) is combined with the verbal suffixes /-toa/ (a stative or intensifying marker) or /-tɕa/

(unknown derivation, but used as 3sg suffix with some other verbs). /-ti/ is the nominalised form of /-toa/, and /-tĩĩ/ is its gerund form. In (18a), I illustrate the use of 'good' as a stative verb, which corresponds to the forms mentioned for color terms (cf. (14)). However, the form *kauatça* is used in a number of ways that make it difficult to decide what word class it belongs to.

(18a)   *kaua-to-ri-tçaẽ*   *hanonaa*
         good-DER-FUT-3sg   day
         'It will be a good day.'

(18b)   *dʒa*   *kauatça*   *ni-ji-lʉ*
         what   good   be-NEG.3ps-REM
         'There were no good things.'

(18c)   *hataaj̃*   *te*   *kauatça*   *itça-e*   *kana+kʷaaʉn-era ...*
         very   TOP   good   make-3ps   1pl+create-AG
         'God has made it very good/well ...' (NT: Luke 1, 68)

(18d)   *raj aheri te-lanaala*   *lenone*   *kauatça*   *te-i-tçe.*
         for stone give-without   food   good   give-2ps-PL
         'You will give him good food, not a stone.' (NT: Matthew 7, 10)

In summary, noun-like "adjectives" resemble nouns in that all of them can be copula complements and they can function as nominal heads (except for one, which is derived). Another feature they share with nouns is that the noun plural /-ʉrʉ/ can be attached to most of these. The difference to other nouns lies in their behaviour as noun modifiers. While a noun only rarely modifies another noun, the words under discussion do so. All verb-like "adjectives" are derived; Their behaviour is quite similar to that of stative verbs. Again, the main difference lies in their function as a modifier.

3.   Functional word classes

Urarina has separate word classes for postpositions, conjunctions, and small classes of introducers and interrogatives, but no underived forms of quantifiers and numerals. Pronouns are a subtype of noun; they are inflected with the same plural suffix as other nouns and they can constitute a nominal head.

3.1   Quantifiers

Most quantifiers are derived from nouns, verbs, or other word classes. It is not always possible to identify the original base, but the morphological complexity of quantifiers is always evident from at least one known component. The following is a list of quantifiers, including some indication of the known parts.

(19)

dʒa-le	'something/somebody' ('what' + 'one')
kuruatahe-ĩ	'little' ('two'-GER)
lauri-lauri	'various ('type'; reduplicated)
taba-ĩ	'much' ('be big'-GER')
taba-uru	'some' ('be-big'-PL)
lejhĩĩ-ɲe-h-ĩ	'not even one' ('one' + 'be'-DUR-GER)
dʒu-ni	'nobody' ('where'-NEG)
ara-hi-ĩ	'various' ('tribe'-DUR-GER)
sa-ti-ĩ	'all' ('end'-EMPH-GER)
hita-ri-ĩ	'all' ('finish'-RAP-GER)[4]

The word *itulere* 'all kinds of' is underived, but noun-like, as it can take a noun plural and function as the head of an NP.

(20)   *itulere*   *itça-hakwa-e*
         all.kinds.of   do-INDV-3sg   'He did all kinds of things'

In summary, it can be stated that Urarina has no underived class of quantifiers.

3.2   Numerals

Urarina numerals can be divided into native and borrowed forms. The native numbers include lexemes from 'one' to 'five', while the other numerals are loans from Quechua. Interestingly, the two types reflect syntactic and morphological differences: While the native numbers are a subtype of verbs, the borrowed forms are nouns. This becomes evident through their use in context. Native numerals are inflected like verbs, which is illustrated by the 3sg marking suffix in (21). Literally, this example means 'Five are my wives.'

(21)   *sauki-a*   *kanu*   *komaasaj*
         five-3ps   1sg   wife
         'I have five wives'

As noun modifiers, occurring in prenominal position, the numerals for 1-5 take the suffix /-i/, which is otherwise used as a nominalizing suffix on verbs (cf. (14c):

(22)   *heena-i*   *katça*
         four-NOM   man
         'four men'

In contrast, the numerals 6-9 always co-occur with the gerund form of the copula ('being'). With this respect, they behave like other nouns in a copula clause.

(23) *sauta+ne-ĩ   katça*
      six+be-GER man
      'six men'

The numerals for '10', '100', and '1,000' behave in a noun-like manner, accordingly. It must be concluded that numerals do not represent a separate class in Urarina, but are divided into two groups that are subclasses of nouns and verbs.

3.3   Introducers

As mentioned above, Urarina has closed functional classes of postpositions, conjunctions, interrogatives, particles, and interjections, and an open class of ideophones. In addition, there is a group of words that I classify as "introducers".

(24) *nihjauria*   Prohibitive (Traditional lg. only; requires HORT inflection on verb)
      kwa   Prohibitive (Innovative lg. only; requires NTR inflection on verb)
      kwatia   Negative (emphasis) (with negative form)
      kwane   Hortative (with hortative form)
      nabana   Adversative (optional; always co-occurring with *kwataa* 'that not')
      ta   Negative question (with clause-final negative clitic)

Introducers always coincide with a particular grammatical construction and the respective morphological inflection on the verb. They always occur in sentence-initial position; some introducers are optional (*kwatia, nabana*), but all others are obligatory. Interestingly, reportative and politeness clitics, which are otherwise found on verbs, can be attached to introducers, which makes them a verb-like category.

4.   Word classes and inflection

The case of word classes that can take verbal inflection, as illustrated by the introducers is further supported by (isolated) examples of other words that are not verbs, but that are suffixed with morphemes otherwise occurring on verbs. One example for this is represented by a form of derivation: the suffix /-k(o)/ derives a verb from a nominal base, such as in *kakɨnɨ* 'daughter' (cf. (25a)). In combination with the suffix, it means 'He has a daughter'. The productivity of this form is limited to certain kinds of nouns; even though modern Urarina has only traces of a distinction between inalienable and alienable possession, the verbalizer /-k(o)/ is only applied to nouns that appear to have been inalienable at an earlier stage of the language (cf. Olawsky forthcoming for further discussion).

(25a)   *kakɨnɨ-ko-a*
         daughter-VBL-3sg
         'He has a daughter.'
(25b)   *ahejri+koteru   ke   teru-k-e   katça-ɨrɨ*
         stone.axe   APPL   axe-VBL-3sg   man-PL
         'The people had stone axes.'

Category-changing derivation is a productive process in many languages. Usually, this involves special derivational morphemes, as illustrated above. In some cases, there is zero derivation, which does not require any segmental morphology in order to convert a word to another class. More unusual is a phenomenon found in Urarina, in which an inflectional suffix that can otherwise be applied to any verb is found on a noun and thereby, changes it into a verb. There are a few isolated examples for this, which I list below. In (26a), *kuri* 'jagua fruit' is converted into a verb with the meaning 'to pick a jagua fruit'. The morpheme used for this is durative aspect suffix /-he/ followed by the gerund suffix /-ĩ/. Similarly, *hanori* 'back' (26b) receives a gerund suffix to mean 'turn one's back'.

(26a)   *ɲaẽ   ɳi   kuri   ke   <u>kuri-hja-ĩ</u>   kɨ   mita-e*
         already that   'jagua' APPL   <u>jagua-DUR-GER</u>   there   take.out-3ps
         'Putting that 'jagua' fruit (onto the baby), he took it out.'[5]
(26b)   *ɳiki   ajɲa   ɨ-a   ne   sajhjej   ke   <u>hanori-ĩ</u>   amɨ-a   ...*
         but   with   come-3ps   SUB   though   APPL   <u>back-GER</u>   walk-3ps
         'But though he had come with him, he walked (away), turning his back on him.'

One explanation for this phenomenon would be to argue that the morphological process behind this is zero derivation, with subsequent verbal suffixation. The low number of examples and the obvious semantic range for the output would support the idea that this kind of conversion is not productive. It is unclear at this stage whether other verbal inflection could be applied to these words; more examples are needed.

A different case is the attachment of noun plurals to words that are not prototypical nouns. I mentioned above that pronouns take the same plural markers as nouns. The form for third person plural of verbs involves the same suffix /-ɨrɨ/, though in combination with suffixes for person, tense, and various other categories. Interestingly, this suffix is also observed with word classes that one would not assume to be nominal. In (27a,b), /-ɨrɨ/ occurs on postpositions to mark plural agreement with the object. This is surprising, as Urarina does not have number concordance, e.g. inside the NP. It was mentioned in section 2 that /-ɨrɨ/ is also observed with demonstratives and with the noun-like quantifier *itulere* 'all kinds of' (cf. section 3.1). In (27e) it occurs with a numeral, though in a complex environment: recall that 'two' is a verb. This is nominalized and marked for plural to literally mean 'those who are two'.

(27a) Plural marker with postposition *kahe*
ka-iritɕu hatɕʉ-ʉrʉ kʉane <u>kahe-ʉrʉ</u>   itanitɕa   karʉrʉ-ĩ
1sg-ear   hole-PL   in   <u>from-PL</u>   mud   clean-GER
'... cleaning the mud from my ears ...'

(27b) Plural marker with postposition *kʉanaj*
<u>kʉanaj-ʉrʉ</u>   nia+natĩ   hja-ʉr-e.
in-PL   even   urinate-PL-3ps
'They even urinated into them (the clothes).'

(27c) Plural marker with demonstrative *nii*
i-tɕuerehe-ʉrʉ i-tɕuasej   <u>nii-tɕʉrʉ</u>   ajɲa   ini-ʉ-ra
2sg-child-PL   2sg-wife   <u>DEM-PL</u>   with   climb-IMP-EMPH
'Climb it with your wife and your children, with those.'

(27d) Plural marker with noun-like quantifier *itulere*
atane huu-ka   akaʉ   ne   hana,   <u>itulere-ʉrʉ</u>   nerutu-hakwa-e
earth flood-3sg water   SUB   when   <u>all.kinds.of-PL</u> change-INDV-3ps
'When the water flooded the earth, all kinds of things changed.'

(27e) Plural marker with verbal numeral
kʉ   kwajtej̃   nii   <u>kʉruatahaj̃-ʉr-i</u>   ...
there   again   DEM   <u>two-PL-NOM</u>
'(There) again, those two (men) (said) ...' (lit. 'those who were two')

5.   Other concepts that are represented by verbs:

The last section of this paper lists a number of words that are not typically represented by verbs in other languages, but which are in Urarina. There are no corresponding forms as adverbs or other classes. The examples from (28) to (32) include verbs for the semantic concepts for 'almost' (lit. 'be missing'), 'in vain' ('be in vain'), and 'be like that'. The verb 'and so on' has no equivalent in English. Example (32) is remarkable as it represents a compound from the two demonstratives 'this' and 'that', which in combination receive regular verbal inflection for person and number.

(28)   *ɲaẽ*   *tʉrʉ-e*   <u>*lalahi-a*</u>
already   arrive-3ps   <u>be.missing-3ps</u>
'He has almost arrived'

(29)   *klabo* *kʉrete-ĩ,*   *semento* *kʉrete-ĩ*   <u>*naohwã-akatɕe*</u>   *ne te ne*
nail   buy-GER   cement   buy-GER   <u>and.so.on-1pl.incl</u>   must
'We must buy, nails, cement, and so on.'

(30)   *ate* *ari-a*   *kʉ-a*   <u>*nʉkuj-a*</u>   *ne*   *hana*   *nijej*   *erʉ-i*
fish   seek-NTR   go-NTR   <u>in.vain-3ps</u> SUB   when   nothing   find-NEG.3ps
'When he went fishing in vain, he found nothing.'

(31)   *nitoani-a*   *aka-uru*   *itçau*
        like.that-3ps   3ps-PL   life
        'Their life was like that.'

(32)   *ku*   *najɲa-ĩ,*   *lenone-j,*   *kaa+nii-tçuru-a*   *haũ, ...*   *ɲaẽ*   *nuku-hw-e*
        there finish-GER eat-GER   this+that-PL-3ps   because   already get.dark-DUR-3ps
        'As they were finishing, eating, doing so, ... it already became dark'

Conclusions

In summary, one can say that the Urarina word class system is unusual in various respects:

- Although Urarina recognizes more than just two word classes, its system of inflection is highly focused on nouns and verbs.
- In particular, there is no inflection specifically assigned to other word classes than nouns or verbs (like adverbs and adjectives).
- For a language with a complex system of inflection this seems to be typologically unusual. While other languages with rich morphologies assign category-specific affixes to each word class, Urarina inflection is either nominal or verbal.

Thinking of how this system developed its typologically unusual features, one may conclude that the Urarina vocabulary originally consisted of only two lexical categories: nouns and verbs.

Notes

[1] Nouns that modify other nouns are restricted to names and to specification of age or profession.

[2] Note that in addition to these, there are stative verbs for 'big' and 'small'. For further discussion on the semantic differences, see Olawsky (forthcoming).

[3] The component [hwiri] in the singular form is not known as a productive suffix of any kind. However, the root appears to be /la/, as the combination with the distributive suffix shows.

[4] There is no apparent difference in use between *satii* and *hitarii*. The major difference in in origin.

[5] The 'jagua' tree probably corresponds to Maximiliana regia.

References

Dixon, R.M.W. 1982. *Where have all the adjectives gone?* and other essays in Semantics and Syntax. Berlin: Mouton.

Manus, Ronald & Phyllis 2001. The New Testament, Urarina version. Forthcoming.

Olawsky, Knut J. 2002. *Urarina texts.* Languages of the World/Text Collections. Munich: LINCOM. 1-238.

Olawsky, Knut J. forthcoming. Urarina grammar.

Abbreviations

3ps	3rd person, unspecified for number	INF	Infinitive
APPL	Applicative	NEG	Negation
ASS	Assertive	NOM	Nominalization
CND	Conditional	NT	New Testament (cf. References)
DER	Derivation	NTR	Neutral form
DIM	Diminutive	PL	Plural
DIR	Directional	PURP	Purposive
DSTR	Distributive	RAP	(Rapid) velocity
DUR	Durative aspect	REF	Reflexive marker
EMPH	Emphasis	REM	Remote past
FUT	Future tense	SG	Singular
GER	Gerund	SUB	Subordinate clause
HRS	Hearsay evidential	TOP	Topic
IMP	Imperative	VBL	Verbalizer
INDV	Individuality		

Appendix

Table of Urarina word classes (underived)

Nouns	open
Verbs	open
Adverbs	Temporal: 8 Others: derived (open)
Adjectives	(2)
Postpositions	13
Conjunctions	9
Introducers	6
Interrogatives	2
Particles	2
Interjections	10+
Ideophones	open
Quantifiers	None
Numerals	None

First-person plural and the aspect morphology of Zapotec[1]

Natalie Operstein
University of California, Los Angeles

1. The structure and classification of the Zapotec verb. The structure of the typical Zapotec verb, as summarized in Speck (1984:140), may include the following categories:
(NEG) ASP (PASS) (CAUS) STEM (ADV) SUBJECT PRON. OBJECT PRON.
The second slot in this scheme represents the category which is often referred to as 'aspect' in the literature on Zapotec (e.g., Butler 1980:27ff; Munro and Lopez 1999:16), but which, in fact, also incorporates mood and tense. For example, the 'aspect' markers of San Lucas Quiaviní Zapotec include not only such aspectual categories as habitual, perfective, and progressive, but also such modal categories as subjunctive, definite, and irrealis; the verb form called 'definite', moreover, expresses a definite, certain future in simple sentences (Munro and Lopez 1999:16-17).

The Zapotec languages may differ considerably in the number of distinctions they make in the category 'aspect'. For instance, Texmelucan and Zaniza Zapotec make five distinctions each (if the imperative is counted as a separate mood), while Quiegolani and Isthmus Zapotec make eight distinctions (Black 2000:24; Speck 1984:140). However, despite the discrepancies in the overall number of tense/mood/aspect markers, all Zapotec languages seem to agree in distinguishing three basic categories, two of which are aspectual and one modal in nature, namely, the habitual, completive, and potential. This fact allowed Kaufman (1994:63) to suggest a classification of the Zapotec verb based on the markers of the completive aspect and the potential mood. He divides the Zapotec verbs into four classes:

	Class A	Class B	Class C	Class D
potential	*ki=	*ki=	*k=	*k=
completive	*kwe=	*ko=	*ko=	*ko= with replacives

Each of the four classes of verbs is formally defined by (a) the allomorphs of the potential (*ki ~ *k) and completive (*kwe ~ *ko) markers, and (b) by whether there appear replacive initial consonants in the completive aspect.[2] The classification proposed by Kaufman has been shown to work for both the diachronic and the synchronic analyses of the Zapotec verb (see Smith Stark 2001:47).

2. The irregular first-person plural forms. Some of the Zapotec languages possess a limited set of common everyday verbs whose first-person plural forms show morphological peculiarities as compared with the rest of the forms in their paradigms. Such peculiarities include the following facts:
    (a) the 1p forms take class A mood/aspect markers regardless of the class
        membership of the verb based on other forms;
    (b) the 1p forms may have a different stem from the rest of the forms in their
        paradigms;

(c) in Papabuco, the irregular 1p forms take no prefix in the potential mood. This morphological peculiarity is shared by a special verb form in Zoogocho Zapotec (discussed below) that seems to have originated in the same pattern.

The Class D verb 'to wash' in Córdova's Zapotec, the earliest recorded form of Zapotec, illustrates this pattern (Smith-Stark 2000a:7):

potential	ca-guibi=a^3 'I will wash'	qui-**tibi**=no 'we will wash'
habitual	ti-guibi=a 'I wash'	ti-**tibi**=no 'we wash'
completive	co-**tibi**=a 'I washed'	pi-**tibi**=no 'we washed'

In this verb, the 1p forms have the same stem as the completive, and they use class A mood/aspect markers even though this verb, based on its conjugation in the other persons, belongs to class D. The related verb in Zaniza Zapotec, a Papabuco language, shows the absence of the prefixed marker of the potential mood (the class A marker of the potential mood in Zaniza Zapotec is *gi-*):

potential	kib=y 'he will wash'	**dib**=n 'we will wash' (not *gi-dib=n)
habitual	ri-gib=y 'he washes'	ri-**dib**=n 'we wash'
completive	u-**dib**=y 'he washed'	bi-**dib**=n 'we washed'

The irregular 1p forms are attested in three branches of Zapotec, namely, Papabuco, Central, and Southern Zapotec. They are more noticeable in the first two branches than in Southern Zapotec, which seems to have very few of the irregular 1p forms (e.g., Marks 1980:82ff). The following diagram shows the mutual relationship of the three groups within Zapotec:[4]

Proto-Zapotec

Solteco   Northern   Central   Southern   Papabuco

Valley   Isthmus
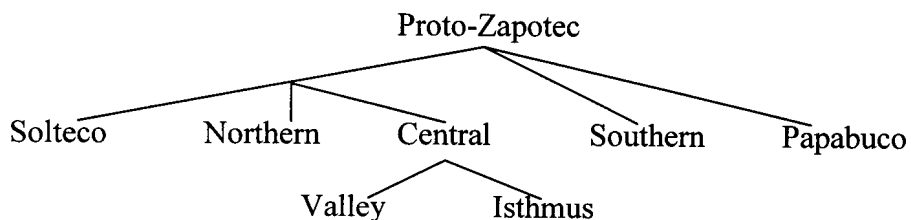
Given the position of these branches within Zapotec, it is clear that the irregular 1p forms are more likely to represent the retention of an ancient pattern than an innovation.

There are certain differences in the way this pattern is manifested in the current languages, but such differences seem to be mostly due to recent analogical levellings. For example, the irregular 1p forms do not add the potential mood prefix in Papabuco, but they do in Central and Southern Zapotec. The irregular stem formation is confined to the 1p forms in Central and Southern Zapotec, but seem to have secondarily spread to the 1s in Papabuco. In the Central and Southern languages that distinguish between the inclusive and exclusive 1p, both 1p stems seem to be affected. For example, in Córdova's dictionary and grammar most 1p verb forms are cited with the 1p excl pronominal subject, but the rarer 1p incl also occasionally gets cited with such forms, cf. *tèechi=na* 'we (incl) vomit' alongside *tèchi=no* 'we (excl) say' (Smith Stark 2000a:10; also see Marks 1980:82 for Guevea de Humboldt Zapotec and Marlett and Pickett 1987:408, n. 13 for Isthmus Zapotec).

Zoogocho Zapotec, a language from the Northern branch, shows two quite different manifestations of what is clearly the same pattern. First, a limited number of common everyday verbs in Zoogocho can form a special modal category by prefixing *d-* to the verbal root; the resulting form expresses the notion 'to be able to'. The prefix *d-* behaves as a replacive consonant, since it is simply added to the vowel-initial verb roots and replaces the initial consonant of the consonant-initial roots (see note 2). The verbs that add the prefix *d-* take no mood marker in the potential, and take class A prefixes in the habitual and completive aspects, regardless of the class membership of the original verb. The conjugation of the verb 'to eat' in Zoogocho illustrates this pattern (Long and Cruz 1999:448):

potential	*g-agw* 'to eat'	***dagüe*** 'to be able to eat'
habitual	*ch-agw*	*ch-**dagüe***
completive	*gw-**dagw***	*b-**dagüe***

The morphological correspondences between the Zoogocho 'abiliative' and the formation of the irregular 1p indicate that they should be regarded as parts of the same phenomenon. The second modal form in Zoogocho that shows the replacive *d* is discussed in section 4(b).

3. Types of morphological changes in the irregular 1p forms. The changes in the irregular 1p verb stems can be reduced to three broad types, each of which may be further subdivided into a number of sub-types.

Type 1. The 1p uses the completive stem, with or without additional changes, in all of its forms. This type includes:

<u>1(a). Verbs of class D (Central Zapotec and Papabuco):</u>

<u>Central Zapotec</u>

Córdova's Zapotec:	ti-b**áana**=ya 'I steal' co-**laana**=ya 'I stole'	te-**laana**=no 'we steal'
	t-**ágo**=a 'I eat' co-**ta[go**=a] 'I ate'	te-**tágo**=no 'we eat'
Chichicapan:	baa'n 'to steal' gu-**laa'n**=bi=n 'he stole it'	bi-**lá'an**=nu 'we stole it'
	awu 'to eat' gu-**dawu**=bi=n 'he ate it'	bi-**dá'awu**=nu'u=n 'we ate it'
San Pablo Güilá:	r-**àaw**=bí 'he eats' b-**dàaw**=bí 'he ate'	r-**daa'w**=nú 'we eat'

Papabuco

Zaniza:	ri-gib=y 'he washes' u-**dib**=y 'he washed'	ri-**dib**=n 'we wash'
	r-aw=y 'he eats' u-**daw**=y 'he ate'	ri-**daw**=n 'we eat'
Texmelucan:	r-o= 2-3s/p 'eat' b-**do**= 2-3s/p 'ate'	b-**daw**= '[I/we] ate'

1(b). Verbs of other classes (Central Zapotec):

Chichicapan (A):	r-utoo'=bi=n 'he sells it' b-**atoo'**=bi=n 'he sold it'	r-**átoo'**=nu'u=n 'we sell it'

1(c). Verbs that use a suppletive stem in the completive and 1p (Central Zapotec):

Córdova's Zapotec:	t-api=a 'I say' co-**chi**=a 'I said'	tè-**chi**=no 'we say'
Chichicapan:	abi 'to say' gu-**dzë**=bi=n 'he said it'	bi-di'i-**tsë**=nuʔ 'we said'

1(d). 1p consists of the completive stem preceded by the prefix *do/u-* (Central Zapotec):

Córdova's Zapotec:	t-àa=ya 'I go to bed' cò-**ta**[=ya] '[I] went to bed'	te-**tò-ta**=no 'we go to bed'
Chichicapan:	a'a 'to go to bed' gu-**ta**[=bi] '[he] went to bed'	bi-**du-ta**=nuʔ 'we went to bed'
San Pablo Güilá:	r-àa'=bi ~ rà-gá'=bí 'he goes to bed' gù-**t**=bí 'he went to bed'	r-**du-t**-gá'=nú 'we go to bed'

Type 2. The 1p uses a separate stem which is not based on the completive. This type may be divided into the following sub-types:

2(a). The 1p has a suppletive stem (Papabuco, Central, and Southern Zapotec):

Central Zapotec

Córdova's Zapotec:	tèle=a 'I come' pe[le=a] 'I came'	teòpe=no 'we come'

| Guevea Zapotec: | rĭăL=á? 'I come' | riŏ?b=nó 'we come' |
| | bi-ăL=á? 'I came' | |

| Chichicapan: | í'i 'to come' | b-io'opa=nu? 'we came' |
| | b-í'i=bi 'he came' | |

| San Pablo Güilá: | r-yée'd=bí 'he comes' | r-yo'p=nú 'we come' |

Papabuco
| Zaniza: | yed=y 'he comes' | bi-yap=n 'we came' |
| | bi-yed=y 'he came' | |

2(b). The 1p stem consists of the prefix *d-* plus the non-completive stem (Central Zapotec and Papabuco):

Central Zapotec
| Córdova's Zapotec: | t-àaba=ya 'I weave' | te-t-aaba=no 'we weave' |
| | còo[ba=ya] 'I wove' | |

Papabuco
| Zaniza: | r-un=y 'he weeps' | bi-d-un=n 'we wept' |
| | bin=y 'he wept' | |

| Texmelucan: | rut= 2-3s/p 'kills' | b-d-ut= '[I/we] killed' |
| | bi'it= 2-3s/p 'killed' | |

2(c). The 1p stem consists of a prefix related to Córdova's *ch-* plus the regular stem (Central Zapotec):

| Córdova's Zapotec: | t-oo=a 'I am inside' | ti-ch-oo=no 'we are inside' |
| | c-oo=a 'I was inside' | |

| Chichicapan: | yuu'=te 'to enter' | bi-dzh-ú'u=te=nu? 'we entered' |
| | gu-yu'u=te=ba 'he entered' | |

2(d). The 1p stem is composed of a prefix *y(e)-* plus the regular stem (with changes in the vocalism of the stem, if applicable) (Central Zapotec):

| Córdova's Zapotec: | t=àpa=ya 'I keep' | te-y-àpa=no 'we keep' |
| | co[pa=ya] 'I kept' | |

| San Pablo Güilá: | r-ù't=bí 'he grinds' | r-ye't=nú 'we grind' |

2(e). The 1p stem consists of the prefix *d/ru-* plus the regular stem (with the applicable changes in the vocalism of the stem) (Central Zapotec and Papabuco):

<u>Central Zapotec</u>
San Pablo Güilá: r-àas=bí 'he bathes'   **r-duus**=na
                        gùus=bí 'he bathed'   'we bathed'
<u>Papabuco</u>
Zaniza: r-**an**=y 'he cleans'   bi-**dun**=n 'we cleaned'
                        gun=y 'he cleaned'

                        r-az=y 'he bathes'   bi-**ruz**=n
                        guz=y 'he bathed'   'we bathed'

Texmelucan: r-az= 2-3s/p 'beats'   **b-ruz**= '[I/we] beat'
                        guz= 2-3s/p 'beat'

2(g). The 1p stem differs from the regular stem by its tone (Central Zapotec). In Chichicapan Zapotec, for which a description of this type is available, the tone change in the 1p forms appears to be systematic and identical to that which characterizes the potential (Smith Stark 2000b):

Chichicapan: **ñi'i** 'to speak'   bi-**ñí'i**=nuʔ 'we spoke'
                        gu-**ñi'i**=bi 'he spoke'

Type 3. The 1p stem (with or without its characteristic changes) is preceded by an auxiliary verb (Central Zapotec):

Chichicapan: u'un 'to weep'   **batshi** dx-í'in=nuʔ
                                                         'we wept'

4. A preliminary analysis. The dialectal distribution of the irregular 1p forms suggests that they represent the survival of an archaic morphological pattern. On the other hand, the small number of the surviving forms seems to suggest that this pattern was no longer productive even at the Proto-Zapotec stage. Therefore, in trying to account for the irregular 1p forms, the comparative data should be supplemented by internal reconstruction.

An analysis of the irregular 1p stems shows that the majority belong to one of the two structural types. The first type consists of the 1p forms based on the stem of the completive: this accounts for the forms cited in 1(a) through 1(c). The second type consists of the 1p stems formed by adding a prefix to either the completive or the non-completive stem: this accounts for the forms in 1(d) and 2(b) through 2(e). In either case, the 1p form is connected with the completive aspect. In the second type, the 1p formation also involves prefixing. An analysis of the synchronic functioning of the completive and that of prefixing in the verb system may provide an explanation for the structure of the irregular 1p forms.

4(a). The completive. The completive aspect in Zapotec shows a persistent connection with the imperative mood. The completive stem, typically without the pronominal marker, serves as the unmarked 2s imperative, for example, in Córdova's Zapotec, Mitla, San Pablo Güilá, San Lucas Quiaviní, Isthmus Zapotec, Coatlán Zapotec, Quiegolani, Zaniza, Zoogocho, Atepec, Yalálag, and Yatzachi Zapotec. In Southern Zapotec (i.e., Coatlán and

Quiegolani), the completive stem can also be used as the 2p imperative. In most Zapotec languages, however, the 2p imperative is expressed by the potential stem, with or without the pronominal markers. In some languages the potential has begun to invade the sphere of the 2s imperative as well: for example, in Zoogocho and Atepec Zapotec the imperative use of the potential conveys the tone of a polite request. The overall current distribution of the completive and potential in the function of the imperative suggests that the use of the potential in this function is more recent, and that its spread occurs at the expense of the more archaic imperative based on the completive.[5]

The 1p imperative, a form of infrequent use, is expressed in some languages by the verb in the potential (for example, in San Lucas Quiaviní Zapotec). More often, however, the lexical verb is preceded by an auxiliary verb or particle. In Córdova's Zapotec it is either *la* or *cola*,[6] the latter being "un termino que se antepone siempre para mandar o exortar a muchos"[7] (Córdova 1578:125). In Mitla Zapotec, the corresponding auxiliary is *do'o*; it appears to be cognate with the Yalálag and Yatzachi El Bajo prefix *do-* used in the same function.[8] The 1p imperatives in these languages are formed as follows:

Mitla:	*do'o gui-dauu*[9] 'let us eat' aux. pot.-'eat'	(Stubblefield and Miller de Stubblefield 1991:225)
Yatzachi El Bajo:	*do-yeclen=ch* 'let us help' aux.-ven.[10] of 'help'=1p excl	(Butler 1980:106)
Yalálag:	*do-kue'e* 'let us sit' aux.-pot. of 'do'	(López and Newberg 1990:15)

The form *do'o* that serves as the auxiliary of the 1p imperative in Mitla Zapotec is the irregular 1p imperative of the verb 'to go', which uses a suppletive root for the 1p. It also seems to be the same as the form analyzed in 1(d) as the 1p-forming prefix *do-*. The conjugation of the verb 'to go' in the habitual aspect shows the suppletive root in the 1p (Stubblefield and Miller de Stubblefield 1991:213):[11]

r-i=a'a	'I go'	*r-io=nnu*	'we go'
r-ij=lu	'you (sg.) go'	*r-ij=tu*	'you (pl.) go'
r-ij=ni	'he goes'	*r-ij=re=ni*	'they go'

The irregular 1p imperative *do'o* thus appears to consist of the suppletive 1p root *io* 'go' preceded by the prefix *d-*, which may be identical with the prefix *d-* used in the formation of the irregular 1p forms in 2(b). It is also possible, given the connection between the imperative and the completive, that the frozen 1p imperative *do'o* is ultimately the old completive of the verb 'to go'.

There are numerous other relic forms of the imperative marked by the prefix *d-* in various Zapotec languages. For example, in Zoogocho the synchronically irregular 2s imperative of the verb *choe'* 'to give' is *doa'*, and that of the verb *chid* 'to come' is *da* (the productive way to form 2s imperatives in Zoogocho, as in the rest of Zapotec, is to use the completive stem without the pronominal marker, cf. Long and Cruz 1999:449). In San Pablo Güilá, *dàa'* is the 2s imperative of *yée'd* 'to come' (López Cruz 1997). The same form is

attested in San Lucas Quiaviní, where *dàa'* is the 2s imperative of *rìed* 'to come', and *da=nèe*, from the same root, is the 2s imperative of *ri'd=nèe* 'to bring'. San Lucas Quiaviní also has the form *do'oonn* 'if; to see if', which is analyzable as the lexicalized 2s imperative of *ràann* 'to see'. One of its uses is after an imperative to express a friendly request (Munro and Lopez 1999:109ff).

Based on the preceding discussion, it becomes possible to view the prefix *d-* as a pre-Proto-Zapotec marker of the completive aspect. However, this prefix survives as a perfectivity marker only in class D verbs. In other classes of verbs, it survives only in its extended function as the marker of a non-indicative mood (which, based on typological considerations, must be secondary to its functioning as a marker of perfectivity). In this secondary function the prefix *d-* has survived (a) in the 2s imperatives of certain common verbs, (b) in the verb forms conveying the idea 'to be able to' in Zoogocho Zapotec, and (c) in the irregular 1p forms of certain common verbs. The semantic shift from an oblique mood to a form with the meaning 'to be able to' is easy enough to account for. But the origin of the 1p in a non-indicative mood form does pose a question that needs to be answered. Although not providing an answer, the current situation in Italian furnishes a plausible typological parallel. It is a well-known fact that Italian has innovated by substituting the indicative endings of the 1p by the subjunctive ending *-iamo*. This shift is generally thought to rely on the use of the subjunctives of common everyday verbs 'do', 'have', 'be', 'go', and 'give' as imperatives later bleaching to indicatives (Tuttle 2000:478). Taking into account the formal differences between the Italian and Zapotec verb, it is still possible to imagine a similar development for Zapotec, where a non-indicative form of a verb such as 'to eat', meaning originally something like 'let us eat' or 'we will eat', could have been interpreted as a form of the indicative. As a result, tense/mood/aspect markers began to be added to what originally was the stem of the non-indicative mood. The fact that the irregular first plurals in Papabuco and the parallel forms in Zoogocho do not add the potential marker is the survival of an earlier stage when the modal force of these forms was not yet completely lost.

4(b). Prefixing. As mentioned in note 10, Zapotec languages can form secondary 'aspects' by prefixing auxiliary verbs (or other prefixes of less clear origin) to the lexical verb. The most widespread of the secondary aspects are formed using the verbs 'to go' and 'to come'. The auxiliary is in some cases added directly to the root, and in others to one of the primary aspectual stems, typically the potential or completive. The secondary aspect auxiliaries thus occupy the same position in the structure of the Zapotec verb as the prefixes that form some of the irregular 1p forms, and it is possible that some of them may also have a common origin. For example, Zoogocho has a frequentative which is formed by adding prefixes *e-/o-* to the root, e.g.

> ch-le'=be' 'he sees' >   frequentative ch-e-le'e=be'
> ch-agw=be' 'he eats' >   frequentative ch-e-(y)agw=be'

This form is structurally parallel to the irregular 1p type described in 2(d), cf.

> Córdova's Zapotec   t-àpa=ya 'I keep',   t-e-(y)àpa=no 'we keep'

Another prefix *e-* is attested in what has been synchronically analyzed in Zoogocho as the prefix *ed-*. This prefix can be added to a limited number of verbs to indicate that the action has been completed. In the case of vowel-initial roots, this prefix is simply added to the root, but in the case of consonant-initial roots, the *d* of the prefix replaces the initial consonant of the root. The behavior of the *d* as well as the perfective semantics of the resulting form suggest that what is synchronically analyzed as a monomorphemic suffix is, in fact, composed of the morpheme *e-* plus the replacive consonant *d*. The *d* had originally belonged to the stem of the completive, but was reanalyzed as part of the suffix. Examples of these forms in Zoogocho include

ch-ot=be' 'he grinds'	> ch-**e**-**d**ot=be' 'he finishes grinding'
ch-azj=be' 'he bathes'	> ch-**e**-**d**azj=be' 'he finishes bathing'

Cognates of these verbs have irregular first-person plurals in Central Zapotec and Papabuco, which shows that the Zoogocho forms are part of the same pattern; cf. the San Pablo Güilá forms:

'to grind':	r-**ù**'t=bí 'he grinds'
	r-**ye**'t=nú 'we grind'

'to bathe':	r-**àas**=bí 'he bathes'
	r-**duus**=na 'we bathe'

The verb 'to grind', in which the Zoogocho frequentative shows a replacive *d* and the San Pablo Güilá 1p the prefix *y(e)-*, illustrates an important fact, namely, that the irregular first plurals of related verbs are sometimes formed using different strategies in different languages. 'To sell' is an example of this kind of verb:

Zaniza Zapotec:	r-**ut**=y 'he sells'	Chichicapan:	r-**utoo**' 'he sells'
	bi-**dut**=n 'we sold'		b-**atoo**' 'we sold'

Finally, the synchronic use of an auxiliary verb with the 1p in Chichicapan seems to support the idea that at least some of the prefixes that form the irregular 1p forms are parallel to the secondary aspect prefixes that originate in auxiliary verbs, cf. Chichicapan *u'un* 'to weep' > *batshi dxí'in=nuʔ* 'we wept', where *batshi* is an auxiliary verb.

5. Conclusion. In this paper I have tried to show that some of the irregular 1p forms in Papabuco, Central, and Southern Zapotec might have originated in the completive through its use as the imperative. I have also shown that the irregular forms of the 1p find parallels in the relic 2s imperatives of certain common verbs in Central and Northern Zapotec, and in two modal types of forms in Zoogocho Zapotec. I have also tried to show that some of the prefixes encountered in the irregular 1p forms may be parallel to secondary aspect prefixes, while *do-* may be identical with the irregular 2s imperative of the verb 'to go'. The lack of published descriptive materials on Solteco makes it impossible to say whether the irregular 1p forms or parallel formations exist in that branch of Zapotec as well. It is also clear that

more descriptive information on the languages from every branch of Zapotec is needed before this pattern can be fully understood.

Notes

[1] I would like to thank Vyach. Vs. Ivanov for a discussion of verbal morphology, Pamela Munro for her valuable comments and suggestions, Thomas C. Smith Stark for sharing with me his analysis of the Chichicapan Zapotec verbs, Edward F. Tuttle for sharing with me his work on the origin of first-person plural verb forms in Italian, and also Rosemary Beam de Azcona, Craig Hilts, and Mark Sicoli for sharing with me their field data.

[2] The replacive consonants (most often *d*, more rarely *r* or *l*) appear as the initial segments of the completive stem of class D verbs. In the case of verbs that can be synchronically analyzed as vowel-initial, the replacive consonants are added before the initial vowel of the verb root. In the case of verbs that are synchronically analyzable as consonant-initial, the replacive consonants appear *instead of* the initial consonant of the verb root. The verb 'to eat' in Chichicapan Zapotec, whose synchronic root is *awu*, is an example of a vowel-initial class D verb, and the verb 'to play' in Zaniza Zapotec, whose non-completive synchronic root is *git*, is an example of a consonant-initial class D verb. The replacive consonants are given in each case in bold font:

The verb 'to eat' in Chichicapan Zapotec (Smith Stark 2001:40):
    habitual: r-awu
    potential: g-âwu
    completive: gu-**d**awu

The verb 'to play' in Zaniza Zapotec:
    habitual: *ri-git*
    potential: kit
    completive: u-**r**it

The class D verbs that are synchronically analyzed as consonant-initial probably go back to vowel-initial roots (Kaufman 1994:60ff).

[3] The sign '-' is used for morpheme boundaries, '=' for clitic boundaries, aux. means 'auxiliary', pot. 'potential', ven. 'venitive', incl 'inclusive', excl 'exclusive'.

[4] This version of the Zapotec genealogical tree is based on my study of the innovations in the system of personal pronouns (Operstein 2003).

[5] The connection between the perfective aspect and non-indicative moods is widely attested cross-linguistically. For example, in Yenisseyan languages the past perfect form coincides with the imperative; comparable facts have also been described for Akkadian, Hittite, and Vedic (cf. Ivanov 1981:31-32). Evidence of the Otomanguean languages other than Zapotec also seems to point to the basic unity of these two categories (cf. Robbins 1968:97 for Chinantec).

[6]Córdova's *la* seems to be cognate with Isthmus Zapotec *la*, Zoogocho *le*, Atepec *lí*, Yalálag *le*, and Yatzachi El Bajo *le/le'e*, all of which are used with the stem of the potential in the function of the 2p imperative. In Yatzachi El Bajo, however, this particle seems to have spread to the 1p imperative as well, which has resulted in the bi-morphemic prefix *ledo*, which is used interchangeably with *do-*. Córdova's *cola* corresponds to Mitla Zapotec *col*, San Pablo Güilá *gúl*, and San Lucas Quiaviní *ua'll*, which are also used with the potential as the 2p imperative. The second of these auxiliaries thus appears to be a specifically Central form, while the first is common to both Central and Northern Zapotec.

[7]"a term which is always preposed in order to command or exhort many".

[8]In Long and Cruz' (1999) dictionary of Zoogocho Zapotec there appears a prefix *do-* glossed as the 'prefix of the exhortative mood', but no examples of its use are provided.

[9]The variation in the root of this verb is not recorded in the dictionary of Mitla Zapotec. The verb 'to eat' appears in the body of the dictionary as *ajw* (the actual forms quoted are the 3s habitual *r-ajw=ni* and potential *g-au=ni*). The stem *dauu* of the 1p potential indicates that Mitla also has irregularly formed 1p forms (cf. the completive forms 3s *gu-dauh=ni* and 1p *bi=dáu=nú* cited in Briggs 1961:46).

[10]'Venitive' is one of the so-called secondary verbal aspects, which are mostly formed by prefixing the reduced forms of motion verbs to the lexical verb in one of its 'primary' aspect stems or, more rarely, directly to the root (see the discussion in Stubblefield and Miller de Stubblefield 1991:212ff, and in Butler 1980:36ff).

[11]The conjugation of the cognate verb in Guevea de Humboldt Zapotec shows that this pattern is Proto-Zapotec (Marks 1980:83):

r-iá=n 'I go'   r-ió=nó 'we go'
r-iá=y 'you go'
r-iá=mè 'he goes'

References

Black, Cheryl A. 2000. Quiegolani Zapotec Syntax. SIL International and University of Texas at Arlington.

Briggs, Elinor. 1961. Mitla Zapotec Grammar. Mexivo: Instituto Lingüístico de Verano and Centro de Investigaciones Antropológicas de México.

Butler, Inez M. 1980. Gramática zapoteca: Zapoteco de Yatzachi El Bajo. México, D.F.: Instituto Lingüístico de Verano.

Córdova, Juan de. 1987 [1578]. Arte del idioma zapoteco. México, D.F.: Ediciones Toledo.

Ivanov, Vyach. Vs. 1981. Slavjanskij, baltijskij i rannebalkanskij glagol: Indoevropejskie istoki. Moskva: Nauka.

Kaufman, Terrence. 1994. Proto-Zapotec reconstructions. Ms.

Long C., Rebecca, and Sofronio Cruz M. 1999. Diccionario zapoteco de San Bartolomé Zoogocho. Coyoacán, D.F.: Instituto Lingüístico de Verano.

López, Filemón L., and Ronaldo Newberg Y. 1990. La conjugación del verbo zapoteco. México, D.F.: Instituto Lingüístico de Verano.

López Cruz, Ausencia. 1997. Morfología verbal del zapoteco de San Pablo Güilá. M.A. thesis, I.N.A.H.

Marks, Donna. 1980. Morphophonemics of the Guevea de Humboldt Zapotec verb. SIL

Mexico Workpapers 4:43-84.

Marlett, Stephen A., and Velma B. Pickett. 1987. Syllable structure and aspect morphology of Isthmus Zapotec. International Journal of American Linguistics 53:398-422.

Munro, Pamela, and Felipe H. Lopez. 1999. Di'csyonaary X:tèe'n Dìi'zh Sah Sann Lu'uc. Vol. 1. Los Angeles: Chicano Studies Research Center Publications.

Operstein, Natalie. 2003. Personal pronouns in Zapotec and Zapotecan. International Journal of American Linguistics (to appear).

Robbins, Frank E. 1968. Quiotepec Chinantec Grammar. México: Museo Nacional de Antropología.

Smith-Stark, Thomas C. 2001. Las clases verbales del zapoteco de Chichicapan. Ms.

_____. 2000a. Structure and meaning in Juan de Córdova's sixteenth century Zapotec dictionary. Paper presented at the conference "La voz indígena de Oaxaca" / "The indigenous voice of Oaxaca", Los Angeles.

_____. 2000b. Primera persona plural. PDLMA handout.

Speck, Charles. 1984. The phonology of the Texmelucan Zapotec verb. International Journal of American Linguistics 50:139-65.

Stubblefield, Morris, and Carol Miller de Stubblefield. 1991. Diccionario zapoteco de Mitla, Oaxaca. México, D.F.: Instituto Lingüístico de Verano.

Tuttle, Edward F. 2001. La pragmatica contro il paradigma come fonti di asimmetrie strutturali e dialettalizzazione morfologica. La dialettologia oggi: Fra tradizione e nuove metodologie, ed. by Alberto Zamboni et al., 477-531. Pisa: Edizioni ETS.

The Changing Face of Field Linguistics: Mohave, the MOO and More

Susan D. Penfield
University of Arizona

Introduction:

Since its inception in the United States, linguistic field work has been marked by the use of one-on-one interviews between the linguist and his/her native language consultant. These exchanges typically involve a close working relationship in which the topic of discussion is some aspect of translation, transcription, data collection or linguistic inquiry centering on the generation of word lists, narrative and discussion about or in the language under investigation. When funding has allowed, the linguist will stay for an extended length of time in the community of the native speaker to complete any given linguistic project. Typically, however, the field work extends beyond the initial visit and evolves over time requiring a number of follow-up visits. This scenario has been common for linguists working with Native American languages every since the turn of the century and, although there have been advances in recording technology; the actual circumstances under which fieldwork takes place have changed little. Fieldwork is still typically interrupted by long periods between visits requiring the reestablishment of the working relationship as well as a readjustment and reassessment of the work in progress. This paper introduces the use of a particular computer-based instructional system, the MOO, combined with tape digitization and a sound-based WIMBA board as technologies offering an alternative to this long-standing approach to fieldwork and discusses their application to linguistic work currently underway with Mohave speakers living on the Colorado River Indian Tribes Reservation in Parker, Arizona.

The Community:

The Colorado River Indian Tribes Reservation (hereafter CRIT) is home to four culturally and linguistically different tribes: Mohave, Chemehuevi, Hopi and Navajo. The present discussion focuses on Mohave, a Yuman language, spoken by just 40 fully fluent speakers at CRIT (there are approximately 25 more fluent speakers at the Fort Mojave Reservation near Needles, California). Most of these speakers are at least age 70 or older. A number of efforts are currently underway aimed at both the preservation and revitalization of Mohave in this community. [1] Most previous work on the Mohave language was accomplished by Pamela Munro who completed a book, *Mojave Syntax*, and the dictionary, *A Mojave Dictionary* (with Judith Gray and Nellie Brown). The tribal members rely on these sources of language information consistently when working on all language projects.

Support for Mohave language work at CRIT has typically been through grants obtained by linguists. However, one new avenue of support has been provided through the

Bill and Melinda Gates Foundation. Three years ago, this foundation provided tribal libraries in Arizona and New Mexico with state-of-the-art computers. The CRIT library, under the direction of Mrs. Amelia Flores, received four new computers and began to train tribal members in their use. This made it possible to experiment with the application of the MOO and other technologies to work with Mohave already underway by the present author. Mohave was particularly adaptable to computer work because the orthography developed by Munro contains no diacritics, other than the glottal stop easily represented by the 'apostrophe' on any computer keyboard. MOOs, however, are capable of handling more complicated orthographies with some special keyboard programming as has been shown through the creation of German-based MOOs. [2]

The MOO as the controlling on-line environment:

Born out of the era of the 'Dungeons and Dragons' children's games of the 1980's, MOOs have gained in popularity within university settings for their educational potential. The acronym, MOO, stands for 'Multi-user domain, Object Oriented'. The MOO at the University of Arizona was configured in June of 1998 and piloted the use of the MOO for a number of classes at the university through 1999.[3] Thus began construction of what is called, 'OldPuebloMoo' which continues to be used extensively as a course work support primarily in the English department. (See the concluding segment of this paper for log on information). MOOs are ideally suited to distance education and out-of-class collaborations. Haynes and Holmevik write that , " MOOs reinvent the notion of education, and their users reconceive this space to accommodate radically different genres of discourse and pedagogies." (2001:4) This potential also attracts and challenges those who wish to apply the MOO to a research situation. However, MOOs have been used less frequently for specific research purposes, except to generate discussions among researchers (Bruckman 2001:19).

In 2000, the present author received a Faculty Small Grant allowing her to experiment with the use of the MOO as a support to research in the context of linguistic fieldwork. This project, which paired the author's on-going work with the Mohave language and the MOO, was successful and changed the way the author, who has had more than thirty years of fieldwork experience with the Mohave members of CRIT, now envisions the dynamics of linguistic fieldwork. Unlike other common types of educational technology support, such as 'Blackboard' or 'WebCT', the MOO offers users a split-screen format: one side is text-based and the other side is web-based. This format allows participants to 'chat' while viewing and/or working with objects placed in the web space. This feature is unique to the MOO and it is this fact that makes it so adaptable to linguistic fieldwork situations.

Please note that on the left side, when facing the MOO screen, the page is also divided. The top half provides information about who else is participating or is available in the MOO environment. The bottom box on the left side is the screen where discussion will appear in full text form. This box is devoted to a 'chat' function' allowing participants (and there can be many) to communicate in this synchronous environment. Participants can 'click' on the boxes in the right-hand corner of this screen to 'say' or to 'emote' or to give 'normal' instructions. (See Figure 1 below) The value of this to researchers is enhanced by the fact that these 'chat' transcripts can be recorded and saved for later viewing.
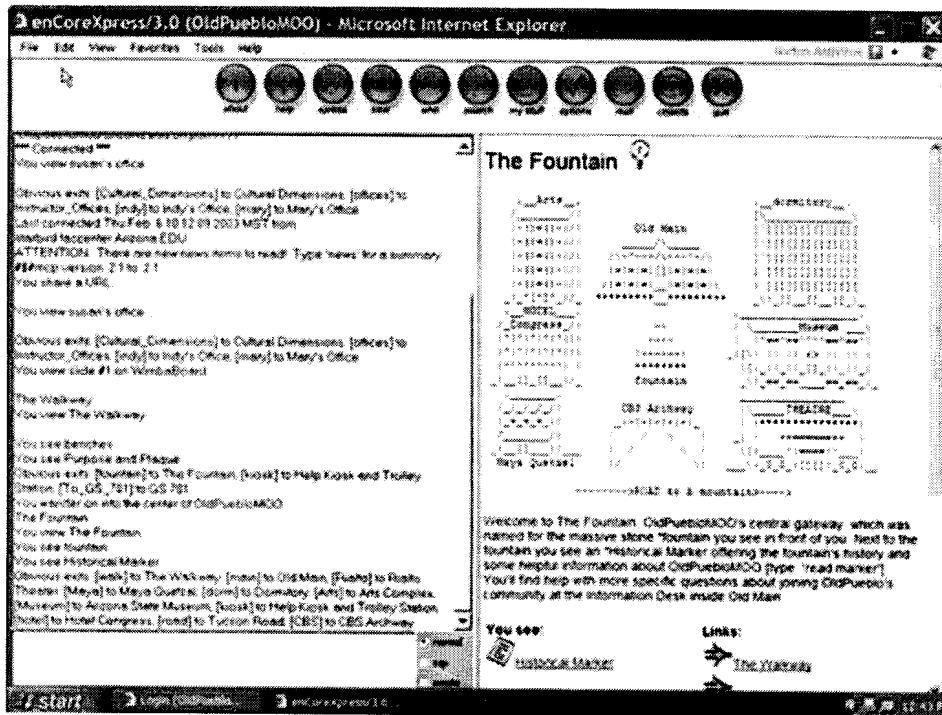
Figure 1: The main opening MOO page illustrates the architectural features on the facing right side and the divided left-side screen with specifications on top and 'chat' box below.
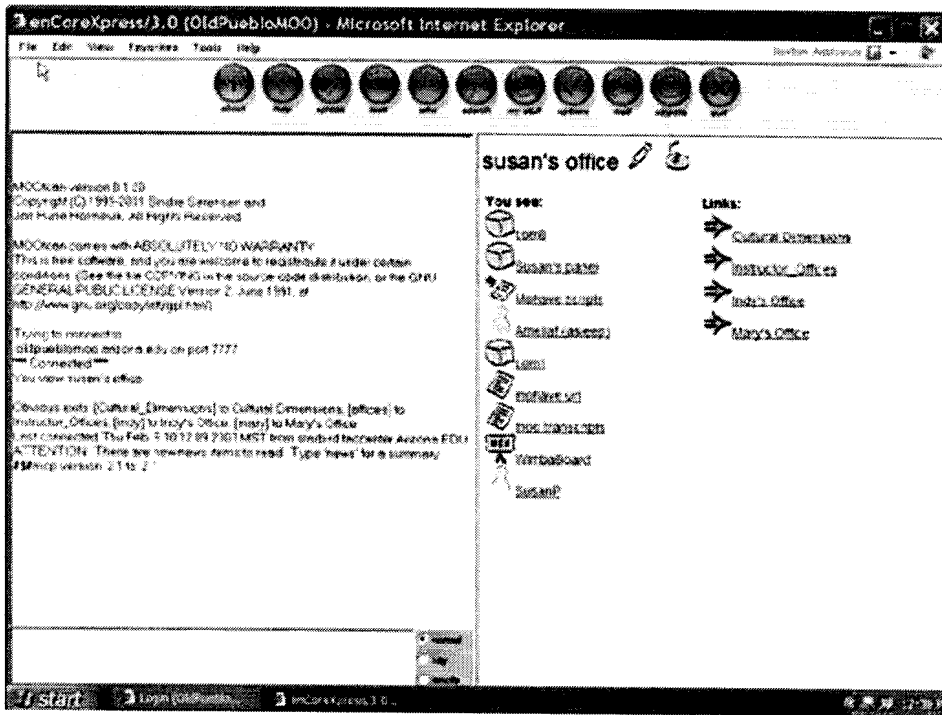
Figure 2: An image of the author's 'office space' on the MOO.

As seen in both figures above, the right side of the screen, facing the viewer, is entirely web-based and allows for the creation of 'objects'. It is considered an 'architectural' space where users can build objects, such as virtual classrooms, in and through which to conduct educational activities. When teaching courses at the university via the MOO, this space can be designated for student group work, instructor office space, posted lecture notes and activities and a myriad of other possibilities. (See 'links' in Figure 2 above).

The simple fact that the MOO makes it possible to display anything that is web-based on one side and then 'chat' about it on the other side of the screen is what attracted the author to experimenting with the MOO as a support for linguistic field work. Because the other technologies mentioned here, tape digitization and sound boards (WIMBA), could be accessed through the Internet, they fit well into the MOO's broader on-line environment.

Mohave and the MOO:

Between 1969 and 1970, the author began doing linguistic fieldwork with the Mohave members at CRIT. This work was funded by a grant from the Doris Duke Project for American Indian Oral History . As such, part of the author's work was to collect narrative samples of the native language, Mohave. The author collected three Mohave coyote stories while working with a respected elder, Emmet VanFleet. Although these were roughly translated and transcribed at the time, the author agreed with the speaker that they should not be used for research purposes until Mr. VanFleet passed away. Thus, the author did not return to this work until the mid- 1990's. At that time, she began formalizing a translation with the help of several elders. The translation process was long and slow. Because the author, like many linguists, was fully employed at the university, visits to the tribal community were short and infrequent. After completing a translation of one story in this way, when the author was funded in 1999-2000 to finish more of this process, she was ready to try supporting the work with the help of the MOO.

The MOO was used to support the translation of the second story in two ways: one, at a distance and two, while on site. Working with the MOO from a distance, the author was able to collaborate with Amelia Flores, CRIT library director, who has received training in basic computer skills such as email and Word and also with tribal elders, Larry Gates and Leona Little, who served as the consultants for the translation of the second story.

Using the MOO in combination with the digitized tape, while on-site in the tribal library, became the favored way of working on the translation with Mr. Gates or Mrs. Little. The chat function of the MOO itself wasn't required, but the web-page containing clips of the digitized tape was very useful. This web page (Figure 3, below, right side) contained digitized clips of the second coyote story. This was done by the author, segmenting the tape in conjunction with the speaker's marked pauses and with the help of a university technician. While working through a detailed translation, the elders and the author could play selected clips repeatedly, discussing meaning and form. This was a far superior way to work than the constant, imperfect rewinding of cassette tapes as previously done. It also made both parties more comfortable with this technology thus making continued distance work, using the same technology, familiar. [4]
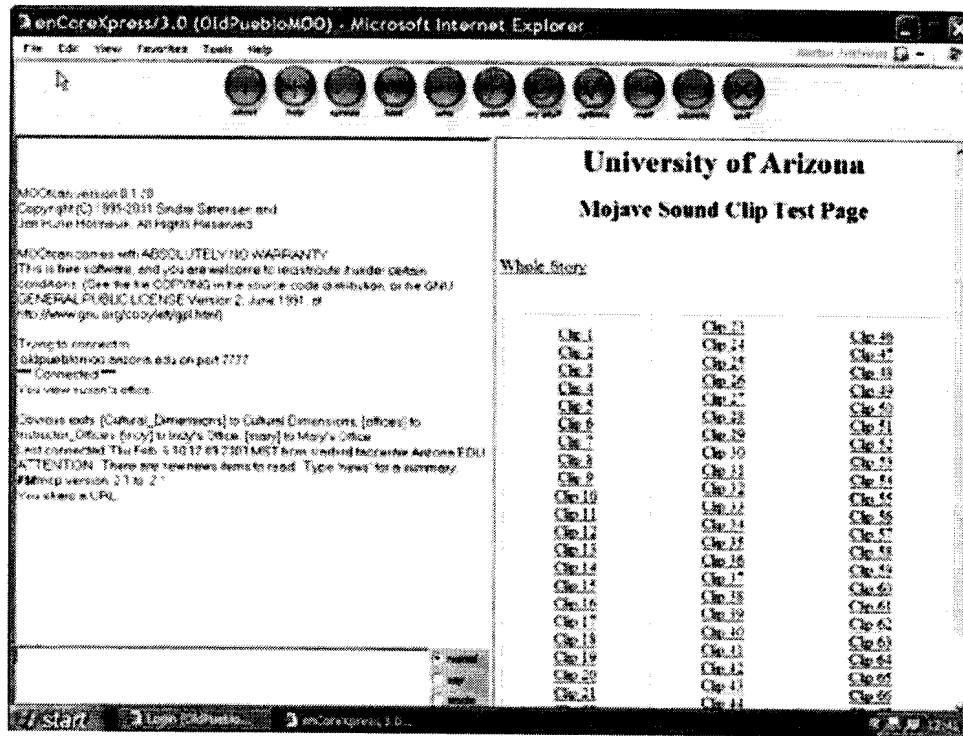
Figure 3: Digitized clips of the Mohave coyote story displayed on right side within the MOO.

When not on site, the author would call the tribal library and ask Ms. Flores and the elders to pick a time to 'meet on the MOO'. Initially, it was beneficial to stay in phone contact while at least logging on to the MOO and while becoming comfortable with the environment it creates. However, work within the MOO, because of the on-line chat, did not require phone contact at all. Once the time was set, and all parties were on-line, the long-distance linguistic field work could begin.

The advantage of working with both the elders and with Amelia Flores at the same time was that, in the process of determining how to write (transcribe) Mohave through the MOO chat function, Mrs. Flores, a semi-speaker of Mohave, began to acquire literacy in the language. And, in this case, the elders involved did not have basic computer skills, but still found the process "really interesting." [5] The elders, then, were serving as translators and language consultants; Mrs. Flores was the language technology expert and language learner. Mrs. Flores was trained in the use of the MOO during one on-site visit with the author and with Jean Kreis, MOO expert from the University of Arizona. Once familiarity of the MOO web page was established on site, it was possible for the author and Mr. Gates or Mrs. Little to continue their fieldwork collaboration from a distance with Mrs. Flores doing the actual computer work in the MOO. Even though separated by 250 miles, we could all 'click' on the same digitized segment, hear it at the same time, and then 'chat', in the MOO, about the best choices for translation and transcription. Another true advantage for the researcher using the MOO is that the chat function can be recorded and later reviewed. What follows

below is one sample of the MOO-chat which includes the author, whose comments appear as 'you say' and Amelia Flores. At the time of this discussion, both Larry Gates and Leona Little were present and involved in discussing with Mrs. Flores how to best translate the digitized clips.

> **Ameliaf** says, "the elders are ready to go"
> You say, "ok - I can do that! "
> You say, "Yep - try click #2 first, just the beginning - I have it in the last part as anya asentik, havik, hamok iyem-ta-ka ...but the beginning is still a little unclear."
> You say, "just write it the best you can"
> You say, "it takes awhile to buffer - and if the 'real player' gets in the way, you can just minimize it. "
> **Ameliaf** says, "ok"
> You say, "if you need more volume or to re-play it , you could use the real player recorder to help with that"
> You say, "Could you listen to it?"
> **Ameliaf** says, "english part is, he won't settle down,"
> **Ameliaf** says, "hadeak mut who vak means not settled down, can't keep still"
> You say, "Good - "
> **Ameliaf** says, "ahot'"
> You say, "oops - ahot!"
> You say, "That is great - hovaa-k must be the main verb"
> **Ameliaf** says, "larry says si"
> You say, "We got through clip #8 last time so let's review that one and then go forward. I will check it all with the elders when I come in person...

Advantages of Maintaining Fieldwork On-line:

The benefits of working with linguistic material, via the MOO with the incorporated other technological advances of tape digitization and the WIMBA sound board, are many and provided for the following advances:

- *The opportunity to establish more continuity in field work and data collection.* Typically, fieldwork sessions are interrupted, taking place over extended time periods. Each break means that the working relationship must be reestablished and the work done to date reviewed before new work can begin. By maintaining contact via the MOO between visits, this aspect of field work changes. The relationship between the participants and the work at hand is maintained over time and distance.
- *A way of bringing new technologies to the reservation community.* Many tribal communities are now being linked to the internet and tribal members are increasingly becoming

accustomed to computer technology. The potential for the various ways in which this technology can support endangered tribal languages is just beginning to be explored; the MOO, the use of digitized tapes and sound boards (such as WIMBA) are just a few of many possibilities. Figure 4 below shows the inclusion of a WIMBA voice board included in the MOO.
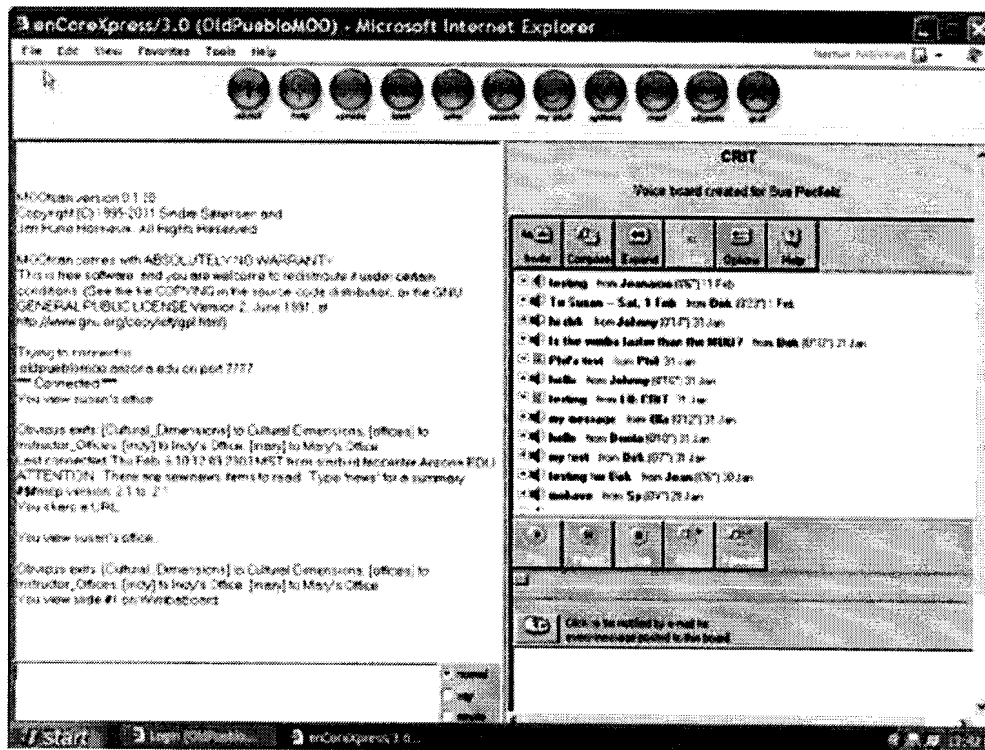
Figure 4. Shows the Wimba voice board on the 'web' side of the MOO screen

While the use of WIMBA boards was not part of the original work with the MOO at CRIT, it has been included in a recent trial (University of Arizona, January 31, 2003). A WIMBA-board was pulled into the web-based right side of a MOO page (See Figure 4 above). Participants, including linguist , Dr. Dirk Elzinga at Brigham Young University, and Johnny Hill, a fluent Chemehuevi speaker, were able to share a voice email exchange (using both English and Chemehuevi) and create a threaded conversation using WIMBA (asynchronous) while in the MOO(synchronous). Since WIMBA offers oral language exchanges and was developed as an on-line language laboratory, its use with Native American languages is very promising though currently under-explored. [6]

- *A significant opportunity for linguists in terms of language translation methods.* Even without the MOO, the use of a digitized tape mounted on a web-page was considerably more efficient. Being able to 'click' on a specific sample of sound and work with just that segment repeatedly was time saving and more exact.. The digitization of tapes can easily be done and is usually available with the help of any basic computer technician. The author sought support for this at the Learning Technology Center at the

University of Arizona which supports faculty in research endeavors. However, the advantage of working with digitized material inside the MOO environment is obvious given the ability to record the 'chat' about the tapes as seen in the sample above. This generates another source of discourse data and produces language about the language in question.

- *Increased literacy in the native language for the participants.* Hence, this may be a possible step toward language revitalization. Where literacy is a goal in revitalization, using a computer keyboard certainly draws attention to issues of literacy and is a useful tool and promotes literacy for those who participate in the MOO. Although MOOs have yet to incorporate the unique orthographies presented for some Native American languages, there is no doubt that they are easily adaptable. MOOs can also be password protected and licensed individually to communities themselves. This is a very attractive aspect which secures work done on the MOO and centralizes the MOO activity within a community if the participants wish to construct it that way.[7]

- *Another avenue for the preservation of highly endangered Native American languages.* Languages as highly endangered as Mohave must take advantage of any and all support available. Using the MOO made it possible to work with a digitized tape and to discuss the tapes contents on-line. In this case, the tape was the original which had been transferred from reel-t-reel to a cassette, not sound edited at all which would have improved the quality and can be easily done. The MOO also allowed the participants to record their conversation for later review—a feature attractive to researchers interested in discourse as well.

Availability of the MOOs and WIMBA:

MOOS, WIMBA and digitized tapes, in this case, have all worked together to enhance and extend linguistic field work. It is good to remember that each has unique features: The MOO, by itself, is entirely text-based and offers a synchronous environment for multi-person collaborations. WIMBA, in contrast, is asynchronous but offers audio potential as well as text support. Digitized tapes can be used independent of either of these or pulled into a MOO environment which just adds more potential for collaborative work.

The most important thing to note is that the technology behind both the MOO and WIMBA is free and available to all. Please note the following:

1. No downloads are required. The MOO is available through free web access and so are WIMBA boards (Both are currently licensed to the University of Arizona; contact information is listed below). Those who would like to experiment with the use of these technologies through the University of Arizona do *not* need to be affiliated with that institiution.

2. The log on URL is http://oldpueblomoo.arizona.edu. Anyone can log on as a 'guest' and explore the domain of the MOO. The computer must be enabled with Javascript. There are some limitations when logged-on as a 'guest'. The user may explore the basic MOO functions, but cannot begin to build projects or create

objects. Permissions from a programmer and 'wizard' (administrator) are required for more extensive use but are available. To explore the MOO at this higher level, contact Jean Kreis, Program Coordinator Senior,(jeank@u.arizona.edu) at the University of Arizona. Jean oversees the MOO license for The University of Arizona and was instrumental in making the connection which allowed for the Mohave/MOO project.

3. WIMBA information is available at www.WIMBA.com. For examples of WIMBA applications prepared by several linguists at the University of Arizona, please see http://www.ltc.arizona.edu/wimba. Included in this site is a sample of a Mohave lesson which was created in 'Front Page' and supported with audio by linking lessons to a WIMBA board. Interested parties may contact Garry Forger, Technology Coordinator, Learning Technologies Center at the University of Arizona, (gforger@u.arizona.edu) who has worked with a number of linguists currently experimenting with this technology.

Final Comment:

The changing face of field linguistics has been brought about the advent of comprehensive technology applied in support of specific fieldwork projects. As shown in this paper, the use of the MOO as the controlling on-line environment clearly has many advantages for fieldwork. First, the split-screen allows for anything web-based to be viewed and discussed. Both the digitized tape and the WIMBA board serve useful purposes on their own but their use is enhanced by being placed in the MOO's collaborative, communicative environment. Today's field linguists have expanding opportunities to explore ways to reduce the time and space which often disrupt the relationship between themselves and the communities they serve. The technologies discussed here are just a few of many possibilities. On-line environments, like the MOO, beg for more exploration by field linguists. As Native American communities move into the technology age with great rapidity, collaborating linguists need to be creative and ready in their ability to adapt their work to the changing circumstances of fieldwork.

Notes

1. While this paper focuses on the work done by the author with Mohave, it is important to note that Chemehuevi is the most seriously endangered language in this community. A survey done in 2001 indicated that there were fewer than 15 fully fluent speakers in the CRIT community; since then, at least three more have passed away.
2. For a comprehensive list of MOOs which have been established in educational settings see the appendices for both books by Cynthia Haynes and Jan Rune Holmevik listed below: *High Wired* and *The MOOniversity.*
3. Additional grant funding in 1999 allowed for the upgrading of OldPuebloMoo's core to include html ability.
4. Although the tape was digitized and mounted into a web page with its own URL, it

is not available for public viewing and use at the request of the tribal elders. The author has created a special file for this web site which effectively 'buries' it on the web.

5. When asked how they liked working on the MOO, both elders replied, "really interesting", "fun", "different" any number of times. It was clear that they enjoyed being part of this experimental work. Sadly, Mrs. Leona Little passed away suddenly during the time this project was in progress. She was a remarkable individual, fully fluent in Mohave and the first person the author knew to develop true literacy in the language.

6. WIMBA is a French acronym of unknown meaning. Since WIMBA was conceived of as an on-line language lab, it holds promise for anyone interested in language instruction. However, those working at the University of Arizona have found some problems with the recording system on WIMBA and are currently exploring other similar sound-based web programs which support language instruction.

7. One reason to experiment with Mohave in the MOO was the fact that the working orthography for Mohave, developed by Pamela Munro, contains no unusual diacritics and is represented completely by a Romanized script. This is also true for the newly developed Chemehuevi orthography. Minor programming would be required for either the keyboard or the actual MOO structure to adapt languages written with more complicated orthographies.

References

Bruckman, Amy. 2001. "Finding One's Own in Cyberspace". *High Wired: On the design, use, and theory of educational MOOs*. Ed. By Cynthia Haynes and Jan Rune Holmevik, 1-12. Ann Arbor: University of Michigan Press

Haynes, Cynthia and Holmevik, Jan R. 2001. "From the Faraway Nearby" (Introduction). *High Wired: On the design, use, and theory of educational MOOs*. Ed. By Cynthia Haynes and Jan Rune Holmevik, 1-12. Ann Arbor: University of Michigan Press.

Haynes, Cynthia and Holmevik, Jan R. 2000. *Thye MOOniversity: A Student's Guide to Online Learning Environments*. Needham Heights, MA: Allyn and Bacon.

Mountford, Roxanne. 1998. "New Learning Environments and Teaching Technologies Grant. http://www.u.arizona.edu/~roxanne/MOOGrant2.html.

Munro, Pamela. 1976. *Mojave Syntax*. Garland Studies in American Indian Linguistics. New York: Garland Publishing.

Munro, Pamela , Judith Gray and Nellie Brown. 1992. *A Mojave Dictionary*. Department of Linguistics, University of California, Los Angeles.

The prefix *u-* in Kariri (with some Macro-Jê notes)[1]

Eduardo Rivail Ribeiro
(University of Chicago and Museu Antropológico/UFG, Brazil)

1. Introduction. Kariri (or Kiriri) was once spoken in northeastern Brazil, in what are today the states of Bahia, Sergipe, and Alagoas. Two of its dialects were fairly well-documented by 17th century missionaries—Kipeá (Mamiani 1877[1699], 1942[1698]), on which this paper is based, and Dzubukuá (Nantes 1896[1709]). Other dialects (Sabujá, Pedra Branca) are only known through short wordlists (Martius 1867: 215-219).[2] The language was still spoken until at least the first half of the 20th century. There are nowadays around four-thousand ethnic Kariri (including Kiriri, Kariri-Xokó, and Xukurú-Kariri), who are, however, Portuguese monolinguals (Instituto Socioambiental 2000: 535-538). Until very recently some members of the tribe still remembered isolated everyday words from their original language (Bandeira 1972, Meader 1978) and, in some communities, isolated words of the Kariri language are still preserved in traditional religious ceremonies.

Kariri has been included in the Macro-Jê stock (Rodrigues 1986, 1999), although in rather hypothetical terms. However, in spite of the lack of comprehensive lexical comparison to date, recent studies have shown very suggestive cases of grammatical affinities between Kariri and other Macro-Jê languages. One of them, first mentioned by Rodrigues (1992a:386), is the existence, in Jê, Maxakalí, Boróro, and Kariri, of an apparently cognate morpheme marking alienable possession. In most languages, this morpheme is an independent noun which can be translated as 'thing', while in Kariri it developed into a prefix. The probable cognates are õ, in Northern Jê (Panará, Kayapó, Timbira, etc.), *yõŋ ~ ʔõŋ ~ ʔõ* in Maxakalí, *o* in Boróro, and *u-* in Kariri.

However, the evidence for the existence of this morpheme in Kariri then provided was quite speculative. The main purpose of the present work is to provide further support for the existence of the marker of alienable possession in Kariri, taking into consideration a number of pieces of evidence which were not mentioned in previous works. As I intend to suggest in this paper, a more careful look at the Kariri data reveals rather remarkable similarities with other languages of the Macro-Jê stock, for which a more likely explanation would reside in common genetic inheritance, rather than areal diffusion or coincidence.

2. A few remarks on Kariri morphosyntax. Kariri is typologically unusual among the Macro-Jê languages (most of which are consistently SOV) in that it is verb-initial, with prepositions instead of postpositions, and possessed-possessor order in genitive constructions (1). However, there is evidence that Kariri underwent a process of *typological rearrangement*. This is clearly suggested by the 'ambiguous' behavior of adpositions, genitive constructions, and compounds.

Kipeá (Mamiani 1877: 62)

(1)   *Wi-cri*   *Pero   mo*   *s-era*   *Paulo.*
      go-PAST   Pedro   LOC   3-house   Paulo
      'Pedro went to Paulo's house.'

Adpositions precede nominal objects (2b), but follow pronominal ones (2a). Possessed nouns precede their nominal possessors (3a), but are preceded by pronominal possessors (3b-c; also see Table 1).

(2)   **Kipeá** (Mamiani 1942: 171, 38)
       a.   *hi-dzene*   b.   *i-dzene*   *nhewo*
             1-EVIT   3-EVIT   devil
             'against me'   'against the devil'

(3)   **Kipeá** (Mamiani 1877: 63; 1942: 29)
       a.   *s-era*   *Paulo*   b.   *d-era*   b.   *k-era*
             3-house   Paulo   3.COR-house   1PL-house
             'Paulo's house'   'his own house'   'our house'

In addition, relics of an older SOV pattern can still be found in compounds. Mamiani (1877: 51-2) describes two kinds of compounding in Kipeá, *composição inversa* 'inverse compounding' (4) and *composição direita* 'direct compounding' (5). The former (true morphological compounding, a likely retention) follows the order possessor-possessed, whereas the latter (syntactic juxtaposition, a likely innovation) follows the order possessed-possessor:

(4)   a.   *i-po-cu*   b.   *byri-baya*   c.   *boro-po*
             3-eye-liquid   foot-nail   arm-eye
             'tears'   'toe nail'   'elbow'

(5)   a.   *i-de-hi-nu*   b.   *i-de-e-nu*   c.   *i-de-i-nu*
             3-mother-1-child   3-mother-2-child   3-mother-3-child
             'my wife'   'your wife'   'his wife'

2.1 Person marking. Nouns, verbs, and adpositions share essentially the same inflectional properties, which seem to be limited to person marking. The same sets of pronominal bound forms mark the possessor, with nouns, and the absolutive argument, with verbs, in addition to adpositional objects. Mamiani (1877) distributes all nominal, adpositional, and verbal stems into five different 'declensions' (Table 1), according to differences in person marking. Mamiani's 5th declension will be of special interest for the present discussion, since stems formed with the prefix *u-* will belong to it.

Table 1. Mamiani's declensions (the morphological segmentation follows Rodrigues 1994)

person	1st declension	2nd declension	3rd declension	4th declension	5th declension
	padzu 'father'	*ambe* 'payment'	*ebaya* 'nail'	*bate* 'dwelling'	*ubyro* 'belly'
1st.	*hi-padzu*	*hi-ambe*	*hi-dz-ebaya*	*hi-bate*	*dz-ubyro*
2nd	*e-padzu*	*e-y-ambe*	*e-dz-ebaya*	*e-bate*	*a-byro*
3rd	*i-padzu*	*s-ambe*	*s-ebaya*	*si-bate*	*s-ubyro*
1PL.INCL	*ku-padzu-a*	*k-ambe, k-ambe-a*	*k-ebaya*	*ku-bate-a*	*k-ubyro-a*
3.COR	*di-padzu*	*d-ambe*	*d-ebaya*	*di-bate*	*d-ubyro*

As shown in Table 1, while stems belonging to the 1st declension—which is by far the most robust lexical class—take the 3rd person marker *i-*, 2nd, 3rd, and 5th declension

stems take the prefix *s-*. This allomorphy cannot be stated in phonological terms, since 1st declension stems also occur with vowel-initial stems. Such morphological idiosyncrasy finds parallels in several other Macro-Jê families (Karajá, Boróro, Jê, and Ofayé), where a vocalic 3rd person prefix (corresponding to Karirí *i-*) is in complementary distribution with a consonantal one (in general an alveolar consonant, corresponding to Karirí *s-*): Karajá *d-ɛra* 'his forearm', *i-wa* 'his foot'; Panará *s-akoa* 'his hand', *ĩ-tɛ* 'his leg'; etc. (Ribeiro 2002, Rodrigues 1994). In all the languages discussed below (except Maxakalí, where the distinction between the two lexical classes was lost), the 'marker of alienable possession' will belong to the class which takes the consonantal prefix—a 'shared aberrancy' which further supports the hypothesis of genetic relationship among the languages considered in this paper.

2.2 Classifiers. Karirí makes extensive use of classifiers (Mamiani 1877: 59-61, Rodrigues 1997). Besides the existence of twelve possessive classifiers (Table 2),[3] whose use is illustrated in the examples (6a) and (6b) below, there are also twelve classifying prefixes (Table 3), which occur with quantifying words (7) and adjectives of consistency, shape, and color:

(6)   **Kipeá** (Mamiani 1877: 61)

    a.   *dz-upodo*   *do*   *sabuca*   b.   *dz-uba do*   *sabuca*
        1-roasted   INSTR   chicken   1-gift INSTR chicken
        'my roasted chicken'   'my chicken (received as a gift)'

(7)   **Kipeá** (Mamiani 1942: 58)

    coto   *hietçã* *do*   **bu-bihe**   *i-bu*   *masikí*
    steal   I   INSTR CLAS-one   3-ear corn

    do   **bu-bihe**   *erumu*   *boho*
    INSTR CLAS-one   pumpkin   or
    'I stole an ear of corn, or a pumpkin.'

Table 2. Possessive classifiers in Karirí (Mamiani 1877: 59-61; Rodrigues 1997: 72-74)[4]

enki	'domestic animals'
uapru	'gathered (non-cultivated) food'
ude	'cooked food'
upodo	'roasted food'
udje	'produce (except manioc)'[5]
uanhi	'manioc'
ubo	'fruits (gathered unripe)'
uito	'things that have been found'
u-boronunu	'war booty'
ukisi	'things received in share'
uba	'gifts from outsiders'
e	'things one has carried'

Table 3. Classifying prefixes (Mamiani 1877: 53; Rodrigues 1997: 69-72)

be-	'hills, dishes, stools, foreheads, etc.'
cro-	'birds, stones, stars, and round objects (such as beads, fruits, eyes, etc.)'

cru-	'liquids and rivers'
epru-	'clusters and bunches'
he-	'sticks, legs, and wooden objects'
ho-, hoi-	'ropes, vines, threads, snakes'
ya-	'iron objects, bones, and pointed things'
mu-, mui-	'edible roots'
nu-	'holes, wells, mouths, fields, valleys, fenced spaces'
ro-	'clothes, fabric, and furs'
woro-	'ways, conversations, speeches, stories'
bu-	'houses, arrows, containers, corn-cobs, and living beings but birds' [also the generic classifier]

2.3 Ergativity. Kariri is an ergative language (Mamiani 1877; Larsen 1984). Nominal absolutive NPs follow immediately the verb and are not morphologically marked, while nominal ergative arguments are marked by the preposition *no* (8):

(8)   **Kipeá** (Mamiani 1877: 63)

   Pa-cri   *Paulo   no*   *Nhiho   mo*   *d-era.*
   kill-PAST   Paulo   ERG   Indian   LOC   3.COR-house
   'The Indians killed Paulo in his own house.'

Pronominal absolutive arguments can be expressed by a series of independent pronouns or by a series of bound morphemes attached to the verb (the same series listed in Table 1 above). Pronominal ergative arguments are marked by the adposition *na*,[6] which also takes the same series of bound morphemes listed in Table 1 above.

(9)   **Kipeá**   (Mamiani 1942: 164)

   a.   *Waicutçu*   *ewatçã hi-nha   mo*   *i-dze*   *Padzu...*
        baptize   you   1-ERG LOC   3-name   father
        'I baptize you in the name of the Father...'

   b.   *A-ca   do*   *e-waicutçu*   *hi-nha   mo*   *yebedzu*   *Tupã?*
        2-want INSTR? 2-baptize   1-ERG LOC   water   God
        'Do you want me to baptize you?'

3. A Macro-Jê marker of alienable possession. One of the few morphological pieces of evidence for the genetic relationship among some of the languages of the Macro-Jê stock, pointed out by Rodrigues (1992: 386), is the existence, in Jê, Maxakalí, Boróro, and Kariri, of an apparently cognate morpheme marking alienable possession—a generic noun which can generally be translated as 'thing'. The probable cognates are *õ*, in Northern Jê (Panará, Kayapó, Timbira, etc.), *yõŋ ~ ʔõŋ ~ ʔõ* in Maxakalí, *o* in Boróro, and *u-* in Kariri. The use of this morpheme is illustrated by the examples below, from Panará and Parkatêjê (Northern Jê) and Boróro:

   Panará (Dourado 2002: 97)
(10)   a.   *mara   y-õ*   *koa*   b.   *s-õ   koa*
            he   REL-POS   house   3-POS   house
            'his house'   'his (own) house'

Parkatêjê (Ferreira 2001: 150)

(11) a.   *Piare j-õ*   *hêti*   b.   *h-õ*   *hêti*
               Piare REL-**thing** spider   3-**thing** spider
               'Piare's spider'   'his spider'

Boróro (Crowell 1977: 178)

(12) a.   *i-n-o*   *tori*   b.   *∅-o*   *tori*
               1-REL-POS rock   3-POS   rock
               'my rock'   'his rock'

3.1 The marker of alienable possession in Karirí. The evidence then presented by Rodrigues for the existence of the 'marker of alienable possession' in Karirí was, however, much less compelling than the one shown for the other languages. As we have seen, there are twelve possessive classifiers in Karirí (Table 2). Since the great majority of these classifiers begin with *u-*, Rodrigues (1992) suggests that this *u-* would be a fossilized prefix cognate with Jê *õ*, "to which other, more specific morphemes were added."

Although this hypothesis was not further examined by Rodrigues, the occurrence of a segmentable *u-* seems to be obvious in the case of the classifier stem for 'war booty', whose basic form is *boronunu* (Mamiani 1877:22); when preceded by a pronominal possessor, this stem requires the prefix *u-*: *dz-u-boronunu do ro* 'my clothes, which were obtained as war booty' (Mamiani 1877:60). As for the other possessive classifiers, Rodrigues's hypothesis still needs to be investigated upon the examination of the remaining Karirí corpus.

However, a more careful look at the data reveals that the distribution of the prefix *u-* in Karirí is much wider and straightforward than initially suggested by Rodrigues.[7] Thus, as described by Mamiani (1877: 25), some stems—such as *su* 'fire'—require the use of a prefix *u-* "when one wants to declare the possessor":

> "A esta [quinta] declinação se reduz o nome *Isù*, fogo ou lenha, que usando-se ordinariamente pela primeira Declinação, quando se quer declarar o possessor da lenha, se usa por esta quinta Declinação, & então perde o I natural na composição com os artigos: v. g. *Dzusù*, minha lenha; *Asù*, tua lenha; *Susù*, sua lenha. E do mesmo modo se declina algum nome semelhante, que a praxe ensinará melhor." [Mamiani 1877, 25]

The morphological behavior of this stem in Karirí is strikingly similar to what happens in Panará, for example. In this language, the citation form of the stem 'fire' is *isí* (Dourado 2001). The *i-* is dropped, however, when the stem is preceded by a possessor. As in Karirí, this stem cannot be directly possessed, requiring the possessive morpheme *õ*. Given the rather uncertain nature of the genetic relationship between the Karirí and Jê families so far, it is quite interesting to find such a remarkable morphosyntactic parallelism, involving affixes and stems which are in all likelihood cognates (compare 13b and 14b).

Panará (Northern Jê; Luciana Dourado, personal communication)

(13) a.   *nãsow*   *y-õ*   *sí*   b.   *s-õ*   *sí*
               vulture   REL-POS fire   3-POS fire
               'the vulture's fire'   'his fire'

Kipeá (Mamiani 1942: 157; 1877: 25)

(14)   a.   *s-u-su*   *nhewo*   b.   *s-u-su*
            3-POS-fire   devil   3-POS-fire
            'the devil's fire'   'his fire'

As we have seen, stems formed with the prefix *u-* belong to Mamiani's 5th declension (Table 1). Besides comprising "all nouns [and verbs] beginning with *u-*" (Mamiani 1877:22-25), this declension includes a number of nouns beginning with other vowels and consonants, including a number of lexemes denoting items of material culture (*buicu* 'arrow', *warandzi* 'medicine', *seridze* 'bow', *eru* 'shredder', etc.). As occurs with *boronunu* and *i-su*, such nouns, listed in the Appendix, will require the prefix *u-* when occurring with a possessor. Furthermore, the prefix *u-* also occurs with loanwords borrowed into Kariri, such as *tayu* 'money' (15), *tasi* 'hoe', *wiraparará* 'sugar cane mill', and *awi* 'needle', from Tupinambá, and *bara* 'basket' and *setu* 'basket', probably from Portuguese *balaio* and *cesto*. This strongly suggests that this prefix was still productive at the time the language was documented.[8]

Kipeá (Mamiani 1877: 100; 1942: 186)

(15)   a.   *I-coto*   *gora   do   tayu   hi-dio-ho.*
            3-steal   Negro INSTR money   1-DAT-EMPH
            'The Negro robbed me of my money."

       b.   *E-coto*   *cune   do   s-u-tayu-a.*
            2-steal   by.the.way   INSTR   3-POS-money-PL
            'Did you, by the way, steal someone else's money?'

3.2 Relative constructions and the 'antipassive' prefix u-. In Kariri—which, as we have seen, is an ergative language—, relative constructions referring to the absolutive argument of a verb can be created by adding the 3rd person co-referential prefix *di-* and the 'nominalizer' suffix *–ri* to the verb stem (16a). In addition, a relative construction referring to the agent of a transitive verb (that is, the ergative argument) can be created by adding the prefix *u-* to the verb stem (16b):[9]

(16)   **Kipeá** (Mamiani 1877: 83)
       a.   *udza   di-di-ri*   *no   ware*
            knife   3.COR-give-RELVZ   ERG   priest
            'the knife that was given by the priest'

       b.   *ware   d-u-di-ri*   *udza*
            priest   3.COR-ANTI?-give-RELVZ   knife
            'the priest who gave the knife'

Thus, the prefix *u-* in such constructions plays one of the roles commonly associated with *antipassive* markers, permitting the occurrence of the ergative argument as the head of a relative construction. Constructions such as *d-u-di-ri* above belong to Mamiani's 5th declension (exactly as the nouns prefixed with the alienable possession

marker *u-* shown above; see also Table 1), and it is likely that this 'antipassive' prefix in Kariri is indeed cognate with the marker of alienable possession. As I suggest elsewhere (Ribeiro 2002a), 'markers of alienable possession' are similar to devices which signal changes in the grammatical relations between a verb and its arguments—antipassive markers, for example, as well as applicatives. The use of the prefix *u-* with both nouns and relative constructions could be particular instances of its general use as a grammatical-relation changing morpheme.[10]

4. An etimological exercise: 'fire' in Macro-Jê.

The word for 'fire' was reconstructed by Davis (1966:21) as **kuzɨ*, for Proto-Jê. However, based on the Panará form *i-sɨ*, I suggest that Davis's reconstructed form actually includes two morphological elements: a morpheme **ku*, whose precise meaning remains to be determined, and the stem **zɨ* 'fire'. This hypothesis is further supported by Kariri *i-su* and Rikbaktsá *izo*. The formative **ku* became fossilized in most Jê languages, but the Panará data suggest that the stem **zɨ* was still an independent morphological entity in Proto-Jê. This morpheme **ku-* may have been another 3rd person marker, which would occur in complementary distribution with the ancestor of the Jê prefix *i-* (cognate of Karajá *i-*, Ofayé *ə-*, Rikbaktsá *i-*, Kariri *i-*, etc.).[11] The existence of a 3rd person marker *ku-*, less productive than *i-*, is described for several Northern Jê languages, including Apãniekrá (Castro 2002), Apinajé and Parkatêjê.[12]

As we have seen, in both Panará and Kariri, the stem for 'fire' occurs with the prefix *i-* in the citation form, and it is rather clear that, in these languages, such initial *i-* is a morpheme synchronically analyzable. The occurrence of the stem for 'fire' with an initial vowel which happens to 'coincide' in shape with a 3rd person marker can also be seen in Ofayé (*ə/ʃəw* 'fire', *ə-* '3rd person') and Rikbaktsá (*izo* 'fire', *i-* '3rd person), although in these languages it is not as clear whether such initial vowel is a synchronically analyzable morpheme.[13] Thus, the use of the morpheme **ku* with the stem for 'fire' in most Jê languages (Parkatêjê *kuhɨ*, Suyá *kusɨ*, etc.) would be an innovation. Panará is apparently the only member of the Jê family to preserve the more conservative pattern still found in Kariri, Rikbaktsá, and Ofayé.[14]

Table 4. 'Fire' in several Macro-Jê languages

Ofayé		ə-*ʃəw*
Kariri		i-*su*
Maxakalí		kɨ*cap*
Rikbaktsá		i*zo*
Karajá		hɛkɔ*dɨ*
Jê[15]	Panará	i-*sɨ*
	Suyá	ku*sɨ*
	Apinajé	kuv*ɨ*
	Parkatêjê	ku*hɨ*
	Davis's Proto-Jê	*(ku-)*zɨ*

Thus, the data discussed above suggest that, in Proto-Macro-Jê, the stem for 'fire' would have been monosyllabic, as can still be clearly seen in Panará (*sɨ*) and Kariri (*su*). Although a comprehensive lexical comparison among the languages which are supposed to be part of the Macro-Jê stock is yet to be conducted, the few lexical correspondences

found so far seem to corroborate the correspondences for the initial consonant of this stem in the several languages: the initial phoneme would have been an alveolar consonant whose reflexes are Kariri *s*, Karajá *d*, Maxakalí *c*, Ofayé *f*, Rikbaktsá *z*, and Proto-Jê **z*—*h* in Parkatêjê, zero in Apinajé, *s* in Panará, *ð* in Xokléng, and so on. For example, the correspondence between Proto-Jê **z* and Kariri *s* (as well as Karajá *d*) is further illustrated by the consonantal third-person prefix mentioned above (see Section 2.1): Kariri *s-*, Karajá *d-*, Parkatêjê *h-*, Xokléng *ð-*, Apinajé *∅-*, Panará *s-*, etc. (Ribeiro 2002).[16]

The correspondences for the vowel, however, seem to be at first less straightforward: although this vowel is generally a central one (*i* in Karajá and Jê, *a* in Ofayé, and *a* in Maxakalí), it is a round one in Kariri and Rikbaktsá. The Maxakalí and Ofayé data, however, provide a plausible explanation for this 'puzzle': the vowel was probably followed by a labial consonant, such as Maxakalí *p* or Ofayé *w*. This consonant would have disappeared in Jê, Karajá, Rikbaktsá, and Kariri, but with very different results: in Karajá and Jê, the final consonant was dropped without leaving any trace, while in Kariri and Rikbaktsá the consonant would have triggered assimilation in [or would have coalesced with] the previous vowel before disappearing.

5. Final remarks. As Rodrigues acknowledges (1999a: 165), the very existence of Macro-Jê as a genetic unit is still "a working hypothesis". However, this may be a result of the scarcity of studies of the individual families that are thought to be part of the Macro-Jê stock, rather than an inherent weakness of the hypothesis. Fortunately, this situation tends to steadily improve as the descriptions of the languages that likely belong to the Macro-Jê stock are improved. As this paper attempts to show, comprehensive studies of the Macro-Jê languages may reveal a great deal of additional evidence for their genetic relationship—even in cases such as Kariri, an extinct language with rather limited documentation.

References:

Adam, Lucien. 1897. *Matériaux pour Servir a l'Établissement d'une Grammaire Comparée des Dialects de la Famille Kariri*. Bibliothèque Linguistique Américaine, Tome XX. Paris: J. Maisonneuve.

Alves, Flávia de Castro. 2002. Aspectos da ergatividade cindida em Apãniekrá (Jê). In Santos, Ludoviko & Pontes, Ismael (editors), *Línguas Jê: Estudos Vários*, 83-93. Londrina: Editora UEL.

Azevedo, Gilda Maria Corrêa de. 1965. Língua Kiriri: descrição do dialeto Kipeá. Master's thesis. Brasília: Universidade de Brasília.

Bandeira, Maria de Lourdes. 1972. *Os Kariris de Mirandela: Um Grupo Indígena Integrado*. Estudos Baianos 6. Salvador: Universidade Federal da Bahia.

Boswood, Joan. 1973. *Evidências para a Inclusão do Aripaktsá no Filo Macro-Jê*. Arquivo Lingüístico, 171. Brasília: SIL.

Davis, Irvine. 1966. Comparative Jê phonology. In *Estudos Lingüísticos: Revista Brasileira de Lingüística Teórica e Aplicada*, 1:2.10-24.

Dourado, Luciana Gonçalves. 2001. Aspectos morfossintáticos da língua Panará (Jê). PhD dissertation. Campinas: Unicamp.

Instituto Socioambiental. 2000. *Povos Indígenas no Brasil 1996/2000*. São Paulo.

Larsen, Thomas. 1984. Case marking and subjecthood in Kipeá Kirirí. *BLS* 10:189-205.

Mamiani, Luiz Vincencio. 1877 [1699]. *Arte de Grammatica da Lingua Brasilica da Naçam Kiriri*. 2nd edition. Rio de Janeiro: Bibliotheca Nacional.

Mamiani, Luiz Vincencio. 1942 [1698]. *Catecismo da Doutrina Christãa na Lingua Brasilica da Nação Kiriri*. Lisboa. (Facsimile edition, Rio de Janeiro: Biblioteca Nacional).

von Martius, Carl Friedrich. 1867. *Beiträge zur Sprachenkunde Amerika's zumal Brasiliens*, vol. II: Wörtersammlung brasilianischer Sprachen. Leipzig: Friedrich Fleisher.

Meader, Robert E. 1978. Índios do Nordeste: Levantamento sobre os Remanescentes Tribais do Nordeste Brasileiro. Brasília: SIL.

Nantes, Bernardo de. 1896 [1709]. *Katecismo Indico da Lingua Kariris*. Lisboa. (Facsimile edition published by Julio Platzmann, Leipzig).

Pereira, Deuscreide G. 1992. Alguns aspectos gramaticais da língua Maxakalí. MA thesis. Belo Horizonte: Universidade Federal de Minas Gerais.

Ribeiro, Eduardo Rivail. 2001. Valence, voice, and noun incorporation in Karajá. To appear in *Proceedings of BLS 27*. Berkeley: University of California.

Ribeiro, Eduardo Rivail. 2002. Relational prefixes and the 'Macro-Jê hypothesis.' Paper presented at the 7th *Workshop on Structure and Constituency in the Languages of the Americas*. University of Alberta at Edmonton, Canada.

Ribeiro, Eduardo Rivail. 2002a. O marcador de posse alienável em Karirí: um morfema Macro-Jê revisitado. *LIAMES* 2.31-48.

Rodrigues, Aryon. 1942. O artigo definido e os numerais na língua Kirirí. Vocabulário Português-Kirirí e Kirirí-Português. *Arquivos do Museu Paranaense* 2.179-211.

Rodrigues, Aryon. 1948. Notas sôbre o sistema de parentesco dos índios Kiriri. *Revista do Museu Paulista* (Nova Série) 2:193-205.

Rodrigues, Aryon. 1992. Um marcador Macro-Jê de posse alienável. *Anais da 44ª Reunião Anual da SBPC*, p. 386. São Paulo: SBPC.

Rodrigues, Aryon. 1994. Grammatical affinities among Tupí, Karíb, and Macro-Jê. Unpublished manuscript. Universidade de Brasília.

Rodrigues, Aryon. 1997. Nominal classification in Karirí. *Opción* 22.65-79.

Rodrigues, Aryon. 1999. Macro-Jê. In Aikhenvald & Dixon (editors), *The Amazonian Languages*. Cambridge: Cambridge University Press.

Seki, Lucy. 2002. O Krenak (Botocudo/Borum) e as línguas Jê. In Santos, Ludoviko & Pontes, Ismael (editors), *Línguas Jê: Estudos Vários*, 15-40. Londrina: Editora UEL.

Wiesemann, Ursula. 1971. *Dicionário Kaingáng-Português/Português-Kaingáng*. Brasília: SIL.

Appendix. Some stems that take the prefix u- (apud Mamiani 1877: 22-25)[17]

Kariri	Mamiani's Portuguese translation	English
1. andze	'pannos velhos'	'old cloth'
2. awi	'agulha'	'needle'
3. babasite	'espeto'	'skewer'
4. bada	'instrumento de boca'	'flute'

5. *badi*	'ornato de pennas'	'feather ornament'
6. *bara*	'balayo'	'basket'
7. *beba*	'colar de osso'	'bone necklace'
8. *byro*	'barriga'	'belly'
9. *bybyte*	'palheta de jugar'	'a kind of toy'
10. *boronunu*	'escravo, presa'	'slave; prey'
11. *bubanga*	'rabisco de fruita'	
12. *bubēho*	'forno ou alguidar'	'oven'
13. *bucunu*	'capoeira, roçado velho'	'old, overgrown garden'
14. *bududu*	'guirajao'	
15. *buibu*	'cabaço'	'gourd'
16. *buicu*	'frecha'	'arrow'
17. *burehe*	'pappas'	'grits'
18. *buruhu*	'fuso'	'spindle'
19. *coto*	'comer que se guarda [matula?]'	'food (which one keeps for later)'
20. *crayote*	'cacimba'	'well, cistern'
21. *crae*	'alfange'	'dagger'
22. *crenu*	'marapirão'	
23. *creya*	'assado em covas'	'food baked underground'
24. *creyahe*	'fouce'	'sickle'
25. *cro*	'pedra'	'rock, stone'
26. *cronhaha*	'milho cozido'	'cooked maize'
27. *cunubo*	'pó que fica da farinha'	'powder (from flour)'
28. *curote*	'colher'	'spoon'
29. *damy*	'carga aos hombros'	'cargo (which one carries on the shoulders)'
30. *datu*	'couza pizada'	'smashed, ground thing'
31. *dedi*	'cerca de paos'	'wood fence'
32. *dzitu*	'embira ou corda'	'rope'
33. *ecuwõbuyē*	'Ceo superior'	'sky'
34. *eicore*	'escaço'	'rare, scarce'
35. *eyapo*	'crueiras de mandioca'	'manioc dough'
36. *endi*	'algodão'	'cotton'
37. *eru*	'ralo de ralar'	'grinder, shredder'
38. *iba*	'carro'	'cart'
39. *inghe*	'criança'	'child'
40. *inio*	'concerto de ferramenta'	'fixing a tool'
41. *yaridzi*	'espora'	'spur'
42. *yawo*	'gancho'	'hook'
43. *keite*	'geito'	'way, manner'
44. *keitene*	'diligente'	'diligent'
45. *kibu*	'osso da garganta'	'the bone of the throat'
46. *kyhiki*	'peneira'	'sieve'
47. *maiba*	'pareas, ou clara de ovo, &c.'	'egg whites'

48. *mairu*	'farinha de milho fresco'	'fresh maize flour'
49. *marã*	'inimigo'	'enemy'
50. *meca*	'sinal no corpo'	'scar'
51. *mereba*	'girao para moquem'	'grill, grid for roasting food'
52. *mymyca*	'fita'	'tape'
53. *myte*	'genro'	'son-in-law'
54. *nhupy*	'vinho de milho'	'corn wine'
55. *nupyte*	'instrumento de tirar fogo'	'fire-making device'
56. *pepe*	'péla de jugar'	'ball'
57. *pobeba*	'fogaça'	
58. *poponghi*	'roca de fiar'	'spinning wheel'
59. *pretore*	'mentiroso'	'liar'
60. *renghe*	'marido'	'husband'
61. *rine*	'carne salgada'	'salted meat'
62. *rute*	'velha, mulher'	'old woman, wife'
63. *sanhicrã*	'monte mór de cousas comestiveis'	'a pile [a deposit?] of edible things'
64. *sasa*	'saya de pindoba'	'palm leaf skirt'
65. *seby*	'cadeiras'	'hips'
66. *sekiki*	'carimá'	'manioc flour'
67. *seridze*	'arco'	'bow'
68. *seti*	'cordão'	'cord, string'
69. *setu*	'cesto'	'basket'
70. *tayu*	'dinheiro'	'money'
71. *tamy*	'aguilhada'	'spike'
72. *tasi*	'eixada'	'hoe'
73. *tça*	'cousa moida, pizada'	'ground, smashed thing'
74. *tçuiru*	'assovio de rabo de tatu'	'whistle made of armadillo's tail'
75. *terere*	'corropio'	'a children's game or toy'
76. *tinhe*	'alcofa'	'basket; baby crib'
77. *tocracu*	'marca de ferro'	'cattle branding iron'
78. *tora*	'cortesia com o pé'	'greeting with the feet'
79. *torarã*	'carta, livro'	'letter, book'
80. *totonghi*	'bordão'	'cane'
81. *warandzi*	'mezinha'	'medicine'
82. *waraero*	'bejù'	'manioc tortilla'
83. *waridza*	'boca'	'mouth'
84. *warudu*	'bolo de mandioca amassada'	'manioc cake'
85. *werete*	'prato para fazer louça'	'a plate for making pottery'
86. *wima*	'abano'	'fan'
87. *wirapararã*	'engenho de moer'	'sugar cane mill'
88. *woncuro*	'tear'	'loom'
89. *woroby*	'novas'	'news'
90. *woroya*	'espia'	'spy'

Abbreviations: ANTI 'antipassive marker'; CLAS 'classifier'; 3.COR '3rd person co-referential'; ERG 'ergative adposition'; EVIT 'evitative adposition'; INSTR 'instrumental'; LOC 'locative adposition'; REL 'relational prefix'; RELVZ 'relativizer'.

---

[1] This paper is a result of an ongoing project of lexical compilation and grammatical analysis of the Kariri language, whose main short-term goal is to gather all the lexical information available in Mamiani's (1877, 1942) and Nantes's (1896) works. As a result of a work in progress, this paper would certainly benefit from any comments, suggestions, and criticisms, which I welcome. I can be reached at avepalavra@yahoo.com. The Panará, Apinajé, and Parkatêjê data used in this paper were kindly provided by Luciana Dourado, Chris Oliveira, and Marília Ferreira, whom I would like to thank. I would also like to thank Jeanie and Ronnie Castillo, for their kindness and hospitality. Any shortcomings in this paper are, naturally, my sole responsibility. This work was originally presented at the 2002 WAIL under the title 'On the grammaticalization of an antipassive marker in Kariri and Karajá.' The present title, however, represents more closely the kind of findings discussed in this paper. In my WAIL talk, I suggested that the antipassive marker ɔ- in Karajá (Ribeiro 2001) could very well be a result of the grammaticalization of a generic incorporated noun, a likely cognate of Jê ō 'thing'. This hypothesis will not be pursued in this paper. The Kariri examples preserve Mamiani's transcription. Maxakalí and Rikbaktsá data are from Pereira (1992) and Boswood (1973), respectively. The Ofayé data mentioned here were obtained in a field trip I conducted last summer under the auspices of a Tinker Field Research Grant, administered by the Center for Latin American Studies of the University of Chicago. Both the transcription and the morphological analysis of the Ofayé data are still preliminary.

[2] Although I refer to Kipeá and Dzubukuá as different 'dialects' of the same language, they could very well be considered as different 'languages.' For Nantes (1896:iv), the differences between Kipeá and Dzubukuá were substantial enough (comparable to the differences between Portuguese and Spanish) to grant each 'language' its own catechism. For Lucien Adam (1897:ii), on the other hand, Dzubukuá and Kipeá would be simply two dialects of the same language. At this point, I refrain from making any conclusive statements concerning this matter, as a careful comparison of Kipeá and Dzubukuá (as well as Sabujá and Pedra Branca) is yet to be conducted.

[3] For more on possessive classifiers, see section 3.1 below.

[4] Possessive 'classifiers' are simply nouns with generic meaning, and in fact they do not seem to be more grammaticalized than any other nouns in the language. Besides their use in classificatory constructions such as in (6) above, such morphemes can also occur by themselves:

Kipeá (Mamiani 1942:107)
no	*si-di-cri-bae*	*vdje*		*boho,*
since	3-give-PAST-IMP	vegetables		or

uneca	*boho*	*no*	*Tupã*	*cu-do-ho.*
livestock	or	ERG	God	2PL-DAT-ENF

'[...] since God gives us everything, be they produce from the gardens, or livestock.'

Possessive classifier constructions such as *dz-uba do sabuca* 'my chicken received as a gift' and noun phrases with adpositional adjuncts such as *ariba do bunha* 'clay dish' (*bunha* 'clay') seem to be syntactically identical, which suggests that in possessive classifier constructions the 'classifier' is in fact the head of the noun phrase, whereas the 'classifiee' is in fact an adjunct. Note that the adposition *do* 'instrumental, allative, dative', is also used to introduce appositive phrases (*Santa Maria do ide Tupã* 'Holy Mary, mother of God'; Mamiani 1942: 227). A more literal translation of *dz-uba do sabuca* would thus be 'my gift, the chicken'.

[5] Actually, 'manioc' can also occur with the generic classifier for 'produce' (Mamiani 1942:108; Ribeiro 2002a:38).

[6] The initial consonants of the adpositions *na* 'ergative' and *do* 'instrumental; locative; allative' undergo palatalization when preceded by the 1st person marker *hi-* (*hi-nha, hi-dio*) and the 3rd person marker *i-* (*i-nha, i-dio*).

[7] For a more extensive discussion of this prefix and other morphemes of similar functions in Macro-Jê and Tupí, see Ribeiro (2002a).

[8] Although phonological correspondences among the Macro-Jê languages remain largely to be worked out, Kiriri *u* seems to generally correspond to Jê *õ*: Xerente *n-õtõ, s-õtõ* 'to sleep', Kipeá *dz-unu, a-nu, s-unu, k-unu*; etc. If that is the case, one has to explain the apparent disparity between the vowels in Kiriri *su* 'fire' and Panará *sí*. A likely explanation for this will be presented in section 4 below.

[9] Relative constructions referring to non-argument NPs are constructed with the suffix *–te*: *di-coto-cri-te* 'the thing which was stolen'.

[10] This is, of course, a hypothesis to be further investigated as the analysis of Kiriri lexicon and morphosyntax advances. Although Mamiani (1877), as well as Rodrigues (1999), call them 'nouns' or 'participles,' constructions such as the ones above preserve all tense/aspect distinctions displayed by a full sentence, including the past tense suffix (?) *–cri* (a) and the sentence-final clitic *=di* (b). Our knowledge on the precise 'part-of-speech' nature of relative constructions in Kiriri—which is made difficult by the lack of clear-cut inflectional differences between nouns and verbs—will certainly benefit from a thorough investigation of the Kiriri corpus. At any rate, if constructions such as *d-u-di-ri* are to be analyzed as nouns, then the head of the relative construction could be seen as a possessor (although displaying a less 'canonical', more archaic possessor-possessed pattern), thus furthering the similarities between the use of the prefix *u-* with both nouns and relative constructions.

Kipeá (Mamiani 1942: 52, 50)

a.	*I-nhu-rã*	*Tupã*	*di-pa-cri-ri*		*mo*	*crusa*
	3-offspring-male	God	3COR-kill-*PAST*-REL		LOC	cross
	'The son of God, who was killed in the cross.'					

b.	*bihe*	*ro*	*sutu*	*di-pro-kie-ri*	*e-na-a=di,*	*si-me*	*Tupã.*
	only	this	fruit	3.COR-eat-NEG-REL	2-ERG-PL=FUT	3-say	God
	'"Only this fruit you (plural) shall not eat", said God.'						

[11] Both prefixes would probably occur as generic possession markers, although it is impossible to establish, at this stage of the research, which semantic, grammatical, or phonological factors would condition their distribution.

[12] In some cases, it is Panará which presents a [probably fossilized] *ku-* prefix: Apinajé *krɛ* 'house', Panará *kukrɛ*. A likely cognate of this prefix can apparently also be found in Krenák (another Macro-Jê family; Seki 2002:23), maybe also in a fossilized form: Krenák *kupõŋ* 'liver' (Karajá *bã*, Proto-Jê **ma*, Ofayé *ɸa*, etc.).

[13] In Ribeiro (2002a), I suggest that the stem for 'fire' would have been an inalienably possessed stem in Proto-Macro-Jê, as suggested by its occurrence, in several languages, with what can be analyzed as a 3rd person marker, which was reanalyzed as a part of the stem in some of the families. This prefix would refer to a primary possessor (indicating maybe the type of fire—'wood fire', 'straw fire', etc.). As it is still the case in Panará and in Kiriri, in order to introduce a secondary possessor, the use of the marker of alienable possession would be required, exactly as it happens with body-part terms and other obligatorily-possessed stems. In Ofayé, the stem for 'fire' (whose 'citation form' is *ʒ/ʒw*) also cannot be directly possessed, requiring the morpheme *ʃi*, another 'marker of alienable possession' with likely cognates in Jê and Tupí languages (Ribeiro 2002a). There is some variation concerning the treatment of the initial vowel of *ʒ/ʒw* 'fire', which seems to be treated as a prefix, by some speakers, or as part of the stem, by others:

Ofayé (Eduardo Ribeiro, field notes, September/2002)

a.	*ʒ-/ʒw*	b.	*a-ʃi*	*(ʒ-)/ʒw*
	3-fire		1-*POSS*	(3-)fire
	'fire'		'my fire'	

[14] Thus, both morphemes, **ku-* and **i-*, were probably already present in Proto-Jê. Although there is strong evidence for considering **i-* a retention from Proto-Macro-Jê, the same cannot be said with relation to **ku-* at this point. There is no evidence so far for the existence of a cognate of Jê 3rd person/generic possessor marker **ku-* in Karajá, the same being apparently the case in Maxakalí. If the analysis suggested here concerning the shape of the proto-stem 'fire' is correct, a possible diachronic source for the hypothetical formatives *ki-* and *kɔ-* in the words for 'fire' in Maxakalí and Karajá could be the stem for 'wood,

firewood' in both languages: Maxakalí *kik* 'firewood', Karajá *kɔ* 'wood'. These stems find likely cognates in Jê (Xerénte *ku* 'wood', etc.; Ribeiro 2002) and may very well be another lexical retention from Proto-Macro-Jê.

[15] In some languages of the Jê family, the word for 'fire' is a reflex of the Proto-Jê word for 'firewood' (reconstructed by Davis 1955 as *$p\tilde{i}$), rather than being a cognate of *$z\dot{i}$ 'fire'. Such is the case in the Southern Jê branch of the family (Kaingáng *pĩ* 'fire, firewood'; Wiesemann 1971:188) and in Jeikó (*ping* 'fire'; Martius 1867:143).

[16] Thus, Panará *s-ō sɨ* (13b) and Kariri *s-u-su* 'his fire' (14b) are perfect matches, presenting not only an exact correspondence morpheme-by-morpheme, but phoneme-by-phoneme as well. As Rodrigues (1999:201) points out, complete sets of cognates for all the Macro-Jê families are difficult to obtain, but partial sets for several lexical items corroborate the phonological correspondences for the initial consonant in 'fire' and the 3rd person prefix (Kariri *s*, Karajá *d*, Panará *s*, Ofayé *f*, etc.) Thus, while a cognate for the Proto-Jê word for 'seed', *$z\dot{i}$, was not found in the portions of the Kariri corpus which have been analyzed thus far, partial sets for this stem in other families corroborate the phonological equations set forth above: Ofayé *fa:* 'seed', Karajá *dɨ*, Panará *sɨ*, Parkatêjê *hɨ*, Xokléng *ðɨ*, etc. For additional lexical correspondences, see Ribeiro (2002).

[17] In some cases, the translations provided above are only approximate and may change as the research project progresses; in cases in which I could not establish a reasonably precise meaning, I limited myself to providing only the Portuguese translation given by Mamiani. This fact illustrates well the difficulties into which one may run when studying an extinct language, with a limited corpus, such as is the case of Kariri. For example, Portuguese *fogaça* (as Mamiani translates the Kariri word *pobeba*) may refer more generically to a large type of cake, or, more specifically, to a cake or other present which, during festivals, is offered to the Church, in order to be auctioned on its behalf. It may also refer, even more generically, to any present or offer which is given to someone in retribution for a good deed. Therefore, in order to determine the precise meaning of the Kariri word *pobeba*, one must be able to observe it in context; it may be the case, however, that this is the only occurrence of this word in the whole surviving Kariri corpus.

Although it is just a limited sample of the Kariri lexicon, the list above illustrates well the kind of glimpse into the Kariri culture which may be provided by the careful analysis of the language's data. The importance of manioc in Kariri agriculture and culinary, for example, is shown not only by the occurence of a rather specialized vocabulary for manioc derivates, but also by the fact that the language has a possessive classifier exclusively for manioc, *uanhi* (see Table 2 above). In addition, the lexical sample above reveals a certain familiarity with cattle-raising activities (introduced by the Portuguese colonizers), providing an interesting look at the cultural changes which were already taking place when the language was documented.

Syntactic inversion in Mapudungun

Fernando Zúñiga
University of Zurich and University of Leipzig

1. Introduction

The clause structure of Mapudungun, a polysynthetic language currently spoken by some hundreds of thousands of people in South-Central Chile and Argentina, has been described in various ways in the literature. Early accounts (Augusta 1903, Moesbach 1962) simply list the "transitions", i.e. the personal scenarios of actor and undergoer, noting the correspondent alternations in verb morphology. More recent contributions propose the application of the notion "inverse" as used in Algonquian studies to the Mapudungun paradigms (Grimes 1985, Arnold 1994, 1997), or advance an analysis that is similar in spirit to the inversion one, but in somewhat different terms (Salas 1992). Finally, one study (Smeets 1989) applies the received notions of subject and direct object to Mapudungun morphosyntax, albeit introducing a novel distinction (viz. internal vs. external direct object) and redefining these notions substantially in order to accommodate the peculiarities of Mapudungun clausal organization patterns.

Since I have addressed the competing accounts elsewhere (Zúñiga 2001, 2002), I will focus in what follows on what appears to distinguish the morphosyntactic organization of Mapudungun and possibly other languages from other inverse systems. Arnold showed that in languages like Mapudungun transitivity inversion is not only a category expressed by verbal morphology but also a principle underlying the mapping of macroroles (actor, undergoer) onto grammatical relations (subject, object). Such a type is to be understood against the background of both (i) languages where transitivity inversion seems to operate only on the morphology of the clause without informing the construal of grammatical relations and (ii) languages where, so to speak, the effect of inversion on clause syntax is even stronger because dispreferred subjects are not even allowed to retain core argument status.

After briefly sketching a theory of direction according to which passive and inverse do not stand in opposition to each other but belong to different realms of morphosyntactic description (§2), I review the essentials of relevant Mapudungun morphosyntax (§3) and finally draw some conclusions (§4).

2. Direction: form and function[1]

In simplified terms, a direction system like the ones familiar from Algonquian studies basically amounts to the alternation between direct and inverse clauses.[2] The former typically depict interactions where the actor outranks the undergoer on a nominal hierarchy like the one in (1); in inverse clauses, the undergoer outranks the actor.

(1)   1st/2nd person > 3rd human > 3rd animate > 3 inanimate

A number of scholars have propounded different frameworks in order to best conceptualize clause patterns sensitive to hierarchies like the one in (1) above. On what can be thought of as the functionalist side, Givón (1994) and other studies have worked with a typology of so-called detransitive voice according to which inverse and passive are points on a scale. The relevant parameter is the relative topicality of actor and undergoer (measured via referential distance and topic persistence):

(2)   Antipassive   A >> O
        Active-direct   A >   O
        Active-inverse   A <   O
        Passive   A << O

The topicality relationship seen as basic is the one expressed by an active-direct clause, i.e. the actor is more topical than the undergoer. This relationship is reversed in the active-inverse, as it is in the passive, the difference between them being one of degree. Although structural parameters like detransitivization of the predicate and case marking may correlate with these detransitive values, they are not criterial in this view.

On what can be seen as the structuralist side, Dixon & Aikhenvald (1997) choose to distinguish inverse from passive clauses on structural grounds.[3] The inverse alters neither transitivity nor the mapping onto grammatical relations when compared to the active-direct construction, whereas the passive typically changes both: it detransitivizes the predicate, demotes the subject and promotes the non-subject argument. A mirror image of Givón's view, this theory of inversion sees topicality relationships as possibly correlating with the structural changes but not as criterial.
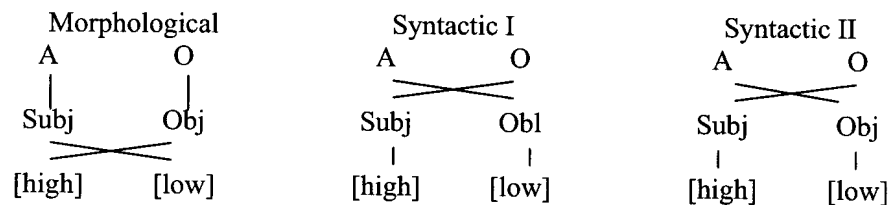
Based upon DeLancey's seminal work in the early 80s (1981a, 1981b, 1982), I prefer a view of inversion according to which both topicality relationships and structural features like valence, argument marking and grammatical relations are parameters along which the constructions found in different languages may vary. What is criterial for the direct-inverse opposition is the alignment or misalignment of a relational hierarchy where actors outranks undergoers and the nominal / empathy / indexability hierarchy where some entities outrank others on semantic, referential, pragmatic and/or syntactic grounds. When both hierarchies are aligned, the clause is said to be direct irrespective of topicality measurements and structural diagnostics; if they are misaligned, the clause is inverse. This is represented graphically in Figure 1 below:

Figure 1: The direct-inverse opposition

DIRECT	INVERSE
A	O	A O	
|	|	⤫	
[high]	[low]	[high]	[low]

The corollary of the above definition that is most relevant for the present purposes is that, once grammatical relations are taken into account, there are at least three possibilities for the relevant lines to cross. This can be seen from Figure 2:

Figure 2: Morphological and syntactic inverse

Morphological		Syntactic I		Syntactic II	
A	O	A	O	A	O
Subj	Obj	Subj	Obl	Subj	Obj
[high]	[low]	[high]	[low]	[high]	[low]

In addition to following Rhodes (p.c.) in terminologically distinguishing morphological from syntactic inverse, I see the syntactic import of the nominal hierarchy as further distinguishing two syntactic subtypes.[4] The schema on the left of Figure 2 represents a situation where the macroroles actor and undergoer determine the mapping of grammatical relations (labeled here "subject" and "object" for convenience only, as will become clear in §3): the actor is always the subject and the undergoer is always the object, but they can be aligned or misaligned with respect to the nominal hierarchy. In this case, direction is a category that may be marked morphologically, but with no syntactic effect. By contrast, the other two schemas feature the restriction that subjects have to be high on the nominal hierarchy, and the mapping of macroroles is in a sense "derived". In the type on the right (syntactic II), the mapping of macroroles onto grammatical relations is just the opposite of the situation in direct clauses, with both participants as core arguments. In the syntactic I type, not only is the actor ranking low on the nominal hierarchy not allowed to be the subject: it is no longer a core argument and appears as oblique.

According to such a typology on inverses, a language like Umatilla Sahaptin (Sahaptian) as described by Rigsby & Rude (1996) conforms to the morphological type:

(3)   Umatilla Sahaptin morphological inverse (Rigsby & Rude 1996: 676)

   a. *łwínš*   *i-tuxnana*   *yáamaš-na.*
      man   3sS/A-shot   mule.deer-OBJ
      'The man_prox shot a mule deer_obv.'

   b. *łwínš-in*   *pá-tuxnana*   *yáamaš-na.*
      man-OBV.ERG   INV-shot   mule.deer-OBJ
      'The man_obv shot a mule deer_prox.'

(3a) is a direct clause—a proximate 3rd person acts upon an obviative one—where the actor appears in the default unmarked case whereas the animate undergoer takes the objective suffix *-na*, and the 3rd person subject agreement marker *i-* appears on the verb.

By contrast, (3b) is an inverse clause where the actor takes the obviative ergative marking *–in* and the verb is marked as inverse by means of the prefix *–pá*. However, there is neither morphological nor syntactic evidence that would suggest a reversal or any change of grammatical relations: the man is actor and subject in both clauses.[5]

By contrast, a language like Southern Tiwa (Kiowa-Tanoan) as described by Klaiman (1991) represents the syntactic I type:

(4)   Southern Tiwa syntactic I inverse (Klaiman 1991: 219f)
     a. *Seuan-ide*   *ti-mɨ-ban.*
         man-s   1sIIA-see-PT
         'I saw the man.'
     b. *Seuan-ide-ba*   *te-mɨ-che-ban.*
         man-s-OBL   1sI-see-PASS-PT
         'The man saw me.'

(4a) is a direct clause, where the undergoer appears in the unmarked case and the 1st person actor is marked on the predicate by means of the prefix *ti–* from the transitive set. On the other hand, (4b) is an inverse clause—the 3rd person actor is outranked by the 1st person undergoer on the nominal hierarchy—where the actor is no longer a core argument but appears marked as oblique (*–ba*) and the verb takes a 1st person prefix from the intransitive set (*te–*) and a passive suffix (*–che*).

The purpose of the next section is to show that Mapudungun provides an example of the third type, viz. syntactic II, where actor and undergoer have been remapped as far as grammatical relations are concerned.

3. Mapudungun verb morphology and syntax

Mapudungun is characterized by an intricate head-marking system of argument cross-referencing and the absence of overt obviation and case marking on core argument nominals. Towards the end of the verbal complex, which can include several verbal roots in addition to an incorporated nominal root and numerous suffixes expressing directional, spatial, temporal, modal and aspectual notions, there appear a number of formatives that code number and person of participants. Number (singular *–i*, dual *–u* and plural *–n*) and person (1st *–i*, 2nd *–m* and unmarked 3rd) are distinguished for what may be labeled subject or, more neutrally, PRIMARY PARTICIPANT,[6] and some additional suffixes like inverse *–e* ~ *–mu* ~ *–w*, 3rd person undergoer *–fi* and 3rd person actor *–(m)ew* help configure a system that conveys the information of who does what to whom. There also exist valence-changing formatives that need not worry us particularly here, viz. the agentless passive *–nge*, the applicatives *–(l)(e)l* and *–ñma*, and the transitivizer *–m*. A slightly simplified paradigm of underlying indicative forms (marked by *–i* immediately before the person markers) is given in (5) and (6) below:

(5)   Mapudungun indicative paradigm I (underlying forms)
      DIRECT   INVERSE
a.   *pe-(fi-)n*   'I saw her'   *pe-e-n-mew*   'she saw me'
b.   *pe-(fi-)i-i-u*   'we(d.) saw her'   *pe-e-i-i-u-mew*   'she saw us(d.)'
c.   *pe-(fi-)i-i-n*   'we(p.) saw her'   *pe-e-i-i-n-mew*   'she saw us(p.)'
d.   *pe-(fi)-i-m-i*   'you(s.) saw her'   *pe-e-i-m-i-mew*   'she saw you(s.)'
e.   *pe-(fi)-i-m-u*   'you(d.) saw her'   *pe-e-i-m-u-mew*   'she saw you(d.)'
f.   *pe-(fi)-i-m-n*   'you(p.) saw her'   *pe-e-i-m-n-mew*   'she saw you(p.)'
g.   *pe-(fi)-i*   'she$_{prox}$ saw her$_{obv}$'   *pe-e-i-mew*   'she$_{obv}$ saw her$_{prox}$'

(6)   Mapudungun indicative paradigm II (underlying forms)
      1st on 2nd   2nd on 1st
a.   *pe-e-i-i-u*   'I saw you(s.)'   *pe-e-n*   'you(s.) saw me'
b.   *pe-w-i-i-n*   [any other 1st person *pe-mu-n*   'you(d./p.) saw me'
                         acting upon a 2nd   *pe-mu-i-i-u*   'you(s./d./p.) saw us(d.)'
                         person]   *pe-mu-i-i-n*   'you(s./d./p.) saw us(p.)'

There are many intriguing issues raised by the forms listed in (5) and (6), and the interested reader is referred to Zúñiga (2002) for a detailed discussion of both these forms and the comparatively neglected nonfinite paradigms. Suffice it to say here that intransitive predicates take the direct form given on the left of (5) without the suffix *-fi*, and that direct transitive forms appear to usually take *-fi* when the 3rd person undergoer is anaphoric or highly animate. Note that *-fi* and *-(m)ew* cross-reference a 3rd person object or SECONDARY PARTICIPANT unspecified for number in (5): the former is the undergoer in a direct clause and the latter the actor in an inverse one.[7] The two forms in (g) correspond to the familiar opposition between direct *wāpamēw* 'he$_{prox}$ sees him$_{obv}$' and inverse *wāpamik* 'he$_{obv}$ sees him$_{obv}$' in Plains Cree, where not only semantics (animacy) or reference (1st/2nd vs. 3rd person) but also pragmatics (topicality) play a role in determining which 3rd person is proximate and which obviative.

Syntactic evidence that supports such an account in terms of primary and secondary participants is found in Arnold (1994, 1997): (i) word order, (ii) the reference of the WH-word *iney* 'who', (iii) coreferential deletion in coordination and (iv) the personal marking with nonfinite forms. In clauses with two lexical NPs, the word order patterns in (7) are attested; the meaning is 'the woman killed the man' for all sentences, but the first three are direct (*langüm-fi-i* kill-3O-IND) and the other three inverse (*langüm-e-i-mew* kill-INV-IND-3A):

(7)   Mapudungun word order patterns
a.   *domo langümfi wentru*   A V O   Subj V Obj
b.   *domo wentru langümfi*   A O V   Subj Obj V
c.   *langümfi wentru domo*   V O A   V Obj Subj
d.   *wentru langümeyew domo*   O V A   Subj V Obj   (=a)
e.   *wentru domo langümeyew*   O A V   Subj Obj V   (=b)
f.   *langümeyew domo wentru*   V A O   V Obj Subj   (=c)

By postulating the grammatical relations subject and object and defining them in non-traditional terms, Arnold arrives at a fairly economical account of word order patterns. The subject or primary participant is the actor in direct clauses but the undergoer in inverse ones, whereas the undergoer in direct clauses and the actor in inverse ones is the object or secondary participant, and the three attested orders are SVO, SOV and VOS.

As to the reference of *iney* 'who', the attested patterns are the following (since my informants have some reservations about the grammaticality of pattern (c), I have provided it here in brackets):

(8)   Mapudungun *iney*
        'Who did Peyro kill?'   'Who killed Peyro?'
        a. *Iney kam langümfi Peyro?*   d. *Iney kam langümeyew Peyro?*
        b. *Peyro iney kam langümfi?*   e. *Peyro iney kam langümeyew?*
        (c. *Iney kam Peyro langümfi?*   f. *Iney kam Peyro langümeyew?*)

The verb forms are the same as in (7), and in these interrogative sentences the particle *kam* appears. It is apparent that *iney* 'who' is coreferential with the undergoer in direct clauses (a through c) and with the actor in inverse ones (d through f)—in other words, the non-WH lexical NP is understood as the subject and *iney* as the object.

Coreferential deletion in (asyndetic) coordination shows that, in addition to the single argument of intransitive predicates (c), the actor of direct clauses (a) and the undergoer of inverse ones (b) pattern alike. Since interpretations according to which the deleted NP is in a different role are excluded, it is this subject or primary participant that constitutes the pivot of this construction:

(9)   Mapudungun coreferential deletion in coordination
        a. *Jose*^{S} *aku-i*   *ñi*   *ruka*   *mew* $\emptyset^A$ *pe-i*   *ñi*   *trewa.*
           J.   arrive-IND   3POSS   house   PPOS   see-IND   3POSS   dog
           'Jose arrived home and saw his dog.'
        b. *Jose*^{S} *aku-i*   *ñi*   *ruka*   *mew* $\emptyset^O$ *ñi*   *trewa*   *pe-e-i-mew.*
           J.   arrive-IND   3POSS   house   PPOS   3POSS   dog   see-INV-IND-3A
           'Jose arrived home and his dog saw him.'
        c. *Jose*^{S} *aku-i*   *ñi*   *ruka*   *mew* $\emptyset^S$ *pe-nge-i.*
           J.   arrive-IND   3POSS   house   PPOS   see-PASS-IND
           'Jose arrived home and was seen / someone saw him.'

Finally, the personal marking by means of possessives with nonfinite verbs shows a similar patterning.[8] When the nonfinite form of the embedded clause is direct (10a), the first 3rd person possessive *ñi* refers to the undergoer (=object) of the matrix clause as being actor (=subject) of the nonfinite form. By contrast, if the embedded form is inverse (10b), the possessive *ñi* refers to the undergoer (=object) of the matrix clause as being undergoer (=subject) of the nonfinite form. In both cases, *ñi* corresponds to the subject of the embedded form.

(10)   Mapudungun personal marking with nonfinite verbs
   a.   *Chi*   *ngürü* *pe-fi-i*   *chi*   *williñ* *ñi*   *mütrüm-ün*   *ñi*   *poyen.*
        ART   fox   see-3O-IND   ART   otter   3POSS   call-NFIN:DIR   3POSS   beloved
        'Foxᵢ saw Otterⱼ call hisⱼ wife.'
   b.   *Chi*   *ngürü* *pe-fi-i*   *chi*   *williñ* *ñi*   *mütrüm-etew*   *ñi*   *poyen.*
        ART   fox   see-3O-IND   ART   otter   3POSS   call-NFIN:INV   3POSS   beloved
        'Foxᵢ saw how Otterⱼ was called by hisⱼ wife.'

By the same token, observe how the undergoer (=subject) of the inverse form *dunguyeetew* is the same as the actor (=subject) of the direct form *witratumeafilu*:

(11)   *Kiñe*   *domo*   *dunguye-fi-lu*   *ka*   *domo*   *wutu-nge-ke-i*
        one   woman   gossip-3O-NFIN   other   woman   visit-PASS-HAB-IND
        ruka   *mew,*   *witratu-me-a-fi-lu*   *feychi* *domo*   *ñi*   *dunguye-etew.*
        house   PPOS   quarrel-AND-FUT-3O-NFIN   this   woman   3POSS   gossip-NFIN:INV
        'When a womanᵢ gossips about another womanⱼ, [sheᵢ] is visited in herᵢ house; the womanⱼ goes [there] in order to quarrel with [the woman whoᵢ] gossiped about herⱼ.' (Coña 1930: 206)

Summing up, there is significant morphosyntactic evidence suggesting that the single argument in intransitive clauses, the actor in direct clauses, and the undergoer in inverse clauses pattern together and may be construed as privileged morphosyntactic argument, primary participant or subject of some sort. Whereas the evidence suggesting that the undergoer in direct clauses and the actor in inverse clauses pattern together as well does not necessarily lead to postulating the grammatical relation of object for this secondary participant, there is no evidence whatsoever in favor of an oblique analysis.[9] I therefore conclude that Mapudungun constitutes an example of an inverse system where grammatical relations have been remapped to macroroles without any participant losing core argument status in inverse clauses, i.e. what I have called syntactic inverse II.

4. Conclusion

The morphosyntax of Mapudungun and possibly other languages not yet identified as displaying a direct-inverse opposition represents an interesting way of implementing the sensitivity to a nominal hierarchy. Languages differ with respect to the extent to which actors low in animacy are tolerated subjects in particular and core arguments in general; Mapudungun illustrates the intermediate case where these actors are dispreferred subjects but are nevertheless core arguments.

The complex functional motivations behind the choice of particular clause patterns (including valence, head-marking, and dependent-marking) includes restrictions placed upon the mapping of macroroles onto grammatical relations in a way explored comparatively recently by optimality-theoretic studies (cf. e.g. Legendre et al. 1993, Legendre et al. 2001, and Aissen 1999). In very simplified terms, the three inverse types outlined in §2 above can be envisaged as different responses of the morphosyntax of a language based on dissimilar rankings of constraints penalizing particular expressions of

arguments. All inverse systems react in some way to the violation of the constraint *Subj$_{low}$, which penalizes subjects ranking low on the nominal hierarchy. Whereas the morphological inverse (Umatilla Sahaptin) expresses this violation morphologically, the syntactic inverse goes further in that the constraint is ranked as high as to preclude clause patterns that would violate it from being preferred outputs. Instead, clause organizations that violate *Subj$_O$ (which penalizes undergoer subjects) are preferred, either with an accompanying argument that violates *Obj$_A$ (which penalizes actor objects) (syntactic II, Mapudungun) or with an oblique actor that does not violate the latter constraint (syntactic I, Southern Tiwa).

Further research will tell us whether the direct-inverse opposition is to be found in more languages than what has been recognized hitherto, but also whether morphological inverses are areally and/or genetically more stable than syntactical inverses, and how all these systems evolve in time. Finally, further subtypes of syntactic inverses that may come up upon closer inspection (or refinements of the analysis outlined in this paper) will hopefully help us understand the dynamics and the status of transitivity inversion better.

Abbreviations

A actor, ABS absolutive, AND andative, ANIM animate, DIR direct, ERG ergative, I set I prefix, II set II prefix, IND indicative, INV inverse, NFIN nonfinite, O undergoer, Obj object, OBJ objective, Obl oblique, obv obviative, p plural, PASS passive, PPS postposition, prox proximate, S single argument, Subj subject

References

Aissen, Judith. 1999. Markedness and subject choice in optimality theory. *NLLT* 17.4: 673-711.

Arnold, Jennifer. 1994. Inverse voice marking in Mapudungun. *BLS* 20: 28-41.

___. 1997. The inverse system in Mapudungun and other languages. *Revista de Lingüística Teórica y Aplicada* 34: 9-48.

Coña, Pascual. 1930. *Lonco Pascual Coña ñi tuculpazugun. Testimonio de un cacique mapuche*. Santiago: Pehuén [3rd ed. 1984].

DeLancey, Scott. 1981a. An interpretation of split ergativity and related patterns. *Language* 57.3: 626-657.

___. 1981b. The category of direction in Tibeto-Burman. *LTBA* 6.1: 83-101.

___. 1982. Aspect, transitivity and viewpoint. In *Tense-aspect: Between semantics and pragmatics*, ed. by P. Hopper. Amsterdam: Benjamins. 167-183.

Dixon, R. M. W. & Alexandra Aikhenvald. 1997. A typology of argument-determined constructions. In *Essays on language function and language type. Dedicated to T. Givón*, edited by J. Bybee, J. Haiman & S. Thompson. 71-113.

Givón, T. ed. 1994. *Voice and inversion*. Amsterdam: Benjamins.

Klaiman, M. H. 1991. *Grammatical voice*. Cambridge: Cambridge University Press.

Legendre, Géraldine, William Raymond & Paul Smolensky. 1993. An optimality-theoretic typology of grammatical voice systems. *BLS* 19: 464-478.

Legendre, Géraldine, Jane Grimshaw & Sten Vikner, eds. 2001. *Optimality-theoretic syntax.* Cambridge, Ma.: MIT Press.

Rhodes, Richard. 1976. The morphosyntax of the Central Ojibwa verb. Ph.D. dissertation, University of Michigan.

___. 1994. Valency, inversion, and thematic alignment in Ojibwe. *BLS* 20: 431-446.

Rigsby, Bruce & Noel Rude. 1996. Sketch of Sahaptin, a Sahaptian language. In *Handbook of North American Indians, Vol. 17: Languages,* edited by I. Goddard. Washington: Smithsonian Institution. 666-692.

Thompson, Chad. 1994. Passive and inverse constructions. In Givón, ed. 47-63.

Zúñiga, Fernando. 2000. *Mapudungun.* Munich: Lincom Europa.

___. 2001. Keep it complicated. Inverse and inverse-like marking in Mapudungun. In *Sprachbeschreibung und Typologie,* ed. by B. Wälchli & F. Zúñiga. Bern: Institut für Sprachwissenschaft [Arbeitspapier 38]. 83-98.

___. 2002. Inverse systems in indigenous languages of the Americas. Ph.D. dissertation, University of Zurich.

---

[1] The reader can find a detailed exposition of this theory, as well as its application to twelve indigenous languages of the Americas, in Zúñiga (2002).

[2] I am glossing over the interesting question of the treatment of local scenarios here, i.e. those where only 1st and 2nd persons are involved. Important though this issue is, it is not directly relevant to the main claim of the present paper.

[3] Klaiman (1991) postulates a view similar to Dixon & Aikhenvald's, just like Thompson (1994) works with a theory similar to Givón's. They will not be addressed here for the sake of brevity.

[4] I am indebted both to Richard Rhodes' personal comments on this topic and to observations made in some of his published work (especially Rhodes 1976 and 1994).

[5] Incidentally observe that the locus of marking constitutes a further parameter rather than a definitional criterion of inversion in the framework used here; affixal material both on predicates and arguments may express the direction opposition segmentally.

[6] Some forms are not strictly compositional (e.g. 1st person singular indicative *–n* instead of the expected sequence **-i-i-i,* and some (morpho-)phonological rules like elision, epenthesis, and the like apply. There are nonsingular markers that occur for the 3rd person under certain circumstances, viz. dual *–ngu* and plural *–ngün.* Consult Zúñiga (2000) or any more thorough grammatical description for details.

[7] Mapudungun lacks gender, so the feminine forms in the English translations should be understood as 'he or she' and the like. The details concerning 3rd person plural forms have been glossed over in this paper since they are immaterial to the issues discussed here.

[8] Mapudungun has several different nonfinite verb forms; the examples show those characterized by the endings *–n* (and its inverse counterpart *–etew*), traditionally called "infinitive" and *–lu,* traditionally called "participle". Nonfinite personal marking shows some quirks that cannot be addressed in detail here. The interested reader is referred to Zúñiga (2002).

[9] There is not much evidence for the existence of an oblique relation comparable to the non-locative uses of *at, to* and the like in English in the first place. Agentless passives do not license the expression of the actor, and the recipient or goal of verbs corresponding to English *send, give* and the like is an unmarked primary object rather than a marked indirect object.