A study of O’dam suppletion and category shift

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1 Agreement isn’t what it seems

• This talk concerns the function of reduplication in resultative constructions in O’dam (Southeastern Tepehuan). Previous work has analyzed reduplication in statives and resultatives as purely grammatical agreement (Willett 1991:205).

• However, using stative predicates¹ as an analogous starting point, we argue:

1. State Number is a grammaticalized feature that is independent from Entity Number or Event Number.
2. The interaction between State and Entity number is determined by real world properties of both the state and the entity that it is applied to rather than any sort of grammatical agreement.

• O’dam is a Uto-Aztecan language spoken by around 28,000 speakers (INEGI 2010) primarily in the southern part of the Mexican state of Durango.

• Resultatives in O’dam are formed by suffixing a verb stem with -ix or -xim.²³

(1) jix=ik-ix   gu   uux
   COP=cut-RES DET stick
   The cut stick

(2) abiar-xim   gu   coca
   buy.on.credit-RES DET Coke
   ‘the sold Coke’

• On monovalent verbs (including intransitives), subject number is marked by a suffix⁴ on the verb and, where an NP is present, by reduplication on the noun.

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¹These are sometimes called adjectives in previous literature (e.g. Willett 1991), however there is some doubt as to whether or not O’dam has more than a few true adjectives.
²The choice between these allomorphs is lexically specific. There is no meaningful difference although there are some tendencies on which types of events take which suffix (see García Salido 2014:60) for further discussion).
³Here we use the practical orthography for O’dam, thus some of the characters have different values than those in IPA and APA, we show those here with their corresponding IPA symbol: <b>= /v/; <bh>= /b/; <dh>= /d̪/; <lh>= /l̪/; <x>= /ʃ/.
⁴Objects are marked by a verbal prefix.
• Verbal number can also be indicated via suppletive verb forms, which survive resultative derivation:

(4) a. Silh jura-’-ran jap moo sixi-a’ dhi tooxkohl na directly heart-3SG.POSS-POSP:on.body.part 2SG.SBJ doubt sting-FUT DEM pig SUB ba’ maa’n jim-dam muki-a’
SEQ one walk-NMLZ die.SG-FUT
‘Stab the pig right in the heart so that it will die quickly’ (Willett & Willett 2015:130)
b. ko’ya-’-am gu pippilh
die.PL-FUT-3PL.SBJ DET chicken.RED
‘The chickens will die’

(5) a. Muk-ix gu yooxi’
die.SG-RES DET flower
‘The flower is dead/the dead flower’
b. Ko’-ix-’am gu yayooxi’
die.PL-RES-3PL.SBJ DET flower.RED
‘The flowers are dead/the dead flowers’

• In texts the verb and noun match singular or plural number marking, like in (3) and (5), so an agreement analysis seems superficially intuitive. However, speakers can sometimes use a singular noun with a reduplicated verb like in (6).

(6) jix=i’k-ix-am gu u’ux
COP=cut.RED-RES-3PL.SBJ DET stick.RED
‘The cut sticks (cut many times)’

• Not all predicates allow for mismatches like in (6). This is the puzzle we investigate: which cases permit the use of a reduplicated verb stem with a singular noun? And what does this tell us about the interaction of the State Number system and Entity Number system?

• We propose that there are two classes of event types: cut-type and hide-type, which differ in their ability to stack simultaneous results onto a single object and, therefore their ability to be used with a number mismatch.

• In §2 we overview the uses and properties of reduplication in O’dam outside of resultativized verbs, especially in statives. We then turn to the properties of resultatives in §3 and detail the mismatch puzzle in §3.1. We then turn to the hide-cut event-type distinction in §4 and how the distinction plays out in suppletive verbs (§5).

2 Reduplication

• As is common across the Uto-Aztecan family, O’dam makes extensive use of reduplication in all content word categories. The meaning of reduplication in O’dam can described as marking plurality in a broad sense.
Phonologically, reduplication targets the first syllable of the root and ignores any prefixes. The reduplicated syllable becomes part of the stress domain (which targets the first two syllables of the root). O’dam roots undergo one of three reduplication rules, which are partially phonologically determined and partially lexically determined (see Willett 1982, Kager 1997, Gouskova 2003 for fuller analyses of O’dam phonology).

(7) **Long Reduplication**

a. \( \emptyset \rightarrow CV_i V_i / \# \_\_CV_i(V_i) \)
   
   \( tirok \rightarrow tiitrok \)
   
   'lizard’ ‘lizards’

b. \( \emptyset \rightarrow CV_i V_j / \# \_\_CV_i V_j \)
   
   \( taibu' \rightarrow taibu' \)
   
   'lighting bug’ ‘lightning bugs’

(8) **Short Reduplication**

a. \( \emptyset \rightarrow CV_i / \# \_\_CV_i(V) \)
   
   \( karbax \rightarrow kakarbax \)
   
   'goat’ ‘goats’

As shown in the above examples, when reduplication appears on nouns it indicates plural number.

On non-resultativized verbs Willett (1991) and Willett & Willett (2015) describe reduplication as marking “iterativity” but there has, thus far, been no close study breaking down what that means.

A key observation here is that there seems to be no interaction between argument number and reduplication for non-resultativized verbs. In (9) we have reduplication and a plural subject, but the reading is that the subjects saw their mother in a sequential manner, not all at once. In (10) we have no reduplication and a plural subject, and in (11) we have reduplication with a singular subject.

(9) Sap \( ba-\tilde{n}i\tilde{n}ii-\tilde{n}-am \) muk-ix gu ja-na\(\tilde{n} \)
   
   REP.UI SEQ-see.RED-APPL-3PL.SBJ dead-RES DET 3PL.POSS-mother
   
   ‘Supposedly, they saw that their mother was dead.’ (García Salido 2014:98)

(10) sap \( ba' \) pui’ chitda-da-\(\tilde{a}m \) gu ja'kam na=\(m \) bima'n \( ba-ni\tilde{i}n-dha' \)
   
   REP:U1 SEQ SENS say-APPL-3PL.SBJ DET people SUB=3PL.SBJ each.one CMP-see-APPL
   
   na=\(am \) tu-a'ga-da’
   
   SUB=3PL.SBJ DUR-talk-CONT
   
   ‘That the people, who saw them together, were saying to him, when they were chatting.’ (García Salido 2014:227)

(11) sap \( ba' \) mu jim-mi-da’ \( mu \) nini'\(i\)n-dha’
   
   REP:U1 SEQ DIR go-run-CONT-FUT DIR see.RED-APPL
   
   ‘He was going fast to see him.’ (García Salido 2014:145)

Reduplication is also used on statives to indicate a sort of stative plurality. Like with resultatives, in texts it is most common to see singular (non-reduplicated) nouns\(^5\) being modified by non-reduplicated states (12) and plural (reduplicated) nouns being modified by reduplicated states (13).

(12) a. gu \( \text{kabai jix}={}t\tilde{e}b \) jix=\(koo\text{ma'} \)
   
   DET horse COP=tall COP=grey
   
   ‘The tall grey horse’

\(^5\)Mass nouns like \( \text{on} \) ‘salt’ are morphosyntactically singular and are identified by their lack of a reduplicated form altogether.
b. gu Pedro onaa’ jix=chua jix=mes-ta’m-da
   DET Pedro salt-IAL COP=white COP=table-POSP:above-CONT
   ‘Pedro’s white salt is on the table’

(13) a. jix=xixdhu-ka’-ich
   COP=blessed.RED-EST-1PL.SBJ
   ‘We are blessed. (García Salido 2014:89)

b. Gu u’ji’ jix=chotob jix=bhai’ jum-tat-am na joidham tanor
   DET bird.RED COP=white.PL COP=good REFL-feel-3PL.SBJ SUB make sun
   jix=chu-juk ba’
   COP=DUR-hot SEQ
   The white birds are happy because it is a good day and the weather is nice. (García 2009)

• However, in elicitation, we find that speakers allow singular nouns to be modified by certain reduplicated states.

• In (14a) we get the unambiguous reading that the blanket is polka-dotted red. While an unreduplicated states, like in (14b) is not incompatible with a polka dot reading, it is underspecified. The unambiguous ‘polka-dotted’ reading is unavailable for plural nouns like in (14c).

(14) a. Gu sa’ua jix=bipi’
   DET blanket COP=red.RED
   ‘The blanket is red (polka-dotted)’

b. Gu sa’ua jix=bi’
   DET blanket COP=red
   ‘The blanket is red’

c. Gu sasua’ jix=bipi’
   DET blanket.RED COP=red.RED
   ‘The blankets are red’

1. Reduplicated statives are compatible with singular nouns.
2. This combination results in unique "polka-dot" meanings.
3. This suggests that reduplication on statives is not simply agreement with entity number, but rather independently marks the number of states.

3 Resultatives

• Let’s first take a moment to characterize resultatives as a category.

• Resultative morphemes appear to convert any verb stem into a monovalent predicate (15).6

(15) a. Tu’-n=ki’n ja-mii-ch-dha’- dhi-ni duduiñkar
    what-1SG.SBJ=POSP:with 3PL.OBJ-burn-CAUS-APPL-FUT DEM-1SG.POSS pipe.RED
    ‘What am I going to light my pipes with?’

6Resultatativization appears to scope over all derivational and inflectional elements except for argument affixes
b. jix=mix-ch-dh-ix-’am gu u’ux
COP=burn-CAUS-APPL-RES-3PL.SBJ DET stick.RED
‘The sticks are burnt’

• Like statives, resultatives can take a copula and the stative suffix -ka, which García Salido (2014:88-94) associates with non-verbal predicates (see the statives in (16-17) and the resultative in (18)).

(16) a. Gib gu almua’n jix=dhupi’ñ gio gui’am gib gu tua jix=io’m
   hit DET pillow COP=soft and 3.PL.SBJ hit DET tree COP=hard
   ‘I hit the the soft pillow and they hit the hard tree’

b. *gu almua’n dhupi’ñ
   DET pillow soft

(17) no’=ñ git jir=alhii-ka’ cham bhammad-da’-iñ git gio na=ñ
   COND=1SG.SBJ SUBJ COP=little-EST NEG angry-CONT-1SG.SBJ SUBJ COORD SUB=1SG.SBJ
   neg 1R/M-crazy-CONT
   ‘If I were a child, I could not be able to get angry or get crazy. (García Salido 2014:245)

(18) a. Jix=magon-xim gu kabai
   COP=tired-RES DET horse
   ‘the tired horse/the horse is tired’

b. Kugu’ tii jix=bhai’ ulhñ-ix-t ullo unico dai ji na-gu’
   ADVR INT.NR COP=good be.guarded-RES-EST-IMPERF the only only FOC SUB-ADVR
   ba-psik na=mit jugio
   mouse.RED SUB=3PL.SBJ.PFV eat
   ‘That was well kept; the only thing is that the mice finished it.’ (García Salido 2014:285)

• Unlike statives, the copula is not obligatory, as seen in (18b) above. Resultatives can also take morphology that typically modifies events, such as the completive ba- in (19) below.

(19) Tienes que na jum-kambiar-im-am sia makam ba-akusturar-ix xib
   have.to SUB 3R/R/M-change-PROG-3PL.SBJ EXPS different CMP-get.used.to-RES now
   ‘They need to change, in other words, they are accustomed to something different now. (García Salido 2014:60)

Resultativized verbs are morphosyntactically somewhat in between canonical verbs and statives in O’dam.

3.1 The Mismatch Puzzle

• Certain resultatives allow for reduplication with a singular argument as in (20b). This type of mismatch consistently yields an unambiguous meaning where the result has been applied to the subject multiple times. (20c) is underspecified for the number of events, the sticks could have been cut with a single chop or many.

(20) ‘The cut stick’
   a. jix=ik-ix gu uux
      COP=cut-RES DET stick
      One time
b. \( jix=i'k-ix \quad gu \quad uux \)
\[ \text{COP=cut.RED-RES} \quad \text{DET stick} \]
Many times

c. \( jix=i'k-ix'am \quad gu \quad u'uux \)
\[ \text{COP=cut.RED-RES-3PL.SBJ} \quad \text{DET stick.RED} \]

• Crucially, the mismatch we see in (20b) is not allowed with all resultatives. Notice that the reduplicated resultative with the singular subject in (21b) is not allowed.

\[
\begin{align*}
(21) \quad & a. \quad ixchu-xim \quad gu \quad uux \\
& \quad \text{hide-RES} \quad \text{DET stick} \\
& \quad \text{‘The hidden stick’} \\
& b. \quad *i'xchu-xim \quad gu \quad uux \\
& \quad \text{hide.RED-RES} \quad \text{DET stick} \\
& \quad \text{Desired reading: ‘The (many times) hidden stick’} \\
& c. \quad i'xchu-xim \quad gu \quad u'uux \\
& \quad \text{hide.RED-RES} \quad \text{DET stick.RED} \\
& \quad \text{‘The hidden sticks’}
\end{align*}
\]

• Verbs that do not allow a mismatch require other means to express a similar meaning, such as continuative inflection under the resultative (22), or the adverb \textit{mui'kim} ‘many times’.

\[
\begin{align*}
(22) \quad & Su'nni-dh-ix \quad gu \quad tas \\
& \quad \text{fill-CONT-RES} \quad \text{DET cup} \\
& \quad \text{‘the (repeatedly) filled cup’}
\end{align*}
\]

1. Resultatives seem to mark State Number, similarly to statives, but not every resultative allows State and Entity number to be different

2. Plural Entity Number entails plural State Number, regardless of the Event Number

4 \textit{hide-type} vs. \textit{cut-type} Events

• So why do we only find mismatches between plural event and singular participants with certain predicates?

• We’ve already seen that State, Event and Entity Number operate as independent systems.

• Real-world properties create a continuum of event types which we call \textit{cut-type} and \textit{hide-type} events, which differ specifically with respect to how states and entities can interact.

<table>
<thead>
<tr>
<th>Cut-type events</th>
<th>Hide-type events</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Number ≥ Entity Number</td>
<td>State Number = Entity Number</td>
</tr>
</tbody>
</table>

• It’s clear that in cases where O’dam speakers accept mismatches, the real-world properties of the event allow for multiple results to hold over the object \textit{simultaneously}, for example in (20c) a single stick can be described as cut many times. Hide-type events don’t allow this stacking of results. In (21b) we’re unable to say that the stick has undergone multiple hiding events, since with each new hiding event the result of the previous event is undone. In other words, there can only be one “hidden” state applied to the stick at a time.
• The distinction between hide-type and cut-type events is not dichotomous. The events described by the verbs *cut* and *hide* seem to be natural endpoints because their properties are consistently characteristic of whether we can or cannot stack results. However, some verbs are more gray for speakers. For example, speakers disagree on the grammaticality of (23b)

(23) a. *bakuañ-ix gu kalsitin*
   wash-RES DET sock
   ‘The (once) washed sock’

b. *?bopkuñ-ix gu kalsitin*
   wash.RED-RES DET sock
   ‘The (many times) washed sock’

• Here, there’s a question of how permanent the state of being ‘washed’ is. If a sock is dirtied after a washing event, can we no longer call it washed? If a sock is washed repeatedly, can we stack the results of each washing event and call it many times-washed? These intuitions seem fuzzy, and the results of washing events seem to waver between stackable cut-type results and strictly singular hide-type results. O’dam speakers’ judgments seem to reflect this uncertainty.

• Regardless, certain verbs have clear tendencies as to which type of events they denote. A sampling below:

(24) **cut-type leaning verbs**
   *ik-ix > i’k-ix ‘cut’*
   *jaiñ-ix > jaix-ix ‘split, sliced, cleaved’*
   *kiĩñ-ix > kiyax-ix ‘kicked’*
   *komk-ix > kokmik-ix ‘hugged’*
   *omñ-ix > omx-ix ‘broken, fractured’*

(25) **hide-type leaning verbs**
   *ixchu-xim > i’xchu-xim ‘hidden’*
   *jugi-ix > ju’gi-ix ‘finished’*
   *juuka’ndh-ix > jujukdh-ix ‘heated up’*
   *kupio’k-ix > kukpio’k-ix ‘opened’*
   *mai’gix-ix > mai’suhs-ix ‘lost’*
   *muk-ix > ko’-ix ‘die’*
   *mu’kdh-ix > mu’mkadh-ix ‘sharpened (transitive base)’

• So is this property characterized by verbs themselves? The verb isn’t the only element that contributes to our ability to talk about stacked results of events. Rather, the noun and its relationship to that verb all play an important role. For example, consider (26).

(26) #*siiss-ix gu baiñum*
   straighten.RED-RES DET iron
   ‘The piece of iron is straightened (in various sections)’

• The reading in (26) is only grammatical if the iron is bent in various places before the straightening event, for example if the iron is a star shape. We cannot get a grammatical reading if the iron is straightened and bent in the same section.

So, both the noun and the verb contribute to real world properties which determine whether multiple results can be stacked onto a single object, and therefore to whether O’dam speakers will allow a reduplicated verb to be used with a singular noun.
5 The interaction between suppletion and reduplication

• In O’dam, suppletion survives derivation in all cases, including resultativization as we saw in (5).

• The table below is an exhaustive list of the attested suppletive verbs in O’dam. As far as we can tell, most of these verbs are hide-type, with the exception of bui’ñ~ iobo “throw” and milhi~bapoo “run.”

(27) Suppletive verbs in O’dam (García Salido & Everdell in review)

<table>
<thead>
<tr>
<th>SG</th>
<th>PL</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>mu’a</td>
<td>kooda</td>
<td>‘kill’</td>
</tr>
<tr>
<td>muki</td>
<td>ko’i</td>
<td>‘die’</td>
</tr>
<tr>
<td>milhi</td>
<td>bapoo</td>
<td>‘run’</td>
</tr>
<tr>
<td>oñi</td>
<td>ua’ki</td>
<td>‘clear up (sky), clean’</td>
</tr>
<tr>
<td>bhiyi</td>
<td>u’i</td>
<td>‘get, acquire, marry, harvest (except corn)’</td>
</tr>
<tr>
<td>bakuan</td>
<td>bopkun</td>
<td>‘wash’</td>
</tr>
<tr>
<td>kuan</td>
<td>kookosa</td>
<td>‘remove (cover), pull out (vertically), undress’</td>
</tr>
<tr>
<td>bui’ñ</td>
<td>iobo</td>
<td>‘throw’</td>
</tr>
<tr>
<td>gixi</td>
<td>suulhig</td>
<td>‘swim, be born, bear fruit’</td>
</tr>
<tr>
<td>baabu</td>
<td>boosog</td>
<td>‘pull out (horizontally), pull aside (to speak to)’</td>
</tr>
</tbody>
</table>

• Suppletion has been described as marking explicit participant number on the verb in O’dam and across the Uto-Aztec family (for further discussion see Haugen & Siddiqi 2013, Haugen & Everdell 2015, Harley et al. 2017 and García Salido & Everdell in review). So if our analysis is true that reduplication is marking State Number on resultative verbs independently from Entity Number, we might expect suppletion and reduplication to act independently on the verb.

• Our two suppletive cut-type verbs only allow for reduplication in the singular form, while the plural form does not have an attested reduplicated form, even outside of resultivization.

(28) a. *Mu buidh-ix gu pilot
    DIR throw.SG-RES DET ball
    ‘The ball is thrown’

b. *bupp-ix gu pilot
   throw.SG.RED-RES DET ball
   ‘The ball is thrown (many times)’

c. gu piglot mu iob-ix
   DET ball.RED DIR throw.PL-RES
   ‘The balls are thrown’

d. *io’b-ix, *i’iob-ix

(29) a. milh-chu-dh-ix gu kabai
     run.SG-CAUS-APPL-RES DET horse
     ‘The horse is run’

b. mimlhi-chu-dh-ix gu kabai
   run.SG.RED-CAUS-APPL-RES DET horse
   ‘The horse is run (many times)’

c. bapoi’-ch-dh-ix gu kakbai
   run.PL-CAUS-APPL-RES DET horse.RED
   ‘The horses are run’
Like it does in non-resultativized verbs, the suppletion in (28) and (29) is always marking participant number. We know this because the suppletion of the verb is always agreeing with the number of the noun regardless of reduplication.

However, while reduplication may mark something like event number in non-resultative verbs, once the verbs shift category to become resultativizes, reduplication is used to mark plural State Number. In other words, reduplication cares about the category its modifying.

When the entity is singular, we can tease apart participant and State number, so we’re able to have optional reduplication. However, once we start talking about plural participants, which is marked by a suppletive plural, there’s a functional motivation to underspecify for state number since plural participants entails plural states.

So, we end up with a conflation of Entity number and State number with plural nouns, and suppletion bears the functional load of both categories.

6 A Call to Action: The Field (Re-)beckons

In texts, we very rarely find mismatches between State Number and Entity Number in resultative constructions, hence the previous agreement analysis. However, given that mismatches are meaningfully contrastive, it is clear that noun and verb reduplication are serving distinct functions in resultatives.

The non-mismatched event and participant number gives a more general meaning that encompasses the unambiguous meaning given by mismatched event-participant number. Thus, it seems that the mismatches would only occur in specific cases where the unambiguous meaning is necessary.

It’s not the case that O’dam conceives of events in a unique way. English differentiates the same event types based on entailments.

(30)  a. # I hid the stick and then I hid it again without un-hiding it.
     b. # I heated up the dinner and then heated it up again without letting it cool.
     c. # I opened the door and then opened it again without it closing.
     d. I cut the stick and then I cut it again without mending it.
     e. I was hugged by Kristie and then hugged by Tom without Kristie letting go.
     f. I broke the plate and then broke it again without fixing it.

However, the ability for O’dam to overtly specify number of results independently from number of participants in resultative constructions allows speakers to bring out the subtle properties that differentiate these universal types of events. Specifically, speakers can encode State Number independently from other aspects of events.

While to our knowledge no other language has been described as overtly distinguishing between cut- and hide-type events, nothing about O’dam’s system here is typologically rare (e.g. Rubino 2013). So we suspect that many more languages will show patterns similar to O’dam’s, however the mismatches discussed here seem to be somewhat rare in natural speech, only occurring where the unambiguous ‘polka-dotted’ reading is absolutely necessary.

Merci beaucoup!!!
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References


