

Title: Participant Reduction and Two-Level Markedness

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1. Overview

Distributed Optimality (Trommer, 2002a), unlike standard Correspondence Theory (McCarthy and Prince, 1994), claims that markedness constraints can refer to input *and* output representations. In this paper, I discuss the phenomenon that number features in transitive agreement with two speech act participants (SAPs, 1st and 2nd person arguments) are neutralized (“Participant Reduction”) and argue that this effect is due to the constraint Participant Uniqueness (P.U.). Based on data from Colloquial Ainu (Shibatani, 1990), I show that P.U. favors unfaithful candidates with reference to input features and provides evidence for two-level markedness constraints at the morphology-syntax interface.

2. Participant Reduction in Colloquial Ainu

In Colloquial Ainu (Shibatani, 1990:29), subject and object agreement in transitive forms is marked transparently by prefixes, where subject precede object prefixes:

- (1) *eci-un-kore* ‘you (pl.) give us’
2pl-O1p-give

However, in all combinations, where the subject is 1st and the object 2nd person, only the 2nd person marker *eci-* appears (2). The left column contains the compositional forms that would be expected (*ku-*, S1sg; *ci-*, S1pl; *e-*, 2sg):

- (2) **ku-e-* ‘I-you (sg.)’ **ci-e-* ‘we-you (sg.)’ ⇒ *eci-*
**ku-eci-* ‘I-you (pl.)’ **ci-eci-* ‘we-you (pl.)’

I assume that this is the effect of two different constraints, one suppressing subject agreement in 1 → 2 forms, and a second one that disallows number expression by *e:[+2-pl]* and effects that 2sg object agreement is also expressed by *eci:[+2]*. The formal nature of this second constraint is the topic of this paper.

3. Distributed Optimality

In Distributed Optimality (Trommer, 2002a), syntactic operations manipulate abstract heads without phonological features. Morphology constitutes an independent module of the grammar that takes wordlike units from the output of syntax

as its input and assigns to them strings of vocabulary items (VIs), pairings of underspecified syntactic feature structures and phonological matrices by evaluating a language-specific ranking of a universal set of morphological constraints.

For *eci-un-kore* in (1), I assume the input [+Nom+2+pl][+Acc+1+pl] (omitting the verb). PARSE [F] is violated by each input feature not realized in the output, and $L \Leftarrow [+2]$ is an alignment constraint which requires 2nd person affixes to be maximally leftwards:

(3) **Input:** [+Nom+2+pl]₁ [+Acc+1+pl]₂

	$L \Leftarrow [+2]$	PRS [F]
☞ a. <i>eci</i> : [+2] ₁ - <i>un</i> : [+Acc+1+pl] ₂ -		**
b. <i>un</i> : [+Acc+1+pl] ₂ - <i>eci</i> : [+2] ₁ -	*!	**
c. <i>un</i> : [+Acc+1+pl] ₂ -		***!
d. <i>eci</i> : [+2] ₁ -		***!***

Note that some violations of PARSE [F] cannot be avoided since there are no VIs expressing e.g. [+Acc+2+pl]. Following Gerlach (1998), I analyze suppression of the [+1] affix for 1 → 2 forms as the effect of two alignment constraints ranked above faithfulness (here PARSE [F]):

(4) **Input:** [+Nom+1-pl]₁ [+Acc+2+pl]₂

	PRS PER ^{[+2]/[+1]}	$L \Leftarrow$ [+Nom]	$L \Leftarrow$ [+2]	PRS [F]
a. <i>eci</i> : [+2] ₂ - <i>ku</i> : [+1+Nom] ₁ -		*!		**
b. <i>ku</i> : [+1+Nom] ₁ - <i>eci</i> : [+2] ₂ -			*!	**
c. <i>ku</i> : [+1+Nom] ₁ -	*!			**
☞ d. <i>eci</i> : [+2] ₂ -				**

PARSE PER^{[+2]/[+1]} belongs to the family of relativized PARSE constraints (Trommer, 2002b), and is to be read as: "If there are adjacent [+2] and [+1] heads in the input, then realize the person feature ([PER]) of the [+2] head. Relativized PARSE constraints are related to universal prominence hierarchies by the schema in (5):

(5) If $A_1 \dots A_n$ are distinct from $B_1 \dots B_n$, and $A_i \geq B_i$ on a scale S_i ($1 \leq i \leq n$), then there is a constraint PARSE [AGR]^{[A₁...A_n]/[B₁...B_n]}

Given the scales in (6) which are justified by extensive crosslinguistic evidence, we get particular constraints as in (7). "[+high]" stands for the highest argument that agrees with the verb, i.e., transitive subject or intransitive object, "[-high]" corresponds to intransitive subject or transitive object.

- (6) a. $\left\{ \begin{array}{l} [+1] \\ [+2] \end{array} \right\} > [+3]$ b. [+high] > [+low]
 c. [-marked] > [+marked] (Nominative/Absolutive > Ergative/Accusative)

(7a,b) encode that agreement with local person is preferred over agreement with 3rd person, (7c) captures the preference for subject agreement. Since [+1] and [+2] are not ranked, there are antagonistic constraints for verbs with [+1] and [+2] agreement (7d,e). Actual preference depends on the language-specific ranking. (7e) is the constraint from (4) and by assumption ranked higher than (7d) in Ainu.¹

- (7) a. PARSE [PER]^{[+1]/[+3]} b. PARSE [PER]^{[+2]/[+3]}
 c. PARSE [PER]^{[+high]/[+low]}
 d. PARSE [PER]^{[+1]/[+2]} e. PARSE [PER]^{[+2]/[+1]}

Note that we still have no account for the fact that number is neutralized in 1 → 2 forms since PARSE [F] should prefer e:[+2-pl] over eci:[+2] for inputs of the form [+Nom+1+/-pl] [+Acc+2-pl], and no other constraint disfavors e:[+2-pl]. I will treat this problem under a crosslinguistic perspective on participant reduction.

4. Participant Reduction crosslinguistically

As Noyer (1992) observes, participant reduction is widespread involving considerable crosslinguistic variation, especially inside the Tanoan Tiwa family, as to which number contrasts are neutralized when both arguments are SAPs. Thus in Nungubuyu number of 1st person arguments is deleted. in Arizona Tiwa, all number contrasts are suppressed, in Rio Grande Tiwa only number of a 1st person subject is preserved, and in Northern Tiwa only number of a 2nd person object. In Southern Tiwa only number features of objects are preserved. Swahili is a language where all number contrasts are preserved. These constellations are summarized in (8) where "†" stands for neutralization and "♯" for retention of the number contrast in the boldfaced category of the respective row:

(8)		Nungubuyu	N. Tiwa	S. Tiwa	A. Tiwa	R.G. Tiwa	Swahili
	1:2	†	†	†	†	♯	♯
	1:2	♯	♯	♯	†	†	♯
	2:1	♯	†	†	†	†	♯
	2:1	†	†	♯	†	†	♯

¹A similar preference for [+2] over [+1] prefixes is found in the Algonquian language Menominee (cf. Trommer, 2002b)

I formulate the crosslinguistic tendency to syncretize number contrasts in agreement when both arguments are non-third person in (9):

- (9) **Participant Uniqueness (P.U.):** For two adjacent [-3] agreement heads in the input, number should not be expressed in the output

(9) ranked above PARSE [F] accounts for Arizona Tiwa, the opposite ranking for Swahili. (10) and (11) show this for the input [+Nom+1+pl]₁ [+Acc+2+pl]₂.

(10) **Swahili**

	PRS [F]	P.U.
a. [+1] ₁ -[+2] ₂	*!*	
b. [+1+pl] ₁ -[+2] ₂	*!	*
c. [+1] ₁ -[+2+pl] ₂	*!	*
☞ d. [+1+pl] ₁ -[+2+pl] ₂		**

(11) **A. Tiwa**

	P.U.	PRS [F]
☞ a. [+1] ₁ -[+2] ₂		**
b. [+1+pl] ₁ -[+2] ₂	*!	*
c. [+1] ₁ -[+2+pl] ₂	*!	*
d. [+1+pl] ₁ -[+2+pl] ₂	*!*	

The languages "in-between", i.e., with partial neutralization of number, can be captured by relativized PARSE constraints, this time referring to number, instead of person and ranked above P.U.:

- (12) Nunggubuyu PRS [NUM]^{[+2]/[+1]} >> P.U. >> PRS ...
 S. Tiwa PRS [NUM]^{[-marked]/[+marked]} >> P.U. >> PRS ...
 R.G. Tiwa PRS [NUM]^{[+1+high]/[+2+low]} >> P.U. >> PRS ...
 N. Tiwa PRS [NUM]^{[+2-marked]/[+1+marked]} >> P.U. >> PRS ...

Note that [+marked] and [-marked] refer to ergative and absolutive case in Northern and Southern Tiwa. Since in Ainu the subject in 1 → 2 forms is completely suppressed, it is unclear whether P.U. applies to [+1] subjects, but we know from (1) that it does not apply to [+1] objects and [+2] subjects. Thus I assume that relativized PARSE constraints generally retain number for [+1] arguments and [+2] subjects but not for [+2] objects, while PARSE [NUM]^{[+1]/[+2]} is overridden by L ⇔ [+2] which causes the dropping of the 1st person prefix.

- (13) L ⇔ [+2] >> { PARSE [NUM]^{[+1]/[+2]}
 PARSE [NUM]^{[+2+high]/[+1+low]} } >> P.U.

5. The Formal Nature of Participant Reduction

While P.U. as formulated in (9) captures the crosslinguistic tendency that number features are suppressed in transitive verbs having only SAP arguments, it is not

a possible constraint in standard OT, since it refers to input features while not being a faithfulness constraint. In Distributed Optimality (Trommer, 2002a), it falls under the category of "Impoverishment constraints", i.e., two-level markedness constraints marking the realization of certain features given a specific input. For some of the languages in (8), (9) could be reformulated as (14) which refers only to output structures:

(14) A [-3] VI should not be specified [+pl] in a form with another [-3] VI

But (14) does not work for Ainu, since it cannot favor (15a) over (15b), where there is no overt [+1] affix:

- (15) a. eci:[+2]-kore
b. *e:[+2-pl]-kore

Transderivational constraints (e.g. Benua, 1997) might seem to be an alternative to constraints which refer to input features. Thus P.U. could be formulated like this:

(16) Transitive forms with two [-3] heads should have equal number specifications.

But as (9), (16) has to refer to the morphological input, since the forms in (15) cannot otherwise be identified as relevant forms. Indeed e:[+2-pl]-kore is grammatical with the interpretations "you (sg.) give" or "he gives you". Thus, the Distributed Optimality version of P.U. is actually more restrictive than a transderivational account, since it refers only to input features, but not to other output forms, while the transderivational version refers to both.

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