

## Two types of binding: Evidence from Tswefap pronominals

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**Overview.** In this paper I argue for a theory of binding that makes use of both situation pronouns and indices, drawing on evidence from a previously undescribed binding pattern in Tswefap (Narrow Grassfields, Cameroon). Tswefap has two third person singular subject pronouns, *zhig* and *yi*, that have different distributions with respect to binding. I claim that both pronouns are definite descriptions containing situation pronouns (Elbourne, 2005, 2013) while only one of them contains an index (Patel-Grosz and Grosz, to appear). The presence or lack of an index yields the differences in the binding behavior of the two pronouns, since one of the pronouns can only participate in situation pronoun binding while the other can participate in A-binding via its index. I argue that both types of binding are necessary to account for the observed patterns, suggesting that two different binding mechanisms are needed to account for the variation seen crosslinguistically.

**Two pronoun structures.** The difference between Tswefap *zhig* and *yi* at first glance resembles the distinction between personal and demonstrative pronouns in languages such as German. *Zhig*, but not *yi*, can occur with an overt NP complement. *Zhig* can be used when the antecedent has been made salient by the physical context, while *yi* requires an overt linguistic antecedent. *Zhig* can be used for topical or anti-topical referents, with a preference for anti-topics, while *yi* is felicitous with topical referents only.

I claim that both pronouns consist of a determiner, a situation pronoun, and an NP, the combination of which is spelled out as a pronoun with the NP complement typically being deleted via NP-deletion (Elbourne, 2005, 2013). Following Patel-Grosz and Grosz’s (to appear) account of German personal and demonstrative pronouns, I claim that the distributional differences between the Tswefap pronouns arise because *zhig* additionally has an index in its structure while *yi* lacks one, as shown in (1).

- (1) a.  $yi = [[\text{he NP}] s_i]$   
b.  $zhig = [1 [[\text{he NP}] s_i]]$

**Covarying interpretations as situation pronoun binding.** The presence or lack of an index further accounts for the most striking difference between the two pronouns – their binding behavior. The first difference in binding possibilities is that *zhig* cannot be bound by a quantifier to receive a covarying interpretation while *yi* can, as shown in (2).

- (2) mbe wəɔ n-rob ngə {**zhig**<sub>\*i/j</sub> / **yi**<sub>i/\*j</sub>} a kho  
every person TAM-say COMP 3.SG FACT cough  
‘[Every person]<sub>i</sub> said that he<sub>i/j</sub> coughed.’

I argue that *yi*’s referent is always established through the binding of its situation pronoun via a sigma operator (Schwarz, 2012; Elbourne, 2013). A sigma operator can bind the situation pronoun to allow it to combine with the topic situation or to achieve an interpretation that covaries with a higher situation pronoun. Following Elbourne (2005, 2013), I assume that quantifiers introduce situation pronouns, and thus quantify over situations. In (2), therefore, *yi*’s situation pronoun is bound by a sigma operator in order to covary with the situation pronoun introduced by the quantifier *mbe* ‘every’. *Zhig*’s referent, on the other hand, additionally depends on its index with the individual referred to by the index determined via an assignment function. *Zhig* thus picks out the unique individual in the situation ( $s_i$ ) that meets the descriptive content of the NP contained within the pronominal, and requires the identity of this individual with the individual denoted by the assignment function applied to its index (Patel-Grosz and Grosz, to appear). *Zhig* is therefore ungrammatical with a bound reading in (2), because an assignment function applied to its index will map its index to a particular individual, ruling out a covarying interpretation. This contrast between the pronouns is shown in the simplified LF structures for bound readings in (3).

- (3) a.  $yi: [[[\text{every } s_1] \text{ person}] [\sigma_2 [\text{said} [[\text{he person}] s_2] \text{ coughed}]]]]$   
b.  $zhig: *[[[\text{every } s_1] \text{ person}] [\sigma_2 [\text{said} [[3 [[\text{he person}] s_2]] \text{ coughed}]]]]]$

In (3a) with *yi*, the pronoun  $s_2$  is bound by the operator  $\sigma_2$  to achieve an interpretation that covaries with the pronoun  $s_1$  introduced by ‘every’. In the ungrammatical (3b) with *zhig*, the binding of  $s_2$  should result in a covarying interpretation, but the index 3 will be mapped to a particular individual via an assignment function. With an assignment such as  $[3 \rightarrow \text{Chimi}]$  we are left with a reading where every individual who is a person in  $s'$  and is Chimi, coughed in  $s''$ , not the desired covarying interpretation. The only grammatical reading with *zhig* and a quantifier is disjoint, where *zhig* refers to a particular individual. This reading results from a pronoun with an NP whose descriptive content is distinct from the content of the NP in the quantifier phrase, such as  $[3 \text{ [[he Chimi] } s_2]]$ , ruling out a bound interpretation.

**A-binding of reflexives as binding via indices.** The second difference between the two Tswefap pronouns with respect to binding is that *zhig* can bind a reflexive, while *yi* cannot, as illustrated by (4).

- (4) {*zhig*/\**yi*} a kwɔg ni-e  
 3.SG FACT like self-3.SG  
 ‘He<sub>i</sub> likes himself<sub>i</sub>.’

I argue that this contrast can also be accounted for by the presence of an index on *zhig*. Following Elbourne (2013), I assume that all and only determiners introduce situation pronouns. I claim that the reflexive *ni* does not have the same articulated structure found in pronominals with a determiner, deleted NP, and situation pronoun. Instead, the interpretation of a reflexive depends on an index only, with A-binding of reflexives being achieved through local binding with indices. Since *yi* only has a situation pronoun and not an index, it can only participate in situation pronoun binding and cannot bind a reflexive. However, *zhig* has an index and is thus a possible local binder for the reflexive in (4).

Support for the claim that A-binding of reflexives is achieved via a different mechanism than the situation pronoun binding of pronominals under the scope of quantifiers in Tswefap comes from configurations involving both quantifiers and reflexive predicates, such as the example in (5).

- (5) mbe wəɔ n-rop ngə yi a kwɔg {\**ni-e* / *zhə n-tswə ni*}  
 every person TAM-say COMP 3.SG FACT likes {self-3.SG / his PL-head body}  
 ‘[Every person]<sub>i</sub> said he<sub>i</sub> likes himself<sub>i</sub>.’

Recall that *zhig* is ungrammatical with a covarying interpretation under a quantifier, leaving *yi* as the only option for the pronoun in the embedded CP. However, *yi* cannot bind a reflexive. Therefore, the intensifier *zhə ntswə ni* ‘he himself’ is used instead of the typical reflexive *ni*. The crucial difference between this intensifier and the reflexive is that the intensifier contains the possessive *zhə*, which introduces a situation pronoun, like other determiners. This situation pronoun allows it to participate in situation pronoun binding via sigma operators, and in fact data from elsewhere in the language show that it can be bound from outside its clause or by the topic situation just like the pronominal *yi*. In (5), then, the situation pronoun of *zhə ntswə ni* is bound via a sigma operator to covary with the higher situation pronouns introduced by the quantifier and *yi*, achieving the correct reading. If situation pronoun binding were possible with the reflexive *ni*, we would expect it, too, to be grammatical in this configuration.

**Conclusions.** These novel binding patterns illustrated by the Tswefap data provide evidence for a distinction between covarying readings arising from situation pronoun binding through sigma operators and local A-binding of reflexives via indices with assignment functions. These data also suggest that both types of binding can be active in the same language. The ungrammaticality of *zhig* as a bound variable under the scope of quantifiers provides evidence for its referential index. Likewise, the ungrammaticality of *yi* as a binder for reflexives lends support for its lack of an index and illustrates the necessity of indices for A-binding. This paper thus extends a mechanism used to account for differences between personal and demonstrative pronouns (Patel-Grosz and Grosz, to appear), namely the co-occurrence of situation pronouns and indices in the structure of some pronouns, to account for previously undescribed binding patterns which provide evidence for the existence of two types of binding.

**References.** Elbourne, P. 2005. *Situations and Individuals*. • Elbourne, P. 2013. *Definite Descriptions*. • Patel-Grosz, P. and Grosz, P. G. to appear. Revisiting pronominal typology. *Linguistic Inquiry*. • Schwarz, F. 2012. Situation pronouns in determiner phrases. *Natural Language Semantics*.