

# A Probe-Goal Approach to Agreement and Non-Incorporation Restrictions in Southern Tiwa

Fabian Heck & Marc Richards\*  
Universität Leipzig

## Abstract

Southern Tiwa (Tanoan) exhibits agreement with up to three arguments (ergative, absolutive, dative). This agreement is subject to certain restrictions resembling the Person-Case Constraint paradigm (Bonet (1991)). Moreover, there is a correlation between agreement restrictions and conditions on (the obviation of) noun-incorporation in Southern Tiwa, as explicitly and elegantly captured by Rosen (1990) in terms of a heterogeneous feature hierarchy and rules of association. We attempt to recast Rosen's central insights in terms of Anagnostopoulou's (2003; 2006) probe-sharing model of Person-Case Constraint effects, to show that the full range of Southern Tiwa agreement and (non)incorporation restrictions can be given a single, unified analysis within the probe-goal-Agree framework of Chomsky (2001). In particular, we argue that Southern Tiwa's triple-agreement system is characterized by (i) an independent class probe located on the heads T and v, and (ii) a rule that allows this class probe to be deleted in the context of local-person T-agreement. The various restrictions on agreement and non-incorporation then reduce to a single source: failure of class-valuation with DP (as opposed to NP) arguments.

*Keywords:* Southern Tiwa, Agree, Person-Case-Constraint, class feature, incorporation, Phase Impenetrability Condition, syncretism, inverse number

## 1 Introduction

Rosen (1990) offers a remarkably elegant reanalysis of the complex set of agreement restrictions and conditions on incorporation in Southern Tiwa, a Tanoan language spoken in New Mexico, as described and analysed in the pioneering work of Allen, Frantz and Gardiner (see, especially, Allen et al. (1990)).<sup>1</sup> Southern Tiwa is a head-marking language (in the sense of Nichols (1986)) that makes extensive use of noun-incorporation and exhibits a particularly interesting system of rich agreement (using portmanteau morphemes): as argued by Rosen, Southern Tiwa is a *triple-agreement* language, in which the verbal prefix can register agreement with up to three arguments

---

\*For helpful comments and questions we would like to thank the audiences at the Workshop on Grammar and Processing of Verbal Arguments (Universität Leipzig, April 2007), Generative Grammatik im Süden (Universität Konstanz, May 2007), and the Workshop on Morphology and Argument Encoding (Harvard University, September 2007), as well as the participants of the Colloquium on Syntax and Morphology at Universität Leipzig, April 2007. Particular thanks go to Daniel Harbour, Gereon Müller, Andrew Nevins, Jochen Trommer, and three anonymous NLLT reviewers.

<sup>1</sup>These works are concerned with the idiom spoken at Isleta pueblo; see also Leap (1970a).

in a clause. Thus verbs may agree with as many as three arguments: the ergative ( $NP_{erg}$ ), absolutive ( $NP_{abs}$ ) and dative ( $NP_{dat}$ ). This agreement, which is expressed in the form of a verbal prefix, registers person, number and, in the case of third-person arguments, class as well; see (1), (2), and (3), from Rosen (1990, 670).

- (1) a. Te-mĩ-ban (eskwela-'ay)  
1SG-go-PAST school-to  
"I went (to school)"  
b. A-mĩ-ban (eskwela-'ay)  
2SG-go-PAST school-to  
"You went (to school)"
- (2) a. Ka-musa-wia-ban  
1SG:A:2SG-cat-give-PAST  
"I gave the cat to you"  
b. Kam-musa-wia-ban  
1SG:B:2SG-cat-give-PAST  
"I gave the cats to you"
- (3) a. 'Uide tam-musa-wia-ban  
child-A 1SG:B:A-cat-give-PAST  
"I gave the cats to the child"  
b. 'Uide tow-keuap-wia-ban  
child-A 1SG:C:A-shoe-give-PAST  
"I gave the shoes to the child"

Following Rosen (1990), the agreement prefix is glossed as follows: a prefix that encodes agreement with  $NP_{erg} = X$ ,  $NP_{abs} = Y$ , and  $NP_{dat} = Z$  is glossed as X:Y:Z (this does not reflect the hierarchy of arguments in the structure, cf. (33); nothing that follows hinges on this); accordingly a prefix encoding for  $NP_{erg}$  and  $NP_{abs}$  is glossed X:Y, and one encoding for  $NP_{abs}$  and  $NP_{dat}$  is glossed Y:Z. The letters A, B and C indicate class-agreement: the singular and plural forms of third-person nouns in Southern Tiwa belong to one of three inflectional classes, labelled A, B and C, respectively, which follow one of the three patterns in (4).<sup>2</sup>

(4) *Agreement patterns:*

	Pattern 1	Pattern 2	Pattern 3
singular	A	A	B
plural	B	C	C

Animate third-person nouns always follow Pattern 1 (Rosen (1990, 672)), a fact that will become crucial in section 4.

Example (1), then, exhibits person and number-agreement for the single, absolutive argument of an intransitive; examples (2) and (3) display triple-agreement with all

<sup>2</sup>Southern Tiwa also exhibits a dual, which often (but not always, see section 4.1; cf. also appendix A, section 7.2) collapses with the plural in the agreement prefix. Thus, (4) is a simplification. We will return to the status of the dual within the Southern Tiwa class system in appendix A, where we attempt to reduce the A-B-C class system in (4) to one based solely on number features, in line with such recent proposals as Noyer (1992) and Harbour (2007).

three arguments of a ditransitive, with the absolutive argument registering variation in inflectional class according to number in (2) and animacy in (3).

Additionally, agreement and incorporation in Southern Tiwa are subject to a number of constraints, which are the central concern to the present paper (and to Rosen (1990)). They can be summarized as follows (a more detailed exposition and explanation of these constraints can be found in sections 2, 4, and 5):

- (5) *Restrictions on Southern Tiwa agreement and incorporation:*  
Any two (or more) of the following three argument types are barred from co-occurring:
- a. A dative DP (of any person)
  - b. A third-person ergative DP
  - c. A local-person (1st/2nd) or non-incorporating absolutive DP.

Rosen's strikingly simple and insightful analysis describes the banned configurations in terms of crossing association lines on a featural hierarchy, akin to a tier in autosegmental phonology. Thus, given the hierarchical arrangement of person, case and animacy features in (6), ungrammaticality arises wherever the linking of arguments according to these features with the corresponding points on this tier would result in the crossing of linkages, formalized as association lines.

- (6) *Rosen's hierarchy:*  
Sole animate  $\gg$  Ergative  $\gg$  1st/2nd *or* specific *or* non-incorporated  $\gg$  Dative  
 $\gg$  3rd  $\gg$  Absolutive  $\gg$  Inanimate

The reader can check for themselves that attempting to combine any two of the three categories in (5) will result in crossing associations, and thus a prohibited configuration.

Effective and explicit as this analysis surely is, the particular technology it employs (a primitive hierarchical tier to which arguments are associated, presumably by special rules of association) is of questionable status, especially under the more stringent standards to which syntactic explanation is held in the recent developments of the Minimalist Program (Chomsky (1995) et seq.). Our aim in the subsequent sections of this paper is thus to attempt a further (re)rethinking of the restrictions in (5) that builds on and recasts Rosen's central insights in terms of the probe-goal mechanism underlying the operation Agree of Chomsky (2000; 2001). In particular, Rosen's crossing association lines would seem readily amenable to a reanalysis in terms of intervention effects arising from the minimality of Agree, whereby a probe must agree (first) with the *closest* goal in its c-command domain (with the hierarchy in (6) perhaps translated into an equivalent corresponding sequence of functional heads). Insofar as such a reworking of Rosen's analysis proves possible, the typologically rare triple-agreement system of Southern Tiwa becomes amenable to principled explanation in the sense of Chomsky (2007; 2008), which, echoing Rosen's own concerns (Rosen (1990, 670)), would be an interesting theoretical result in itself.

The rest of the paper is organized as follows. Section 2 elaborates on the empirical situation, presenting the data and restrictions on agreement and non-incorporation in greater detail. Our theoretical assumptions are then summarized in section 3, which leads to an analysis of Southern Tiwa's agreement restrictions in terms of the Person-

Case-Constraint in section 4. Section 5 extends this analysis to the restrictions on non-incorporation, developing a unified account that strengthens the connection that Rosen draws between (non)agreement and (non)incorporation by removing the stipulations associated with her hierarchical rankings. Finally, section 6 offers a brief conclusion.

The analysis presented in sections 3–5 is based on Leap’s (1970*a*) atomic A-B-C class system (cf. (4) above). In light of recent successful number-based treatments of Kiowa-Tanoan class such as Noyer (1992) and Harbour (2007), which dispense with class as a primitive feature, appendix A attempts to reformulate our analysis in terms of a system based on decomposed number features, arguing that this is not only desirable from the perspective of semantic transparency, but also quite possible, requiring relatively few additional assumptions once it is recognized that Southern Tiwa lacks the nominal inverse of related Kiowa-Tanoan languages.

## 2 The Restrictions

### 2.1 Agreement restrictions

Let us first illustrate the three agreement restrictions to which Southern Tiwa is subject, adhering largely to the presentation in Rosen (1990) (see also Allen and Frantz (1983), Allen et al. (1990), Aissen (1990); for a more crosslinguistic view of these and similar restrictions, see Aissen (1999), Haspelmath (2003), Baker (2008)).

The first restriction relates to transitive clauses and bars the co-occurrence of a third-person ergative with a first- or second-person absolutive. As shown in (7), there is no agreement prefix to express A/B/C:1/2 in transitives (the position of the nonexistent prefix is indicated in the structure by xxx). Instead, Southern Tiwa resorts to a passive to express such a proposition (see (7-c)).

- (7) a. Ti-khwian-mu-ban  
 1SG:A-dog-see-PAST  
 “I saw the dog”  
 b. \*’Uide xxx-mū-ban  
 child-A A:2-see-PAST  
 “The child saw you”  
 c. ’Uide-ba ma-mū-che-ban  
 child-INST 2PL-see-PASS-PAST  
 “You were seen by the child”

This restriction, which bears the hallmarks of the “weak” form of the Person-Case Constraint (PCC; see in particular Anagnostopoulou (2006) and references therein, and section 4 below), may be stated as follows:

- (8) *First agreement restriction (simple transitives; Rosen (1990, 675f.)):*  
 If NP<sub>erg</sub> in a simple transitive structure is 3rd, then NP<sub>abs</sub> must be 3rd, too.

The second restriction on Southern Tiwa agreement applies to “dative intransitives”, i.e., intransitive clauses in which the absolutive co-occurs with a dative goal, and by extension to ditransitives too (see also the third restriction, (12), below). The dative

argument may or may not control agreement (i.e. be expressed in the verbal prefix). If it is an agreement-controlling dative, then the co-occurring absolutive is once again barred from being first- or second-person, as shown in (9). Propositions involving a first- or second-person absolutive require a nonagreeing dative, i.e. the language must resort to an oblique dative (marked by a post-position, as for instance -'ay in (9-c)).

- (9) a. Im-seuan-wan-ban  
       B: 1SG-man-come-PAST  
       “The men came to me”  
       b. \*xxx-wan-ban  
       2SG: 1SG-come-PAST  
       “You came to me”  
       c. A-wan-ban       na-'ay  
       2SG-come-PAST me-to  
       “You came to me”

This restriction, which resembles the “strong” Person-Case Constraint (see Bonet (1991), Boeckx (2000), Anagnostopoulou (2003; 2006), Řezáč (2004), Richards (2008*b*), Adger and Harbour (2007), and section 4 below), may be stated as follows:

- (10) *Second agreement restriction (dative intransitive; Rosen (1990, 678f.)):*  
 In a structure with NP<sub>abs</sub> and NP<sub>dat</sub>, NP<sub>abs</sub> must be 3rd (NP<sub>dat</sub> is free).

Finally, the third restriction on agreement in Southern Tiwa applies to ditransitives, such that a dative may not co-occur with a third-person ergative, as in (11-b). Since a dative is present, the previous restriction (10) applies here too, thus excluding a first- or second-person absolutive (see (11-c)).

- (11) a. Tow-wia-ban  
       1SG:C:A-give-PAST  
       “I gave them to him/her”  
       b. \*xxx-wia-ban  
       A:C:A-give-PAST  
       “He gave them to him/her”  
       c. \*xxx-wia-ban  
       1SG:2SG:A-give-PAST  
       “I gave you to him”

We might state this restriction as in (12), which includes the strong Person-Case Constraint in (10) as its second part.

- (12) *Third agreement restriction (ditransitives; Rosen (1990, 677)):*  
 In a ditransitive structure, NP<sub>erg</sub> must not be 3rd and NP<sub>abs</sub> must be 3rd (NP<sub>dat</sub> is free).

In sum, the three restrictions on Southern Tiwa agreement ban the three logically possible pairings of datives, third-person ergatives, and first- or second-person absolutes:

- (13) *Summary of agreement restrictions:*
- a. \*NP<sub>erg,3rd</sub> + NP<sub>abs,1st/2nd</sub> (weak PCC)
  - b. \*NP<sub>dat</sub> + NP<sub>abs,1st/2nd</sub> (strong PCC)
  - c. \*NP<sub>erg,3rd</sub> + NP<sub>dat</sub> (restriction on NP<sub>erg</sub>)

## 2.2 (Non-)incorporation restrictions

Rosen (1990) shows that there is a correlation between agreement restrictions and the “seemingly intricate” conditions on noun-incorporation in Southern Tiwa, specifically the conditions under which a third-person absolutive nominal may obviate otherwise obligatory incorporation and thus appear in a “free-standing” form (see also Allen et al. (1984), Sadock (1985), Baker (1988) on N-incorporation in Southern Tiwa). Though apparently “chaotic” and “idiosyncratic” at first sight, these conditions are shown to follow a simple pattern by Rosen, who reduces them to the same formal restriction as the agreement conditions reviewed above: namely, the ban on crossing association lines. Noting that an absolutive may only “stand unincorporated if it has [...] a high degree of specificity” (Rosen (1990, 683)), Rosen captures this effect by ranking the property of “High Specificity” high on the hierarchy in (6), at the same position as 1st/2nd-person.

The various conditions on (non)incorporation in Southern Tiwa may be stated as follows. Firstly, in intransitives, if the sole (absolutive) argument is inanimate then it must incorporate; if it is animate then it must stand unincorporated:<sup>3</sup>

- (14) *First condition on incorporation (Rosen (1990, 680)):*  
If NP<sub>abs</sub> is the sole argument of a clause, then it must incorporate if inanimate and must not incorporate if animate.
- (15) a. Musan i-teurawe-ban  
cats B-run-PAST  
“The cats ran”  
b. \*I-musa-teurawe-ban  
B-cat-run-PAST
- (16) a. I-k’uru-k’euwe-m  
B-dipper-old-PRES  
“The dipper is old”  
b. \*K’uru i-k’euwe-m  
dipper B-old-PRES

Note that such examples cannot be reduced to a ban on incorporating the subjects

<sup>3</sup>In fact, this restriction is rather more flexible than stated in (14). As Rosen (1990, 699, fn. 16) puts it, “when the grammar is manipulated in real discourse”, exceptions are possible: thus examples of unincorporated inanimates with class-A (“animate”) agreement instead of the expected class-B/C-agreement can be found. In effect, a speaker is free to optionally promote an inanimate to the class of “animate”, non-incorporating absolutives (i.e. to invest it with the “High Specificity” property of high pragmatic salience) at their discretion. In the analysis we propose below (section 5), this equates to the free optionality of embedding an NP under a DP shell, a choice which is subject only to considerations of pragmatic deviance, cultural appropriateness, etc.

of unergatives (cf. Baker (1988; 1996)), since incorporation is also banned in unaccusative contexts (such as “The cats are old”; cf. Rosen (1990, 680, ex. (40))).

Secondly, ergatives can never incorporate. Consequently, this leaves only one reading for sentences such as (18-a,b).

(17) *Second condition on incorporation (Rosen (1990, 681)):*  
 NP<sub>erg</sub> never incorporates.

- (18) a. Seuanin ibi-musa-muban  
 men B:B-cat-see-PAST  
 “The men saw the cats” Not: “The cats saw the men”  
 b. Ibi-kan-hwiwimu-’an  
 B:B-horse-hate-PRES  
 “They hate horses” Not: “Horses hate them”

The same is true of datives, see (19). (Note that examples such as (20-b) cannot be explained by assuming a restriction against polyincorporation, as shown by Allen et al. (1984, 304), Rosen (1990, 681-682).)

(19) *Third condition on incorporation (Rosen (1990, 681f.)):*  
 NP<sub>dat</sub> never incorporates.

- (20) a. Ta-’u’u-wia-ban hliawrade  
 1SG:A:A-baby-give-PAST woman  
 “I gave the baby to the woman”  
 b. \*Ta-hliawra-’u’u-wia-ban  
 1SG:A:A-woman-baby-give-PAST

For all other cases, incorporation is normally obligatory. Thus, where the absolutive is not the sole argument (i.e. in transitives), incorporation is mandatory (pending the exceptions to be stated in the final condition (24) below), including for animates.

(21) *Fourth condition on incorporation (Rosen (1990, 682f.)):*  
 An NP<sub>abs</sub> that is not the sole argument of the clause obligatorily incorporates (unless (24)).

- (22) a. Musan i-hliaw-ban na-’ay  
 cats B-come.down-PAST me-to  
 “The cats came down to me”  
 b. \*I-musa-hliaw-ban na-’ay  
 B-cat-come.down-PAST me-to
- (23) a. Im-musa-hliaw-ban  
 B:1SG-cat-come.down-PAST  
 “The cats came down to me”  
 b. \*Musan im-hliaw-ban  
 cats B-come.down-PAST

In (22), “cats” is the sole argument controlling agreement (the dative is a prepositional oblique), and so cannot incorporate, in accordance with the first condition (14), above.

By contrast, (23-a) involves a dative intransitive in which both arguments control agreement; “cats” is thus not the sole argument, and must incorporate, by (21).

Though generally obligatory, such incorporation of nonsole absolutes is obviated under two conditions. Firstly, as noted above, the absolute must be interpreted as “highly specific” (see (25)). Secondly, non-incorporation cannot co-occur with either a third-person ergative (see (26)) or any dative (see (27)).

- (24) *Fifth condition on incorporation (Rosen (1990, 683, 688)):*  
 An NP<sub>abs</sub> that is not the sole argument can optionally obviate (otherwise obligatory) incorporation (see (21)) if it is interpreted as specific and if a. and b. hold.
- a. NP<sub>erg</sub> is 1st/2nd.  
 b. There is no NP<sub>dat</sub> co-argument.
- (25) a. Ti-seuan-mũ-ban  
 1 SG:A-man-see-PAST  
 “I saw the man”  
 b. Seuanide ti-mũ-ban  
 man 1 SG:A-see-PAST
- (26) a. Ø-seuan-mũ-ban  
 A:A-man-see-PAST  
 “He/she saw the man”  
 b. \*Seuanide Ø-mũ-ban  
 man A:A-see-PAST
- (27) a. Ka-’u’u-wia-ban  
 1 SG:A:2SG-baby-give-PAST  
 “I gave the baby to you”  
 b. \*’U’ude ka-wia-ban  
 baby 1 SG:A:2SG-give-PAST

Thus non-incorporating absolutes, i.e. those associated with specific interpretations, induce the same kinds of Person-Case Constraint effects as 1st- and 2nd-person absolutes: both non-incorporating (“highly specific”) absolutes and 1st/2nd-person absolutes are barred from co-occurring with datives or third-person ergatives. This can be summarized as follows, a slight modification of (13):

- (28) *Summary of agreement and non-incorporation restrictions:*
- a. \*NP<sub>erg,3rd</sub> + NP<sub>abs,1st/2nd/non-incorporating</sub> (weak PCC)  
 b. \*NP<sub>dat</sub> + NP<sub>abs,1st/2nd/non-incorporating</sub> (strong PCC)  
 c. \*NP<sub>erg,3rd</sub> + NP<sub>dat</sub> (restriction on NP<sub>erg</sub>)

The restrictions on agreement and non-incorporation thus unified, the challenge is to identify a single property common to both these types of absolutes (1st/2nd and non-incorporating/specific) that is responsible for inducing them. For Rosen, this property is an identical ranking on her featural hierarchy (cf. (6)). We will suggest in section 5 that the unifying property is simply the presence of a D head on the abso-

lutive argument. This D head contributes both the person feature (1st/2nd) and the animacy/specificity interpretation, and serves to block the kind of agreement with the head noun that yields both (non)incorporation and (lack of) Person-Case Constraint effects in Southern Tiwa. It will turn out that all and only the NPs given in (28)/(13) above are in fact DPs. Before presenting the workings of this analysis, we must first make explicit the theoretical assumptions from which our analysis proceeds. These are outlined in the following section.

### 3 Theoretical assumptions

Our aim is to develop an account of the restrictions in (28) that follows from independently motivated conditions on agreement within a minimalist architecture of the language faculty (Chomsky (1995; 2008)). As such, we adopt the probe-goal model of feature-agreement as first set out in Chomsky (2000), in which designated checking configurations are replaced with simple c-command between a probe (which lacks feature values) and a goal (which bears the corresponding feature values and specifies these values on the probe).

We adopt the standard assumption that T and v are the locus of unvalued agreement features (i.e. probes), and that these agreement features include [PERSON] and [NUMBER]. Further, we assume that T and v in Southern Tiwa additionally have an unvalued class feature, as indicated in section 1.<sup>4</sup> These features must all seek values from the corresponding interpretable agreement features of NP arguments (goals). The goal arguments, for their part, bear case features that must be valued in the syntax by the verbal heads, T or v. Case valuation on NP is thus a by-product of agreement valuation on T/v (in the spirit of the long-standing insight that case and agreement are two sides of the same coin, cf. George and Kornfilt (1981)).

Valuation of case and agreement features on probe and goal is effected by the operation Agree, a standard version of which is given in (29):

- (29) *Agree*:  
 A probe  $\alpha$  can agree with a goal  $\beta$  iff a.-d. hold:
- a.  $\alpha$  is unvalued and seeks the value of  $\beta$ .
  - b.  $\alpha$  c-commands  $\beta$ .
  - c.  $\beta$  is the closest goal to  $\alpha$ .
  - d.  $\beta$  co-occurs with an unvalued case feature.

“Closest” in (29-c) captures an important property of the minimalist computational system: search is minimized (on grounds of operative efficiency), so that the first head encountered that bears a goal values as many features as it can. For concreteness, Closeness can be structurally defined as in (30), and the maximization of feature valuation may be stated as in (31), though the effects of both of these are simply the result of minimal search.

---

<sup>4</sup>We abstract away from the question of how these features end up pronounced as a prefix on the verb; cf. Adger et al. (in press, 139-161), who address this issue for the related language, Kiowa.

- (30) *Closeness*:  
 Goal  $\beta$  is closer to probe  $\alpha$  than goal  $\gamma$  if a. and b. hold.
- a.  $\alpha$  c-commands both  $\beta$  and  $\gamma$ .
  - b.  $\beta$  asymmetrically c-commands  $\gamma$ .
- (31) *Maximize (Chomsky (2001))*:  
 One application of Agree values all features of the probe head that find a matching feature on the current goal head (see also Pesetsky's (1989) Earliness Principle).

The condition (29-d) on Agree is sometimes subsumed under the Activity Condition. As argued in Richards (2008a), case features render interpretable  $\Phi$ -sets (i.e. goals) visible to the syntax and thus contribute to optimal design. A goal is thus only visible (active) for as long as it has an unvalued case feature. In effect, case acts as a boolean switch: if it is unvalued (switched on), then the goal is visible to probes; if it is valued (switched off), then the goal is invisible. We further assume that, for a goal's case feature to be valued, it is in principle sufficient for the goal to Agree with just *one* of the probe's agreement features, in the spirit of maximizing valuation opportunities (cf. (31)); that is, a blind, local computational system should not allow valuation to be delayed in the hope of finding a better (fuller) match later in the derivation. (See also Řezáč (2003; 2004) for an approach to the individual deactivation of goal features, and Béjar and Řezáč (2009) on the separable valuation of person and number probes.)

As is standard, we further assume that T and v each come in two varieties: a defective variant, which lacks  $\Phi$  features, and a nondefective,  $\Phi$ -complete variant able to partake in agreement and case valuation. For Southern Tiwa, we thus have nondefective variants of T and v with unvalued agreement and class features [AGR:□] and [CLASS:□] (the feature's lack of value is indicated by the presence of □) and defective variants of T and v that lack these features. The various variants of T and v are allowed to combine freely in principle as lexical choices in the numeration; some of these combinations will simply lead to nonconvergent derivations due to unvalued features. Thus a combination of defective T and defective v is unable to value case at all and so is incompatible with the presence of nominal arguments; on the other hand, a combination of T and v each bearing both [AGR:□] and [CLASS:□] will fail to converge in a simple transitive due to the presence of more probe features than two arguments are able to value ([PERSON], [NUMBER] and [CLASS] are never valuable by the same argument in Southern Tiwa, for reasons of the complementary distribution of these features across D and N: see (36) below). It follows that the only possible (convergent) combinations of T-types and v-types are those given in (32), and that each corresponds to a particular clause type that provides just the right number of arguments for the features of all the probes and goals to be valued.<sup>5</sup>

---

<sup>5</sup>In transitive structures, ergative and absolutive are both associated with T (cf. Anagnostopoulou (2006), Bobaljik and Branigan (2006)). The simple intransitive case employs a defective (probeless) v with a "semi-defectivized" T that comprises either (i) unvalued [AGR:□] and a default valued [CLASS:A] or (ii) unvalued [CLASS:□] and default valued [AGR] ([PERSON:3,NUMBER:SG]). See section 4.3 for empirical and conceptual justification of this.

(32)	<i>T/v-combinatorics</i>	<i>Clause type</i>
a.	$T_{[AGR:\square, CLASS:\square]} + v_{[-]}$	→ transitive
b.	$T_{[AGR:\square, CLASS:\square]} + v_{[AGR:\square, CLASS:\square]}$	→ ditransitive
c.	$T_{[-]} + v_{[AGR:\square, CLASS:\square]}$	→ dative intransitive
d.	$T_{[AGR:\square, CLASS:A]} + v_{[-]}$	or
e.	$T_{[PERS:3, NUM:SG, CLASS:\square]} + v_{[-]}$	→ simple intransitive

The simple clause structure in (33) shows the base positions we assume for the various probes and goals. The latter are identified by their valued case forms. By Closeness (30), these case forms can be identified with particular probes, as given in (34).

(33) *Clausal structure:*  
 $[_{TP} T [_{vP} NP_{erg} [_{v'} v [_{vP} (NP_{dat}) [_{v'} V NP_{abs} ]]]]]$

(34) *Case assignment:*  
a.  $T_{[PERS]}$  → Ergative  
b.  $v_{[PERS]}$  → Dative  
c.  $T/v_{[CLASS(/NUM)]}$  → Absolutive

Our final set of assumptions relates to the categorial status of nominal arguments as NPs versus DPs. As noted in the previous section, Rosen (1990) claims that non-incorporating absolutes are “highly specific”, belonging to a class of definite or specific referring expressions that she calls “HiSpec”. Further, she also notes that ergatives and datives, which may not incorporate, are always animate (Rosen (1990, 682); see also Fillmore (1968), Pesetsky (1995), Adger and Harbour (2007)). Animacy and specificity thus characterize the entire class of non-incorporating arguments. Recent work has revealed an implicational link between the specification of person features, on the one hand, and precisely these semantic properties (animacy and specificity) on the other: see Adger and Harbour (2007) on the person-to-animacy entailment, and Richards (2008a) on the person-to-specificity entailment. If, following Richards (2008a), we take person to be a property only of DPs (bare NPs being inherently third-person, that is, third person on T is the default in the context of a bare NP), then we can provide a structural definition of the entire class of non-incorporating arguments (regardless of case): these are all DPs. We thus equate Rosen’s (1990) category HiSpec with the presence of a D-head. Nominals that are not HiSpec (i.e. incorporating nominals) lack a DP-shell, i.e. they are bare NPs, and optionality of HiSpec (and non-incorporation) now translates to optionality of DP over NP.

As mentioned above, Adger and Harbour (2007, 20), in their study of the related language Kiowa, propose an implication from person (specifically, the presence of [PARTICIPANT]) to animacy. This can now be restated as an implication from DPs to animacy:

(35) *DP-animacy implication:*  
a. DP ⇒ animate  
b. animate ⇏ DP

DPs are always animate, by virtue of the syntactic person feature that they specify.

Animates may still be NPs (by (35-b)), however, and thus incorporate, as in (23-a). Further, the obligatory animacy of datives and ergatives now follows if these are obligatorily DPs (in Adger and Harbour’s (2007) terms, dative arguments are obligatorily person/participant-specified since indirect objects must be capable of mental experience; see Harbour (2007) for similar claims about agents and ergatives). We will thus refer henceforth to  $DP_{erg}$  and  $DP_{dat}$  instead of  $NP_{erg}$  and  $NP_{dat}$ . Absolutives, by contrast, may be optionally  $DP_{abs}$  or  $NP_{abs}$  (i.e. optionally HiSpec, for Rosen), and we will refer to them accordingly in what follows.

The structural difference between DPs and NPs has important consequences for the accessibility of the class feature of nouns. We take [CLASS] to be a lexical property of N; thus [CLASS] is located on the head of NP. [PERSON] and [NUMBER], on the other hand, are contributed by D. We thus arrive at the DP-internal structure in (36).

- (36) *Nominal structure:*  
 $[DP D_{[PERS,NUM]} [NP N_{[CLASS]} ]]$

We assume that the category D, like C and v, constitutes a *phase* in the sense of Chomsky (2001). (See Svenonius (2004), Heck and Zimmermann (2004), den Dikken (2007) for arguments that DP is a phase.) As such, it is subject to the Phase Impenetrability Condition, as defined in (37).

- (37) *Phase Impenetrability Condition, PIC; (Chomsky (2001)):*  
 The domain of a head X of a phase XP is not accessible to operations at ZP (the next phase); only X and its edge (SpecX) are accessible to such operations.

As a result of (37), everything on the complement side of D (of an object within VP) becomes inaccessible once the phase head v has been introduced into the structure; only SpecD and D remain accessible. It follows that an NP’s class feature is not accessible from outside of DP; i.e., [CLASS] on NP is only accessible to probes when that NP is not “protected” by a DP-layer. Third-person DPs, unlike NPs, thus have “invisible” [CLASS], a factor which will play a crucial role in the following sections in deriving the agreement and incorporation restrictions in (28).

#### 4 Analysis 1: Agreement restrictions

With the above assumptions in place, we proceed to our analysis of the three agreement restrictions in (13) across the various clause types – transitives (section 4.1), ditransitives (4.2), and intransitives (4.3).

As noted in section 2, the agreement restrictions found in Southern Tiwa bear a close resemblance to a class of phenomena that has been dubbed the Person-Case Constraint (PCC) in the literature: so-called “weak” PCC effects in the case of transitives, and “strong” PCC effects in the case of ditransitives. Such effects may traditionally be analysed in terms of a Silversteinian prominence scale, such that the lower argument cannot be more prominent or salient in terms of its person/animacy properties than the higher argument (see Silverstein (1976)). Thus, for weak PCC, the lower argument cannot be 1st- or 2nd-person if the higher argument is 3rd person; for strong PCC, the lower argument cannot be high-ranked (local-person) at all. Instead of this, we adopt

an approach to the PCC and PCC-like argument restrictions along the lines of recent minimalist analyses such as Anagnostopoulou (2003; 2006) and Řezáč (2004), which dispense with primitive hierarchies and derive their effects from the mechanics of the Agree operation and the variable featural make-up of probes and goals. Specifically, agreement restrictions arise in the context of what we might call “probe sharing”, that is, where a single probe relates to and values multiple goals. The first (higher, closer) goal encountered by the probe is invariably fully specified for person features (see, e.g., Adger and Harbour (2007), Harbour (2007) for independent semantic arguments that nominals occupying specifier positions, namely indirect objects and external arguments, must be capable of mental experience, affectedness, volitionality and the like, which they equate with presence of a person/participant feature, implying animacy, as discussed in section 3 above). Consequently, the person (and number) features of the probe are consumed by this first goal (in line with (31)), leaving only a sharply reduced set of probe features with which to value the second argument. (We assume that probe features, once valued, are no longer active and so cannot enter into further Agree operations – cf. Chomsky (2001) and the discussion of the Activity Condition in section 3 above; there is thus no “true” multiple Agree.) It follows that the second argument must be less featurally specified than the first, if its [CASE:□] is to be valuable by the remaining feature(s) of the reduced probe. Agreement restrictions on the second, lower argument thus arise as a consequence of its having to make do with the leftover features not valued by the first, higher goal. In sum, the (set of) probe features available for more remote arguments is diminished, resulting in PCC-effects (see Bonet (1991), Boeckx (2000), Anagnostopoulou (2003), Haspelmath (2003), Řezáč (2004), Richards (2008*b*)).

In the specific case of Southern Tiwa, we assume the  $\Phi$ -set of a probe to comprise person, number and, crucially, also class features. Since only third-person arguments bear [CLASS] (cf. section 1), the third-person restriction on absolutive arguments (PCC) follows wherever [PERSON] and [NUMBER] are consumed (valued) by the higher argument, leaving only [CLASS] to probe and value the lower, absolutive argument.

#### 4.1 Transitives

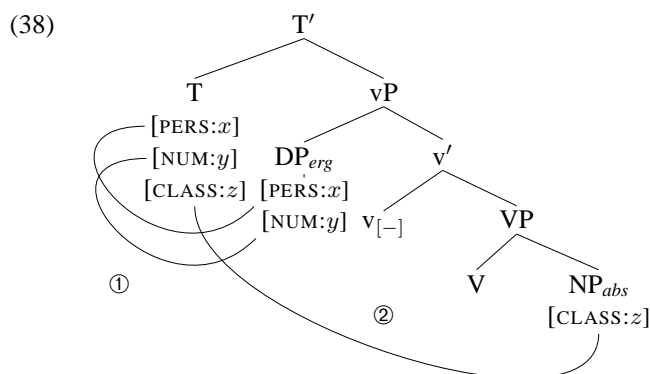
Transitives with  $DP_{erg}$  and  $DP/NP_{abs}$  involve a T probe with unvalued  $\Phi$ -agreement (person, number) and class features, and a defective v probe, i.e.  $T_{[AGR:\square, CLASS:\square]} + v_{[-]}$  (see the discussion of (32) above). Assuming that  $v_{[-]}$  selects for a VP with only one argument (since otherwise there would be insufficient probes to value all the case features present), the probe(s) on T must value the case features of both the  $DP_{erg}$  and the  $DP/NP_{abs}$  argument. Accordingly, agreement restrictions (PCC effects) will arise on the second argument,  $DP/NP_{abs}$ .<sup>6</sup>

##### *Scenario 1:*

Assume first that  $DP_{erg}$  is 1st/2nd-person and  $NP_{abs}$  is 3rd-person. The T probe first encounters the closer  $DP_{erg}$ , which values T’s person and number features and, in turn,

<sup>6</sup>Compare Baker (2008, 100-101), who independently suggests a similar analysis for PCC-effects in Southern Tiwa, although he confines it to passives and unaccusatives; cf. also Baker (2008, 101, fn. 28)).

has its own case feature valued ergative by T (see ① in (38)). Since 1st/2nd-person DPs are without class features, the class probe is left unvalued on T and is therefore able to probe further, for NP<sub>abs</sub>. Insofar as the absolutive argument is an NP and not a DP, its class feature is accessible (by PIC, (37)) and so both the NP<sub>abs</sub>'s case feature and the class probe on T (see ② in (38)) are valued in this second step of Agree. With all previously unvalued features thus valued, the derivation converges.



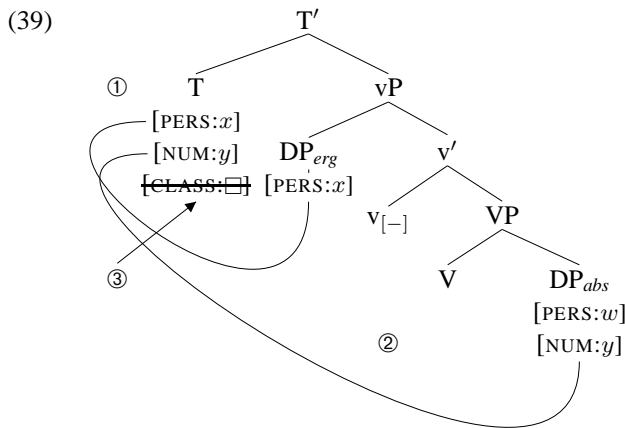
*Scenario 2:*

Assume next that both DP<sub>erg</sub> and DP<sub>abs</sub> are 1st/2nd-person. Since neither of these arguments bears [CLASS], both require probing by [PERSON] and/or [NUMBER] if they are to have their case features valued. This means that, in this particular case, T cannot expend both its person and number features on the closer, ergative argument; rather, it must withhold one of these for the more distant, absolutive argument. Clearly, this poses a lookahead problem, since the probe cannot know the 1st/2nd-person value of the second, lower argument prior to its agreeing with it, by which time it is too late to withhold a probe from agreeing with the first, higher argument. One possibility would be to allow violations of (31), so that a probe is not *forced* to maximize agreement with the first goal that it finds. However, this would be an undesirable move on both empirical and conceptual grounds. Empirically, it would predict the absence of strong PCC effects with ditransitives (modulo rule (41) below; see also next section), since datives and 1st/2nd-person absolutes could freely co-occur in the absence of (31) by sharing v's person and number probes. Conceptually, this solution introduces optionality into the workings of the syntax itself (specifically, the Agree operation, which now may or may not maximize valuation), weakening the local, feature-driven determinism of the system. Instead, optionality in a minimalist system should be confined to the numeration, i.e. to lexical choices.

In that spirit, we propose a local alternative in terms of variable defectiveness of the goal rather than variable defectiveness ((31)-violability) of Agree. Let us simply assume that D in Southern Tiwa comes in two varieties: either defective, with only a person feature, or else complete, with person and number features (cf. Anagnostopoulou (2003; 2006) on the defective nature of dative DPs, which she claims to check only [PERSON]; see also Richards (2008a) on the person-only agreement of quirky dative subjects in Icelandic). We thus have a lexical choice between defective D<sub>[PERS]</sub> and complete D<sub>[PERS,NUM]</sub>. For the most part, choice of the defective variant of DP<sub>erg</sub> will

simply result in nonconvergence due to an unvalued number probe on T; in such cases, the complete (nondefective) variant must be chosen. However, wherever the lower argument is a DP and thus has accessible number features (i.e. when it is 1st/2nd-person or non-incorporating/HiSpec), choice of the defective variant of  $DP_{erg}$  has the potential to converge. The present example, scenario 2, is such a case.

Thus, suppose first that  $DP_{erg}$  is complete. Then both [PERSON] and [NUMBER] on T are valued by  $DP_{erg}$ , leaving no probe by which  $DP_{abs}$  could value its case feature. This leads to a crash of the derivation. On the other hand, if  $DP_{erg}$  is defective, then it consumes only [PERSON] on T (see ① in (39)), leaving [NUMBER] for  $DP_{abs}$  (see ②). (Note that the derivation would crash if  $DP_{abs}$  were also of the defective, number-less kind, since T's person feature is already consumed by  $DP_{erg}$  and therefore [CASE] on  $DP_{abs}$  and [NUM] on T would go unvalued.)



Before we address the fate of the class feature on T, note that this defective-DP approach to the co-occurrence of local-person (1st/2nd-person) subjects and objects predicts that it is exclusively the  $DP_{abs}$  argument that controls number-agreement in this scenario. Interestingly, the syncretisms in (40) illustrate that this prediction is borne out – there is no variation for number with the ergative argument – and thus support the claim that D may optionally be number-defective in Southern Tiwa.<sup>7</sup> (Note that the apparent covariation of person-agreement with the absolutive argument in this paradigm can be readily attributed to variation in the ergative argument's person value, and so does not speak against this claim.)<sup>8</sup>

<sup>7</sup>A reviewer rightly notes that this conclusion is only valid under the caveat that the prefixes are not distinguished by tone, which is responsible for minimal pairs in some of the other Kiowa-Tanoan languages. Allen et al. (1990, 382, fn. 31) cite one case where tone on the prefix is relevant (noting that a complete analysis is lacking). They do not list any tone in the paradigms relevant here, though. Moreover, Leap (1970a), who explicitly treats tone in Southern Tiwa, does not indicate any tone at all in the prefix system. Furthermore, as pointed out to us by Daniel Harbour (p.c.), the related language Jemez (Towa) shows uniform low tone in its prefix system, suggesting that we might be justified in abstracting away from tone in Southern Tiwa here too.

<sup>8</sup>Affixes for contexts in which both arguments are marked for the same person belong to a special reflexive paradigm, which we do not address here. See Rosen (1990) for discussion.

(40)

		DP <sub>erg</sub>					
		1st			2nd		
		SG	DU	PL	SG	DU	PL
DP <sub>abs</sub>	SG				<i>bey-</i>	<i>bey-</i>	<i>bey-</i>
	1st DU				<i>ku-</i>	<i>ku-</i>	<i>ku-</i>
	PL				<i>ku-</i>	<i>ku-</i>	<i>ku-</i>
2nd	SG	<i>i-</i>	<i>i-</i>	<i>i-</i>			
	DU	<i>men-</i>	<i>men-</i>	<i>men-</i>			
	PL	<i>ma-</i>	<i>ma-</i>	<i>ma-</i>			

These syncretisms are also noted by Noyer (1992, 312), who accounts for them by assuming a filter (dubbed 1-2 Number Deletion) that “deletes number from the subject but not the object in a clause with two [+participant] arguments” in Southern Tiwa. Essentially, our analysis recasts Noyer’s idea but relegates feature deletion to the lexicon (or the numeration). A minor advantage of our version is, perhaps, the fact that we do not specify the contexts in which deletion applies; derivations that involve a defective DP in the wrong context simply crash.

At this point, T’s person and number features and the case features of both arguments are all valued. However, the derivation as yet will fail to converge, since there is still the unvalued class feature on T to take care of (see [CLASS:□] in (39)). To that end, it seems reasonable to assume that a triple-agreement language such as Southern Tiwa, i.e. a language with a separate class probe, will have at its disposal a last-resort deletion rule for removing unvalued class probes in precisely the contexts where no corresponding class features on goals are to be found, i.e. in the context of local-person arguments. We thus propose that a postsyntactic rule such as (41) is operative in Southern Tiwa at the PF interface, without which a class-probe language would be unable to license canonical, prototypical, high-salience subjects (i.e. 1st/2nd-person ergatives), in ditransitives and intransitives at least.

- (41) *Feature deletion:*  
Unvalued [CLASS:□] on T can be deleted in the context of local person.

It is rule (41) which is responsible for the weak PCC effect characterizing Southern Tiwa T-agreement in transitives (see scenario 4 below), rescuing as it does those configurations in which no class features are present on either subject or object (both arguments are local person). As we will see, rule (41) will equally account for the restriction against third-person ergative arguments in ditransitives (see section 4.2.2) as well as for the corresponding restriction of non-incorporation to local-person environments (see section 5).

*Scenario 3:*

Let us consider the scenario in which both DP<sub>erg</sub> and NP<sub>abs</sub> are third-person. Here, the derivation proceeds almost exactly as in scenario 1, except that this time the DP<sub>erg</sub> is third-person and so bears a class feature. However, given our assumption that [CLASS] is a property of N, this feature is not accessible, being embedded under the DP-shell of the ergative (cf. section 3). This means that the pattern of feature valuation should

be identical to scenario 1, with the ergative valuing only [PERSON] and [NUMBER] (its class feature being PIC-inaccessible), leaving T's class probe for NP<sub>abs</sub>. At first sight, the morphological evidence speaks against this, since DP<sub>erg</sub> does indeed seem to control for class (see, e.g., *u-* vs. *in-* vs. *iw-* with a class-C NP<sub>abs</sub> in (42)).

(42)

	DP <sub>erg</sub>								
	1st			2nd			3rd		
	SG	DU	PL	SG	DU	PL	A <sub>sg</sub>	A <sub>du</sub>	B <sub>pl</sub>
NP <sub>abs</sub>									
A	<i>ti-</i>	<i>in-</i>	<i>i-</i>	<i>a-</i>	<i>men-</i>	<i>ma-</i>	∅-	<i>in-</i>	<i>i-</i>
3rd B	<i>bi-</i>	<i>imim-</i>	<i>ibi-</i>	<i>i-</i>	<i>mimim-</i>	<i>bibi-</i>	<i>i-</i>	<i>imim-</i>	<i>ibi-</i>
C	<i>te-</i>	<i>kin-</i>	<i>kiw-</i>	<i>ku-</i>	<i>men-</i>	<i>mow-</i>	<i>u-</i>	<i>in-</i>	<i>iw-</i>

It would seem that all of T's probes ([PERSON], [NUMBER] and [CLASS]) are exhausted by the third-person DP<sub>erg</sub>, which should fatally leave no probe to value NP<sub>abs</sub>.

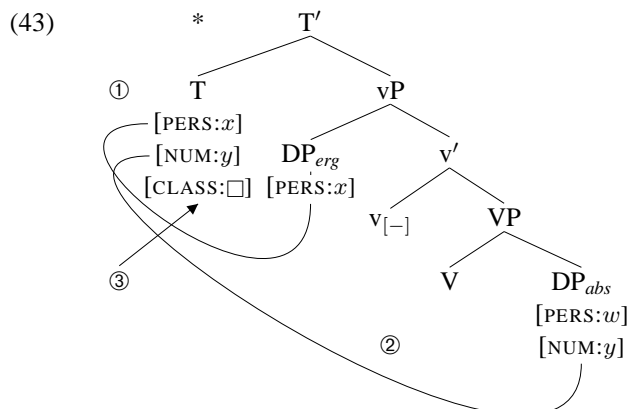
To draw such a conclusion on the basis of (42) would be premature, however. Recall from section 1 that animate NPs always follow Pattern 1 of the inflectional classes in (4). That is, in the singular they uniformly belong to class A, whereas in the plural they uniformly belong to class B. Number thus entirely determines “class” in the case of animates. The alleged class-A/B-agreement of DP<sub>erg</sub> in (42) can therefore be readily reinterpreted as number-agreement. Since the ergative argument is obligatorily animate (and a DP, on our assumptions) and since [NUMBER] is located on D (cf. (36)), [NUMBER] on the ergative goal is always PIC-accessible to T (unlike [CLASS] on N), lending further support to our claim that what is usually taken to be class-agreement with ergative (and dative) DPs is really just number-agreement. Note also that there is a distinction between singular, dual and plural for DP<sub>erg</sub> in (42), in contrast to the absolutive argument. This further indicates that what is under consideration for DP<sub>erg</sub> really is number-agreement, not class-agreement.<sup>9</sup> We henceforth replace A<sub>sg</sub>, A<sub>du</sub>, B<sub>pl</sub> by SG, DU, PL, respectively, in order to indicate genuine number agreement.

The class probe on T therefore remains unvalued by the ergative, freeing it up for further probing and allowing NP<sub>abs</sub>'s case feature to be valued. (Note that the number-less, defective variant of DP<sub>erg</sub> would lead to a nonconvergent derivation in which T's [NUMBER] goes unvalued in this scenario, thus number must always be present on D in this context, on independent grounds).

*Scenario 4:*

The final transitive scenario to consider is the one which is excluded as a weak PCC effect: a 3rd-person DP<sub>erg</sub> with a 1st/2nd-person DP<sub>abs</sub>. As in scenario 2, T's [PERSON] and/or [NUMBER] must value both DP<sub>erg</sub> and DP<sub>abs</sub>, since neither of these goals bears (accessible) [CLASS]. DP<sub>erg</sub> must therefore, as in scenario 2, be defective in order for the derivation to be viable, consuming just the person feature of T (see ① in (43)) and thereby leaving [NUMBER] for the absolutive argument (see ②).

<sup>9</sup>The distinction between A<sub>sg</sub>, A<sub>du</sub>, and B<sub>pl</sub> in (42) cannot be reinterpreted as the usual trichotomy of class A, B, and C because ergative arguments, necessarily being DP and thus animate (see (35)), can never trigger class C agreement (see (4)).



However, as in scenario 2, there again remains an unvalued class feature on T (see ③). As the context is not one of local (1st/2nd) ergative-agreement on T, the rule in (41) cannot apply in this case. The unvalued class feature thus remains undeleted and the derivation crashes at the interface, yielding the weak PCC restriction (8) on transitives.

To summarize, we have illustrated how the probe-goal mechanism (enriched by certain particular assumptions) leads to a pattern where exactly three out of four derivations of transitive structures that involve different combinations of local and non-local person values converge. Only the combination that involves an ergative with a non-local person value and an absolutive with a local person value crashes, due to an unvalued [CLASS:□] on T, thus instantiating a weak PCC-effect. The other combinations lead to converging derivations, in agreement with the facts. One of these involved  $\Phi$ -complete, canonical agreement, another a defective internal argument (a claim supported by the morphology), yet another the last resort application of class-feature deletion (which will also prove important elsewhere in our analysis).

## 4.2 Ditransitives

Whereas “upstairs” agreement (T-Agree) is characterized by a weak PCC effect (barring local objects only in the context of nonlocal subjects), the “downstairs” agreement domain (v-Agree) is characterized by a strong PCC effect, barring local direct objects with any (person of) indirect object. This difference between strong and weak PCC, we propose, reduces simply to the unavailability of a rule like (41) for v.

In the case of ditransitives, there are two probes present with unvalued agreement features: T and v both bear [AGR:□] and [CLASS:□]. Assuming that v with [AGR:□] selects for a VP with two arguments (cf. the clausal structure in (33)), it is the v probe that will enter into Agree with multiple goals, valuing the case of both  $DP_{dat}$  and  $DP/NP_{abs}$ .  $DP_{dat}$  is closer to v than  $DP/NP_{abs}$ , and so agreement restrictions will once again arise on the absolutive argument as the more distant of v’s two goals (the closer argument,  $DP_{dat}$ , being obligatorily animate and obligatorily specified for [PERSON], i.e. a DP in our terms). T, on the other hand, has just a single goal to take care of in ditransitives, namely the  $DP_{erg}$ . We first consider the Agree operations initiated by the v probe, and the associated strong PCC restriction, in section 4.2.1, before turning to

the T probe and the ban on third-person ergatives (section 4.2.2).

#### 4.2.1 Probing from v

##### Scenario 1:

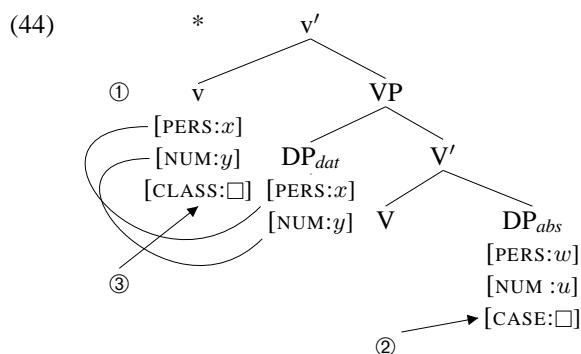
Suppose first that  $DP_{dat}$  is 1st/2nd-person and  $NP_{abs}$  is 3rd-person. As with the T- $DP_{erg}$  relation in transitive scenario 1,  $DP_{dat}$  consumes both [PERSON] and [NUMBER] on v. This leaves [CLASS] for  $NP_{abs}$ , which possesses an (accessible) class feature, enabling valuation of [CASE] on NP and [CLASS] on v. (If a defective  $DP_{dat}$  were selected here, [NUMBER] on v would remain unvalued and thus crash the derivation.)

##### Scenario 2:

If  $DP_{dat}$  and  $NP_{abs}$  are both 3rd-person, then the derivation proceeds exactly as in scenario 1. As in the transitive scenario 3, apparent class-A/B-agreement with  $DP_{dat}$  (whose embedded class feature on N should be PIC-inaccessible to v) can be reconceived as number-agreement.

##### Scenario 3:

We finally consider the illicit cases, i.e. those in which  $DP_{abs}$  is 1st/2nd-person, ruled out as a strong PCC effect. This ban on local-person direct objects emerges as a ‘‘Class Filter’’ effect: no matter what the person value for  $DP_{dat}$ , [CLASS] is left unvalued on v, since neither the  $DP_{dat}$  nor a 1st/2nd-person  $DP_{abs}$  is able to match and value it. The derivation involving a nondefective ( $\Phi$ -complete)  $DP_{dat}$  is shown in (44); here, case on  $DP_{abs}$  also goes unvalued, since no probe is available to match it ([PERSON] and [NUMBER] being both consumed by  $DP_{dat}$ ). If a defective (number-less)  $DP_{dat}$  is selected instead, it consumes just [PERSON] on v, leaving [NUMBER] for  $DP_{abs}$ ; all case features are then valued, but [CLASS] on v still remains unsatisfied. Crucially, the deletion rule in (41) cannot apply here, since it applies only to local-person agreement with T. On the assumption that no last-resort deletion rule on a par with (41) is available for dealing with v’s class feature, the strong PCC restriction (10) on dative intransitives, and equivalently the second half of restriction (12) on ditransitives, is derived.



To summarize, of the four possible combinations of local and non-local person values that can show up on the absolutive and the dative argument within the vP of a ditran-

sitive construction only two combinations lead to a converging derivation. The reason why the person restriction on the absolutive is more severe in ditransitives than in transitives can ultimately be traced back to the general unavailability of the class-feature deletion rule within the vP-domain (as opposed to the TP-domain). As a consequence, there are two scenarios in the ditransitive paradigm (as opposed to only one such scenario in the transitive paradigm) where an unvalued class feature leads to the crash of the derivation, deriving the strong PCC-effect observable in ditransitives.

The derivation of the person restriction on the ergative in ditransitives is addressed in the following subsection.

#### 4.2.2 Probing from T

Turning now to the role of T-agreement in ditransitives, a nondefective 1st/2nd-person DP<sub>erg</sub> will consume T's [PERSON] and [NUMBER] (a defective, number-less DP<sub>erg</sub> will leave T's [NUMBER] fatally unvalued, since the lower arguments, DP<sub>dat</sub> and NP<sub>abs</sub>, are already rendered inactive through v-Agree). [CLASS] on T thus remains, with no active arguments left to value it. However, this is nonfatal, as the context for the last-resort deletion rule (41) is met ((41) is available for T in the context of 1st/2nd-person), which takes care of T's remaining class probe. On the other hand, a 3rd-person DP<sub>erg</sub> (whose class feature is embedded under a DP-shell) is similarly unable to value T's [CLASS]; however, in this case T's retention of an unvalued class feature *is* fatal, since last-resort deletion by (41) requires a local-person context (valued 1st/2nd-person on T). As a consequence, T's [CLASS] remains unvalued, crashing the derivation as a Class Filter effect. The first half of restriction (12) on ditransitives, which bars third-person ergatives with (any person of) datives, is thus derived.

### 4.3 Simple intransitives

The final clause type to consider is that which contains a single argument. Proceeding from the assumption that intransitives involve only a T probe (i.e. v in intransitives is defective and thus unable to value internal case – cf. Burzio's Generalization), we face the immediate problem of how a solo third-person argument is able to fully value T's agreement and class features (see, e.g., example (15)). If that third-person argument is a DP, then T's [CLASS] should go fatally unvalued, since rule (41) applies (by assumption) only in local-person contexts. On the other hand, if the solo third-person argument is a bare NP, then the opposite problem arises: now the goal can value only the complement set of features, namely [CLASS], leaving T's person and number features unvalued.

Our suggestion is that the defectivization of probes in intransitive clauses in Southern Tiwa extends beyond v to a subset of T's probe features. That is, in a language like English in which transitive clauses involve separate probes on distinct heads (T and v) for valuation of subject and object respectively, intransitives involve defectivization of one of these heads (namely v) in order to implement the “one argument - one probe” characteristic that underlies Burzio's Generalization. In languages like Southern Tiwa, however, in which transitive clauses involve valuation of subject and object by the probes of a *single* head (namely [AGR] and [CLASS] on

T), the “one argument - one probe” profile of intransitives must be achieved through further defectivization of one of those features of T. Thus, intransitive T may comprise either active agreement (person/number) features or an active class feature, but not both, and is thus “defectivized”. We suggest that in each case, the other (inactive) feature simply bears a pre-specified default value: simple intransitives therefore involve T either with [AGR:□] and [CLASS:A] or with [AGR:3,SG] and [CLASS:□], the two logical possibilities for defectivizing the T head. As we shall see, both these possibilities receive independent morphological support, suggesting that our approach to the defectivization of intransitive T is on the right track.

*Scenario 1:*

Let us first consider the scenario in which the only argument is (complete, nondefective) DP<sub>erg</sub>, valuing [PERSON] and [NUMBER] on T. In this case, convergence requires that the T<sub>[AGR:□,CLASS:A]</sub> variant of the defectivized T head is selected (if T bears [PERSON:3], [NUMBER:SG] and [CLASS:□], then [CLASS] on T and [CASE] on DP<sub>erg</sub> go unvalued due to the unavailability of an accessible class feature on the goal). T’s [CLASS] thus bears the default value A in this scenario. An inspection of the intransitive paradigm (45) bears this out: the prefixes that express a single-argument DP are almost completely identical to those that constitute that part of the transitive paradigm (46) where NP<sub>abs</sub> belongs to class A (see Rosen (1990, 673, fn. 4)).<sup>10</sup>

(45)

DP <sub>erg</sub> <sup>11</sup>								
1st			2nd			3rd		
SG	DU	PL	SG	DU	PL	SG	DU	PL
<i>te-</i>	<i>in-</i>	<i>i-</i>	<i>a-</i>	<i>men-</i>	<i>ma-</i>	∅-	<i>in-</i>	<i>i-</i>

(46)

NP <sub>abs</sub>	DP <sub>erg</sub>								
	1st			2nd			3rd		
	SG	DU	PL	SG	DU	PL	SG	DU	PL
	<i>ti-</i>	<i>in-</i>	<i>i-</i>	<i>a-</i>	<i>men-</i>	<i>ma-</i>	∅-	<i>in-</i>	<i>i-</i>

An important difference thus emerges between *deletion* of unvalued class features by rule (41) in transitives and *defaulting* (or lexical pre-specification) of [CLASS] to the A-value in intransitives. Only in the latter case does [CLASS] have a value, and so only there do we expect a morphological reflex of [CLASS] to be detected in the paradigm. The (41)-deleted class feature of transitives, by contrast, should fail to affect the morphology. This is indeed what we find. Thus, in a transitive scenario 2 derivation of the kind *I saw you<sub>pl</sub>*, the 1st-person singular subject values T’s [PERSON] to 1, the 2nd-person plural object values T’s [NUMBER] to PL, and rule (41) deletes

<sup>10</sup>Only the 1st-person singular prefixes introduce a slight disparity between the two paradigms (*te-* vs. *ti-*), a minor deviation, albeit one for which we presently have no account.

<sup>11</sup>One may wonder why the only argument in an intransitive clause is called ergative in (45), and not absolutive (or nominative, for that matter). We have followed Rosen (1990) on this point. To this end, we have assumed that ergative is the case assigned to an argument when it values person on T (see (34)). However, nothing hinges on this assumption and our analysis is equally compatible with the idea that the only argument in an intransitive clause is valued nominative (cf. also Rosen (1990, 673, fn. 4)).

T's unvalued class feature. The features to be realized by the morphology are therefore [PERSON:1] and [NUMBER:PL], with no expression of [CLASS]. This feature bundle is realized by the prefix *ma-* (see appendix B for the full transitive paradigm). On the other hand, in an intransitive derivation of the kind *We arrived*, the 1st-person plural argument values T's [PERSON] to 1 and T's [NUMBER] to PL, with [CLASS] (pre-)specified as default A. The features to be realized by the morphology are thus [PERSON:1], [NUMBER:PL], and [CLASS:A]. This feature bundle is realized by the prefix *i-* (cf. (45)). Thus the different strategies for dealing with syntactically unvalued [CLASS] in transitive versus intransitive clauses result in different morphemes, *ma-* versus *i-*, corresponding purely to the difference between deleted (non-)class and default A-class. Without this difference, we would expect these two derivations to yield identical morphological forms, since both result in valuation of T's agreement features to 1st-person plural.

*Scenario 2:*

In the second scenario, the single argument is NP<sub>abs</sub>, thus able to value only [CLASS] on T. The corresponding convergent choice of T bears [AGR:3,SG] and [CLASS:□]: its [PERSON] and [NUMBER] being already default-valued, only [CLASS] is unvalued and active as a probe, for which NP<sub>abs</sub>'s accessible [CLASS] provides the appropriate goal. (If T with [AGR:□] and [CLASS:A] is chosen, then both [PERSON] and [NUMBER] on T and [CASE] on NP<sub>abs</sub> remain unvalued.) Again, there is ample morphological evidence in support of this alternative defectivization of the T probe. The prefixes we find with a solo third-person argument in the intransitive row in (45), the relevant part of which is repeated and augmented for NP<sub>abs</sub> in (47)<sup>12</sup>, are *∅-*, *i-*, *u-*, and these are identical to those found in the transitive paradigm with a third-person singular ergative: see the first column in (48).

(47)

NP <sub>abs</sub>			
A <sub>sg</sub>	B <sub>pl</sub>	C	
<b>∅-</b>	<b>i-</b>	<b>u-</b>	

(48)

		DP <sub>erg</sub>		
			3rd	
		SG	DU	PL
NP <sub>abs</sub>	A	<b>∅-</b>	<i>in-</i>	<i>i-</i>
3rd	B	<b>i-</b>	<i>imim-</i>	<i>ibi-</i>
	C	<b>u-</b>	<i>in-</i>	<i>iw-</i>

Since third-person singular is exactly what one would expect to find as a default specification for [PERSON] and [NUMBER], and since the intransitives with a third-person argument show precisely these same forms, our postulation of a defectivized intransi-

<sup>12</sup>Recall that class C is a possibility only with inanimate nominals (NPs) (see (4)), hence the absence of class C from the paradigm in (45). Furthermore, the category dual is absent from (47) since the single argument here is an NP (not DP) and therefore bears only a class feature (not number).

tive T bearing [PERSON:3], [NUMBER:SG] and [CLASS:□] is empirically corroborated.

A problem in this argument, as noted by a reviewer, is that something must limit the use of the defective variants of T to intransitive contexts. If a defective T with a default valued [CLASS] is used in a ditransitive, then we lose our explanation in section 4.2.2 for why a third-person ergative cannot co-occur with a dative: person and number will be valued by the ergative, class is default, and the derivation converges.

For want of a proper explanation, we assume a selectional restriction such that defective T may only select a defective v (adhering to the core functional sequence C-T-v, cf. Chomsky (2000), and confining ourselves to direct selectional relations between these heads), thus barring the combination of a defective T with a nondefective vP (i.e. a ditransitive vP; cf. (32)). This makes some sense from the perspective of passivization: a defective (intransitive, passive) T must combine with a v lacking an external argument; such v heads are always defective in our system (as nondefective v heads, being ditransitive, host three arguments).

To conclude, the general probe-goal theory in combination with the distribution of class and agreement features within the nominal domain in Southern Tiwa suggests that intransitive constructions involve a defective v. To this end, we proposed that intransitives come in two variants: one where T's agreement features are valued by default, another where its class feature receives a default value. This ensures that one argument is sufficient to value the remaining probes on T, independent of whether the argument is a DP or an NP. We also argued that this assumption receives independent support from the morphological paradigm in Southern Tiwa.

## 5 Analysis 2: Non-Incorporation restrictions

As described in section 2, theme arguments (direct objects) generally undergo obligatory incorporation in Southern Tiwa. The exceptions always involve nominals which, as Rosen (1990, 685) describes them, are “likely to [be] definite, or at least specific, referring expressions”. Such nominals, along with human and animate nouns, belong to the category that Rosen dubs “HiSpec” (for “highly specific”), which can be equated with high prominence on a Silversteinian referential hierarchy. Let us pursue the suggestion put forward in section 3 that we can associate the HiSpec property with the presence of a D-head and thus DP-shell above the relevant NP. If [PERSON] is a property of D rather than N (there being no first- or second-person bare nouns, cf. Postal (1970), Richards (2008a)), then this amounts to the suggestion that it is the specification of a person feature that translates to the interpretive properties of animacy, definiteness, etc., i.e. to the interpretive complex that Rosen refers to as HiSpec (see Adger and Harbour (2007), Richards (2008a) on the relation between person (or participant) features in the syntax and animacy and definiteness in the semantic component). In short, DPs are person-specified nominals and therefore bear the person-associated semantic properties of animacy and/or specificity; as such, DPs are the categorial equivalent of Rosen's HiSpec class of nominals.

The patterns of obligatory (non)incorporation in Southern Tiwa can then be simply restated as follows: DPs cannot incorporate, whereas bare NPs must (see Baker (1996)

on incorporation as a property of bare, unmodified, lexical nouns only).<sup>13</sup> For our present purposes, the technical reasons underlying this difference between the obligatory incorporation of NPs versus the obligatory non-incorporation of DPs need not concern us further. Plausibly the PIC (37) is again implicated in blocking the movement of N to V across the phase head D. Alternatively, one might adopt and adapt some of the central insights of Roberts’s (2006) recent treatment of head movement within the probe-goal framework: namely, Agree is indistinguishable from Move just in case the values of *all* the formal features of the goal are copied onto the probe, which in effect creates a new insertion site at the probe, allowing the goal to be spelled out at the position of the probe, yielding the effect of head movement. Roberts employs similar reasoning as the basis of a compelling treatment of clitic movement. Given our claim that bare NPs in Southern Tiwa bear just a single formal feature, namely [CLASS], incorporation of the Southern Tiwa kind would seem to instantiate the same basic pattern: Agree with NP<sub>abs</sub> copies the values of *all* of the goal’s formal features (i.e., [CLASS]) onto the probe, and thus the noun is spelled out as if it had moved to the probe. Head movement (incorporation), thus construed, would have both a syntactic (Agree) and morphophonological (realizational) component, striking a balance between the two sides of the “syntax versus PF” debate in the recent literature (both approaches to head movement are then correct, at least in part).<sup>14</sup>

Assuming, then, that DPs cannot whereas NPs must incorporate in Southern Tiwa, the conditions on non-incorporation reviewed in section 2.2 become conditions on when a direct object may or may not appear as a DP (as opposed to as an NP). Recall the contexts in which obviation of incorporation obtains: In intransitives, animates resist incorporation (cf. (14)-(16)); in transitives, non-incorporation is possible only with specific and/or animate nominals (i.e., HiSpec nominals, and thus DPs on our assumptions), and then only when two further conditions are met, as in (24) above, repeated here.

(49) *Fifth condition on incorporation (Rosen (1990, 683, 688)):*

An NP<sub>abs</sub> that is not the sole argument can optionally obviate (otherwise obligatory) incorporation (see (21)) if it is interpreted as specific and if a. and b. hold.

- a. DP<sub>erg</sub> is 1st/2nd.
- b. There is no DP<sub>dat</sub> co-argument.

As noted in section 2.2, the resemblance between the conditions on non-incorporation in (49-a) and (49-b) and the agreement restrictions in (8) and (10), respectively, is striking. The contexts where incorporation may be obviated are identical to those in which a 1st/2nd-person absolutive may appear in transitive and ditransitive clauses: (a)

<sup>13</sup>The ban on incorporating ergatives (17) and datives (19) now follows automatically if these arguments are always DPs, i.e. person-specified and animate. See also footnote 15 below. Similarly, the restriction in (14) falls out if, for whatever reason, sole animate arguments in intransitives must necessarily be DPs, i.e. person-specified. Obligatoriness of (non)incorporation thus correlates with the optional presence vs. absence of D.

<sup>14</sup>Note that this approach presupposes a theory that allows for late insertion of roots (see, for instance, Marantz (1995; 1997)). Late insertion can spell out the valued class feature as any nominal whose lexical semantics is compatible with the class feature (cf. appendix A).

$DP_{erg}$  must not be 3rd-person; and (b) no  $DP_{dat}$  may be present. Datives and third-person ergatives thus block non-incorporating (i.e. DP) absolutes in the same way that they block 1st- and 2nd-person absolute DPs (yielding weak and strong PCC effects).

This identity of behaviour between HiSpec and local-person direct objects is surely no coincidence, but rather indicates an underlying unity, such that non-incorporating (HiSpec) absolutes share a formal property with 1st/2nd-person absolutes. Rosen (1990) captures this shared behaviour by ranking HiSpec in the same position as 1st/2nd-person on her alignment hierarchy (see (6)). Whilst this identity of ranking affords an effective and neat unification within her system, it is still an arbitrary stipulation. Building on her central insight, our approach allows us to take the unification a step further – the identical behaviour of 1st/2nd-person and HiSpec absolutes follows automatically for us, reducing to the presence of a single shared property, namely the D head. Both local-person nominals and Hi-Spec absolutes are DPs – as argued above, it is D that contributes [PERSON] (and is thus obligatorily present on 1st/2nd-specified nominals), and it is [PERSON], in turn, that contributes semantic animacy, specificity and so on. It follows that all 1st/2nd-person nominals are, in effect, HiSpec: all are DPs, hence the unity of behaviour.

Agreement restrictions due to D thus automatically become constraints on incorporation too, since these now all involve the same set of nominals, namely those with a person-specification: DPs. What blocks agreement with local-person direct objects in the presence of datives and third-person ergatives will also block non-incorporation in these contexts. We thus attain the simplest possible unification of the categories of 1st/2nd-person and HiSpec, reducing the conditions on non-incorporation to the conditions on agreement (weak and strong PCC) as analysed in the previous section.

To show how this works in practice, we now run through the derivation of the restrictions on non-incorporation in transitive (5.1) and intransitive (5.2) clauses, in each case considering first the case where an NP (i.e. non-HiSpec) absolute is chosen and then the case where the absolute is a DP (i.e. the category of nominal that resists incorporation). Since the category of nominal that obligatorily incorporates (i.e. NP) bears only a class feature, we arrive at a system in which valuation of a class probe on T/v always goes hand-in-hand with incorporation of the matching goal. DP direct objects, and thus non-incorporation, are then only tolerated where Class-Agree is allowed to fail, and this, as we have seen in our derivation of the agreement restrictions in section 4, is independently determined by the deletion rule in (41).

## 5.1 Transitives

Assume first that the absolute is not HiSpec, i.e. that it is  $NP_{abs}$ . As familiar from section 4.1, (complete)  $DP_{erg}$  consumes [PERSON] and [NUMBER] on T, leaving  $NP_{abs}$  to consume [CLASS]. All features are then valued, ensuring convergence, and incorporation occurs due to the categorial status of the direct object (NP): in terms of Roberts (2006), the values of all of  $NP_{abs}$ 's formal features (namely [CLASS]) are copied onto T, which results in spelling-out of  $NP_{abs}$  in the position of the probe. This yields (21) (the obligatory incorporation of non-HiSpec absolutes,  $NP_{abs}$ ).

If the absolute is HiSpec, i.e. if it is  $DP_{abs}$  (and thus interpreted as spe-

cific/animate), its class feature is not accessible to T, by (37). The class probe on T thus goes unvalued, and this failure of Class-Agree is accompanied by failure of incorporation: DPs cannot incorporate (in terms of Roberts (2006), complete copying of the DP’s formal feature values to the probe does not take place). Consequently, [CLASS] on T must be taken care of by the last-resort deletion mechanism (41). Since this is only possible if  $DP_{erg}$  is 1st/2nd-person, non-incorporation is only legitimate with 1st/2nd-person ergatives. Thus the derivation of the restriction on non-incorporation in (49-a) reduces to that of the weak PCC restriction in (8): both are due to (41); cf. section 4.1.

## 5.2 Ditransitives

Turning now to ditransitives, the same logic applies as in the transitive scenarios, except that the relevant class probe is now that of  $v$ , not T. If the absolutive is not HiSpec (i.e. if it is  $NP_{abs}$ ), then the derivation involves Class-Agree and incorporation, just as in the first scenario of the transitive case above (section 5.1).

If, on the other hand, the absolutive is a DP (i.e. HiSpec), the class probe is left unvalued on  $v$  and incorporation is concomitantly impossible. However, in this case the context for last-resort deletion of [CLASS] by (41) is not met: the offending class feature is on  $v$ , not T. The derivation thus crashes, yielding (49-b): the ban on non-incorporation in the presence of a dative DP reduces to the strong PCC restriction in (10) and thus, once again, to (41); cf. section 4.2.<sup>15</sup>

## 6 Conclusion

We have attempted to show that the seemingly complex restrictions on agreement and incorporation in the typologically rare triple-agreement system of Southern Tiwa are to a large extent derivable from independently motivated, universal conditions on probe-goal Agree (thus dispensing with hierarchies as a primitive of the theory) plus some special, but nonarbitrary, assumptions about the featural make-up of the heads T,  $v$  and D (which all exist in defective and nondefective forms) and of DP versus NP arguments. The three overlapping conditions on agreement identified in section 1, such that combinations of any two out of three categories of DP-argument (datives; 3rd-person ergatives; 1st/2nd-person and/or “HiSpec” absolutives) are banned, have been shown to reduce to a single feature-deletion rule, (41), that we have argued to be a necessary property of a triple-agreement language with an independent class probe. The differences between the weak PCC effect characterizing transitives and the strong PCC effect characterizing ditransitives in Southern Tiwa are then a function of the applicability of

---

<sup>15</sup>Note that, in terms of Roberts (2006), the ban on incorporation of datives and ergatives (cf. (17), (19)), which are always HiSpec/DPs, would follow in the same way as the ban on incorporation of HiSpec/DP absolutives (direct objects): at least where third-person DPs are concerned, it will never be the case that the values of *all* the formal features of a HiSpec ergative or dative nominal, i.e. [PERSON] and [NUMBER] and [CLASS], are copied onto the probe by Agree. Thus  $DP_{erg}$  and  $DP_{dat}$ , like  $DP_{abs}$ , never “move” to the probe and so incorporation is never possible (cf. also Baker (1988; 1996)). The situation is less clear for local-person DPs, where arguably person and number are the only features present (since local nominals lack [CLASS]). The technical possibility thus arises, at least in principle, of treating 1st/2nd-person agreement morphemes as incorporated pronominal (DP) arguments. We leave this for future research.

that rule: last-resort deletion of unvalued [CLASS] is available “upstairs”, in the T domain, but not “downstairs”, in the v domain, thus yielding the stronger PCC restriction in the lower domain. Person-Case-Constraint and non-incorporation restrictions thus arise in a specific context in Southern Tiwa, namely that of (failed) Class-agreement, and are thereby unified into a single set of constraints on the licensing of DPs (i.e. that category of nominal which cannot value [CLASS] in the syntax). In this way, we have motivated an interesting difference between Southern Tiwa and its Kiowa-Tanoan relative, Kiowa: as analysed by Adger and Harbour (2007), the postulation of a class probe is unnecessary for deriving the (strong) PCC effects found in Kiowa ditransitives. As we will suggest in appendix A, it is possible, and indeed necessary, to maintain a distinct class probe even under a Harbourian reworking of our analysis in which Leap-style atomic class features (A, B, C) are replaced by decomposed number features. It is precisely this class probe which sets Southern Tiwa apart from its closest relatives.

## 7 Appendix A: Noun classes from a Kiowa-Tanoan perspective

Two reviewers note that noun classes in Southern Tiwa and other Kiowa-Tanoan languages have been successfully analyzed as (decomposed) number features (see Noyer (1992) on Southern Tiwa, Towa (Jemez), Tewa, Kiowa, and, in particular, Harbour (2007) on Kiowa). Against this background, the A-B-C class notation from Allen et al. (1990) and Rosen (1990), ultimately based on Leap (1970a), seems to be a step backwards. In this section, we address the issue of class features in Southern Tiwa from a Noyer-Harbour perspective and examine the compatibility of our analysis with a number-only approach to class.

Other Kiowa-Tanoan languages have a noun-class system very similar to the one in Southern Tiwa. Take Kiowa as a case in point. Nouns in this language vary with respect to what is called “inherent” number (see Watkins (1984), Harbour (2007), and references therein): some nouns are inherently singular, some are inherently plural, others inherently dual/plural, yet others lack inherent number altogether, etc. If a noun refers to a cardinality that is the complement of its inherent number, it is marked by the inverse suffix *-gó* (or some allomorph thereof). Moreover, inverse marked nouns also trigger a particular kind of agreement on the verb. For instance, *tógúl* “young man” is inherently singular and dual (see (50-a,b)), triggering singular and dual agreement. If referring to a plurality (as in (50-c)), it is marked inverse by *-dó* and triggers inverse agreement *e-* on the verb.

- (50) a. *Tógúl*     $\emptyset$ -*dóó*  
           young.man 3SG-be  
           “It is a young man”  
       b. *Tógúl*     $\text{ɛ}$ -*dóó*  
           young.man 3DU-be  
           “It is two young men”  
       c. *Tógúú-dó*    *e*-*dóó*  
           young.man-INV 3INV-be  
           “They are young men”

A noun that is inherently dual (such as *k!ʔn* “two tomatoes”) triggers dual agreement if unmarked. If it refers to an object with singular or plural cardinality, it bears the inverse suffix *-dɔ* and triggers inverse agreement *e-* on the verb.

Traditionally, nouns are said to fall into different classes, depending on what their inherent number is. It is important to clarify here that this notion of noun class is not to be confused with what we (following Allen et al. (1990)) have called (inflectional) class in Southern Tiwa. Thus, one and the same noun usually falls into different inflectional classes (labelled A, B, and C in the preceding sections) as signalled by different agreement prefixes on the verb, depending on its referential cardinality. The totality of inflectional classes that a noun belongs to characterizes its noun class. Thus, the traditional notion of noun class is equivalent to what we have called agreement “patterns” in section 1 (see (4)). In what follows, we explicitly distinguish between *i*(nflexional)-class and *n*(oun)-class to preclude misunderstandings.

A highly detailed analysis of the number system of Kiowa is presented by Harbour (2007). This analysis not only reduces *n*-class membership to the presence of independently motivated (decomposed) number features, thereby avoiding the stipulation of opaque *i*-class features (of the A-B-C-kind); it also accounts for inverse marking on the noun, inverse agreement on the verb, and it correlates the feature(s) that define the *n*-classes with independent semantic properties of the nouns belonging to these classes.

Given the success of Harbour’s analysis and the similarity between Kiowa and its relative Southern Tiwa, a reviewer notes that “(a) a class notation that opacifies this similarity is detrimental, and (b) that the starting point for an analysis of the system should be one that has been shown to work for Kiowa”. The reviewer suspects that the analysis of Southern Tiwa presented here is incompatible with the number-based analysis of noun class, and criticizes the fact that it ignores the inverse marking on the noun.

We agree that Harbour’s analysis is insightful and works well for Kiowa. Also, we acknowledge that there are considerable similarities between Kiowa and Southern Tiwa. In what follows we argue that a Harbourian analysis of Kiowa-Tanoan noun classes can be made compatible with the present approach to agreement and incorporation restrictions in Southern Tiwa. Where the analysis departs from Harbour’s particular assumptions, which are mostly motivated by the facts from Kiowa, we claim that these departures can be motivated by independent differences between the two languages.

### 7.1 A Noyer-Harbourian analysis of Southern Tiwa

To begin with, consider the analysis of Southern Tiwa proposed in Noyer (1992). It is based on the paradigm of verbal prefixes in an intransitive context; see (51).

(51) *Intransitive paradigm (Noyer (1992, 217))*

	I	II	III
singular	∅-	∅-	<i>i-</i>
plural	<i>i-</i>	<i>u-</i>	<i>u-</i>
inherent number	[+sg]	–	[–sg]

The roman numerals I, II, and III in (51) denote the *n*-classes.<sup>16</sup> The bottom line shows what Noyer assumes to be the inherent number for each *n*-class. As can be seen, the agreement marker that appears in the plural of *n*-class I also shows up in the singular of *n*-class III. Noyer thus analyzes *i-* as an inverse agreement marker. Nouns in *n*-class I are inherently singular and trigger inverse agreement if interpreted as plural. The opposite pattern holds for nouns in *n*-class III. Nouns in *n*-class II do not bear any inherent number and trigger the  $\emptyset$ -prefix when singular and *u-* when plural.

As the reviewer suggests, Harbour’s (2007) analysis can be transferred to Southern Tiwa as follows. In Harbour’s terminology, nouns that trigger singular agreement in the singular and inverse agreement in the plural (i.e., nouns that belong to *n*-class I) are “SI” nouns (singular-inverse). Accordingly, *n*-class II nouns are “SP” (singular-plural) and *n*-class III nouns are “IP” (inverse-plural). Against this background, the reviewer points out, Southern Tiwa looks like a simplified version of Kiowa, which exhibits (among others) *n*-classes of the types SDI, SDP, and IDP (singular-dual-inverse, etc.), the crucial difference being that Southern Tiwa has lost the dual for third person nouns.<sup>17</sup>

On this view, number and *n*-class in Southern Tiwa are characterizable as in (52).<sup>18</sup>

(52)	<i>n</i> -class		number	3rd,obj	otherwise
	SI	[+SG]	singular	[+SG]	[+SG,−AUG]
	SP	−	dual	−	[−SG,−AUG]
	IP	[−SG]	plural	[−SG]	[−SG,+AUG]

The characterization of number for arguments that are not 3rd-person objects follows the tradition of decomposing number into  $[\pm SG]$  and  $[\pm AUG]$  (Noyer (1992), Harbour (2007), and references therein).<sup>19</sup> Number features of 3rd-person objects are underspecified with respect to  $[\pm AUG]$ , which captures their lack of reference to dual cardinalities in Southern Tiwa.

The relevant part of Harbour’s analysis then proceeds essentially as follows. D bears probes for  $[SG:\square]$  and  $[AUG:\square]$  that are valued “simultaneously” by *n*-class features on N (or perhaps on a Class head located between D and N) and number features on Num (a head located between D and N/Class). Since  $[NUMBER]$  and *n*- $[CLASS]$  are (partially) composed of the same vocabulary, this valuation can lead to contradictory specifications with respect to  $[\pm SG]$  on D. Inverse morphology on the noun is the spell-out of such a feature clash. Agree then transfers the contradictory feature values from D onto T, resulting in inverse agreement on the verb, too.

To briefly illustrate, take an ergative (i.e., non-object) plural-marked SI noun, such as *seuan* “man”.  $[NUMBER]$  on Num decomposes into  $[-SG,+AUG]$ ; *n*- $[CLASS]$  on N is  $[+SG]$ . The probes on D are thus valued  $[+AUG]$  and  $[\pm SG]$ , the latter specification being a contradiction (note that we use the symbol  $\pm$  here and below to indicate the

<sup>16</sup>Noyer calls them agreement classes.

<sup>17</sup>This claim is also made by Noyer (1992). For more on this issue, see section 7.3 below.

<sup>18</sup>The reviewer actually proposes a different characterization of *n*-class features in Southern Tiwa, with SI nouns being  $[-AUG]$  and IP nouns being  $[+AUG]$ . This cannot capture the *-in* marking on nouns that are interpreted as duals, however; see below. We therefore adhere to Noyer’s classification in terms of  $[+SG]$  and  $[-SG]$  here.

<sup>19</sup>The combination  $[+SG,+AUG]$  is excluded on independent grounds.

simultaneous presence of both + and – values). As a result, D is spelled out as the nominal suffix *-in*, the inverse marker: *seuan-in* “men”. If [NUMBER] is [+SG,–AUG] (encoding singular), no contradiction arises since both Num and N value [SG:□] on D as [+SG]. Consequently, D is spelled out as *-ide*, the singular suffix on the noun: *seuan-ide* “a man”. The complementary state of affairs arises with IP nouns (albeit with no nominal P(lural)-suffix; see section 7.2 below). Finally, SP nouns never bear inverse marking, simply because they lack *n*-class altogether and therefore cannot incur any contradictions on D. As in Kiowa, the verbal prefix *i-* can be interpreted as inverse agreement resulting from the feature clash being transferred to T via Agree(T, D).

Thus, the theory derives inverse marking both on the noun and on the verb. Let us now turn to the question of whether the number-based analysis of Kiowa-Tanoan *n*-class is compatible with the theory of agreement and incorporation restrictions in Southern Tiwa proposed in the preceding sections. Whether this question can be answered in the affirmative depends on whether one can transfer the function of features within the present theory onto (number-based) *n*-class features, whilst at the same time maintaining two distinct probes, class and number, on T (and v).

We see one major problem for such a translation of our *i*-class-based analysis into one based on *n*-class features. It has to do with inverse marking on the noun. According to Harbour, both *n*-class and number (or more precisely: valued instances of [SG] and [AUG], which [NUMBER] decomposes into) value probes on D, which results in inverse marking if the feature values instantiated on D are contradictory. In a second step, the probes thus valued on D serve as goals for Agree with probes on T, thereby transferring their values onto T. Consequently, if D bears feature values that trigger inverse marking, then T will too. However, this means that there are *n*-class features on D, accessible from outside the DP. Due to (31), the ergative DP in a transitive construction (see scenario 1, section 4.1) must then value [PERSON], [NUMBER], and *n*-[CLASS] on T, thereby leaving nothing for the absolutive argument; such a derivation should then crash, contrary to fact.<sup>20</sup>

In the following subsection, we attempt a Harbourian reanalysis that avoids this problem by doing away with the nominal inverse in Southern Tiwa. Before that, we should briefly mention two further problems which we have not addressed until now but which turn out to disappear once the number-based class theory is adopted (see section 7.3).

---

<sup>20</sup>More generally, it is a crucial aspect of our foregoing analysis that no single nominal may value both number and class probes on a single head. Any translation of our analysis into Harbourian *n*-class features, into which both number and class are decomposed, must somehow ensure that a DP (specified for [±SG] and [±AUG]) will not value T’s class probe (by virtue of its [±SG] specification). We can achieve this by conceiving of our class probe as a ‘pure’ [SG:□] probe and number as a composite [SG:□, AUG:□] probe that must be valued by both of these features together. Possibly, if *Maximize* (cf. (31)) applies not only to entire heads but also at the level of individual probes, then number valuation by the [±SG] and [±AUG] features of D will trump separate class valuation by [±SG] and number valuation by [±AUG] alone, since the former allows for a greater number of features to be valued on a single probe (Number). Alternatively, an ordering of feature valuation by means of a probe hierarchy, such that number valuation precedes class valuation, will achieve the same effect. Neither of these solutions is particularly elegant, however, and so this might in itself provide a conceptual argument in favour of the Leap-based analysis of the preceding sections, in which class is treated as the atomic features A, B, and C distinct from number, over a Harbourian approach to Southern Tiwa, as attempted in the following subsections.

First, nothing has been said so far as to how *i*-class agreement and number interpretation of the agreed-with noun interact. For instance, the examples in (2), section 1, repeated here as (53), show that if the noun *musa* “cat” is interpreted as singular, then it triggers class-A agreement; if it is interpreted as plural, it triggers class-B agreement.

- (53) a. Ka-musa-wia-ban  
 1SG:A:2SG-cat-give-PAST  
 “I gave the cat to you”  
 b. Kam-musa-wia-ban  
 1SG:B:2SG-cat-give-PAST  
 “I gave the cats to you”

In our theory, incorporated nouns that trigger *i*-class agreement are bare NPs, which lack number specifications (see (36), section 3). But this raises the question of how the different number interpretations in (53) come about. At this point, the opaque nature of the A-B-C-notation becomes obvious. One could, in principle, assume that *i*-class is primary and then stipulate that [CLASS:A] is interpreted as singular, that [CLASS:C] is interpreted as plural, and that [CLASS:B] is interpreted as plural in the context of [ANIM] and as singular otherwise.<sup>21</sup> However, it follows from nothing that the *i*-class features A, B, and C should receive such interpretations (though see section 7.3).

Second, the question arises as to how *i*-class membership can be semantically determined (as *n*-class membership is in Kiowa; cf. below). According to Leap (1970a, 200-210), nouns that trigger A-type agreement (i.e., belong to *i*-class A) are perceived as “units” (things that denote individuals) by speakers of Southern Tiwa; nouns that trigger C-agreement can be characterized as “aggregates”, a kind of unordered set; finally, nouns that trigger B-agreement are “sets”, a collection of elements that bear some systematic relation to each other – these can either be pluralities or singular objects with complex internal structure. The solution to the first problem, which was based on the idea that *i*-class is primary, becomes circular once this second problem is taken into account. Namely, whether a noun is conceptualized as, for instance, a set with internal structure or as an individual depends on both its lexical semantics and its number value. For instance, *seuan* “man” is *i*-class B only in the plural, not in the singular. This suggests that number is primary (not *i*-class, as hypothesized above) and (partially) determines *i*-class membership.

In Harbour’s theory, no problem arises. In contrast to *i*-class, *n*-class cuts across number and therefore does not have any direct influence on it. Both *n*-class and number are primary in the sense that none is the interpretation of the other. On the other hand, *n*-class stands in a certain dependency relationship to number (leading to the impression that *n*-class is number-based) because the features that characterize *n*-class are decomposed number features. Furthermore, the semantic basis of *n*-classes is derived because the features that define *n*-classes are interpretable and combine only with

---

<sup>21</sup>The feature [ANIM] here is semantic, part of the lexical specification of items belonging to category N, and thus is to be distinguished from the grammatical animacy contributed by the person/D feature in our analysis in the previous sections. Recall, in this connection, the implication in (35) and discussion thereunder: animate nouns may incorporate, and thus be bare NPs.

nouns that have particular lexical semantics.<sup>22</sup>

## 7.2 Against an inverse in Southern Tiwa

The solution to the problem of the nominal inverse mentioned in the previous subsection lies, we suggest, in recognizing that Southern Tiwa, unlike Kiowa, Towa, and perhaps other members of the Kiowa-Tanoan family, does not have (or no longer has) an inverse system.

To begin with, it can be observed that the markings *-in* and *-ide* (and their allomorphs), which according to Noyer (1992) have to be analyzed as inverse and non-inverse markers, respectively, exclusively appear on animate nouns (see Leap (1970a, 204-205), Allen et al. (1990, 379, fn. 3)), Noyer (1992, 217)). Recall that animate nouns all belong to *n*-class SI; see (54) (adapted from Rosen (1990, 672)).

(54)

		n-class					
		SI		SP		IP	
i-class	A	<i>musa-de</i>	“cat”	<i>shut</i>	“shirt”		
	B	<i>musa-n</i>	“cats”			<i>keuap</i>	“shoe”
	C			<i>shut</i>	“shirts”	<i>keuap</i>	“shoes”

If *-(i)n* is the inverse marker (i.e., *i*-class agreement B) for SI nouns, then  $-\emptyset$  marks the inverse for IP nouns. The alternation does not seem to be phonologically conditioned; rather, it must refer to the *n*-class features present on N. If the inverse spells out a feature clash on D, then the spell-out rule must be able to inspect the feature content on the non-adjacent head N in order to decide which allomorph to choose (the clash on D involves  $[\pm SG]$  in both cases). In any event, it is only animate nouns that provide overt evidence within the nominal domain for the claim that Southern Tiwa has an inverse system.

We propose that Southern Tiwa in fact does not have an inverse in the nominal domain. Rather, the markers *-in* and *-ide* are plural/dual and singular suffixes, respec-

<sup>22</sup>There is a further problem, related to that discussed below (53), which has also gone unaddressed thus far but which a Harbourian number-based class system potentially avoids. As illustrated in example (25) in section 2.1, absolutive arguments trigger identical verbal agreement forms whether that argument incorporates or not (*ti-* in (25)), that is, in our terms, whether that argument is a DP or an NP. This is unexpected on our *i*-class-based analysis of sections 3–5, since the categorial distinction between DPs and NPs correlates with distinct sets of accessible features (cf. (36)) – the D head bears Person and Number, but not Class, whereas the N head bears only Class. We claimed under scenario 3 of section 4.1 above that apparent A/B-class agreement with ergative DPs is in fact number agreement (thus yielding the three-way singular-dual-plural distinction with such DPs). The question, then, is how the number feature on an absolutive DP argument can trigger the same agreement form as the class feature on the bare incorporating NP alternant of that absolutive argument (‘the man’ in (25)). On our *i*-class-based system, it can be little more than coincidence that number-agreement with a non-incorporating DP matches *i*-class (A/B)-agreement with the corresponding incorporating NP, since Number and *i*-Class are two ontologically distinct features. However, on a Harbourian revision in terms of *n*-class, in which both Number and Class are composed of the same vocabulary ( $[+SG]$  and  $[-SG]$ ), this identity of agreement becomes much more transparent: both the A-class NP in (25-a) and the singular DP in (25-b) contain the same feature on D and N, namely  $[+SG]$  in this case. In terms of the feature specifications in (52) above (and (55) below), we might reasonably assume, therefore, that the category D (as the category implying Rosen’s HiSpec properties of animacy, specificity, etc.) is inherently specified  $[+SG]$ , just like N heads of Pattern I (*n*-class SI), i.e. that class of nominals that bears the semantic feature  $[ANIM]$  (cf. footnote 21 above).

tively;<sup>23</sup> see also Leap (1970*b*), who suggests that Southern Tiwa *-in* and *-ide* have become markers for number and animacy. Before we sketch how this provides us with a handle on the first problem mentioned in section 7.1, we would like to justify this proposal.

To this end, suppose Southern Tiwa had an inverse system in the nominal domain. First, it is clear that at least animate 3rd-person nouns in Southern Tiwa can be interpreted as singular, dual, and plural.<sup>24</sup> (Accordingly, we will revise table (52) in (55) below so that the *3rd, obj* column refers only to inanimate NPs, with 3rd-person animate DPs now belonging to the *otherwise* column.) This means that if *-in* is a nominal inverse suffix, then animate nouns in Southern Tiwa actually belong to the *n*-class SII (singular marking for referential cardinality one, inverse marking for referential cardinality two and more than two). As the inverse marker appears in the dual and the plural, and since [DUAL] and [PLURAL] decompose into [-SG,-AUG] and [-SG,+AUG], respectively, it follows that, according to Harbour (2007), the *n*-class feature of SII must be [+SG]: this ultimately results in a feature clash on D with [-SG], the feature that makes dual and plural a natural class. This fits with what was assumed in (52).

Now, Noyer's (1992) analysis of the inverse in Southern Tiwa is based on the assumption that the verbal prefix does not register any differences between dual and plural for animate 3rd (i.e., class SII) nouns (see (51))<sup>25</sup>. This is also what one expects in Harbour's theory, where inverse marked nouns trigger (uniform) inverse agreement on the verb. However, this expectation is not borne out by the facts. For instance, if in a transitive construction the agent is dual (marked by *-in* on the noun), then the verbal prefixes for a 1st-, 2nd-, and 3rd-person agent and an object of *i*-class A are *in-*, *men-*, and *in-*, respectively (see Allen et al. (1990, 376-377), Rosen (1990, 673), and appendix B). If the agent changes to plural while the object remains constant, then the verbal prefixes change, too: *i-*, *ma-*, and *i-*, respectively. Thus, the verbal prefixes register a difference between dual and plural although they are assumed to be triggered by the same inverse (feature set) in the nominal domain. Note that for both dual and plural, the feature clash that triggers the inverse on D involves [ $\pm$ SG] (*n*-class is [+SG]; number consists of [-SG] in both cases). The fact that the expectation is not borne out, we conclude, suggests that the nouns are not in the inverse in the technical sense of Harbour (2007).

One might argue that the difference in verbal agreement between dual and plural is attributable to the inverse marker spelling out the clash between [+SG] and [-SG] differently depending on the value of [AUG]: dual is [-AUG], plural is [+AUG] (recall

---

<sup>23</sup>In one way or another, a shift away from the pure inverse system has been suggested for other Kiowa-Tanoan languages too (Kiowa and Towa being the most conservative ones; see Noyer (1992, 223)). See Yumitami (1998, 98-99) on (Jemez) Towa, Noyer (1992, 219-22) on (Rio Grande) Tewa, and Leap (1970*b*, 40), citing Trager (1968, 42-45), on Picurís (a Northern Tiwa dialect; also see Zaharlick (1977, 45), citing Trager (1971)). Since Southern Tiwa is one of the most distant relatives of Kiowa (see Kroskrity (1977, 8), citing Trager (1967)), it would not come as a surprise if it had also followed this general tendency.

<sup>24</sup>See, for instance, Leap (1970*a*, 104), who observes that “-[i]de and -[i]n [. . .] can be seen to correlate with singular-*non-singular* semological reference” (emphasis ours); cf. the discussion of animate 3rd-person nouns under scenario 3, section 4.1, and the paradigms in (42) and (56).

<sup>25</sup>As Noyer (1992, 219) puts it: “To summarize the discussion of Tiwa, the innovation of the Tiwa branch is the loss of dual number entirely from the system of inherent number. Duals always fall together with plurals in the number-affix system and with respect to verbal agreement.”

that this now applies to animate 3rd-person DPs as well as to 1st- and 2nd-person DPs, unlike in (52)). For instance, in the scenario above, *men-* would appear in the context of  $[\pm\text{SG}, -\text{AUG}]$ ; *ma-* would show up in the context of  $[\pm\text{SG}, +\text{AUG}]$ .

This makes the prediction that in an intransitive construction, an IP noun in the singular should trigger the same agreement form as an SII noun in the dual (both have  $[\pm\text{SG}, -\text{AUG}]$  on D) while an IP noun in the plural triggers a different agreement (being  $[\pm\text{SG}, +\text{AUG}]$ ). As far as we can tell, only the second part of this prediction is confirmed. Thus, for the first part, Allen et al. (1990, 376) give *i-* (an *i*-class B prefix) as the intransitive prefix for a singular IP noun, and although they do not list it in the paradigm, they explicitly note: “If an animate 3rd person subject is dual, prefix *in-* is used in place of the B-prefix”. These two different forms of the intransitive prefix – *i-* for a singular IP noun and *in-* for a dual SII noun – can be seen in the paradigm in (42) (from Rosen 1990:673), where *i-* appears in both B-cells (plural and otherwise) and *in-* is labelled (by Rosen) as ‘*A<sub>du</sub>*’ (cf. also (45), (47), and (48)).

There is, however, an alternative to the *n*-class specification in (52) which can avoid this problem. Suppose that IP is not classified as  $[-\text{SG}]$  but as  $[\text{+AUG}]$ , as in (55).

(55)	<i>n</i> -class		<i>number</i>	<i>3rd,obj,inanim</i> (NP)	<i>otherwise</i> (DP)
	SII	$[\text{+SG}]$	singular	$[\text{+SG}]$	$[\text{+SG}, -\text{AUG}]$
	SP	–	dual	–	$[-\text{SG}, -\text{AUG}]$
	IIP	$[\text{+AUG}]$	plural	$[\text{+AUG}]$	$[-\text{SG}, +\text{AUG}]$

Nouns that fall into this revised IP *n*-class receive an inverse marking in the singular and in the dual (triggered by  $[\pm\text{AUG}]$ ; the class is, in fact, IIP). This does not affect what we have said about the difference in verbal prefixing between dual and plural for SII nouns above. However, it does make a difference with respect to the verbal prefixes triggered by I(IP) nouns in the singular and by SII nouns in the dual: the former now have  $[\text{+SG}, \pm\text{AUG}]$  on D, the latter have  $[\pm\text{SG}, -\text{AUG}]$ . It is thus not unexpected that they condition different verbal prefixes.<sup>26</sup>

We might therefore be able to maintain the nominal inverse in a Harbourian analysis of Southern Tiwa after all. However, although it works, this solution is basically just a technical one. In particular, it must be stipulated from case to case whether the choice of inverse agreement on the verb takes other, contextual features into account or not. Thus, the choice of the verbal inverse for SII nouns reflects the contextual difference between  $[\text{+AUG}]$  and  $[-\text{AUG}]$ , whereas the choice of the verbal inverse for I(IP) nouns does not: as far as we can tell, the sole I(IP) argument in an intransitive construction triggers the same verbal prefix in the singular as it does in the dual, namely *i-*, even though the features on D are  $[\text{+SG}, \pm\text{AUG}]$  and  $[-\text{SG}, \pm\text{AUG}]$ , respectively.

Another potential problem raised by (55) concerns what Harbour (2007, 94-96) calls “mnemonic naturalness”. As already mentioned, the feature that defines an *n*-class must be compatible with the lexical semantics of the nouns that belong to that *n*-class. Although our sources are sparse on this, we can identify four members of the

<sup>26</sup>Also, classifying I(IP) nouns as  $[\text{+AUG}]$  offers an explanation for the alternation between the nominal inverse markers *-in* and  $-\emptyset$ : the former is a reflex of  $[\pm\text{SG}]$ , the latter a reflex of  $[\pm\text{AUG}]$ . It is unclear, though, why one inverse should be overtly marked and the other not. Furthermore, the alternation of the non-inverse prefixes between *-ide* and  $-\emptyset$  still remains unexplained.

I(IP) class in Southern Tiwa: the nouns for “flower”, “mountain”, “eye” (Leap (1970a, 202)), and “shoe” (Rosen (1990, 672)). According to Harbour (2007, 69), the feature [+AUG], which in (55) defines the *n*-class I(IP), “guarantees that whatever properties hold of *x* hold also of some proper subset of *x*”.

Now, a mountain is a piece of rock. It can be broken into parts that are pieces of rock, too. This corresponds well with [+AUG]. However, things are far less evident for a flower, a shoe, or an eye. In fact, one would be inclined to say that the parts of a flower, such as the stem, petals and leaves, are not flowers. The same goes for a shoe or an eye. On the other hand, [−SG], the *n*-class feature proposed for IP in (52), denotes the property of being non-atomic. Obviously, this holds for a mountain by the reasoning above. But what is more, if a flower is perceived of as a complex object, as suggested by Leap (1970a), then it is non-atomic in a certain sense. Likewise, an eye or a shoe might be thought of as composed from more basic elements (such as the pupil, the retina, and the lashes in the case of an eye). This suggests that it might be better to think of the *n*-class feature for IP as [−SG] rather than as [+AUG]. If so, then the above-mentioned erroneous prediction concerning the verbal intransitive agreement of a singular IP noun and a dual SII noun remains an issue.

We conclude that a Noyer-Harbourian analysis of Southern Tiwa as an inverse system is possible but requires certain extra assumptions; also, as we have seen, it is not without problems. We therefore consider it worth pursuing the idea that Southern Tiwa has lost its inverse system (whilst retaining the *n*-class features; see the following section). This does not seem too far-fetched, particularly considering the common trend among the Tanoan languages away from the inverse (see footnote 23). In any event, the crucial point here is that this assumption provides an answer to the first question raised in section 7.1, namely how a probe (head) can avoid valuing all of its features when all of the corresponding goal features are already accessible on D, as a Harbourian analysis of the inverse requires. If there is no inverse, then there is no need for the (*n*-)class features to be on D. Thus, they can be assumed to remain embedded within the DP, leaving the class probe active, in line with our analysis. (For the related problem of how to prevent D’s number features from valuing T/v’s class probe in this Harbourian system, see footnote 20.)

### 7.3 A modified Noyer-Harbourian analysis

We have argued above that a Noyer-Harbourian number-based analysis of *n*-class can be made compatible with the theory of agreement restrictions presented here if one assumes that Southern Tiwa has lost its inverse in the nominal domain. We have also sketched how a number-based analysis of *n*-class features can capture the observation that noun classes in Southern Tiwa are semantically based, albeit in a manner that causes problems for the verbal agreement facts if an inverse is maintained (cf. previous subsection). Still to be accounted for, however, are the number interpretations of *i*-classes. In this connection, suppose that Southern Tiwa has shifted towards a system that merely shows a singular–plural opposition with respect to non-HiSpec 3rd-person nouns.<sup>27</sup> To express this opposition, the feature [±SG] is sufficient. To be precise,

<sup>27</sup>Thus, although we do not agree with Noyer (1992) that Southern Tiwa has lost the dual with 3rd-person nouns altogether (cf. footnote 25), we do assume that there is no dual for non-HiSpec nouns. This makes the

assume that *n*-class SI nouns in Southern Tiwa are lexically specified as [+SG] while *n*-class IP nouns are specified as [-SG] (as proposed in (52)). These features are *n*-class features as they are known from other Kiowa-Tanoan systems. Like *n*-class features in the theory of Harbour (2007), they are only compatible with nouns that have a particular lexical semantics.

In a system that distinguishes singular, dual and plural, the feature [ $\pm$ SG] is not interpreted as number (for instance, singular is not [+SG] but [+SG,-AUG] in such a system). But given the singular-plural system, they are: [+SG] denotes referential cardinality one, [-SG] referential cardinality of more than one. We suggest that it is actually the [ $\pm$ SG] feature on N (instead of [CLASS:A/B/C]) that triggers *i*-class agreement in our analysis. Namely, we propose that [+SG] and [-SG] value a probe [CLASS:□]. [CLASS] is special insofar as it takes as its value the complete goal feature. Thus, [CLASS:□] is valued as [CLASS:+SG] or as [CLASS:-SG], which is spelled out as *i*-class A- or *i*-class C-agreement, respectively. This explains the number interpretations of SI nouns that trigger class-A agreement and of IP nouns that trigger class-C agreement.

In order to achieve a plural interpretation for SI nouns and a singular interpretation for IP nouns, we propose that Southern Tiwa resorts to the marked strategy of deleting the value of the [ $\pm$ SG] feature on N. In both cases, the result is the feature [SG], which we assume to be able to value [CLASS:□] as well, to [CLASS:SG]. Moreover, we make a stipulation to the effect that [SG] is contextually interpreted: if it shows up on a noun that also bears the inherent semantic feature [ANIM] (see footnote 21), then it is interpreted as plural; otherwise, it is interpreted as singular. In the morphology, [CLASS:SG] is always spelled out as *i*-class B-agreement.<sup>28</sup>

Finally, assume that SP nouns can be lexically valued either as [+SG] or as [-SG], resulting in singular interpretation accompanied by *i*-class A-agreement or in plural interpretation with *i*-class C-agreement.<sup>29</sup>

To summarize, we propose that Southern Tiwa has essentially retained the number-based *n*-class features assumed for other Kiowa-Tanoan languages in the literature. However, there are two crucial differences between Southern Tiwa and its more conservative relatives. First, Southern Tiwa has lost the dual from 3rd-person non-HiSpec nouns. This enables *n*-class features on bare NPs to be interpretable as number. Second, Southern Tiwa has lost the inverse in the nominal domain. This enables [CLASS:□] to remain unvalued by a DP, thus allowing subsequent class-Agree with a bare NP argument. Indeed, it is tempting to speculate that it was this very loss of the inverse which conditioned the emergence of class as a separate probe from person and number in Southern Tiwa, thus yielding the characteristic verbal agreement and non-incorporation

---

prediction that it should never be the case that incorporated nouns receive a dual-only interpretation, whilst non-incorporated (HiSpec) absolutes, including 3rd-person ones, should allow such an interpretation. We do not know whether this is correct.

<sup>28</sup>Alternatively, one could assume that the marked strategy consists of adding the opposite value, thus turning [+SG] and [-SG] into [ $\pm$ SG]. This would render the analysis even more similar to the theory of Harbour (2007) in that there is a feature clash; the difference is that in the present account the clash arises on N, not on D, and that [ $\pm$ SG] receives a special (contextually conditioned) interpretation.

<sup>29</sup>This class should be the smallest of all because nouns that belong to it must be semantically compatible with both [+SG] and [-SG]. We do not know whether this is true, but note that the (corresponding) SDP class in Kiowa indeed only comprises a few nouns (see Harbour (2007, 49)).

restrictions as described and analysed in sections 1–5.

## 8 Appendix B: Transitive and ditransitive paradigms in Southern Tiwa

Cells in the paradigms (56) and (57) for which there is no entry for independent reasons (PCC, animacy-class correlation, and the like) are filled with “\*”. Cells that belong to the special reflexive paradigm (see footnote 8) are ignored and filled with “...”.

(56) *Transitive paradigm* (Allen *et al.* (1990, 376-377), Rosen (1990, 673)):

		DP <sub>erg</sub>			2nd			3rd		
		1st			SG	DU	PL	SG	DU	PL
DP/NP <sub>abs</sub>		SG	DU	PL	SG	DU	PL	SG	DU	PL
1st	SG	...	...	...	<i>bey-</i>	<i>bey-</i>	<i>bey-</i>	*	*	*
	DU	...	...	...	<i>ku-</i>	<i>ku-</i>	<i>ku-</i>	*	*	*
	PL	...	...	...	<i>ku-</i>	<i>ku-</i>	<i>ku-</i>	*	*	*
2nd	SG	<i>i-</i>	<i>i-</i>	<i>i-</i>	...	...	...	*	*	*
	DU	<i>men-</i>	<i>men-</i>	<i>men-</i>	...	...	...	*	*	*
	PL	<i>ma-</i>	<i>ma-</i>	<i>ma-</i>	...	...	...	*	*	*
3rd	A	<i>ti-</i>	<i>in-</i>	<i>i-</i>	<i>a-</i>	<i>men-</i>	<i>ma-</i>	∅-	<i>in-</i>	<i>i-</i>
	B	<i>bi-</i>	<i>imim-</i>	<i>ibi-</i>	<i>i-</i>	<i>mimim-</i>	<i>bibi-</i>	<i>i-</i>	<i>imim-</i>	<i>ibi-</i>
	C	<i>te-</i>	<i>kin-</i>	<i>kiw-</i>	<i>ku-</i>	<i>men-</i>	<i>mow-</i>	<i>u-</i>	<i>in-</i>	<i>iw-</i>

(57) *Ditransitive paradigm* (Allen et al. (1990, 378), Rosen (1990, 673)):

		DP <sub>erg</sub>			2nd			
		SG	1st		SG	DU	PL	
			DU	PL				
DP <sub>dat</sub>	DP/NP <sub>abs</sub>							
		A	...	...	...	<i>ben-</i>	<i>men-</i>	<i>mim-</i>
	SG	B	...	...	...	<i>bem-</i>	<i>mem-</i>	<i>mim-</i>
		C	...	...	...	<i>bow-</i>	<i>mow-</i>	<i>miw-</i>
		A	...	...	...	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>
	1st DU	B	...	...	...	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>
		C	...	...	...	<i>miw-</i>	<i>miw-</i>	<i>miw-</i>
		A	...	...	...	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>
	PL	B	...	...	...	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>
C		...	...	...	<i>miw-</i>	<i>miw-</i>	<i>miw-</i>	
2nd	SG	A	<i>ka-</i>	<i>ka-</i>	<i>ka-</i>	...	...	...
		B	<i>kam-</i>	<i>kam-</i>	<i>kam-</i>	...	...	...
		C	<i>kow-</i>	<i>kow-</i>	<i>kow-</i>	...	...	...
	DU	A	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	...	...	...
		B	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	...	...	...
		C	<i>miw-</i>	<i>miw-</i>	<i>miw-</i>	...	...	...
	PL	A	<i>mam-</i>	<i>mam-</i>	<i>mam-</i>	...	...	...
		B	<i>mam-</i>	<i>mam-</i>	<i>mam-</i>	...	...	...
		C	<i>mow-</i>	<i>mow-</i>	<i>mow-</i>	...	...	...
3rd	A <sub>sg</sub>	A	<i>ta-</i>	<i>mim-</i>	<i>mim-</i>	<i>a-</i>	<i>mim-</i>	<i>mim-</i>
		B	<i>tam-</i>	<i>min-</i>	<i>mim-</i>	<i>am-</i>	<i>mim-</i>	<i>mim-</i>
		C	<i>tow-</i>	<i>miw-</i>	<i>miw-</i>	<i>ow-</i>	<i>miw-</i>	<i>miw-</i>
	B <sub>pl</sub>	A	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>
		B	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>	<i>mim-</i>
		C	<i>miw-</i>	<i>miw-</i>	<i>miw-</i>	<i>miw-</i>	<i>miw-</i>	<i>miw-</i>

## References

- Adger, David and Daniel Harbour (2007): 'Syntax and Syncretisms of the Person Case Constraint', *Syntax* **10**, 2–37.
- Adger, David, Daniel Harbour and Laurel Watkins (in press): *Mirrors and Microparameters: Phrase Structure Beyond Free Word Order*. Cambridge University Press, Cambridge.
- Aissen, Judith (1990): Towards a Theory of Agreement Controllers. In: B. Joseph and P. Postal, eds, *Studies in Relational Grammar 3*. University of Chicago Press, Chicago, pp. 279–320.
- Aissen, Judith (1999): 'Markedness and Subject Choice in Optimality Theory', *Natural Language and Linguistic Theory* **17**, 673–711.
- Allen, Barbara J. and Donald G. Frantz (1983): Advancements and Verb Agreement in Southern Tiwa. In: D. Perlmutter and C. Rosen, eds, *Studies in Relational Grammar 1*. University of Chicago Press, Chicago, pp. 303–314.
- Allen, Barbara J., Donald G. Frantz and Donna B. Gardiner (1984): 'Noun Incorporation in Southern Tiwa', *International Journal of American Linguistics* **50**, 292–311.
- Allen, Barbara J., Donald G. Frantz, Donna B. Gardiner and David Perlmutter (1990): Verb Agreement, Possessor Ascension, and Multistratal Representation in Southern Tiwa. In: B. Joseph and P. Postal, eds, *Studies in Relational Grammar 3*. University of Chicago Press, Chicago, pp. 321–383.
- Anagnostopoulou, Elena (2003): *The Syntax of Ditransitives: Evidence from Clitics*. Studies in Generative Grammar, Mouton De Gruyter, Berlin.
- Anagnostopoulou, Elena (2006): Strong and weak person restrictions: A feature checking analysis. In: L. Heggie and F. Ordoñez, eds, *Clitics and Affixation*. John Benjamins, Amsterdam, pp. 199–235.
- Baker, Mark (1988): *Incorporation: A Theory of Grammatical Function Changing*. University of Chicago Press, Chicago.
- Baker, Mark (1996): *The Polysynthesis Parameter*. Oxford University Press, New York.
- Baker, Mark (2008): *The Syntax of Agreement and Concord*. Cambridge University Press, Cambridge.
- Béjar, Susana and Milan Řezáč (2009): 'Cyclic Agree', *Linguistic Inquiry* **40**, 35–73.
- Bobaljik, Jonathan and Phil Branigan (2006): Eccentric agreement and multiple case checking. In: A. Johns, D. Massam and J. Ndayiragije, eds, *Ergativity: Emerging Issues*. Springer, Dordrecht, pp. 47–77.
- Boeckx, Cedric (2000): 'Quirky Agreement', *Studia Linguistica* **54**, 354–380.

- Bonet, Eulália (1991): Morphology after Syntax: Pronominal Clitics in Romance. PhD thesis, MIT.
- Chomsky, Noam (1995): *The Minimalist Program*. MIT Press, Cambridge, Massachusetts.
- Chomsky, Noam (2000): Minimalist Inquiries: The Framework. In: R. Martin, D. Michaels and J. Uriagereka, eds, *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. MIT Press, Cambridge, Massachusetts, pp. 89–155.
- Chomsky, Noam (2001): Derivation by Phase. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, Massachusetts, pp. 1–52.
- Chomsky, Noam (2007): Approaching UG from Below. In: U. Sauerland and H.-M. Gärtner, eds, *Interfaces + Rekursion = Language? Chomsky's Minimalism and the View from Syntax-Semantics*. Mouton de Gruyter, Berlin, pp. 1–30.
- Chomsky, Noam (2008): On Phases. In: R. Freidin, C. P. Otero and M. L. Zubizarreta, eds, *Foundational Issues in Linguistic Theory*. MIT Press, Cambridge, Massachusetts, pp. 133–166.
- den Dikken, Marcel (2007): 'Amharic Relatives and Possessives: Definiteness, Agreement, and the Linker', *Linguistic Inquiry* **38**, 302–320.
- Fillmore, Charles (1968): The Case for Case. In: E. Bach and R. Harms, eds, *Universals in Linguistic Theory*. Holt, Reinhart and Winston, New York, pp. 1–88.
- George, Leland and Jaklin Kornfilt (1981): Finiteness and Boundedness in Turkish. In: F. Heny, ed., *Binding and Filtering*. MIT Press, Cambridge, Massachusetts, pp. 105–127.
- Harbour, Daniel (2007): *Morphosemantic Number – From Kiowa Noun Classes to UG Number Features*. Springer, Dordrecht.
- Haspelmath, Martin (2003): Explaining the Ditransitive Person-Role Constraint: A Usage Based Approach. Ms., MPI Eva, Leipzig.
- Heck, Fabian and Malte Zimmermann (2004): Remarks on the Phasal Status of DP. Ms., Universität Tübingen, Humboldt-Universität Berlin.
- Kroskrity, Paul Vincent (1977): Aspects of Arizona Tewa Language Structure and Language Use. PhD thesis, Indiana University.
- Leap, William Lester (1970a): The Language of Isleta, New Mexico. PhD thesis, Southern Methodist University.
- Leap, William Lester (1970b): 'Tiwa Noun Class Semology: A Historical View', *Anthropological Linguistics* **12**, 38–45.
- Marantz, Alec (1995): 'Cat' as a phrasal idiom: Consequences of late insertion in distributed morphology. Ms., MIT.

- 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**, 201–225.
- Nichols, Johanna (1986): 'Head-Marking and Dependent-Marking Grammar', *Language* **62**, 56–119.
- Noyer, Rolf (1992): Features, Positions, and Affixes in Autonomous Morphological Structure. PhD thesis, MIT, Cambridge, Massachusetts.
- Pesetsky, David (1989): Language Particular Processes and the Earliness Principle. Ms., MIT.
- Pesetsky, David (1995): *Zero Syntax. Experiencers and Cascades*. MIT Press, Cambridge, Massachusetts.
- Postal, Paul (1970): On So-Called Pronouns in English. In: R. A. Jacobs and P. S. Rosenbaum, eds, *Readings in English Transformational Grammar*. Ginn and Company, Waltham, Massachusetts, pp. 56–82.
- Řezáč, Milan (2003): 'The Fine Structure of Cyclic Agree', *Syntax* **6**, 156–182.
- Řezáč, Milan (2004): Elements of Cyclic Syntax: Agree and Merge. PhD thesis, University of Toronto.
- Richards, Marc (2008a): Defective Agree and Case Alternations. In: M. Richards and A. L. Malchukov, eds, *Scales*. Vol. 86 of *Linguistische Arbeitsberichte*, Institut für Linguistik, Universität Leipzig.
- Richards, Marc (2008b): Quirky Expletives. In: R. d'Alessandro, G. H. Hrafnbjargarson and S. Fischer, eds, *Agreement Restrictions*. Mouton de Gruyter, Berlin, pp. 181–213.
- Roberts, Ian (2006): Clitics, Head-Movement, and Defective Goals. Ms., University of Cambridge.
- Rosen, Carol (1990): 'Rethinking Southern Tiwa: The Geometry of a Triple Agreement Language', *Language* **66**, 669–713.
- Sadock, Jerrold M. (1985): 'The Southern Tiwa Incorporability Hierarchy', *International Journal of American Linguistics* **51**, 568–72.
- Silverstein, Michael (1976): Hierarchy of Features and Ergativity. In: R. Dixon, ed., *Grammatical Categories in Australian Languages*. Humanities Press, Princeton, New Jersey, pp. 112–171.
- Svenonius, Peter (2004): On the Edge. In: D. Adger, C. de Cat and G. Tsoulas, eds, *Peripheries: Syntactic Edges and their Effects*. Kluwer, pp. 261–287.
- Trager, Felicia Harben (1968): Picurís Pueblo, New Mexico, An Ethnolinguistic Salvage Study. PhD thesis, State University of New York, Buffalo.

- Trager, Felicia Harben (1971): 'The Phonology of Picurís', *International Journal of American Linguistics* **37**, 29–33.
- Watkins, Laurel (1984): *A Grammar of Kiowa*. University of Nebraska Press, Lincoln. With the assistance of Parker McKenzie.
- Yumitami, Yukihiro (1998): A Phonology and Morphology of Jemez Towa. PhD thesis, University of Kansas.
- Zaharlick, Ann Marie (1977): Picurís Syntax. PhD thesis, American University, Washington.