

**OT-interactions between Focus and Canonical Word order:  
Deriving the Crosslinguistic Typology of Structural Contrastive Focus\***

Vieri Samek-Lodovici - Universität Konstanz

### 1. Introduction

A crosslinguistic survey of structural contrastive focus within VP which also takes into account a language canonical word order reveals the variety of patterns listed in (1) below, including languages uniformly realizing focused constituents at the left- and respectively right-edge of VP, languages with mixed patterns where leftward and rightward focus cooccur in complementary distribution, languages lacking structural focus altogether, and languages where structural focus is only partial, affecting objects and indirect objects but not subjects.

(1)	LEFT	RIGHT	LEFT & RIGHT (left default)	RIGHT & LEFT (right default)	NONE	PARTIAL
SVO	Western Bade	Italian	Kanakuru		French	English (optionally)
VSO	Podoko	Spanish (VSO varieties)			Scottish Gaelic	

This work presents a principled account of the above typology where all language specific properties — such as presence vs. absence of structural focus, its uniform vs. non-uniform nature, and whether it may or may not affect subjects— are never directly encoded within the analysis, but rather follow from the interaction between two constraints requiring VP-alignment of focused constituents and three independently motivated constraints affecting a language canonical word order. In particular, each typological slot will correspond to a ranking of the five constraints at issue. Moreover, the unattested typological slots in (1) above (i.e. the grey boxes), as well as Tuller's (1992) generalization banning object incorporation within VSO languages with leftward focus, will all follow as theorems of the analysis (on the interaction of word order and focus see also Harries-Delisle 1978, Givón 1988, Tuller 1992, Costa 1997a,b).

The analysis will also show that word order related conditions do constrain structural focus, defeating the intuitive but incorrect perception that since structural focus is by definition an alteration of a language canonical word order, no word order condition should constrain it.

The overall layout is as follows: section 2 presents the general assumptions underlying this work; section 3 introduces in detail the five constraints on which the analysis is based; and the following sections examine each individual language and corresponding focus pattern.

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### 2. General Assumptions

Structural contrastive focus, henceforth 'focus', occurs when a constituent which is semantically contrasted with the members of a set of alternatives (Rooth 1985:14) is realized in a specific, non-canonical position (Rochement & Culicover, 1990:24-25).

Following Rooth, I will consider question-answer pairs, association with the focusing verb 'only', and presence of a clear contrastive focus interpretation as valid diagnostics for the contrastive focus status of a constituent. As for the 'canonical word order' of a language, I follow Zubizarreta, Pinto, and Costa, and identify it as the order that occurs when all involved constituents are neither contrastive foci nor discourse topics (Vallduví 1992; Zubizarreta 1992; Fassi Fehri 1993; Pinto 1997; Costa 1997a,b). Therefore, this is the order that the language displays as an answer to the question 'what happened?', and characterizing 'out-of-blue' utterances (Pinto, 1997).

Furthermore, I restrict my attention to left-headed VO languages with structural focus realized within the scope of I<sup>o</sup>. I thus exclude all languages projecting focus within or above IP as well as right-headed OV languages, because they structurally lack the kind of interaction between focus, case-adjacency and movement of interest here. When a language allows for structural focus in two positions, one within and one outside VP, I will examine only the VP-level case, on the base of the assumption that the two modalities are not interpretationally equivalent, as is plausible given the meaning distinctions observed in many languages with respect to occurrence within or outside VP (Diesing 1992, Vallduví 1992, Choi 1996).

I also assume that IP and VP are always projected (Vikner 1997, but contra Grimshaw 1993, 1997), and that where present, structural focus occurs aligned with the left-edge and respectively right-edge of VP, thus abstracting away from finer analyses involving a focus projection between VP and I<sup>o</sup>. Finally, I will highlight at the top of the relevant tableaux those ranking relations imposed by the suboptimal status of specific candidates whose conjunction forms the OT-grammar each time under discussion.

### 3. A Fragment of UG

This section defines in detail the five universal constraints determining the focus typology.

#### 3.1 Focus-related Constraints: AF<sub>left</sub> and AF<sub>right</sub>

The constraints AF<sub>left</sub> and AF<sub>right</sub> —where 'AF' stands for 'align focus'— require any focused phrase to align to the left-, respectively right-edge of VP, as stated in (2a) (Grimshaw & Samek-Lodovici 1995, to appear; Samek-Lodovici 1996a). Being alignment constraints, however, AF<sub>left</sub> and AF<sub>right</sub> are more precisely defined as in (2b), along McCarthy and Prince's (1993a) theory of general alignment. For example, the definition of AF<sub>left</sub> states that for any focused phrase XP, there is a VP such that the left edge of XP matches the left edge of VP.

(2a) AF<sub>left</sub>, AF<sub>right</sub>: Align contrastively focused constituents with the left/right edge of VP.

Failed by misaligned contrastive foci.

(2b) AF<sub>left</sub> = ALIGN (XP<sub>[+focus]</sub>, Left, VP, Left), AF<sub>right</sub> = ALIGN (XP<sub>[+focus]</sub>, Right, VP, Right).

Notice that a focused subject S<sub>f</sub> in specVP satisfies AF<sub>left</sub>, because its left edge is already aligned with the

left edge of VP, as shown in (3a). However, the same  $S_f$  cannot satisfy  $AF_{right}$ , because the verbal trace 't<sub>v</sub>' of the verb raised to I' intervenes between the right-edge of  $S_f$  and the right-edge of VP. In order to satisfy  $AF_{right}$  the subject must thus right-adjoin to VP, as in (3b). The same of course holds when the VP contains internal arguments, as in (3c). ('O' and 'IO' stand for 'object' and 'indirect object')

- (3) a. [<sub>VP</sub>  $S_f$  t<sub>v</sub>]                      b. [<sub>VP</sub> [<sub>VP</sub> t<sub>s</sub> t<sub>v</sub>]  $S_f$ ]                      c. [<sub>VP</sub> [<sub>VP</sub> t<sub>s</sub> t<sub>v</sub> O IO]  $S_f$ ]

The right-adjunction representation in (3c) is implicitly challenged by recent works concerning mostly presentational focus appeared on the wake of Kayne's (1994) antisymmetry monograph, such as Reinhart (1995), Costa (1997a,b), Zubizarreta (1997), and Ordoñez (to appear). These authors maintain that a specVP subject  $S_f$  may satisfy (the presentational version of)  $AF_{right}$  through leftward scrambling of all internal arguments intervening between it and the right-edge of VP, as shown in (4) below (but see also Neeleman & Weerman 1996, who restrict leftward scrambling to languages with OV word order).

- (4) ... O IO [<sub>VP</sub>  $S_f$  t<sub>v</sub> t<sub>o</sub>] <sub>IO</sub>

A full discussion of this proposal would require a paper on its own. For the time being, I will simply list a few reasons why with respect to structural contrastive focus I still favor the right-adjunction analysis given in (3c). The first reason comes from the Italian data in (5) below, where the rightward focused subject binds into the object at its left. Under a leftward scrambling analysis this should not be possible because the object scrambles to an A-position higher than the subject, as shown in (6a). The same data, however, follow straightforwardly if the subject has right VP-adjoined as in (6b) below, since in this case the in situ object is bound by the subject trace in specVP. (Focus in bold, sentential stress underlined.)

- (5) Q: Chi incoraggia gli alunni in questa scuola ?  
 who encourages the students in this school?  
 'Who encourages the students in this school?'  
 A: Incoraggia [i suoi<sub>i</sub> alunni] [**ogni insegnante**]<sub>i</sub>.  
 encourages [the his students ] [**each teacher**]  
 'Each teacher encourages his own students'

- (6) a. ... O [<sub>VP</sub>  $S_f$  t<sub>v</sub> t<sub>o</sub>]                      b. ... [<sub>VP</sub> [<sub>VP</sub> t<sub>s</sub> t<sub>v</sub> O ]  $S_f$ ]

A second reason concerns those accounts where the object moves leftwards in order to get case in SpecAgr<sub>o</sub>, leaving an in situ focused subject at their right (Costa 1997a:10; Pinto 1997; Cinque to appear; Zubizarreta 1992, 1997; Reinhart 1995). As Costa points out, this analysis predicts that a presentationally focused subject will precede a VP-internal prepositional phrase, because PPs do not need to get case. As is already pointed out in Pinto (1997:235), contrastively focused subjects defeat this prediction. As (7) shows, postverbal focused subjects follow prepositional arguments, and in absence of right-dislocation this is the only possible order. Further support comes from the data in (8), showing that when the prepositional phrase is not right-dislocated, a postverbal subject may focus by association with a preceding focusing adverb *only* only

when the subject follows the PP.

- (7) Q: Chi é arrivato da Firenze?                      A: E' arrivato da Firenze **Dante**.  
 Who is arrived from Florence?                      is arrived from Florence **Dante**.  
 'Who arrived from Florence?'                      '**Dante** arrived from Florence.'  
 (8) a. E' soltanto arrivato da Firenze **Dante**.                      b. \*E' soltanto arrivato **Dante** da Firenze.  
 is only arrived from Florence **Dante**.  
 'only Dante arrived from Florence'

Finally, consider the important evidence for leftward scrambling provided in Ordoñez (1995), who showed how in Spanish V-IO-S patterns such as (9) below indirect objects bind subjects but subjects do not, precisely as predicted by a leftward-scrambling analysis and contradicting a rightward-adjunction one. Though milder, the same contrast occurs in the correspondent Italian data.

- (9) Q: ¿Que le regalo a cada ninõ<sub>i</sub> su<sub>i</sub> amigo para su compleanõs?  
 what cl-bought for each boy his friend for his birthday?  
 'What did his friend give to each child for his birthday?'  
 A: Este libro se lo regalo a cada ninõ<sub>i</sub> su<sub>i</sub> amigo.  
 This book cl-gave for each boy his friend.  
 'His friend gave this book to each child'

According to Rooth's (1985) diagnostics, however, the constituent being focused in (9) is the object *este libro*. The subject is mentioned in the question and thus cannot be contrastively focused. It follows that it cannot have been right-adjoined for focus-related reasons. Crucially, as the data in (5) above already showed, when the paradigm is fed with a contrastively focused subject the opposite binding facts hold, again in favor of the right-adjunction analysis.

### 3.2 Canonical Word order Constraints: SUBJECT, STAY, CASEADJ

Unlike the focus constraints, the constraints below apply non-vacuously to both focused and unfocused constituents, thus affecting also the canonical word order of a language, which by definition is the order emerging in absence of topichood and focus.

The constraint SUBJECT was first proposed in Grimshaw (1993, 1997), and has its origin in the extended projection principle (Chomsky, 1981). It requires that the highest A-position be structurally realized. For the structures that concern us here, this position is always SpecIP, which is assumed to be structurally unrealized whenever not filled by an overt subject or by its trace (see Samek-Lodovici 1996a, where referential and expletive null subjects are viewed as structurally non-existent. For the sake of this work, however, any version of SUBJECT forcing overt realization of specIP would be acceptable).

- (10) SUBJECT: The highest A-specifier of a clause must be structurally realized.  
 Failed when the highest A-specifier of a clause is left structurally unrealized.

The next constraint, STAY, penalizes movement, and is violated by traces. Its origin rests on the notion of movement economy in Chomsky (1992, 1995), and plays an important role in almost all works within OT-syntax, such as for example Grimshaw's analysis of *do*-support (Grimshaw 1993, 1997).

(11) STAY: Traces are not allowed. Failed by traces.

The last constraint, CASEADJ (C.A.) requires linear adjacency between case-assigners and case-assignees (see also Chomsky 1981; Saito 1983; Stowell 1981; Rizzi 1991; Neeleman & Weerman 1996; Neeleman 1997; Neeleman & Reinhart, to appear). Intuitively, CASEADJ is violated whenever an overt distinct constituent intervenes between a case assigner and its correspondent case assignee, and the hurried reader may safely use this approximation. I adopt, however, the more complex but formally more precise definition proposed in Neeleman & Reinhart (to appear) and supported by their analysis of case-induced leftward object scrambling under OV word order.

According to these authors, *leftward* case assignment occurs within the syntactic m-command domain of the case assigner, whereas *rightward* case assignment occurs within its phonological phrase, which following Selkirk's (1986) is built by introducing a phonological phrase right edge at the right edge of each syntactic phrase XP. CASEADJ is thus defined as follows:

- (12) CASEADJ: Rightward: A case assigner  $X^\circ$  and a case assignee DP must occur in the same phonological phrase  $\phi$ .  
 Failed whenever  $X^\circ$  and DP belong to two distinct phonological phrases.  
 Leftward: A case assigner  $X^\circ$  and a case assignee DP must mutually m-command each other. Failed when either  $X^\circ$  or DP does not m-command the other.

In addition, following the OT-analysis of case-assignment developed in Samek-Lodovici (1996a), I assume that structural case is assigned from the surface position of the case-assigner to the highest A-position taken by the case-assignee (see also Burzio 1994, allowing for case assignment from  $I^\circ$  into VP). This entails that in the languages examined here, accusative case is assigned from the surface position of V, i.e.  $I^\circ$ , rather than from the verbal trace 't<sub>v</sub>'.

This case-assignment configuration has already been proposed as a language-specific property in many works, including Chung & McCloskey (1987), McCloskey (1991), Koopman & Sportiche (1991), Fassi Fehri (1993), Tuller (1992). Nevertheless, it is often objected that structures with V to I movement would end up violating CASEADJ whenever an adverb intervenes between the raised verb and its object. Within OT, however, this consideration is no proof that the object should get case from the verbal trace. In fact, like all OT constraints CASEADJ is violable, and will be violated whenever ranked lower than whatever constraint is responsible for V to I movement. A second objection points out that objects precede prepositional indirect objects even when the verb has raised to the left of an adverb, as if case-adjacency were still enforced (Neeleman, p.c.). What this shows is that CASEADJ is actually a *gradient* constraint, violated once by each  $\phi$ -boundary crossed by case assignment. The structure <V Adv O PP> then beats the structure

<V Adv PP O> because case assignment crosses only one  $\phi$ -boundary (that built by the adverb) rather than two (that built by the adverb plus that built by the PP). Even this effect thus does not show that case is assigned from the verb trace. For the sake of simplicity, I will keep the simpler binary definition of CASEADJ given above.

Let us finally examine how CASEADJ covers the case-adjacency effects relevant for this work. The most important case is the one in (13a) below, where the focused subject  $S_f$  occurs in specVP to satisfy AF<sub>left</sub>, thus intervening between the verb V and the in situ object O. CASEADJ is violated once, because the phonological phrase  $\phi_v$  of the verb extends only until the right-edge of the subject  $S_f$  (see the curly bracketing). Nominative case from  $I^\circ$  to S is assigned within  $\phi_v$ , but accusative case to O crosses a  $\phi$ -boundary, thus violating CASEADJ. This structure thus puts in conflict AF<sub>left</sub> with CASEADJ.

- (13a) [Object in situ, V [<sub>VP</sub>  $S_f$  t<sub>v</sub> O] CASEADJ, \*AF<sub>left</sub>  
 Subject in specVP] { } $\phi_v$  { } $\phi$

In most other structures, CASEADJ is satisfied. For example, this is the case when  $S_f$  focuses in specVP but the object head H incorporates into  $I^\circ$ , as in (13b) below. The incorporated head does not induce a right-edge for  $\phi_v$  because it is not a maximal projection. Therefore  $\phi_v$  extends until  $S_f$ . Since the object is assigned case through its incorporated head, and the subject is assigned nominative case from  $I^\circ$  within  $\phi_v$  CASEADJ is satisfied. Object incorporation is thus a way to solve potential conflicts between AF<sub>left</sub> and CASEADJ.

- (13b) [Object head incorporates, V-H [<sub>VP</sub>  $S_f$  t<sub>v</sub> [<sub>DP</sub> t<sub>H</sub>]] CASEADJ, AF<sub>left</sub>  
 Subject in specVP] { } $\phi_v$

CASEADJ is also satisfied when  $S_f$  right VP-adjoin to the right of an in situ object to satisfy AF<sub>right</sub>, as in (13c). The phonological phrase  $\phi_v$  extends until the right-boundary of the object O. Accusative case is thus assigned within  $\phi_v$ , satisfying CASEADJ. Nominative case is assigned to the higher A-position of the subject chain. Since the focus position is an A'-position, the highest A-position in the chain is the specVP position (Samek-Lodovici 1996a). Nominative case is thus assigned to the subject trace 't<sub>s</sub>', hence within  $\phi_v$  and satisfying CASEADJ. The structure thus satisfies both CASEADJ and AF<sub>right</sub>.

- (13c) [Object in situ, V [<sub>VP</sub> [<sub>VP</sub> t<sub>s</sub> t<sub>v</sub> O ]  $S_f$ ] CASEADJ, AF<sub>right</sub>  
 Right VP-adjoined Subject] { } $\phi_v$  { } $\phi$

Finally, and concluding the discussions of the word order related constraints, consider the case where the subject raises to specIP, shown in (13d). The phonological phrase  $\phi_v$  now extends until the right-boundary of the object. Accusative case is thus assigned within  $\phi_v$ . Nominative case is assigned to the highest A-position of the subject chain, hence leftwards, to the specIP subject m-commanded by  $I^\circ$ . Hence CASEADJ is satisfied.

(13c) [Object in situ,  $S_f$  V [<sub>vp</sub> t<sub>s</sub> t<sub>v</sub> O] CASEADJ  
Subject in specIP] { } { }  $\phi_v$

#### 4. Candidate Set and Potential Optima

The candidate set contains all those structures where the focused constituents take a different syntactic position. Although there are an infinite number of them, most of them are *harmonically bound*, i.e. their violations are a superset of the violations of some other structure which outperforms them under any ranking of the constraints (Prince & Smolensky 1993, chap 9.1.1). The actual set of candidates we are interested in is the set of structures which are not harmonically bound by any other structure, which I will call the set of *potential optima*.

Consider for example the 10 structures for focused subjects in transitive constructions shown below. The first five differ in the position of the focused subject  $S_f$ , which occurs in specVP in 1, in specIP in 2, in right VP-adjoined position in 3, in left VP-adjoined position in 4, and again in specIP position but with the verb in C° in 5. The structures from 6 to 10 are identical to those in 1-5, except for the additional incorporation of the object head-complex H into I°, which leaves a stranded relative-clause CP behind.

#### (14) Structural Candidates Marked for Harmonic-Bounding

1	V	[ <sub>vp</sub> S <sub>f</sub> t <sub>v</sub> O]	6	V+H	[ <sub>vp</sub> S <sub>f</sub> t <sub>v</sub> [ <sub>DP</sub> t <sub>H</sub> CP]]
2	S <sub>f</sub> V	[ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O]	7 ✘	S <sub>f</sub> V+H	[ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> [ <sub>DP</sub> t <sub>H</sub> CP]]
3	V [ <sub>vp</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O] S <sub>f</sub> ]		8 ✘	V+H [ <sub>vp</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> [ <sub>DP</sub> t <sub>H</sub> CP]] S <sub>f</sub> ]	
4 ✘	V [ <sub>vp</sub> S <sub>f</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O]]		9 ✘	V+H [ <sub>vp</sub> S <sub>f</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> [ <sub>DP</sub> t <sub>H</sub> CP]]]	
5 ✘	V [ <sub>ip</sub> S <sub>f</sub> t <sub>v</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O]]		10 ✘	V+H [ <sub>ip</sub> S <sub>f</sub> t <sub>v</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> [ <sub>DP</sub> t <sub>H</sub> CP]]]	

The harmonically bound structures are marked with '✘'. For example, 7 and 8 are harmonically bound by structures 2 and 3, because they differ from them only for object incorporation, which costs them an additional STAY violation. Likewise, 4 and 9 are harmonically bound by 1 and 6, from which they differ only in that they raise the subject to the left VP-adjoined position, which costs them an additional STAY violation. Finally, structures 10 and 5 are harmonically bound by structure 2, as shown in (15) below. In fact, all three structures violate AF<sub>left</sub> and AF<sub>right</sub> because the focused subject is in specIP, and all violate STAY at least twice by moving the verb and the subject outside VP. However, 5 and 10 violate STAY one additional time to move the verb from I° to C°. Moreover, 5 also violates CASEADJ because the subject now interferes with accusative case assignment, and 10 violates STAY yet another time due to object incorporation.

#### (15) I-to-C verb movement

	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
2. S <sub>f</sub> V [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O]		*	*		**
5. ✘ V [ <sub>ip</sub> S <sub>f</sub> t <sub>v</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O]]	*	*	*		***
10. ✘ V+H [ <sub>ip</sub> S <sub>f</sub> t <sub>v</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> [ <sub>DP</sub> t <sub>H</sub> CP]]]		*	*		****

Further candidates could be created only by building additional projections on top of CP, thus adding violations of constraints penalizing projections lacking heads (c.f. Grimshaw's OBLIGATORY-HEADS, 1997), or further violating STAY to fill their heads through verb movement. It follows that the uncrossed candidates, repeated below, are the only structural realizations of focused subjects that are optimal for some ranking of the proposed constraints.

#### (16) Potential optima for focused subjects in transitive clauses.

a.	V	[ <sub>vp</sub> S <sub>f</sub> t <sub>v</sub> O]	b.	V	[ <sub>vp</sub> [ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O] S <sub>f</sub> ]
c.	S <sub>f</sub> V	[ <sub>vp</sub> t <sub>s</sub> t <sub>v</sub> O]	d.	V+H	[ <sub>vp</sub> S <sub>f</sub> t <sub>v</sub> [ <sub>DP</sub> t <sub>H</sub> CP]]

What structure(s) are optimal in each language and how they correlate with canonical word order is examined in the following sections.

#### 5. Complementary Distribution between Leftward and Rightward Focus

The most complex focus pattern predicted by the proposed constraints is that of Kanakuru, an SVO Chadic language displaying complementary distribution between leftward and rightward focus, whose grammar is given in (17) below:

(17) Kanakuru: CASEADJ >> AF<sub>left</sub> >> AF<sub>right</sub> >> SUBJECT >> STAY

The higher rank of AF<sub>left</sub> with respect to AF<sub>right</sub>, SUBJECT and STAY makes left VP-alignment the default realization of focus in the language. Leftward focus, however, may occur only when not in conflict with the higher ranked CASEADJ. Whenever a conflict is inevitable, satisfying CASEADJ forces a violation of AF<sub>left</sub>, providing the opportunity to satisfy the lower AF<sub>right</sub>, and giving rise to rightward focus. In the following I address this alternation again through OT-tableaus, and then provide the empirical data supporting it.

#### 5.1 The OT-analysis

Consider first the case where the subject is focused, and the object allows for incorporation, shown in T1 below. The optimal candidate in (a) satisfies AF<sub>left</sub> because S<sub>f</sub> is left-aligned with VP, and satisfies CASEADJ because accusative case is assigned by object incorporation and nominative case is assigned under adjacency (see the discussion of CASEADJ in section 3.2). All other potential optima fail either CASEADJ or AF<sub>left</sub>. In particular, CASEADJ is failed by (b), whose subject intervenes between the accusative case assigner V and the in situ object O, whereas AF<sub>left</sub> is violated by (c) and (d), which focus the subject in specIP and respectively right VP-adjoined position. Object incorporation thus emerges as the way to simultaneously satisfy AF<sub>left</sub> and CASEADJ.

T1 - When object incorporation is available, subjects focus leftwards.

(b): CASEADJ >> STAY; (d): AF<sub>left</sub> >> AF<sub>right</sub>.

Subject focused & object incorporation available	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
a. $\varnothing$ V+H [vp S <sub>f</sub> t <sub>v</sub> [DP t <sub>H</sub> CP]]			*	*	**
b. V [vp S <sub>f</sub> t <sub>v</sub> O ]	*!		*	*	*
c. S <sub>f</sub> V [vp t <sub>s</sub> t <sub>v</sub> O ]		*!	*		**
d. V [vp [vp t <sub>s</sub> t <sub>v</sub> O ] S <sub>f</sub> ]		*!		*	**

Under certain inputs, object incorporation is not available. For example, when the object is a proper name, it constitutes an undecomposable maximal projection lacking an incorporable X<sup>o</sup> head. I assume that in all these cases the incorporation candidate is not generated<sup>1</sup>. The competition is thus restricted to the remaining potential optima shown in T2 below. Precisely in this case, the focused subject is optimally realized in right VP-adjoined position, as in (d). This candidate, in fact, violates AF<sub>left</sub> but satisfies the higher ranked CASEADJ (recall that nominative case is assigned to the subject trace in specVP). In contrast, satisfying AF<sub>left</sub> by focusing the subject in specVP, as in (b), violates the higher ranked CASEADJ. Likewise, realizing the subject in specIP to satisfy SUBJECT, as in (c), fails the higher ranked AF<sub>right</sub>, which (d) satisfies. Thus, under this grammar, when incorporation is unavailable, focused subjects focus rightwards.

T2 - When incorporation is disallowed, subjects focus rightwards.

(b)<sup>2</sup>: CASEADJ >> AF<sub>left</sub>; (c): AF<sub>right</sub> >> SUBJECT.

Subject focused & object incorporation unavailable	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
b. V [vp S <sub>f</sub> t <sub>v</sub> O ]	*!		*	*	*
c. S <sub>f</sub> V [vp t <sub>s</sub> t <sub>v</sub> O ]		*	*!		**
d. $\varnothing$ V [vp [vp t <sub>s</sub> t <sub>v</sub> O ] S <sub>f</sub> ]		*		*	**

Notice that though the mirror constraints AF<sub>left</sub> and AF<sub>right</sub> entail each the violation of the other, they are nevertheless both necessary to determine the particular distribution at issue. We cannot “switch off” AF<sub>right</sub> the way one may switch off a parameter-value. If AF<sub>right</sub> were somehow made “inactive”, the decision between (d) and (c) would fall on SUBJECT, which would incorrectly select (c) as optimal. This shows that using mirror constraints within OT is not equivalent to positing parameters within the Government and Binding framework (see also Grimshaw 1993 and 1997 who makes a similar point while discussing headedness alternations).

A second consideration concerns the unexpected interaction between grammatical properties which at first sight appear fully distinct from one another. In the case at issue, object incorporability eventually affects the syntactic expression of focused subjects. Thanks to constraint interaction, this complex relation follows as an epiphenomenon of a specific ranking of independent universal constraints.

## 5.2 Empirical Evidence for Mixed Focus Patterns: Kanakuru

Contrastive focus in Kanakuru occurs both postverbally and sentence initially. In accord with the assumption laid out in the introduction, I will examine only postverbal focus, which is the primary mode to express contrastive focus in the language (Newman, 1974; also Tuller 1992, Samek-Lodovici, to appear).

### 5.2.1 Evidence for Leftward Focus

Evidence for the existence of leftward focus comes from the analysis of sentences like (18a) below. The focused subject, in bold, follows the object but obligatorily precedes any object-related relative-clause, which in turn obligatorily precedes the particle *ane* (*ane* is a ‘totality feature’ denoting completion of a task, RM is a relative clause marker).

- (18a) Ade shirwo-i **ngadla-i** ŋ shée wura *ane* (Newman, ex. 16, p.79)  
 ate fish-the **cat-the** RM she fried<sub>UPtot-feat</sub>  
 ‘**The cat** ate the fish that she fried’

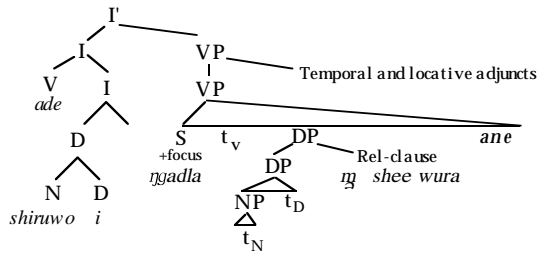
If the relative clause were in object position, then the subject at its left could only occur in specVP, since it follows the verb. That the relative clause is in object position follows from its preceding the particle *ane*, which according to Newman (1974:77-78), acts as a VP-delimiter obligatorily preceded by internal arguments and obligatorily followed by locative and temporal adjuncts. Suppose in fact that the relative clause were instead right-extrapolated: its extraposed position should then be available to temporal and locative adjuncts as well. But in this case they ought be able to occur to the left of *ane*, against Newman’s observation. Hence, the relative clause is indeed stranded in object position, and the subject obligatorily preceding it must occur in specVP, hence focused leftwards, as shown in (18b) below.

- (18b) V N-D [vp S<sub>f</sub> t<sub>v</sub> [DP t<sub>N-D</sub> CP<sub>rel-clause</sub> ] *ane* ]

The object precedes the subject, therefore it cannot be in its base-generated position. There are only two possibilities: either it is an N<sup>o</sup>-D<sup>o</sup> object head complex incorporated into I<sup>o</sup>, as in (18b), or it is a full DP scrambled to the specifier of a higher projection. In the incorporation case, the relative clause would be obligatorily stranded behind, because maximal projections cannot incorporate. In the scrambling case, however, nothing prevents scrambling the whole object DP together with its relative clause, which should thus be able to precede the subject. Since according to Newman (1977:64) the subject always precedes object-related relative clauses, the incorporation analysis is the only available one.

In conclusion, (18a) involves an incorporated object head-complex N-D, followed by a subject in specVP, followed by a relative clause stranded in object position, as in (19) below. Notice that in accord with the conditions on incorporation discussed in Li (1990) and Baker & Hale (1990), the incorporations of V<sup>o</sup>, of N<sup>o</sup> and of the N-D complex involve all left-adjunction and never move from functional to lexical categories. This latter condition also explains why the functional head-complex [D N-D] may skip the lexical head V on its way to I<sup>o</sup> (Li 1990).

(19)



Further evidence for leftward focus comes from the fact that focused subject precede other internal arguments, as is the case in (20) below. In fact, if the subject were in right-adjoined position it should follow rather than precede the locative argument.

- (20) Are lowo-i **jewe-i** la lushu (Newman, ex. 11, p64)  
 bury boy-the **slave-the** in bush  
 ‘**The slave** buried the boy in the bush’

Notice, finally, that object-incorporation is attested independently of focus<sup>3</sup>. Its visible effects involve loss of final /i/ in polysyllabic words. Consider for example the verbs *jindai* ‘desire’ and *kùrí* ‘refuse’. When the complement is nominal, as in (21a) and (21b), it incorporates, causing /i/-loss in the verb. However, non-incorporating constituents such as the sentential complement in (21c) and the adjunct in (21d) leave the /i/ unaffected, confirming that /i/-deletion is triggered by object incorporation. Newman also observes that the feature *ane* never induces /i/-loss in a preceding verb, again as expected if the loss is caused by incorporation of nominal complements (Newman 1977, page 19 and footnote 2 page 41). (The subjunctive marker *ɔ̃* *rà* in (21c) is optional; the term *móvò* ‘chase’ in (21b) is a nominalized verb with the exact same distribution of full nouns, Newman 1977:101.)

- (21) /i/-loss due to object incorporation.  
 a. *jindai* → ... *ɔ̃* da *jinda* ayim (Newman ex. (3), p.92)  
     ... because desire money  
     ‘...because of wanting money’  
 b. *kùrí* → *À kùr* *gásh̩* -móvò (Newman ex. (3), p.101)  
     perfect.3s refuse [chase-you]<sub>N</sub>  
     ‘He refused to chase you’  
 c. *jindai* → *Nàa* *jindai* (*ɔ̃* *rà*) *nà* wum penti (Newman ex. (18), p.93)  
     I desire (subjunctive-C°) to spread paint  
     ‘I want to spread paint’

- d. *kùrí* → *À kùr* *woi* *ɔ̃* *ɔ̃* *ba* *kindi* ayim u, *ɔ̃* *ɔ̃* *ba* *lombok* mani. (Newman ex. (19), p.111)  
 perfect.3s refuse not because lack money NEG, (but) because stinginess his  
 ‘He refused not for lack of money, but because of his stinginess’

To sum up, a detailed analysis of the constructions involving stranded relative clauses shows that when objects may incorporate into I° subjects focus in left-aligned position.

5.2.2 Evidence for Rightward Focus

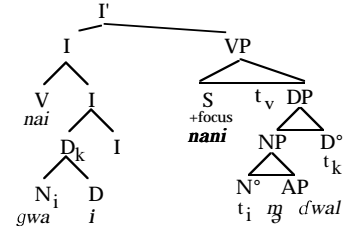
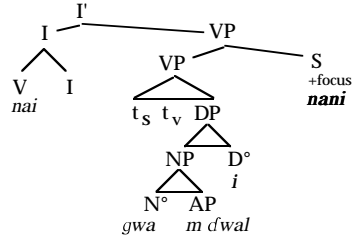
A first theory-internal argument for the existence of rightward focus comes from the analysis of sentences with proper name objects, such as (22) below (from Newman, ex. 8, p.16). As a maximal projection, the object cannot undergo X°-movement, and must thus occur in object position. A subject focused leftwards in specVP should precede the object. But the subject instead follows the object, and must thus be aligned with the right-edge of the VP, as schematized in (22b).

- (22) a. *Àl* *Básha* **mòlki** (Newman ex. 8, p.16)  
     saw Basha (**his**)-brother  
     ‘**His brother** saw Básha’  
 b. V [<sub>VP</sub> [<sub>VP</sub> t<sub>S</sub> t<sub>V</sub> O ] S<sub>f</sub>]

The alternation between left- and right-alignment of focused subject is however best revealed by the pair in (23) below, involving an object with an adjectival phrase modifying its internal NP projection. Sentence (23a) constitutes the canonical way to express adjectival modification, and Newman reports it as “strongly preferred” to (23b) (Newman 1974, p. 64, p. 97).

Consider first (23b). Its word order matches that found in the leftward focus example in (18a) above and should thus be assigned the same analysis: the object *gwa-i* is an incorporated object head-complex, the subject *nani* is left-aligned in specVP position, and the adjectival reduced relative clause *m̩* *dwal* is stranded in object position because maximal projections cannot incorporate; see the picture beneath (23b).

- (23) (Newman, ex. 20a, p.64)
- |  |  |  |
|--|--|--|
| <p>a. Preferred:<br/> <i>Nai</i> <i>gwa</i> <i>m</i> <i>dwal</i> <i>i</i> <b>nani</b><br/>             drank water RM cold-the <b>I</b><br/>             ‘<b>I</b> drank cold water’</p> |  | <p>b. Strongly dispreferred:<br/> <i>Nai</i> <i>gwa-i</i> <b>nani</b> <i>m̩</i> <i>dwal</i><br/>             drank water-the <b>I</b> RM cold<br/>             ‘<b>I</b> drank cold water’</p> |
|--|--|--|



In contrast, in (23a) the adjectival modifier *m dwal* occurs between N° and D°. This means that no incorporation occurred, because the adjectival phrase is a maximal projection and cannot have incorporated with N° and D°. It follows that the leftmost position for the object of (23a) is its base-generated position. But then the focused subject at its right is right-adjoined to VP (or to some higher position), thus confirming that subjects focus rightwards whenever object incorporation does not occur.

To complete the argument, notice that unlike full relative clauses, adjectival modifiers oppose stranding also in other languages. For example, (24) and (25) show how relative clauses allow for extraposition and stranding in English, whereas adjectival phrases disallow both operations (Doherty 1993).

(24) Full relative clauses allow for extraposition and stranding:

- English, rel-clause extraposition: I gave [DP a dog t<sub>i</sub>] to Mary [that I bought in Milan];
- English, rel-clause stranding by NP-raising: [a man]<sub>i</sub> arrived [DP t<sub>i</sub> [that I met in Milan]]
- Kanakuru, rel-clause stranding by incorporation: see ex. (18a) in section 5.2.1.

(25) Adjectival modifiers disallow for both extraposition and stranding:

- English, AP extraposition: \*I gave [DP a [NP t<sub>i</sub> dog] ] to Mary [unusually cute]<sub>i</sub>
- English, AP stranding by NP-raising: \*[a man]<sub>i</sub> arrived [DP t<sub>i</sub> [unusually tall]]
- Kanakuru, stranding of adjectival modifier by incorporation: see ex. (23b) above.

Wrapping up, the empirical data of Kanakuru instantiate precisely the mixed focus pattern predicted by the OT-grammar proposed in section 5.1, with subjects focusing leftwards when object incorporation may occur, and rightwards otherwise.

### 5.3 Internal Arguments

In Kanakuru, postverbal focus has visible effects only with subjects; focused objects and indirect objects do not alter the canonical <S V O IO> order of the language. Even this property follows from the proposed grammar.

Consider first the case for focused objects, in T3 below. The optimal structure (a) focuses the object O<sub>f</sub> in leftward VP-adjoined position. Therefore, O<sub>f</sub> follows the unfocused subject S in specIP and precedes any in situ indirect object IO, with no visible word order effects. Any alternative candidate is suboptimal. For example, focusing the object to the right of the indirect object, as in (b), violates the high ranked AF<sub>left</sub> which

(a) satisfies, and is thus suboptimal. Likewise, the object cannot be left in situ, as in (c) since this fails AF<sub>left</sub> as well. The candidates in (d)-(e) correspond to those in (a)-(c), except that their subject is in specVP. They are all suboptimal because they fail CASEADJ, either because the subject disrupts accusative case assignment, as in (e) and (f), or because the focused object disrupts nominative case assignment, as in (d). In (a) instead, accusative case is assigned to the object trace, which is the chain highest A-position, and since O<sub>f</sub> lies within the phonological phrase of the verb, its chain does not belong to a distinct phonological phrase, and CASEADJ is satisfied.

T3 - Lack of word order effects with focused objects.

Object is focused	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
a. S V [vp O <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> t <sub>obj</sub> IO]]			*		***
b. S V [vp [vp t <sub>s</sub> t <sub>v</sub> t <sub>obj</sub> IO] O <sub>f</sub> ]		*!			***
c. S V [vp t <sub>s</sub> t <sub>v</sub> O <sub>f</sub> IO]		*!	*		**
d. V [vp O <sub>f</sub> [vp S t <sub>v</sub> t <sub>obj</sub> IO]]	*!		*	*	**
e. V [vp [vp S t <sub>v</sub> t <sub>obj</sub> IO] O <sub>f</sub> ]	*!	*		*	**
f. V [vp S t <sub>v</sub> O <sub>f</sub> IO]	*!	*	*	*	*

In the case of focused indirect objects we must distinguish between inputs allowing for object incorporation and inputs disallowing it. T4 lists the potential optima when incorporation is available. The optimal structure, in (c), focuses the indirect object IO<sub>f</sub> in leftward position, but following the preverbal subject and the incorporated object, thus with no word order effects. All other alternatives are suboptimal, because they fail either CASEADJ or AF<sub>left</sub>, which (c) satisfies. The analysis also predicts that focused indirect objects obligatorily precede any stranded behind object-related relative clause, but since the available data do not contemplate this case, the prediction is left untested for the time being.

T4 - Lack of word order effects with focused indirect objects under object incorporation.

Indirect object focused & object incorporation available	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
a. S V [vp IO <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> O IO <sub>f</sub> ]]		*!	*		**
b. S V [vp IO <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> O t <sub>io</sub> ]]	*!				***
c. S V-H [vp IO <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> [DP t <sub>H</sub> CP] t <sub>io</sub> ]]			*		****
d. V [vp IO <sub>f</sub> [vp S t <sub>v</sub> O IO <sub>f</sub> ]]	*!	*		*	*
e. V [vp IO <sub>f</sub> [vp S t <sub>v</sub> O t <sub>io</sub> ]]	*! *		*	*	**

When object incorporation is disallowed, the optimal structure is (a), focusing the indirect object rightwards so that accusative case is assigned under adjacency and CASEADJ is satisfied. All other potential optima fail the highest ranked CASEADJ. Hence, even in this case, the indirect object follows the preverbal subject and the object, thus respecting the canonical order, as observed by Newman.

T5 - Lack of word order effects with focused indirect objects in absence of object incorporation.

Indirect object focused & object incorporation available	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
a. $\varnothing$ S V [vp t <sub>s</sub> t <sub>v</sub> O IO <sub>f</sub> ]		*	*		**
b. S [vp IO <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> O t <sub>io</sub> ]]	*!				***
d. V [vp S t <sub>v</sub> O IO <sub>f</sub> ]	*!	*		*	*
e. V [vp IO <sub>f</sub> [vp S t <sub>v</sub> O t <sub>io</sub> ]]	*! *		*	*	**

The lack of word order effects with focused objects and indirect objects thus follows straightforwardly from the same OT-grammar responsible for the mixed pattern of focus subjects.

#### 5.4 Deriving the SVO Canonical Word Order of Kanakuru.

As already mentioned, Kanakuru canonical word order follows the <SV O IO> pattern, as shown in (26) below (Newman, 1977; ex. 10a , p.18 and ex. 10a , p.25).

- (26) a. Ambo-i wù jòfè landa-i                      b. Gami à tukwe-ni la gawi  
       boys-the perfect.3pl wash clothes-the        the ram perfect.3sg hide-3Msg inside room  
       ‘The boys washed the clothes’                ‘The ram hid in the room’

Such SVO order is the only one compatible with a mixed focus pattern. In fact, as we saw while examining focused subjects in T1 above, the optimal candidate required CASEADJ to outrank STAY, else object incorporation could not occur. This ranking, however, is incompatible with VSO order, which requires STAY to outrank CASEADJ and SUBJECT.

This is shown in T6 below, where VSO and SVO declaratives compete with each other (whereas their incorporation counterparts ‘V-OS’ and ‘SV-O’ are harmonically bound by the SVO candidate)<sup>4</sup>. VSO-order violates the constraints STAY because of verb movement, SUBJECT because it leaves the specIP position unrealized, and CASEADJ because the subject disrupts verb-object case-adjacency. In contrast, SVO order violates STAY twice, because the verb and the subject move, but satisfies SUBJECT and CASEADJ. Therefore, VSO may win if and only if STAY outranks SUBJECT and CASEADJ. This contradicts the CASEADJ>>STAY ranking of Kanakuru, and thus shows that mixed focus patterns cannot occur in VSO languages.

T6 - VSO word order: STAY >> {CASEADJ, SUBJECT}.

All constituents are unfocused	AF <sub>L</sub>	AF <sub>R</sub>	STAY	SUBJ	C.A.
a. $\varnothing$ V [vp S t <sub>v</sub> O]			*	*	*
b. S V [vp t <sub>s</sub> t <sub>v</sub> O]			* !		

Confirming the above conclusion, T7 below shows how the grammar of Kanakuru selects the SVO structure as optimal when fed with the two competing word orders above.

T7 -SVO canonical order in Kanakuru: CASEADJ >> STAY.

All constituents are unfocused	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
a. V [vp S t <sub>v</sub> O]	*!			*	*
b. $\varnothing$ S V [vp t <sub>s</sub> t <sub>v</sub> O]					* *

For completeness, notice that the study of word order in intransitive structures, where CASEADJ is influential, shows that in Kanakuru STAY is also dominated by SUBJECT. In fact, in Kanakuru unfocused subjects precede the verb, as in (b) below, rather than following it, as in (a). As the tableau shows, this requires that SUBJECT outrank STAY, else (a) would be optimal<sup>5</sup>.

T8 -SV canonical order in Kanakuru: SUBJECT>>STAY.

All constituents are unfocused	C.A.	AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY
a. V [vp S t <sub>v</sub> ]				*!	*
b. $\varnothing$ S V [vp t <sub>s</sub> t <sub>v</sub> ]					* *

In sum, the SVO order of Kanakuru follows necessarily from the ranking responsible for its focus pattern, which requires CASEADJ to outrank STAY, whereas VSO order requires the opposite.

#### 5.5 Summary

The crosslinguistic typology of structural contrastive focus cannot be captured through a simple focus parameter specifying leftward and rightward alignment as values, since this would exclude the mixed focus pattern of Kanakuru. Once conceived as OT-constraints, however, the same conditions predict precisely the complementary distribution between leftward and rightward focus at issue. Moreover, the analysis properly predicts the lack of word order effects with respect to focused objects and indirect objects, as well as the associated SVO canonical order.

#### 6. Uniform Leftward Focus

When AF<sub>left</sub> is reranked at the top of the hierarchy, thus even above CASEADJ, the alternation between leftward and rightward focus is dissolved. Focus occurs uniformly leftwards and is no longer related to object-incorporation. CASEADJ is now free to rank above or below STAY, predicting uniform leftward focus in VSO as well as SVO languages.

##### 6.1 Uniform Leftward Focus in VSO Languages: Podoko

Uniform leftward focus within VSO languages is instantiated in the Chadic language Podoko (but see also Southern Nilotic Nandi, Creider & Creider 1989:121-124, and Creider 1989:56-62, 161-162). The VSO order of Podoko is shown in (27) below<sup>6</sup>, whereas (28a)-(28c) show how focused subjects, objects and prepositional adjuncts all left-align with VP. Focused subjects focus in situ in specVP, where they are already left VP-aligned. Focused objects and adjuncts move into left VP-adjoined position, thus yielding word order effects by preceding unfocused specVP subjects (Jarvis 1981:159-61). (R-marker is a register marker characterizing dialogues in opposition to narratives, Jarvis 1981:158.)



- (27) Taɿ da maɿ sɿ ɿ aɿ bala (Jarvis 1981, ex. 11, p159)  
 cook-for-him mother-my meat for father-my  
 ‘My mother cooked meat for my father’
- (28) a. A taɿ da maɿ sɿ ɿ (Jarvis 1981, ex. 19, p.161)  
 R-marker cook-for-him **mother-my** meat  
 ‘**My mother** cooked meat’
- b. A taɿ sɿ ɿ nda. (Jarvis 1981, ex. 14b, p160)  
 R-marker cook **meat** one  
 ‘One cooked **meat**’
- c. A taɿ ta bala maɿ sɿ ɿ (Jarvis 1981, ex. 21b, p161)  
 R-marker cook **for father-my** mother-my meat  
 ‘My mother cooked meat **for my father**’

As we know from section 5.4, VSO order requires STAY to outrank both SUBJECT and CASEADJ. Leftward focus, on the other hand, requires that AF<sub>left</sub> outrank both AF<sub>right</sub> and STAY, else focused constituents would focus rightwards or remain in situ but not focus leftwards. Once conjoined together, these conditions yield the ranking characterizing uniform leftward focus in VSO languages.

(29) Uniform leftward focus in VSO languages: AF<sub>left</sub> >> {AF<sub>right</sub>, STAY}, and  
 STAY >> {SUBJECT, CASEADJ}

As T9 shows, in absence of focus this ranking properly selects VSO order as optimal, because VSO fails the high ranked STAY constraint one less time than SVO.

T9 -VSO canonical order in Podoko: STAY >> {SUBJECT, CASEADJ}.

All constituents are unfocused					
	AF <sub>L</sub>	AF <sub>R</sub>	STAY	SUBJ	C.A.
a. $\varnothing$ V [vp S t <sub>v</sub> O]			*	*	*
b. S V [vp t <sub>s</sub> t <sub>v</sub> O]			* *!		

As shown in T10 below, the ranking in (29) also forces leftward focusing of subjects. In particular, the candidate focusing subjects leftwards and lacking object incorporation, in (a), beats its incorporation counterpart in (b). Candidate (b), in fact, fails STAY one more time than (a) due to object-incorporation and its satisfying CASEADJ is influential given the higher rank of STAY. Since (b) is suboptimal, it is irrelevant whether object incorporation is allowed; subjects will uniformly focus leftwards in either case. The high rank of AF<sub>left</sub> established in the previous tableaux also eliminate candidates (c) and (d), respectively focusing the subject in specIP and right-adjoined position.

T10- Subjects focus leftwards independently from the availability of object incorporation.

(c): STAY >> {SUBJECT, CASEADJ}.

Subject is focused					
	AF <sub>L</sub>	AF <sub>R</sub>	STAY	SUBJ	C.A.
a. $\varnothing$ V [vp S <sub>f</sub> t <sub>v</sub> O]		*	*	*	*
b. V+H [vp S <sub>f</sub> t <sub>v</sub> [DP t <sub>H</sub> CP]]		*	* *!	*	
c. S <sub>f</sub> V [vp t <sub>s</sub> t <sub>v</sub> O]	*!	*	* *		
d. V [vp [vp t <sub>s</sub> t <sub>v</sub> O] S <sub>f</sub> ]	*!		* *	*	

Notice that the suboptimal status of the incorporation candidate in (b) follows directly from the conditions on VSO order ranking STAY higher than CASEADJ. The analysis thus entails Tuller's (1992) observation that VSO languages disallow the structure <V+H [vp S<sub>f</sub> t<sub>v</sub> [DP t<sub>H</sub> ]]>, with no need to appeal to Koopman's (1987) case parameter to stipulate which language assign accusative case from the verbal trace and which from the surface position of V°, as Tuller does in his own account.

Let us now turn to focused objects. T11 shows that they focus to the left of unfocused specVP subjects, as in (a). All other alternatives are suboptimal: keeping the object in situ fails the highest ranked AF<sub>left</sub>, whether the subject remain in situ as in (b) or raises to specIP as in (c); and focusing the object leftwards while raising the subject to specIP, as in (d), violates STAY one more time than (a). (For reasons of space, I omitted here indirect objects, which do not affect the result.)

T11 - Objects focus leftwards. (b) AF<sub>left</sub> >> {AF<sub>right</sub>, STAY}.

Object is focused					
	AF <sub>L</sub>	AF <sub>R</sub>	STAY	SUBJ	C.A.
a. $\varnothing$ V [vp O <sub>f</sub> [vp S t <sub>v</sub> t <sub>obj</sub> ]]		*	* *	*	*
b. V [vp S t <sub>v</sub> O <sub>f</sub> ]	*!		*	*	*
c. S V [vp [vp t <sub>s</sub> t <sub>v</sub> O <sub>f</sub> ]]	*!		* *		
d. S V [vp O <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> t <sub>obj</sub> ]]		*	* * *!		

The same ranking determines leftwards focalization of PP adjuncts, which not being arguments, are directly generated in the various positions, see T12 below. In the optimal form (a), the leftward focused adjunct interferes with nominative and accusative case-assignment, violating CASEADJ twice. The low rank of CASEADJ, however, makes these failures irrelevant. In contrast, satisfying CASEADJ by moving the subject in specIP, as in (b), or by incorporating the object, as in (c), adds violations to the higher constraint STAY, and is thus suboptimal. Likewise, leaving the PP adjunct in rightward position, as in (d) and (e), is suboptimal, because it fails the highest constraint AF<sub>left</sub>.

## T12 - Uniform left-alignment of focused adjuncts.

Adjunct is focused		AF <sub>L</sub>	AF <sub>R</sub>	STAY	SUBJ	C.A.
a. $\varnothing$	V [vp PP <sub>f</sub> [vp S t <sub>v</sub> O]]		*	*	*	**
b.	S V [vp PP <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> O]]		*	**!		*
c.	S V+H <sub>i</sub> [vp PP <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> [DP t <sub>i</sub> ]]]		*	**! *		
d.	S V [vp [vp t <sub>s</sub> t <sub>v</sub> O] PP <sub>f</sub> ]	*!		**		
e.	V [vp [vp S t <sub>v</sub> O] PP <sub>f</sub> ]	*!		*	*	*

The proposed grammar thus properly accounts for the VSO order and uniform leftward focus pattern of Podoko.

## 6.2 Uniform Leftward Focus in SVO Languages: Western Bade

Uniform leftward focus under SVO canonical word order is found in the Chadic language Western<sup>7</sup> Bade (Shuh 1971, 1982). Here unfocused subjects are always realized preverbally, see (30). Focused subjects, on the other hand, are focused leftwards in speVP position, as shown in (31). (Focus is in bold, 1=first person, sg=singular, M=masculine.)

- (30) Dlaag na [ɗaaguraa-gl] (Schuh 1971, ex.2', p.70)  
 Dlaag na called-sg.M  
 'Dlaag na called you'
- (31) a. [ɗaaguraa-gl-k] **Dlaag na** (Schuh 1971, ex.2', p.70)  
 called-sg.M-focus.marker **Dlaag na**  
 'Dlaag na called you'
- b. N<sub>1</sub> -zeɗe-k **ayu** s raw (Schuh 1971, ex.1e, p.69)  
 1.sg.M-dug-focus.marker **I** the-well  
 'I dug the well'

Unfortunately, Schuh examines only focused phrases subjects, thus there are no examples where leftward focus requires movement. Notice, however, that the VS<sub>f</sub>O order in (31b) may only occur under leftward focus. Rightward focus would in fact place the focused subject to the right of the in situ object; a mixed focus grammar a la Kanakuru would incorporate the object to the left of the subject in order to satisfy CASEADJ; and lack of structural focus would realize the subject in the same position of unfocused subjects, i.e. in preverbal position. We may thus conclude that Western Bade exemplifies uniform leftward focus under SVO canonical word order.

The OT-grammar responsible for Western Bade will thus rank AF<sub>left</sub> above the constraints AF<sub>right</sub>, STAY and SUBJECT for the reasons just mentioned. Moreover, the SV order of the intransitive clause in (30) above tells us that SUBJECT outranks STAY. Furthermore, STAY must outrank CASEADJ, else case-adjacency would force the object to incorporate to the left of the subject whenever the subject is focused in specVP position, which it does not. The ranking conditions for uniform leftward focus in SVO languages are thus those listed below.

- (32) Uniform leftward focus in SVO languages: AF<sub>left</sub> >> {AF<sub>right</sub>, SUBJECT}, and  
 SUBJECT >> STAY >> CASEADJ.

For reasons of space, I omit the tableau deriving the SV order of example (30) above, which is analogous to tableau T8 in section 5.4 deriving intransitive clauses in Kanakuru. The proper order for focused subjects is instead derived in T13 below. The optimal form (a) encodes the attested VS<sub>f</sub>O pattern, violating STAY through verb movement, and CASEADJ, through S, which<sub>f</sub> intervenes between V and the object. The incorporation candidate (b) is suboptimal because it satisfies CASEADJ but violates the higher ranked STAY one more time than (a), and the two remaining potential optima (c) and (d) realizing the subject in preverbal and in rightward position are suboptimal because they violate the top-ranked AF<sub>left</sub>.

T13 - Subjects focus leftwards independently from the availability of object incorporation.

- (b): STAY >> CASEADJ; (c,d)<sup>8</sup>: AF<sub>left</sub> >> SUBJECT; (d)<sup>9</sup>: AF<sub>left</sub> >> AF<sub>right</sub>.

Subject is focused, object incorporation available		AF <sub>L</sub>	AF <sub>R</sub>	SUBJ	STAY	C.A.
a. $\varnothing$	V [vp S <sub>f</sub> t <sub>v</sub> O]		*	*	*	*
b.	V+H [vp S <sub>f</sub> t <sub>v</sub> [DP t <sub>H</sub> CP]]		*	*	**!	
c.	S <sub>f</sub> V [vp t <sub>s</sub> t <sub>v</sub> O]	*!	*		**	
d.	V [vp [vp t <sub>s</sub> t <sub>v</sub> O] S <sub>f</sub> ]	*!		*	**	

## 6.3 Summary

The same constraints that determine the mixed focus pattern of Kanakuru, account for the uniform leftward focus patterns found in Podoko and Western Bade. The difference concerns CASEADJ, which is reranked lower than AF<sub>left</sub>. Once so lowered, CASEADJ does no longer necessarily outrank STAY, properly predicting the availability of uniform leftward focus in both SVO and VSO languages. Furthermore, the discussion of Podoko showed how the ranking conditions responsible for VSO order entail the suboptimal status of the object incorporation structure <V-O S<sub>f</sub> t<sub>o</sub>>, deriving Tuller's (1992) generalization without language specific assumptions on case-assignment.

## 7. Uniform Rightward Focus

Uniform rightward focus is found in the Chadic language Ngizim, as well as in Catalan, Portuguese, Spanish, and Italian (Ngizim: Schuh 1971, 1982. Catalan: Bonet 1990. Portuguese: Costa 1997a,b, and references listed there. Spanish: Ordoñez 1995, 1997, to appear; Zubizarreta 1992, 1997. Italian: Antinucci & Cinque 1977; Calabrese 1982, 1992; Cinque 1993, Saccon 1993; Belletti & Shlonsky 1995; Grimshaw & Samek-Lodovici 1995, to appear; Samek-Lodovici 1996a, 1996b, 1997; Pinto 1997).

This pattern occurs when AF<sub>right</sub> reranks toward the top of the hierarchy, as shown in (33) below. In particular, AF<sub>right</sub> must outrank the constraints AF<sub>left</sub>, else focus would occur leftwards, SUBJECT, else focused subjects would raise to specIP rather than right-align with VP, and STAY, else focused subject would remain in situ in specVP position, again not aligning with the right edge of VP.



In absence of focusing by stress, all phrases focus rightwards, much like in Italian. Focused subjects occur to the right of in situ objects, as in (40) (from Ordoñez 1997:33), and focused objects occur to the right of indirect objects, as in (41) (from Zubizarreta 1992:22-24).

- (40) Q: ¿Quién ganó la lotería ayer? A: Ayer ganó la lotería **Juan**  
 who won the lottery yesterday? yesterday won the lottery **John**  
 ‘Who won the lottery yesterday?’ ‘Yesterday, **John** won the lottery’
- (41) Q: ¿Qué puso María sobre la mesa? A: María puso sobre la mesa **el libro**  
 what put Mary on the table? Mary put on the table **the book**  
 ‘What put Mary on the table?’ ‘Mary put **the book** on the table’

As is by now familiar, the VSO order requires STAY to outrank SUBJECT and CASEADJ. Together with (33) above this yields the following hierarchy for rightward focus under VSO word order:

- (42) Uniform rightward focus in VSO languages: AF<sub>right</sub> >> AF<sub>left</sub>, and  
 AF<sub>right</sub> >> STAY >> {SUBJECT, CASEADJ}

The only difference from the Italian case is thus the obligatory ranking of STAY on top of SUBJECT and CASEADJ. The ranking relations between these constraints, however, is not essential for determining rightward focus itself, which follows only from the high rank of AF<sub>right</sub>. Therefore, the derivation of rightward focus in Spanish is identical to that given for Italian. For example, as T16 below shows, the optimal realization for focused subjects is in right VP-adjoined position, given in (a), because any other choice violates the highest ranked AF<sub>right</sub>, as was the case in the correspondent tableau T14 for Italian.

T16. Subjects focus uniformly rightwards. (b): AF<sub>right</sub> >> AF<sub>left</sub>; (d): AF<sub>right</sub> >> SUBJECT.

Subject is focused	AF <sub>R</sub>	AF <sub>L</sub>	STAY	SUBJ	C.A.
a. $\varnothing$ V [vp [vp t <sub>s</sub> t <sub>v</sub> O ] S <sub>f</sub> ]		*	* *	*	
b. V+H [vp S <sub>f</sub> t <sub>v</sub> [DP t <sub>H</sub> CP]]	*!		* *	*	
c. V [vp S <sub>f</sub> t <sub>v</sub> O ]	*!		*	*	*
d. S <sub>f</sub> V [vp t <sub>s</sub> t <sub>v</sub> O ]	*!	*	* *		

Likewise, in order to satisfy AF<sub>right</sub>, objects focus to the right of indirect objects. As the reader may check by swiching the STAY and SUBJECT columns in the Italian tableau T15 above, this incorrectly selects as optimal structure (d), with an in situ subject unattested in (41) above. Tableau 15, however, does not factor in the condition on topichood responsible for the preverbal position of the subject in the answer of (41). The analysis thus places a condition on the ranking of such topichood condition, which must outrank STAY. Once this is done, (d) fails the higher-ranked topichood condition, and the grammar correctly selects (a) as optimal, as shown below.

T17. Objects focus rightwards and subject is preverbal: (d):TOPIC>>STAY.

Object is focused	TOPIC	AF <sub>R</sub>	AF <sub>L</sub>	STAY	SUBJ	C.A.
a. $\varnothing$ S V [vp [vp t <sub>s</sub> t <sub>v</sub> t <sub>obj</sub> IO ] O <sub>f</sub> ]			*	* * *		
b. S V [vp t <sub>s</sub> t <sub>v</sub> O <sub>f</sub> IO ]		*!	*	* *		
c. S V [vp O <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> t <sub>obj</sub> IO]]		*!		* * *		
d. V [vp [vp S t <sub>v</sub> t <sub>obj</sub> IO] O <sub>f</sub> ]	*!		*	* *	*	*
e. V [vp S t <sub>v</sub> O <sub>f</sub> IO]	*!	*	*	*	*	*
f. V [vp O <sub>f</sub> [vp S t <sub>v</sub> t <sub>obj</sub> IO ]]	*!	*		* *	*	*

#### 7.4 Summary

Uniform rightward focus follows from the same constraints responsible for mixed focus patterns and for uniform leftward focus, and is characterized by the high rank of AF<sub>right</sub>. No conditions are imposed on the constraints responsible for canonical order, thus allowing for SVO and VSO languages. Furthermore, rightward focus excludes mixed focus patterns because it does not interfere with case adjacency.

#### 8. Lack of Structural Focus

By definition, when focused phrases are realized in their canonical position there is no structural focus. In this analysis, however, focused phrases are always subject to AF<sub>left</sub> and AF<sub>right</sub>. The reason why they focus in situ can then only be the high rank of STAY. Lack of structural focus thus occurs when AF<sub>right</sub> and AF<sub>left</sub> are subordinated to STAY, as in (43) below.

- (43) Lack of structural focus: STAY >> {AF<sub>right</sub>, AF<sub>left</sub>}

Once again, we have a ranking that imposes no condition among the word order constraints. Therefore we expect to find lack of structural focus in both SVO and VSO languages.

#### 8.1 Lack of Structural Focus in SVO languages: French

The SVO case is exemplified by French. Its SVO order is shown in (44) below. This order is respected by focused subjects, as shown in (45). The same is true for focused objects, which remain in situ and precede in situ indirect objects, as shown in (46).

- (44) Q: Que se passe-t-il? A: Rien, Jean a mis un vase sur la table  
 what refl. happen it Nothing, John has put a vase on the table  
 ‘What happened?’ ‘Nothing, John has put a vase on the table’
- (45) Q: Qui a peint la porte? A: **Pierre** a peint la porte (Behne 1989, ex 12, p.10)  
 Who has painted the door? **Pierre** has painted the door  
 ‘Who painted the door?’ ‘**Pierre** painted the door’

- (46) Q: Qu'as-tu donné á Marie?      A: J'ai donné **un chien** á Marie<sup>10</sup>      (Deprez, p.c.)  
 What have-you given to Mary?      I have given **a dog** to Mary  
 'What did you give to Mary?'      'I gave **a dog** to Mary'

Since intransitive structure follow the SV order, in the case of French the ranking conditions of (43) above must be integrated with the higher rank of SUBJECT over STAY, as in (47) below.

- (47) Lack of structural focus in SVO languages: SUBJECT>>STAY>> {AF<sub>right</sub>, AF<sub>left</sub>}

The preverbal focused subject of (45) follows straightforwardly from this grammar. The candidate realizing the focused subject in specIP position, in (a), is the only one satisfying the high ranked constraint SUBJECT, and is thus optimal. All other candidates realize the subject either in right-adjoined position or in specVP. They thus violate SUBJECT, which condemns them to suboptimal status.

T18. Subjects focus in their canonical specIP position.

Subject is focused	SUBJ	STAY	AF <sub>R</sub>	AF <sub>L</sub>	C.A.
a. S <sub>f</sub> V [vp t <sub>s</sub> t <sub>v</sub> O ]		* *	*	*	
b. V [vp [vp t <sub>s</sub> t <sub>v</sub> O ] S <sub>f</sub> ]	*!	* *		*	
c. V+H [vp S <sub>f</sub> t <sub>v</sub> [O t <sub>H</sub> CP]]	*!	* *	*		
d. V [vp S <sub>f</sub> t <sub>v</sub> O ]	*!	*	*		*

As for focused objects, and restricting the discussion to the potential optima satisfying SUBJECT, the optimal realization is in situ, as in (a). This in fact satisfies STAY one more time than realizing them in rightward or leftward adjoined position, as in (b) and (c), and since STAY outranks AF<sub>right</sub> and AF<sub>left</sub>, structure (a) is selected as optimal. As the reader may check in tableau T15 above, all other potential optima violate SUBJECT as well as CASEADJ, and since one of these two constraints is the highest in the grammar, they are all suboptimal.

T19. Objects focus in situ. (b): STAY >> AF<sub>right</sub>; (c): STAY >> AF<sub>left</sub>.

Object is focused	SUBJ	STAY	AF <sub>R</sub>	AF <sub>L</sub>	C.A.
a. S V [vp t <sub>s</sub> t <sub>v</sub> O <sub>f</sub> IO ]		* *	*	*	
b. S V [vp [vp t <sub>s</sub> t <sub>v</sub> t <sub>o</sub> IO ] O <sub>f</sub> ]		* * *!		*	
c. S V [vp O <sub>f</sub> [vp t <sub>s</sub> t <sub>v</sub> t <sub>o</sub> IO ] ]		* * *!	*		

## 8.2 Lack of Structural Focus in VSO languages: Scottish Gaelic

The VSO counterpart of French is Scottish Gaelic (Cecil Ward, p.c. Structurally identical data exist for Irish Gaelic, Caoimhin P. Odonnaile, p.c.). Its VSO order is exemplified in (48) below, whereas examples (49) and (50) show how the same order is respected by focused subjects and objects.

- (48) Chuir duine soir air a' bhòrd      (Ward, p.c.)  
 Put man vase on art[+prep] table  
 'A man put a vase on the table'

- (49) Q: Cò a sgrìobh litir?      A: sgrìobh **duine** litir.      (Ward, p.c.)  
 who RM wrote letter?      wrote **man** letter.  
 'Who wrote a letter?'      '**A man** wrote a letter'

- (50) Q: Dé a chuir duine air a' bhòrd?      (Ward, p.c.)  
 what RM put man on art[+prep] table?  
 'What did a man put on the table?'

- A: Chuir duine **soir** air a' chòrd.  
 putt man **vase** on art[+prep] table.  
 'A man put a **vase** on the table'

This pattern follows once we integrate the ranking conditions for lack of structural focus in (43) above with the conditions for VSO word order, requiring STAY above SUBJECT and CASEADJ. The final grammar for Scottish Gaelic is thus as follows.

- (51) Lack of structural focus in VSO languages: STAY >> {AF<sub>right</sub>, AF<sub>left</sub>, SUBJECT, CASEADJ}

As T20 shows, this grammar focuses subjects in specVP position, as in (a), in order to satisfy STAY. All other potential optima move the subject somewhere, thus involving an additional violation of the highest ranked STAY, which makes them suboptimal.

T20. Focused subjects are realized in specVP. (c)<sup>11</sup>: STAY >> {SUBJECT, CASEADJ}.

Subject is focused	STAY	AF <sub>R</sub>	AF <sub>L</sub>	SUBJ	C.A.
a. V [vp S <sub>f</sub> t <sub>v</sub> O ]	*	*		*	*
b. V+H [vp S <sub>f</sub> t <sub>v</sub> [O t <sub>H</sub> CP]]	* *!	*		*	
c. S <sub>f</sub> V [vp t <sub>s</sub> t <sub>v</sub> O ]	* *!	*	*		
d. V [vp [vp t <sub>s</sub> t <sub>v</sub> O ] S <sub>f</sub> ]	* *!		*	*	

The highest rank of STAY also forces in situ realization of focused objects, as shown in T21 below. The potential optima raising the subject in specIP are omitted, since they violate STAY one more time than the potential optima with the subject in situ, and are therefore suboptimal. Within the latter set, shown below, focusing the object in situ, as in (b) is optimal, because it fails the highest ranked STAY the least.

T21. Focused objects are realized in situ. (a): STAY >> AF<sub>right</sub>; (c): STAY >> AF<sub>left</sub>.

Object is focused	STAY	AF <sub>R</sub>	AF <sub>L</sub>	SUBJ	C.A.
a. V [vp [vp S t <sub>v</sub> t <sub>obj</sub> IO] O <sub>f</sub> ]	* *!		*	*	*
b. V [vp [vp S t <sub>v</sub> O <sub>f</sub> IO]	*	*	*	*	*
c. V [vp O <sub>f</sub> [vp S t <sub>v</sub> t <sub>obj</sub> IO]]	* *!	*		*	*

### 8.3 Summary

Lack of structural focus thus follows from the high rank of STAY with respect to AF<sub>left</sub> and AF<sub>right</sub>. In this case, all constituents focus in their canonical position, because any focus-related movement costs an uncompensated STAY violation. However, the ranking of SUBJECT and CASEADJ relative to STAY remains free, predicting the attested split between SVO-languages and VSO-languages.

### 9. Partial Structural Focus: English

The final case concerns grammars where AF<sub>left</sub> and AF<sub>right</sub> outrank STAY but are outranked by SUBJECT, as in (52) below. This ranking determines partial structural focus: focused subjects focus in specIP on pressure from SUBJECT, but any other constituent focuses in the position required by the highest of the two focus constraints.

(52) Partial structural focus in SVO Ls: SUBJECT >> {AF<sub>left</sub>, AF<sub>right</sub>}, and  
{AF<sub>left</sub> or AF<sub>right</sub>} >> STAY.

As pointed out in Grimshaw & Samek (1995, to appear) and Samek-Lodovici (1996a), precisely this pattern occurs in English, although optionally so. In fact, subjects can only focus in their canonical preverbal position, whereas objects may focus structurally in rightward position. The relevant data come from Rochemont & Culicover (1990:24), who observed that a heavy object at the right of an indirect object is grammatical when focused, as in (53), but ungrammatical when unfocused, as in (54), showing that focus is one factor licensing the rightward realization of the object.

- (53) Q: What did John purchase for his wife?  
A: John purchased for his wife **a new fur coat**
- (54) Q: For whom did John purchase a new fur coat?  
A: \*John purchased **for his wife** a new fur coat

English rightward focus occurs only optionally and only when the object is heavy, thus other conditions are at play. However, since the goal here is to show how this pattern integrates with the larger focus typology determined by the five constraints at issue, I will abstract away from these other conditions, and treat English partial focus as a register on its own, determined by its own grammar. Adapting the analysis in Grimshaw & Samek (1995) to the constraints proposed here, we may thus derive partial focus in English from the grammar in (55) below:

(55) Partial rightward focus in English: SUBJECT >> AF<sub>right</sub> >> {AF<sub>left</sub>, STAY}.

Another obstacle is that English lexical verbs do not move to I<sup>o</sup>. However, we may keep consistent with the assumptions on V to I movement made so far by considering structures with an auxiliary, which do project IP. The obligatory preverbal position of English focused subjects, in (a), now follows straightforwardly from the above grammar. Structure (a) in fact satisfies SUBJECT, which (b) and (c), with the subject respectively in right VP-adjoined and specVP position, violate. SUBJECT, however, must outrank AF<sub>right</sub>, else (b) would win, and it must also outrank AF<sub>left</sub> and STAY, else (c) would be selected as optimal, thus confirming the ranking conditions given above (object incorporation into V<sup>o</sup> costs one STAY violation and yields no advantages because the verb V is already adjacent to the object. The correspondent structure is thus harmonically bound and excluded from the tableau.)

T22 - English subjects are realized in preverbal position. (b): SUBJECT >> AF<sub>right</sub>.

Subject is focused	SUBJ	AF <sub>R</sub>	AF <sub>L</sub>	STAY	C.A.
a. S <sub>f</sub> Aux [vp t <sub>s</sub> V O]		*	*	*	
b. Aux [vp [vp t <sub>s</sub> V O] S <sub>f</sub> ]	*!		*	*	
c. Aux [vp S <sub>f</sub> V O]	*!	*			

Non-subject constituents, on the other hand, remain free to focus structurally, since SUBJECT in this case is satisfied by raising the unfocused subject into specIP (raising the object would constitute a case of super-raising, because the specVP subject would intervene between the object in specIP and its trace in object position). Therefore, the object focuses to the right of the indirect object, as in (a), where it satisfies AF<sub>right</sub>. Leaving the object in situ, as in (b), is suboptimal because it fails AF<sub>right</sub>, even though it violates the lower ranked STAY once less time than (a). Similarly, focusing the object leftwards, as in (c), satisfies AF<sub>left</sub> at the cost of the higher ranked AF<sub>right</sub>, and is thus suboptimal. All other potential optima have the subject in specVP and fail both SUBJECT as well as CASEADJ, and since one of these constraints must occur highest in the grammar, they are all suboptimal.

T23 - English objects (may) focus rightwards. (b): AF<sub>right</sub> >> STAY; (c): AF<sub>right</sub> >> AF<sub>left</sub>

Object is focused	SUBJ	AF <sub>R</sub>	AF <sub>L</sub>	STAY	C.A.
a. S Aux [vp [vp t <sub>s</sub> V t <sub>obj</sub> IO] O <sub>f</sub> ]			*	* *	
b. S Aux [vp t <sub>s</sub> V O <sub>f</sub> IO]		*!	*	*	
c. S Aux [vp O <sub>f</sub> [vp t <sub>s</sub> V t <sub>obj</sub> IO]]		*!		* *	

The above discussion showed how the proposed constraints predict the existence of focus patterns where only the internal arguments are focused structurally, of which English provides an example. The analysis, however, also predicts that any partial focus pattern looks necessarily as the one just examined, thus excluding both the existence of "reversed" partial-patterns where structural focus is restricted to external arguments only, as well as the existence of partial focus within VSO languages.

Reversed partial-focus is impossible because internal arguments may lack structural focus if and only if

STAY outranks both focus constraints. This condition, however, inevitably affects external arguments as well, which are thus equally prevented from focusing structurally. This is not the case with the “well formed” partial pattern examined above, because its grammar lets all arguments be governed by  $AF_{right}$ , which outranks STAY, but blocks structural focus in external arguments through the higher ranked SUBJECT.

Furthermore, partial focus is impossible within VSO languages: VSO order requires STAY above SUBJECT and CASEADJ, as in (56a). Structural focus of the internal arguments requires that at least one of the focus constraints, call it  $AF_{\alpha}$ , outrank STAY, as in (56b), else focus would occur in situ. Lack of structural focus for external arguments, on the other hand, requires that both focus constraints be outranked by either SUBJECT or STAY, as in (56c). But since we know from (56b) that STAY is outranked by at least one of the focus constraints, the constraint outranking them both must be SUBJECT, as in (56d). By transitivity from (56b) and (56d), SUBJECT must dominate STAY, thus contradicting (56a), and proving the impossibility of partial focus in VSO languages.

- (56) a. VSO order: STAY>>SUBJECT, CASEADJ}.
- b. Structural focus of internal arguments:  $AF_{\alpha}$ >> STAY ( $\alpha$  = Left or Right).
- c. Lack of structural focus for subjects: (SUBJECT or STAY)>>{ $AF_{right}$ ,  $AF_{left}$ }.
- d. From (a) and (b), it follows: SUBJECT>>{ $AF_{right}$ ,  $AF_{left}$ }.
- e. By transitivity from (b) and (d): SUBJECT>>STAY.

## 10. Conclusions

Languages differ with respect to whether they allow for contrastive structural focus, as well as to what constituents focus structurally, where they focus, and what canonical orders are compatible with specific focus patterns. This work showed that an OT-approach permits us to derive all these language specific properties from a principled interaction of universal constraints, i.e. from UG.

In particular, all focus patterns, including mixed and partial ones, were shown to be triggered by just two constraints differing only in the polarity that they assign to the same fundamental condition on focus-alignment. Moreover, the analysis showed that the realization of focused phrases is subtly affected by the constraints responsible for canonical word order. It is their interaction with the focus constraints what determines mixed and partial focus patterns, the incompatibility of the latter patterns with VSO word order, Tuller's (1992) generalization about incorporation in leftward-focusing VSO languages, as well as languages lacking structural focus altogether.

## 12. References

- Antinucci, F. and G. Cinque. 1977. Sull'ordine delle parole in Italiano: l'emarginazione. *Studi di Grammatica Italiana* VI:121-146.
- Baker, M.C. 1988. *Incorporation. A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.
- Baker, M. and K. Hale. 1990. Relativized Minimality and Pronoun Incorporation. *LI-Squib* 2:289-297.
- Behne, D. M. 1989. *Acoustic Effects of Focus and Sentence Position on Stress in English and French*. Ph.D. Dissertation, University of Wisconsin-Madison.
- Belletti, A. and U. Shlonsky, 1995. The Order of Verbal Complements: a Comparative Study. *Natural Language and Linguistic Theory* 13, 489-526.
- Bonet, E. 1990. *Subjects in Catalan*. MIT Working Papers in Linguistics.
- Burzio, L. 1994. *Case Uniformity*. Ms. Johns Hopkins University.

- Calabrese, A. 1982. Alcune ipotesi sulla struttura informazionale della frase in Italiano e sul suo rapporto con la struttura fonologica. In *Rivista di Grammatica Generativa* 7.
- Calabrese, A. 1992. Some informal Remarks on Focus and Logical Structures in Italian. In S. Kuno and H. Thrainsson (eds.), *Harvard Working Papers in Linguistics* 1.
- Choi, H. 1996. *Optimizing Structures in Context: Scrambling and Information Structure*. Ph.D. Diss. Stanford University.
- Chomsky, N. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, N. 1986. *Barriers*. LI-monograph. Cambridge: MIT Press.
- Chomsky, N. 1992. *A Minimalist Program for Linguistic Theory*. MIT Occasional Papers in Linguistics. MIT.
- Chomsky, N. 1995. *The Minimalist Program*. Cambridge: MIT Press.
- Chung, S. and J. McCloskey. 1987. Government, Barriers and Small Clauses in Modern Irish. *LI*18:173-237.
- Cinque, G. 1993. *A Null Theory of Phrase and Compound Stress*. *Linguistic Inquiry* 24, 239-298.
- Cinque, G. (to appear). *Adverbs and the Universal Hierarchy of Functional Projections*. Oxford University Press.
- Costa, J. 1997a. *Word Order Typology in Optimality Theory*. Ms. University of Lisboa and HIL/Leiden University.
- Costa, J. 1997b. *Word Order and Constraint Interaction*. Ms. HIL/Leiden University.
- Creider, A. C. 1989. *The Syntax of the Nilotic Languages*. Berlin: Dietrich Reimer Verlag.
- Creider, C. and J. Creider, 1989. *A Grammar of Nandi*. Hamburg: Helmut Buske Verlag.
- Diesing, M. 1992. *Indefinites*. LI-monograph. Cambridge: MIT Press.
- Doherty, C. 1993. *Clauses without that: the Case for Bare Sentential Complementation in English*. Ph.D. Diss. UCSC.
- Fassi Fehri, A. 1993. *Issues in the Structure of Arabic Clauses and Words*. Boston: Kluwer.
- Givon, T. 1988. *Pragmatics of Word Order*. In M. Hammon, E. A. Moravcsik and J. R. Wirth (eds). *Studies in Syntactic Typology*. John Benjamins:243-284.
- Grimshaw, J. 1993. *Minimal Projections, and Optimality*. Ms., Rutgers University.
- Grimshaw, J. 1997. *Projection, Heads and Optimality*. *Linguistic Inquiry* 28:373-422.
- Grimshaw, J. and V. Samek-Lodovici. 1995. *Optimal Subjects*. UMOP 18. Amherst: UMASS.
- Grimshaw, J. and V. Samek-Lodovici. (to appear). *Optimal Subjects and Subject Universals*. *Proceedings of the Optimality in Syntax Workshop*. MIT Working Papers in Linguistics and MIT Press.
- Harries-Delisle, H. 1978. *Cleft Sentences*. In Greenberg (ed). *Universal of Human Languages*. V. 4 - *Syntax*:419-486.
- Jarvis, E. 1981. *Some Considerations in Establishing the Basic Word Order of Podoko*. *Studies in African Linguistics*, V.12 (2):155-167.
- Kayne, R. 1994. *The Antisymmetry of Syntax*. LI-Monograph. Cambridge: MIT Press.
- Koopman, H. 1992. *On the Absence of Case Chains in Bambara*. *Natural Language and Linguistic Theory* 10.
- Koopman, H. and D. Sportiche. 1991. *On the Position of Subjects*. In James McCloskey, (ed). *The Syntax of Verb-Initial Languages*. *Lingua*, Special Edition:211-258.
- Li, Y. 1990. *X<sup>0</sup>-Binding and Verb Incorporation*. *Linguistics Inquiry* 3:399-426.
- McCarthy, J. and A. Prince. 1993a. *Generalized Alignment*. Ms., UMASS, and Rutgers University.
- Neeleman, A. 1997. *Object Scrambling and the PF Interface*. Talk given at the 19 Jahrestagung der DGFS. Düsseldorf.
- Neeleman, A. and T. Reinhart (to appear). *Scrambling and the PF-interface*. In Wilhelm Geuder and Miriam Butt (eds.) *The Projection of Arguments: Lexical and Compositional Factors*. CSLI Publications, Stanford, CA.
- Neeleman, A. and F. Weerman, 1996. *Case and Arguments in a Flexible Syntax*. Ms. Utrecht University-OTS.
- Newman P. 1974. *The Kanakuru Language*. *West African Languages Monograph Series* 9. Leeds: the Scholar Press Ltd.
- Newman, P. 1977. *Chadic classification and reconstruction*. *Afroasiatic Linguistics* 5(1):1-42.
- Ordóñez, Francisco. 1995. *Post-verbal Asymmetries in Spanish*. Ms. CUNY.
- Ordóñez, Francisco. 1997. *Word Order in Spanish and Other Romance Languages*. Ph.D. Dissertation, City University of New York.
- Ordóñez, F. To appear. *Post-verbal Asymmetries in Spanish*. NLLT.
- Ordóñez, F. and E. Treviño 1995. *Los Sujetos y objetos preverbiales en español*. Paper presented at the 5th colloquium on *Generative Grammar*, Coruña, Spain.
- Pinto, M. 1997. *Licensing and Interpretation of Inverted Subjects in Italian*. Utrecht: UiL OTS Dissertation Series.
- Prince, A. and P. Smolensky, 1993. *Optimality: Constraint Interaction in Generative Grammar*. Ms. Rutgers University and University of Colorado. To appear as *LI-Monograph*.
- Reinhart, T. 1995. *Interface Strategies*. Utrecht, Research Institute for Language and Speech: OTS Working Papers, OTS-WP-TL-95-002.
- Rizzi, L. 1991. *Residual Verb Second and the Wh-Criterion*. Ms., University of Geneva.
- Rochemont, M. and P. Culicover. 1990. *English Focus Constructions and the Theory of Grammar*. New York: Cambridge University Press.
- Rooth, M. 1985. *Association with Focus*. Ph.D. Diss. UMASS.
- Saccon, G. 1993. *Postverbal Subjects*. Ph.D. Diss. Harvard.
- Saito, M. 1983. *Case and Government in Japanese*. WCCFL 2.
- Samek-Lodovici, V. 1996a. *Constraints on Subjects*. *An Optimality Theoretic Analysis*. Ph.D. Diss. Rutgers University.
- Samek-Lodovici, V. 1996b. *Structural Contrastive Focus in Italian, with and without Emphatic Stress*. Ms., Universität Konstanz.
- Samek-Lodovici, V. 1997. *Structural Contrastive Focus in Italian*. Handout of the talk given at the colloquium at Frankfurt Universität.

- Samek-Lodovici, V. (to appear). Opposite Constraints: Left and Right Focus-alignment in Kanakuru. *Lingua*.
- Schuh, R. 1971. Reconstruction of the Syntax of Subject Emphasis in Certain Chadic Languages. *Studies in African Linguistics*, Supplement 2:67-77.
- Schuh, R. 1982. Questioned and Focused Subjects and Objects in Bade/Ngizim. In H. Jungraithmayr (ed), *The Chad Languages in the Hamito-Semitic-Nigritic Border Area*. Berlin: Verlag von Dietrich Reimer. 160-174.
- Selkirk, E. O. 1986. On Derived Domains in Sentence Phonology. *Phonology Yearbook* 3:371-405.
- Stowell, T. 1981. *Origins of Phrase Structure*. PhD Diss. MIT.
- Tuller, L. 1992. The Syntax of Postverbal Focus Constructions in Chadic. *Natural Language and Linguistic Theory* 10, 303-334.
- Valliduví, E. 1992. *The Informational Component*. Garland Publishing Inc.
- Vikner, S. 1997. V-to-I Movement, Do-insertion, and Negation in Optimality Theory. Talk given at the Hopkins Optimality Theory Workshop.
- Zubizarreta, M. L. 1992. *Word Order in Spanish and the Nature of Nominative Case*. Ms. USC.
- Zubizarreta, M. L. 1997. *Prosody, Focus and Word order*. Ms. USC. To appear as an LI Monograph.

### 1. Footnotes

<sup>1</sup> Alternatively, these candidates could be excluded through a top-ranked constraint encoding the structural conditions for incorporation, such as structure preservation (Baker 1988:59, Chomsky 1986).

<sup>2</sup> Candidate (b) is suboptimal if CaseAdj >> (Aleft & Stay) or Aright >> (Aleft & Stay). Since we already know from T1 that CaseAdj >> Stay and Aleft >> Aright, we need CaseAdj >> Aleft.

<sup>3</sup> This suggests that CASEADJ is a gradient constraint sensitive to syntactic distance, better satisfied by incorporated objects than by unincorporated ones. Such gradient version would unnecessarily complicate the argumentations to follow, and is thus not pursued further, except for footnotes 4 and 5 below.

<sup>4</sup> SV-O and V-OS stand for the incorporation structures '[S V-H [t<sub>s</sub> t<sub>v</sub> [ t<sub>H</sub> ] ]]' and '[V-H [S t<sub>v</sub> [ t<sub>H</sub> ] ]]' . They do count as potential optima when CASEADJ is gradient in the sense of footnote 3, so that SV-O satisfies CASEADJ better than SVO which in turn outperforms VSO, as shown in T1 below. In this case, VSO is optimal under the ranking STAY >> {SUBJECT, CASEADJ}; V-OS under CASEADJ >> STAY >> SUBJECT; SVO under SUBJECT >> STAY >> CASEADJ, and SV-O under {CASEADJ, SUBJECT} >> STAY. Kanakuru then selects as optimal SV-O for declaratives and '[S V-H<sub>f</sub> [t<sub>s</sub> t<sub>v</sub> [ t<sub>H</sub> ] IO] ]' for focused objects, preserving all the generalizations made in the main text. All other tableaux and argumentations in this work are already compatible with the above rankings.

T1 - Gradient CASEADJ.						STAY	SUBJECT	C.A.gradient
a.	V	[vp	S	t <sub>v</sub>	O ]	*	*	* *
b.	V-H	[vp	S	t <sub>v</sub>	[ t <sub>H</sub> ] ]	* *	*	
c.	S	V	[vp	t <sub>s</sub>	t <sub>v</sub>	O ]	* *	*
d.	S	V-H	[vp	t <sub>s</sub>	t <sub>v</sub>	[ t <sub>H</sub> ] ]	* * *	

<sup>5</sup> The ranking CASEADJ >> STAY >> SUBJECT predicts a language with SVO order in transitive constructions, but VS order in intransitive ones. This problematic prediction disappears under the above gradient conception of CASEADJ. Each of the rankings identified in footnote 4 in fact fixes the ranking between STAY and SUBJECT, thus preserving the order between S and V also in intransitive structures.

<sup>6</sup> The alternative SVO and VOS orders occur, but restricted to specific clause-types, see Jarvis (1981).

<sup>7</sup> The data from Schuh (1971) quoted in the main text are from Bade. Today Bade is subdivided in a Western and Southern variety (Newman 1977). According to Schuh (1982) each variety realizes focused phrases in the same position of wh-phrases. Since focus in the Bade data matches the position of wh-phrases in Western Bade but not in Southern Bade, they belong to Western Bade (Schuh 1982; ex.10W, p.165; ex.10S, p.165).

<sup>8</sup> The SV word order imposes that SUBJECT >> STAY, hence SUBJECT must be outranked by Aleft.

<sup>9</sup> We know that Aleft >> SUBJECT >> STAY >> CASEADJ, we must thus only add Aleft >> Aright.

<sup>10</sup> Deprez (p.c.) considers this answer marginal but grammatical, and much better than the answer where the order between object and indirect object is reversed, which is what matters here.

<sup>11</sup> STAY >> {SUBJECT, CASEADJ}, imposed by the language VSO order, suffices, blocking any deduction about the ranking of Aleft.