Harmony, the Head-Proximate Filter, and the Near Parallels between Nominal and Clausal Linkers

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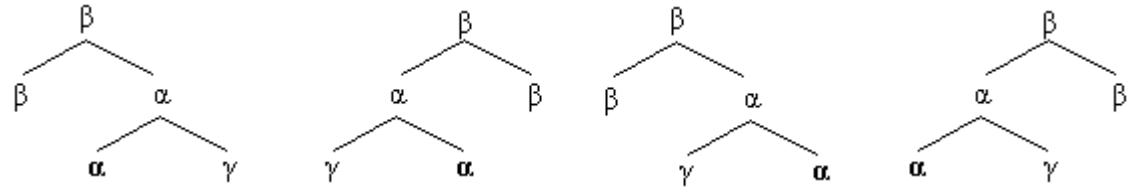
(1) *Harmonic orders* *Disharmonic orders*

a) Initial-over-initial b) Final-over-final c) Initial-over-final d) Final-over-initial



- The aim of this presentation is to motivate following **generalisations**:

(2) a) Where α belongs to a certain class of functional heads (which we will term '**linkers**'), the **disharmonic** orders in (1)c) and d) are **ungrammatical**.

b) Where α is **any other head**, the **disharmonic** orders in (1)c) and d) are simply **dispreferred** (as long as any requirement over linkers can otherwise be satisfied).

In doing so, we will also find an explanation both for certain **parallels** and certain **differences** between word order in **clauses** and **nominals**, particularly as regards the distribution of **complement clauses to verbs** and of **relative clauses**.

1 Typological Overview

1.1 Linkers and Harmony

(2) a) Where α belongs to a certain class of functional heads (which we will term '**linkers**'), the **disharmonic** orders in (1)c) and d) are **ungrammatical**.

- Distribution of **subordinating complementisers** (C), heading complement to verb:

(3) α = C

a) Initial-over-initial:	[V [**C** TP]]	= 157 languages	(93%)
b) Final-over-final:	[[TP **C**] V]	= 12 languages	(7%)
c) *Initial-over-final:	**[V [TP C]]**	**= 0 languages**	**(0%)**
d) *Final-over-initial:	**[[C TP] V]]**	**= 0 languages**	**(0%)**

(Data taken from Dryer 2009:199-200[1]; cf. Grosu and Thompson 1977; Hawkins 1988:346, 1994:§5.6.1; Bayer 1996 *et seq*; Kayne 2000:320, ex 36, p324, fn 12; Cinque 2005b:53-54)

- Distribution of syntactically independent **relative clause markers** (REL), including:

- ordinary complementisers:

(4) the letter [**that** you sent] *English*

[1] I have removed from Dryer's data the languages Supyire, Harar Oromo and Khoekhoe, since these are not true instances of C-headed complements to verbs. In Supyire, the CP is in fact an adjunct associated with a pronoun in (preverbal) object position (see Dryer 2009:200, ex 25b). In Harar Oromo and Khoekhoe, the complement clause is embedded under a nominal (see discussion in Philip 2010:§4).

- general markers of subordination in NP:

(5) [ni jilai **de**] xin *Mandarin Chinese*
you send LNK letter[2]
'the letter that you sent' (Paul 2007:1, ex 1f)

- specialised relative clause markers / relativisers:

(6) dopisu [**co** Vám poslali] *Czech*
letter REL you.PL.DAT sent
'the letter that they sent you' (Fried in press: 5, ex 5a)

(7) α = REL

a) Initial-over-initial: [N [**REL** TP]] = 21 languages (88%)
b) Final-over-final: [[TP **REL**] N] = 3 languages (14%)
c) *Initial-over-final: [N [TP REL]] = 0 languages (0%)
d) *Final-over-initial: [[REL TP] N]] = 0 languages (0%)

(Data taken from C. Lehmann 1984; cf. Andrews 1975/1985:26; Downing 1978; Keenan 1985:160; Hawkins 1988 *et seq*; De Vries 2002:37, 2005:148; Cinque 2005b:53-54)

- Distribution of **linkers** in the complex **NP** (LNK):

- These are **semantically vacuous**, **syntactically independent markers** of a **relationship** between a **noun** and any kind of **phrasal dependent** (Rubin 2002; Den Dikken and Singhapreecha 2004; Philip 2009), including

  - complements:

(8) səmy-a [**cə** Habi] *Zina*
listen.to-N.F LNK.F Habi
'listening to Habi' (Oprina 2002:124, ex 64d)

  - possessors:

(9) [wo **de**] shu *Mandarin Chinese*
I LNK book
'my book' (Den Dikken & Singhapreecha 2004:34, ex 46b)

  - predicative modifiers:

(10) [hao **de**] shu *Mandarin Chinese*
good LNK book
'good books' (Den Dikken & Singhapreecha 2004:34, ex 46a)

(11) [zai Beijing **de**] ren
in Beijing LNK people
'people in Beijing' (ex 46c)

[2] Abbreviations in glosses are as follows: ACC accusative; CL classifier; DAT dative; FUT future; IMP imperative; IMPF imperfective; LOC locative; LNK linker; N nominaliser; NOM nominative; PERF perfective; PL plural; REL relative clause; SG singular.

(12) [wo mai **de**] shu
I buy LNK book
'the book that I bought' (ex 46d)

- non-predicative modifiers:

(13) [weilai **de**] laoshi *Mandarin Chinese*
future LNK teacher
'future teacher' (Ortmann 2003:24, ex 61b)

(14) [chi **ve**] qhaʔ-šɛ nî gâ *Lahu*
this LNK headman two CL
'these two headmen' (Den Dikken & Singhapreecha 2004:36, fn 23, ex iii)

(15) ghayak-i [**tə** darra] *Zina*
knife.PL-PL LNK.PL many
'many knives' (Demeke 2002:96, ex 74c)

(16) α = LNK

a) Initial-over-initial: [N [**LNK** XP]] = 51 languages (61-62%)
b) Final-over-final: [[XP **LNK**] N] = 31 languages (37-38%)
c) *Initial-over-final: [N [XP LNK]] = potentially 1 language[3] (0-1%)
d) *Final-over-initial: [[LNK XP] N]] = 0 languages (0%)

(see Appendix for languages and classification)

- **Subordinating complementisers**, **relative clause markers** and **linkers** in the NP form a **natural class** – **'linkers'**:
- **syntactically independent**
- **semantically vacuous**
- serve only to **mark** the presence of an **independently existing relationship** – modification or θ-role assignment – between a head (here noun or verb) in one extended projection and a distinct dependent extended projection
  - Where there is no head-dependent relationship, there is no linker:
    complementisers and relative clause markers do not appear in matrix clauses;
    the linkers in (10) and (11) do not occur where the adjective or preposition is the sentence predicate.
  - in many languages, the relationships marked by linkers in (3)-(16) occur with no marking at all.

1.2 Disharmony Elsewhere

(2) b) Where α is **any other head**, the **disharmonic** orders in (1)c) and d) are simply **dispreferred**.

- Where a head does **not** belong to the class of **linkers**, **disharmony** is possible, both
- between extended projections:

(17) α = P

a) Initial-over-initial: [V [P NP]] = 419 languages (47%)
b) Final-over-final: [[NP P] V] = 427 languages (48%)

[3] Kanuri (Western Saharan); see Philip (2010:§5.2) for discussion.

c) Initial-over-final:	[V [NP P]]	= 38 languages	(4%)	(8% of postpositional lgs)
d) Final-over-initial:	[[P NP] V]	= 10 languages	(1%)	(2% of prepositional lgs)

(Data taken from Dryer 2008c; Sheehan 2008:§4)

(18) α = D

a) Initial-over-initial:	[V [D NP]]	= 37 genera	(44%)	
b) Final-over-final:	[[NP D] V]	= 19 genera	(23%)	
c) Initial-over-final:	[V [NP D]]	= 15 genera	(18%)	(29% of VO genera)
d) Final-over-initial:	[[D NP] V]]	= 13 genera	(15%)	(41% of OV genera)

(Data taken from Dryer 1992:104, table 34)

(19) α = N

a) Initial-over-initial:	[V [N PossP]]	= 63 genera	(29%)	
b) Final-over-final:	[[PossP N] V]	= 112 genera	(52%)	
c) Initial-over-final:	[V [PossP N]]	= 30 genera	(14%)	(21% of N-final genera)
d) Final-over-initial:	[[N PossP] V]	= 12 genera	(6%)	(16% of N-initial genera)

(Data taken from Dryer 1992:91, table 5)

- within a single extended projection:

(20) α = V

a) Initial-over-initial:	[Aux [V O]]	= 79 languages	(55%)	
b) Final-over-final:	[[O V] Aux]	= 30 languages	(21%)	
c) Initial-over-final:	[Aux [O V]]	= 19 languages	(13%)	(39% of OV languages)
d) Final-over-initial:	[[V O] Aux]]	= 16 languages	(11%)	(17% of VO languages)

(Data taken from Julien 2002:330-356)

(21) α = V

a) Initial-over-initial:	[Q [V O]]	= 75 languages	(20%)	
b) Final-over-final:	[[O V] Q]	= 127 languages	(34%)	
c) Initial-over-final:	[Q [O V]]	= 34 languages	(9%)	(21% of OV languages)
d) Final-over-initial:	[[V O] Q]]	= 135 languages	(36%)	(64% of VO languages)

(Data taken from Bailey 2010:29, table 1, using data from Dryer 2008a,b)

(22) α = N

a) Initial-over-initial:	[P [N PossP]]	= 134 languages	(40%)	
b) Final-over-final:	[[PossP N] P]	= 177 languages	(53%)	
c) Initial-over-final:	[P [PossP N]]	= 14 languages	(4%)	(7% of N-final languages)
d) Final-over-initial:	[[N PossP] P]	= 11 languages	(3%)	(8% of N-initial languages)

(Hawkins 2010:1, using data from Hawkins 1983)

2 Subordinating Complementiser Distribution and a Theory of Harmony

(23)

VO languages:	*OV languages:*
V[CVO]	**V[COV]**
*[VOC]V	**[OVC]V**
*V[VOC]	*V[OVC]
*[CVO]V	*[COV]V

(see Grosu and Thompson 1977; Dryer 1980, 1991:500, 1992:102, 2009:199-200; Hawkins 1988 *et seq*; Bayer 1996 *et seq*; Kayne 2000:320, ex 36, p324, fn 12; Cinque 2005b:53-54)

The data in (23) can be summed up by two left-right asymmetries:

- **OV** languages allow both **initial** and **final Cs**; **VO** languages allow **only final Cs**.
- **OV** languages allow both **preverbal** and **postverbal CPs**; **VO** languages allow **only postverbal CPs**.

and an intervention requirement:

- **C** must **intervene linearly** between its selecting V and the complement clause.

- I propose that these three observations can be captured by the **interaction** of three **independently motivated harmonic word order constraints**:

(24) HEAD UNIFORMITY

A functional head must match the lexical head of its extended projection in the direction of headedness.

(cf. Natural Serialisation Principle, Bartsch and Vennemann 1972:136;
Cross-Categorial Harmony, Hawkins 1980, 1983; Head Parameter, *inter alia* Chomsky 1981;
Branching Direction Theory, Dryer 1992, 2009; Principle of Cross-Domain Harmony, Dik 1997:403)

As regards Cs, there should therefore be a preference for **initial Cs** in **VO** languages and for **final Cs** in **OV** languages.

(25) CP-FINAL REQUIREMENT

A clausal dependent must follow the head of its superordinate domain.

(cf. Sentential NP Position Hierarchy, Dryer 1980;
Language Independent Preferred Order of Constituents, Dik 1997)

Dryer (1980) showed that there is a cross-linguistic preference for **clausal arguments** to appear in **sentence-final** position (cf. (3) above).

(26) HEAD-PROXIMATE FILTER

The highest head in the extended projection of a subordinate domain must be contiguous with the head of its superordinate domain.

(cf. W. Lehmann 1973; Surface Recursion Restriction, Emonds 1976, 1985; Head-Final Filter, Williams 1982; Head Proximity, Rijkhoff 1984 *et seq*; Early Immediate Constituents, Hawkins 1990, 1994)

For example, cross-linguistically there is an overwhelming tendency to avoid placing the complement of an adposition between this adposition and its selecting verb (see (17) above).

In (23), **C**, as head of the dependent clause, must be **base-generated** such that it is **adjacent** to its **selecting head**, the matrix verb.

Where the three constraints compete, the **Head-Proximate Filter universally** takes precedence:

(27) *Harmonic Word Order Ranking*

HEAD-PROXIMATE FILTER >> CP-FINAL, HEAD UNIFORMITY

- In **VO** languages, the constraints do not compete, resulting in a **single optimal order**:

(28)

VO language	HEAD-PROXIMATE	CP-FINAL	HEAD UNIFORMITY
a. ☞ V[CVO]			
b. [VOC]V		*!	*!
c. V[VOC]	*!		*
d. [CVO]V	*!	*	

- In **OV** languages, no single order obeys all three constraints.

  In order to obey the **dominant** constraint – the **Head Proximate Filter** – either **Head Uniformity** or the **CP-Final** requirement must be **violated**, resulting in **two possible orders**:

(29)

OV language	HEAD-PROXIMATE	CP-FINAL	HEAD UNIFORMITY
a. ☞ V[COV]			*
b. ☞ [OVC]V		*	
c. V[OVC]	*!		
d. [COV]V	*!	*	*

It is important to note that the **Harmonic Word Order Ranking** is concerned only with **base-generated** structures:

- In OV languages displaying the order [V[COV]], such as Bengali, Dutch, German, Hindi-Urdu, Persian and Turkish, the C-initial complement is base-generated in postverbal position; it is not an island for extraction:

  (Bennis 1987; Simpson & Bhattacharya 2000:587, 2003:130; Karimi 2001; Aghaei 2006; Biberauer, Newton & Sheehan 2009; Biberauer & Sheehan 2010:§4.2 & references cited there)

(30) [Un ketab-a=ro]$_i$ mæn mi-dun-æm [**ke** Kimea t_i xær-id-e]. *Persian*
that book-PL=LNK.ACC I IMPF-know-1SG LNK Kimea buy-PERF-3SG
'As for those books, I know that Kimea has bought (them).' (Karimi 2001, ex 69)

- The effects of the Harmonic Word Order Ranking can be **undone** on the surface by **movement**: certain OV languages (such as Japanese and Malayalam[4]) allow as a result of movement the otherwise unattested order V[OVC], as marked variant of the harmonic [[OVC]V]:

(31) a) ayaaL [waliya miinu-kaL aa kuLatt-il uNTə **ennə**] paraññu. *Malayalam*
he big fish-PL that pond-LOC is LNK said

b) ayaaL paraññu [waliya miinu-kaL aa kuLatt-il uNTə **ennə**].
he said big fish-PL that pond-LOC is LNK
'He said that there are big fish in that pond.'

The island test shows that only the harmonic order is base-generated:

(32) a) [aa kuLatt-il]$_i$ ayaaL [waliya miinu-kaL t_i uNTə **ennə**] paraññu.
that pond-LOC he big fish-PL is LNK said
'In that pond, he said that there are big fish.' (Bayer 1999:256, ex 35, citing p.c. from Hany Babu)

b) * [aa kuLatt-il]$_i$ ayaaL paraññu [waliya miinu-kaL t_i uNTə **ennə**]
that pond-LOC he said big fish-PL is LNK

3 A Theory of Disharmony

In the previous section, I proposed that the distribution of subordinating complementisers be derived by a universal Harmonic Word Order Ranking.

However, it is clear that not all categories obey this ranking; evidence in 1.2 suggests that for **any head** that is **not** a **linker**, **disharmony** is **possible**.

So, why do non-linkers not always obey this Harmonic Word Order Ranking? That is, **why** does **disharmony** arise?

[4] Many thanks to Dennis Philip for Malayalam judgments

- I propose the following explanation:

- **Ordering rules** pertaining to the **semantics** of a head can require it to appear in a **prominent position**, either initial or final.
- Where such rules **conflict** with, and **override**, the Harmonic Word Order Ranking in (27), **disharmony** arises.

For example, disharmony is relatively common for negative markers. As operators, negative markers certainly have semantics. Cross-linguistically, there is a tendency to place negative markers in one of two prominent positions: initially, with the result that negation will be expressed as soon as possible (Jespersen 1917, 1933:297; Dryer 1988:102); or finally, the position reserved for new or significant information (Mazzon 2004:5). Where the choice of prominent position differs from the headedness of the verb, disharmony arises.

- **Linkers**, on the other hand, are **impervious** to such **ordering rules**:

- They are distinguished from other heads by their **semantic vacuity**.
  Disharmonic orders arise only when ordering rules require a head with specified semantics to appear in a certain (prominent) position; however, since linkers are semantically vacuous, they can never be the target of such ordering rules.

Therefore the position of **linkers always conforms** to the dominant constraint in the Harmonic Word Order Ranking: the **Head-Proximate Filter**.

Synchronic and diachronic **supporting evidence**:

- In Bengali, the subordinating complementiser *bole* must obey the Harmonic Word Order Ranking:

(33) a) chele-ta [or baba aS-be **bole**] Sune-che. *Bengali*
boy-CL his father come-FUT.3 LNK hear-PST.3

b) *?chele-ta Sune-che [or baba aS-be **bole**].
boy-CL hear-PST.3 his father come-FUT.3 LNK

'The boy has heard that his father will come.' (Bayer 1996:255, ex 9)

Where the same morpheme is used to head a reason adverbial – and hence has semantics – it can violate the Head Proximate Filter, and hence the Harmonic Word Order Ranking:

(34) ami ekhane eSe-chi [tomar SONge kOtha bol-bo bole]. *Bengali*
I here come-PST.1 you with speech say-FUT.1 because
'I have come here in order to talk with you.' (Bayer 1996:255, ex 10)

- In the now extinct language Akkadian, the initial adverbial conjunction *kīma* was used to head comparative/purpose clauses:

(35) [kīma udammiqak-kunūši] dummikā-nim. *Akkadian*
as 1SG.do.favours.PST-to.you.PL do.favours.IMP.PL-to.me
'As I have done you favours, do me favours.' (Deutscher 2007:40, ex 27)

Over time, a gradual semantic bleaching took place, such that *kīma* became a subordinating complementiser *kī*. In conjunction with the semantic change, the clause headed by initial *kī* shifted from preverbal to postverbal position (Deutscher 2007:§4), from a disharmonic position to a harmonic one:

(36) bēl-ī īde [**kī** ultu ēlâ dilipt-u mahratan-ni]. *Akkadian*
lord-my 3SG.know LNK since1SG.arrive.PST trouble-NOM 3FSG.contront.STATIVE-me
'My lord knows that since I arrived, trouble has befallen me.' (Deutscher 2007:51, ex 57)

4 Harmony Meets Disharmony: Linkers in the Noun Phrase

Distribution of **relative clauses**:

(37) a) Postnominal and VO: [N [$_{RC}$ V O]] = 370 languages (64%)
b) Prenominal and OV: [[$_{RC}$ O V] N] = 111 languages (19%)
c) Postnominal and OV: [N [$_{RC}$ O V]] = 95 languages (16%) (46% of OV languages)
d) Prenominal and VO: [[$_{RC}$ V O] N] = 5 languages (1%) (1% of VO languages)

(Data taken from Dryer 2008d; cf. Greenberg 1963:90, table 10; Downing 1977:164, 1978; Mallinson and Blake 1981:§5.2.1; Hawkins 1983 *et seq*; C. Lehmann 1984; Keenan 1985:§2.1; Foster and Höfling 1987:486, 494; Dryer 1991:456, 1992:86, 2007:§6.1, 2008e; De Vries 2001:235-236, 2005:136-137; Rijkhoff 2002:307; Andrews 2007)

(38)

VO languages:	*OV languages:*
N[REL VO]	**[OV REL]N**
[VO REL]N (very rare)	**N[REL OV]**
*N[VO REL]	*N[OV REL]
*[REL VO]N	*[REL OV]N

The distribution of **relative clause markers** (REL) exhibits certain **parallels** with the distribution of **subordinating complementisers** (cf. (23)):

- There is an **intervention** requirement: REL must intervene between the N it modifies and the relative clause.
- **OV** languages allow both **prenominal** and **postnominal CPs**; **VO** languages show a marked **preference** for **postnominal CPs**.

However, there is an important **difference**:

- **Preverbal complement clauses** in **VO** languages are **ungrammatical**;
  Prenominal relative clauses in **VO** languages are simply **dispreferred**.

- Both the **parallels**, and the **difference**, in the data can be captured by the **Harmonic Word Order Ranking**, working in conjunction with the theory of disharmony:
- In **OV** languages, there are two possible orders:

(39)

OV language	HEAD-PROXIMATE	CP-FINAL	HEAD UNIFORMITY
a. ☞ N[REL OV]			*
b. ☞ [OV REL]N		*	
c. N[OV REL]	*!		
d. [REL OV]N	*!	*	*

- In **VO** languages, it initially appears as if only one order is permitted, obeying all constraints (which of course is the wrong result):

(40)

VO language	HEAD-PROXIMATE	CP-FINAL	HEAD UNIFORMITY
a. ☞ N[REL VO]			
b. [VO REL]N		*!	*!
c. N[VO REL]	*!		*
d. [REL VO]N	*!	*	

However, recall that while relative clause markers, as linkers, must obey the Harmonic Word Order Ranking, the **noun**, as a head with **semantics**, may have an **ordering rule of its own**.

- Suppose firstly the noun has an initial ordering rule, **N-initial**:

(41)

VO language	HEAD-PROXIMATE	N-INITIAL	CP-FINAL	HEAD UNIFORMITY
a. ☞ N[REL VO]				
b. [VO REL]N		*!	*	*
c. N[VO REL]	*!			*
d. [REL VO]N	*!	*!	*	

- If however the noun has a **final** ordering rule (dominating at least CP-Final and Head Uniformity), the **results are different**; the optimal candidate violates both CP-Final and Head Uniformity in order to obey N-Final:

(42)

VO language	HEAD-PROXIMATE	N-FINAL	CP-FINAL	HEAD UNIFORMITY
a. N[REL VO]		*!		
b. ☞ [VO REL]N			*	*
c. N[VO REL]	*!	*!		*
d. [REL VO]N	*!		*	

Hence there are **two possible orders** for relative clause markers in **VO** languages:
[[**VO REL**]**N**] where the noun phrase is **N-final**, and [**N**[**REL VO**]] **elsewhere**.

The presence of N-Initial and N-Final rules in **OV** languages does not increase the number of orders allowed, since of the two permitted orders ([N[REL OV]] and [[OV REL]N]) one is N-initial and one N-final anyway.

- **Why** do we **not** find a **parallel** situation with regard to **subordinating complementisers** and **complement clauses**? – Why are there no preverbal complement clauses in VO languages?

A clausal dependent in a VO language will only precede its superordinate head if this superordinate head has a final ordering rule. In the case of clausal complements to verbs, the superordinate head is **V**. In a **VO** language, it is simply **impossible** to have a **V-final** ordering rule; if there is an active V-final rule, the language as a whole is necessarily **OV**!

- This explanation for prenominal relative clauses in VO languages makes a very **precise prediction**: In languages displaying the order [[**VO REL**]**N**] (which must have an active N-Final rule), the **noun** should appear **finally** to its projection.

Dryer (2008d) and Comrie (2008) list the following languages displaying this order:

- Cantonese, Hakka, Mandarin — Chinese
- Bai — Tibeto-Burman
- Amis, Pazih — Formosan

- *Chinese languages*

These are well known to be **consistently N-final**:

(9) [wo **de**] shu *Mandarin Chinese*
I LNK book
'my book' (Den Dikken & Singhapreecha 2004:34, ex 46b)

(10) [hao **de**] shu
good LNK book
'good books' (ex 46a)

(11) [zai Beijing **de**] ren
in Beijing LNK people
'people in Beijing' (ex 46c)

- *Bai*

Possessors precede the noun, but demonstratives and numerals **follow** the noun, while adjectives may appear on either side (Dryer 2008e:§4).

However, recall that the **Harmonic Word Order Ranking** is concerned **not** with the **surface order**, but with the **base-generated order**.

It turns out that, **prior to movement**, Bai is **N-final**:

The two possible surface orders are: A-N-Dem-Num and N-Dem-Num-A

Extensive work on word order in the NP by Cinque (2005a) and Abels & Neeleman (2009, to appear) shows that the surface orders attested in Bai are not possible as base-generated orders; they can be derived only by leftwards movement of (a projection of) the noun from final position:

(43) a) [A N]$_i$ [Dem Num t_i]
b) N$_i$ [Dem Num A t_i]

- *Amis*

Demonstratives, numerals and adjectives precede the noun, while **possessors** may appear on **either side**, the postnominal position being preferred (Joy Wu, p.c.).

Again this is not necessarily problematic.

It is generally assumed that UG has **two** available positions for possessors: one **low**, within **NP**, and one **high**, in [Spec, **DP**].

If the possessor in Amis is associated with **D**, rather than N, and hence outside the immediate projection of N, its appearance in **final** position **poses no problem**.

- *Pazih*

Adjectives, numerals and possessors precede the noun, while **demonstratives** may appear on **either side** (see Li 2000; Li & Tsuchida 2001).

Like the high possessor, demonstratives are associated with **D**, rather than N, appearing in [Spec, DP].

Therefore demonstratives lie outside our prediction, and Pazih conforms perfectly to the prediction that it should be **N-final**.

5 Concluding Remarks

- I have presented evidence supporting the generalisations in (2):

(2) a) Where α belongs to a certain class of functional heads (which we will term '**linkers**'), the **disharmonic** orders in (1)c) and d) are **ungrammatical**.

b) Where α is **any other head**, the **disharmonic** orders in (1)c) and d) are simply **dispreferred** (as long as any requirement over linkers can otherwise be satisfied).

- **Harmony** is defined here by the optimal order determined by the **ranking** of the **Head-Proximate Filter**, **CP-Final** and **Head Uniformity**, with the **Head-Proximate Filter** taking precedence.
- **Disharmony** occurs where **ordering rules** pertaining to the **semantics** of a head **override** the **Harmonic Word Order Ranking**.

- Since **linkers** do **not** have **semantics**, they must **always obey** at least the **Head-Proximate Filter**, the dominant constraint in the Harmonic Word Order Ranking (hence generalisation (2)a)). We have seen evidence for this from **subordinating complementisers**, **relative clause markers**, and **linkers** in the **noun phrase**.

- An **alternative generalisation** over absent disharmonic word orders is provided by the **Final-Over-Final Constraint** (FOFC, Holmberg 2000; Biberauer, Holmberg & Roberts 2007 *et seq*):

(44) *The Final-over-Final Constraint*

If α is a head-initial phrase and β is a phrase immediately dominating α, then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α, then β can be head-initial or head-final, where:
(i) α and β are in the same Extended Projection [categorially non-distinct, and αP is a complement to β][5]
(ii) αP has not been A'-moved to SpecβP. (Biberauer, Holmberg & Roberts 2010:53, ex 1'''')

This states that a **head-initial phrase cannot** be **dominated** by a categorially non-distinct **head-final phrase** (that is, where α and β are categorially non-distinct, (1)d) is ungrammatical).

- I suggest that the **proposals** presented **here** capture a **wider range of data** than **FOFC**:
- Arguably, the most convincing evidence for FOFC is the distribution of **subordinating complementisers** (in (23)).[6] I have shown that this same data can be captured by the **Harmonic Word Order Ranking** in (27).
- The **relative clause marker** and other **linker** data, on the other hand, falls **outside** the scope of **FOFC**: both disharmonic orders are absent, and not just the final-over-initial order (in (1)d)). Moreover, even the ungrammaticality of this order is not predicted by FOFC, since the relevant heads are categorially distinct.
- Moreover, **clause-final particles** in **VO** languages (see (20)d), (21)d), also (22)d)), that pose a problem for FOFC, are unproblematic here: being **semantically contentful**, **disharmony** is possible.
- Finally, we have also seen that, in certain cases, **FOFC** may be **violated** specifically to **obey** the **Head-Proximate Filter**. This occurs where a noun in an N-final language takes a head-initial dependent, marked by a linker:

(11) [zai Beijing **de**] ren *Mandarin Chinese*
in Beijing LNK people
'people in Beijing' (Den Dikken & Singhapreecha 2004:34, ex 46c)

(45) [zuotian chi yurou **de**] ren
yesterday eat fish LNK person
'the people who ate fish yesterday' (Paul to appear: 4, ex 8a)

(46) [vɛ̃^{42} tsɐ̲^{21}tsɑ̲^{42} **no^{33}**] sɤ^{55} *Bai*
write tidy LNK word
'words that are written tidily' (Dryer 2008e, ex 39, citing Xu & Zhao 1984:73)

[5] Note that Biberauer *et al*'s definition of Extended Projection differs from Grimshaw's (1991/2005, 2000).

[6] See however Philip (2010:§3.1) for complementiser data from the Ge-Kaingang language Canela-Krahô that seems to fall outside the scope of FOFC.

Appendix: Languages with Linkers in the Noun Phrase

Classification	No. of lgs. in sample	Language	Position of linker
Afro-Asiatic	10		
- Chadic	(9)		
Biu-Mandara	(8)		
A		Gude	Postnominal
B	(7)		
Kotoko-Yedina			
Kotoko		Afade	Postnominal
		Goulfey	Postnominal
		Lagwan	Postnominal
		Mpade	Postnominal
		Mser	Postnominal
Zina		Mazera	Postnominal
		Zina	Postnominal
West Chadic		Nyam	Postnominal
- East Cushitic		Dasenech	Prenominal
Austronesian	13		
- Formosan	(4)		
Atayalic		Mayrinax Atayal	Prenominal/Both
Bunnan		Isbukun Bunan	Prenominal
Central East Formosan		Amis	Prenominal
Northern Formosan		Pazih	Prenominal/Both
- Malayo-Polynesian	(9)		
Nuclear Malayo-Polynesian		Palauan	Both
Oceanic	(5)		
Central-Eastern Oceanic	(2)		
Central Pacific		Rotuman	Postnominal
Micronesian		Kiribati	Postnominal
Meso-Melanesian		Bali-Vitu	Postnominal
Polynesian		Samoan	Postnominal
Southern Oceanic		Malo	Postnominal
Philippine	(3)		
Central Philippine		Tagalog	Both
Northern Luzon	(2)		
Central Cordilleran		Batad Ifugao	Both
Ilocano		Ilocano	Both
Creole languages	2		
- Dutch Creole		Berbice Dutch Creole	Postnominal
- English Creole		Tok Pisin	Postnominal
Indo-European	18		
- Albanian		Albanian	Postnominal
- Indo-Iranian	(11)		
Indo-Aryan		Hindi	Prenominal
		Urdu	Both
Western Iranian	(9)		
Northwestern Iranian	(7)		
Caspian		Gilaki	Both
		Mazandarani	Both
Kurdish		Balochi	Postnominal
		Hawrami	Postnominal
		Kurmanji	Postnominal
		Sorani	Postnominal
		Zazaki	Postnominal
Southwestern Iranian		Persian	Postnominal
		Tajik	Postnominal
- Italic	(3)		
Romance			
East Romance		Romanian	Postnominal

Italo-Western	(2)		
Italo-Dalmation		Italian	Postnominal
Western		French	Postnominal
- West Germanic	(3)		
Anglo-Frisian		English	Postnominal
High German		German	Postnominal
Low Franconian		Dutch	Postnominal
Japonic	1	Japanese	Prenominal
Korean	1	Korean	Prenominal
Kwadi-Khoe	1		
- Khoe		Khoekhoe	Postnominal
Mayan	1		
- Cholan-Tzeltalan		Tzeltal	Prenominal
Niger-Congo	9		
- Atlantic-Congo	(8)		
Benue-Congo	(7)		
Bantoid			
Central Bantu			
Zone D		Kilega	Postnominal
Zone E	(2)		
Kikuyu-Kamba		Gikuyu	Postnominal
		Kiitharaka	Postnominal
Zone G		Swahili	Postnominal
Zone J	(2)		
Haya-Jita		Haya	Postnominal
Konzo		Kinande	Postnominal
Zone N		Chichewa	Postnominal
Senegal-Guinea		Wolof	Postnominal
- Central-Southwestern Mande		Bambara	Prenominal
Nilo-Saharan	4		
- Central Sudanic		Lendu	Prenominal
- East Sudanic	(2)		
Western Nilotic			
Southern Luo			
Luo-Acholi		Dholuo	Postnominal
		Lango	Postnominal
- Songhay		Koyra Chiini	Prenominal
Penutian	1	Tsimshian	Postnominal
Sino-Tibetan	8		
- Sinitic	(3)		
Chinese		Cantonese	Prenominal
		Mandarin	Prenominal
		Taiwanese	Prenominal
- Tibeto-Burman	(5)		
Himalayish	(2)		
Mahakiranti		Newari	Prenominal
Tibeto-Kanauri		Byansi	Prenominal
Lolo-Burmese	(2)		
Burmish		Burmese	Prenominal
Loloish		Lahu	Prenominal
Northeast Tibeto-Burman		Bai	Prenominal
Tai-Kadai	1		
- Tai		Thai	Postnominal
Trans-New Guinea	1		
- Madang		Amele	Prenominal

Data from Ross (1998); Zeitoun *et al* (1999); Li (2000); Matambirofa (2000); Li & Tsuchida (2001); Kinyalolo (2002); Rijkhoff (2002); Den Dikken & Singhapreecha (2004); Holmberg & Odden (2004); Kutsch Lojenga (2005); Shklovsky (2005); Svenonius (2006); Witzlack-Makarevich (2006); Dryer (2007, 2008e); Bögel *et al* (2008); Jahani (2008); Spencer (2008); Andreas *et al* (2009); Philip (2009); Tourneux & Mahamat (2009); Larson (in press)

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