

Syntactic gangs: cumulative effects with weighted constraints

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Claim: I argue for the existence of ‘gang effects’ in syntax, i.e. particular constraints on syntactic operations can be analyzed as the cumulative effect of two permitted processes combining. The recurrent pattern we can identify, already well-known from phonology (Pater 2009), is that a language permits process A and B individually, but the combination of A&B is not possible. This will be demonstrated on the basis of restrictions on Left-Branch Extraction (LBE) in Slavic, defective intervention in Icelandic and successive-cyclic movement. I propose a constraint-based variant of Minimalism, in which each step of the derivation is subject to optimization (cf. Harmonic Serialism; McCarthy 2010, Heck & Müller 2013) with constraints bearing weights as in Harmonic Grammar (Legendre *et al.* 1990), thereby allowing for lower-ranked constraints to ‘gang up’.

Multiple LBE: A long-standing puzzle in the literature on wh-movement in Slavic is why multiple left-branch extraction (MLBE) seems to be impossible in languages with multiple wh-fronting (MWF) and left-branch extraction (LBE) (Fernandez-Salgueiro 2005, Grebenyova 2012). We would expect a language with both MWF (1) and LBE (2) to allow MLBE, but this is not the case.

- (1) Kto kogo priglasil na užin?
who whom invited to dinner
‘Who invited whom to dinner?’
- (2) Čju on kupil [t mašinu]?
whose he bought car
‘Whose car did he buy?’ (Russian)
- (3) *Kakoj₁ čju₂ [t₁ aktër] kupil [t₂ mašinu]?
which whose actor bought car
‘Which actor bought whose car?’ (Grebenyova 2012)

Given standard accounts of LBE (e.g. presence/absence of DP; Bošković 2005), this restriction is puzzling. It is possible to derive the ban on MLBE if we take the view that the cumulative interaction of LBE and MWF is the cause for this ungrammaticality.

Proposal: I adopt a constraint-based approach to syntax akin to Harmonic Serialism (Heck & Müller 2007), where the result of cyclic-structure building is evaluated after each operation. As well as restricting the candidate set, this approach entails that syntactic operations are only permitted if they are *harmonically improving*, i.e. a movement operation is only licensed if it does not violate a more important constraint than non-movement. One could argue that this kind of evaluation is implicit in a number of analyses, e.g. *Merge over Move* (Chomsky 1995; see Müller 2015 for discussion). Rather than a traditional Optimality Theory (Prince & Smolensky 1993/2004) account using ranked constraints, this approach rests of the assumption of *weighted constraints* in Harmonic Grammar (HG) (Legendre *et al.* 1990, Pater 2009). In HG, constraints bear a numerical weight and violations are deducted from the base Harmony Score (0) of a candidate. In a language allowing LBE, the requirement that wh-phrases be in the specifier of a licensing head (C_[wh]) can be captured by a constraint WH-CRIT. Furthermore, whatever ordinarily penalizes LBE can be represented by the constraint LBC (*Left-Branch Condition*). A language with LBE has the weighting $w(\text{WH-CRIT}) > w(\text{LBC})$ meaning it is better to wh-move than respect LBC.

(4)

	WH-CRIT	LBC	
[CP C _{wh} ... [VP V [DP wh NP]]]	$w = 2$	$w = 1.5$	$\mathcal{H}$
a. [CP C _{wh} ... [VP V [DP wh NP]]]	-1		-2
b. $\mathbb{P}^{\mathbb{P}}$ [CP wh ₁ C _{wh} ... [VP V [DP t ₁ NP]]]		-1	-1.5

(5)

	WH-CRIT	*MULTSPEC	
[CP C _{wh} ... [vP wh ... wh]]	$w = 2$	$w = 1.5$	$\mathcal{H}$
a. [CP C _{wh} ... [vP wh ... wh]]	-2		-4
b. [CP wh ₁ C _{wh} ... [vP t ₁ ... wh]]	-1		-2
c. $\mathbb{P}^{\mathbb{P}}$ [CP wh ₁ wh ₂ C _{wh} ... [vP t ₁ ... t ₂]]		-1	-1.5

If a language also allows MWF, then WH-CRIT will have a higher weight than some antagonistic constraint. I assume this to be *MULTSPEC, punishing the creation of multiple specifiers. The

weighting $w(\text{WH-CRIT}) > w(*\text{MULTSPEC})$ allows for MWF (5) as the summed weights of two constraints can ‘gang up’ to overthrow a more important constraint. In the derivation of MLBE, the first wh-movement step in (6) is licensed since it is *harmonically improving* ($-3.5 > -4$).

(6) *Step 1:*

	WH-CRIT	*MULTSPEC	LBC	
$[\text{CP } C_{\text{wh}} \dots [\text{vP } [\text{DP } \text{wh NP}] \dots [\text{DP } \text{wh NP}]]$	$w = 2$	$w = 1.5$	$w = 1.5$	$\mathcal{H}$
a. $[\text{CP } C_{\text{wh}} \dots [\text{vP } [\text{DP } \text{wh NP}] \dots [\text{DP } \text{wh NP}]]$	-2			-4
b. $[\text{CP } \text{wh}_1 C_{\text{wh}} \dots [\text{vP } [\text{DP } \text{t}_1 \text{ NP}] \dots [\text{DP } \text{wh NP}]]$	-1		-1	-3.5

Taking the output of (6) as the input of the evaluation of the second wh-movement step (7), in creating an additional specifier, the summed weights of *MULTSPEC and LBC turn out to be higher than a single violation of WH-CRIT. Thus, a second instance of LBE is not licensed since it is not harmonically improving.

(7) *Step 2:*

	WH-CRIT	*MULTSPEC	LBC	
$[\text{CP } \text{wh}_1 C_{\text{wh}} \dots [\text{vP } [\text{DP } \text{t}_1 \text{ NP}] \dots [\text{DP } \text{wh NP}]]$	$w = 2$	$w = 1.5$	$w = 1.5$	$\mathcal{H}$
a. $[\text{CP } \text{wh}_1 C_{\text{wh}} \dots [\text{vP } [\text{DP } \text{t}_1 \text{ NP}] \dots [\text{DP } \text{wh NP}]]$	-1			-2
b. $[\text{CP } \text{wh}_1 \text{wh}_2 C_{\text{wh}} \dots [\text{vP } [\text{DP } \text{t}_1 \text{ NP}] \dots [\text{DP } \text{t}_2 \text{ NP}]]$		-1	-1	-3

The ban of MLBE follows from a single wh-movement step violating the LBC while also creating an additional specifier being more costly than leaving the wh-phrase in situ. This approach also derives the emergence of unexpected superiority effects with LBE (Fernandez-Salgueiro 2005).

Defective intervention: As well as a single movement step being blocked due to a gang effect, we would expect to find an Agree operation that is not harmonically improving. I argue that this is the case with so-called *defective intervention* (Chomsky 2000, Chomsky 2008) in Icelandic. In certain expletive configurations, agreement with a nominative is blocked by an intervening dative:

- (8) það virðist/*virðast einhverjum manni [TP hestarnir vera seinir]
there seem.3SG/*seem.3PL some man.DAT horses.NOM be slow
‘It seems to some man that the horses are slow.’ (Holmberg and Hróardóttir 2003)

However, it is not the case that all datives block agreement with a nominative (Broekhuis 2008). As noted by Ussery (2009), Kučerová (to appear), dative intervention is restricted to bi-clausal environments (i.e. more than one TP) such as the raising context in (8). This can be modelled as a cumulative effect as follows: whereas it is OK to probe past a closer inactive DP, it is not possible if the lower nominative DP is outside the local TP. We can posit a constraint MINIMAL LINK CONDITION (MLC) for the former as well as one militating against agreement outside the local TP (LOCAL AGREE (LA)). As above, these two constraints are individually ranked lower than the constraint driving Agree, however their cumulative effect is sufficient to block agreement (11).

(9)

	AGREE	MLC	
$[\text{TP } T_{[\phi:\square]} \dots [\text{vP } \text{DP}_{\text{DAT}} \dots \text{DP}_{\text{NOM.PL}}]]_{\text{C}}$	$w = 7$	$w = 4$	$\mathcal{H}$
a. $[\text{TP } T_{[\phi:\square]} \dots [\text{vP } \text{DP}_{\text{DAT}} \dots \text{DP}_{\text{NOM.PL}}]]$	-1		-7
b. $[\text{TP } T_{[\phi:\text{PL}]} \dots [\text{vP } \text{DP}_{\text{DAT}} \dots \text{DP}_{\text{NOM.PL}}]]$		-1	-4

(10)

	AGREE	LA	
$[\text{TP } \text{DP}_{\text{DAT}} T_{[\phi:\square]} \dots [\text{vP } \dots [\text{TP } \dots \text{DP}_{\text{NOM.PL}}]]]$	$w = 7$	$w = 4$	$\mathcal{H}$
a. $[\text{TP } \text{DP}_{\text{DAT}} T_{[\phi:\square]} \dots [\text{vP } \dots [\text{TP } \dots \text{DP}_{\text{NOM.PL}}]]]$	-1		-7
b. $[\text{TP } \text{DP}_{\text{DAT}} T_{[\phi:\text{PL}]} \dots [\text{vP } \dots [\text{TP } \dots \text{DP}_{\text{NOM.PL}}]]]$		-1	-4

(11) *Defective intervention as a gang effect:*

	AGREE	MLC	LA	
$[\text{TP } T_{[\phi:\square]} \dots [\text{vP } \text{DP}_{\text{DAT}} \dots [\text{TP } \dots \text{DP}_{\text{NOM.PL}}]]]$	$w = 7$	$w = 4$	$w = 4$	$\mathcal{H}$
a. $[\text{TP } T_{[\phi:\square]} \dots [\text{vP } \text{DP}_{\text{DAT}} \dots [\text{TP } \dots \text{DP}_{\text{NOM.PL}}]]]$	-1			-7
b. $[\text{TP } T_{[\phi:\text{PL}]} \dots [\text{vP } \text{DP}_{\text{DAT}} \dots [\text{TP } \dots \text{DP}_{\text{NOM.PL}}]]]$		-1	-1	-8