Deriving order and structure

Jan-Wouter Zwart

Groningen Syntax Workshop, University of Groningen, June 17, 2018

1. The model of grammar

(1) We want a mechanism turning a *set* { … } into an *ordered n-tuple* 〈 … 〉.

(2) *The derivational model is a triple*
Numeration > Merge (**N**arrow **S**yntax) > **Ext**ernalization (form/linear order, meaning)

NB, Num and Ext are the interfaces, NS is internal

(3) *Basic principle*
Everything that is structured is derived by the derivational model (2) = **Δ**

(4) *Merge*
{ α, β, γ } --> 〈 α, β, γ 〉

(5) *Order*
〈 α, β, γ 〉 --> / α β γ / (replaces LCA)

(6) *Structure*
Should be a function of Merge > step-wise procedure

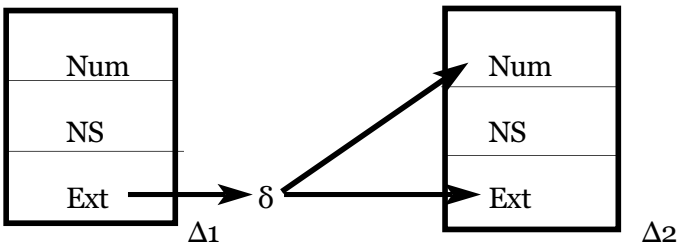
(7) *Recursion*
Minimally: any $n \in$ Num can be the output of some Δ (= δ)
(and vice versa: any δ can be included in the Num for another Δ)

examples: compounds, idioms, derived forms, complex left branch elements

(8) Given (7), it is not clear that Merge itself should be recursive (so minimally, assume not)

(9) *Question*
Can δ access another Δ via the other interface Ext (*vulgo* PF/LF) ?

(10)



NB, Ext has a 'PF' and an 'LF' side

2. Suspension of disbelief

(11) *Inflectional morphology*
By (3), inflected forms are derived in some Δ

(12) weak lexicalism: inflected forms are derived in the course of a larger Δ
strong lexicalism: inflected forms are derived in a designated Δ (exhaustive)

(13) *Current minimalism*
a. NS manipulates inflectional *features*, not *morphemes*
b. Ext: terminals (with features) are substituted by *forms* ('from Morphology')

(14) Since the forms are complex, they must be the output of some (different) Δ, i.e. δ
--> hence δ is fed into Ext

(15) *derivational interaction*
a. Num ✓
b. Ext (i) 'PF' ✓
(ii) 'LF' ?

3. Narrow Syntax (Merge)

(16) *Traditional conception*
Take α, β ∈ Num and create { α, β } = OUC (object under construction)

(17) *But also* ('external merge')
Take α ∈ Num and OUC and create { α, OUC }

(18) *And* ('internal merge')
Take α ∈ OUC and OUC and create { α, OUC }

(19) *Problems*
a. 'transfer' from Num to OUC (cf. Bobaljik 1995)
b. priority question internal vs. external merge
c. triggers?

(20) *Trigger*
We already have a trigger = (1), turning a set into an ordered n-tuple (cf. Fortuny 2008)

(21) *Eliminating external merge* (cf. Zwart 2015)
Only internal merge does not reify 'transfer' > Num = OUC

(22) *Internal merge*
{ α, β } --> { α, { α, β } }

(23) *and by Kuratowski* (Kuratowski 1921)
{ α, { α, β } } ≡ ⟨ α, β ⟩

(24) *No copy spell-out problem*
NS creates { α, { α, β }}, Ext 'sees' ⟨ α, β ⟩

(25) *Constituency*
{ α, β } in (22) is a constituent

(26) *Dependency*
{ α, β } in (22) is a dependent of α

(27) *Agree = feature sharing* (cf. Koster 1987)
α shares α's features with α's dependent β (= asymmetric sisterhood)

(28) *Iterative step*
Apply (22) as long as the dependent is a set (i.e. is not equivalent to an ordered pair)

〈 α, { β, γ } 〉 --> 〈 α, { β, { β, γ } } 〉 ≡ 〈 α, 〈 β, γ 〉〉 ≡ 〈 α, β, γ 〉

(29) *Consequence*
No room for further movements (rearrangement), unless an additional mechanism is stipulated

(30) *So we lose*
a. head movement
b. A-movement
c. A'-movement

(31) *But…*
a. cannot be part of NS anyway (section 4)
b. cannot be part of NS anyway (section 5)
c. can be redefined as δ feeding into Ext (section 6)

4. Head movement

(31) *Problems noted*
a. head movement is not internal merge (i.e. does not target OUC)
b. head movement does not affect 'LF' (it does affect 'PF', cf. Chomsky 1995 note 50)

But a. can be fixed if we are smart enough, and b. is contended (inconclusively)

(32) *Many instances of head movement are not needed*
a. a verb can acquire tense/agreement features via feature sharing (27)
b. V-*v* conflation (Hale & Keyser) cannot be part of NS

(33) *V-v complex*
a. Hale & Keyser 1993: is clearly idiomatic
b. idiomatic (noncompositional meaning) is established at Ext
c. so V-*v* complex must be δ, arguably fed into Num for another Δ

NB, by (7), 'lexical' does not entail 'not syntactic', it just points to separate levels of derivation

Now for an argument that head movement ***cannot*** *be in NS* (Zwart 2017)

(34) *Dutch tense system*
a. present *wandel*
b. simple past *wandel-**de***
c. periphrastic past ('perfect') ***ge**-wandel-**d heb*** (auxiliary *hebben* 'have')

(35) *Distribution*
a. present: unmarked
b. simple past: E = R (event cotemporaneous with reference time)
c. periphrastic past: E > R (event precedes reference time)

(36) *The two past tenses*

a.	Toen	hij	binnen	kwam	sliep	ik	(*heb ik geslapen)
	when	he:NOM	in	came	sleep:PAST	I:NOM	
	'When he came in (=R), I was sleeping (=E).'						
b.	Heb	je	lekker	geslapen ?			(*sliep je)
	AUX	you	well	sleep:PERF	'Did you sleep well (=E)?' (R = here and now)		

(37) *Tense operators needed*
a. Tense (= ANCHORING in Wiltschko 2014)
b. Anteriority (= POINT OF VIEW in Wiltschko 2014)

(38) *Structure should be something like this* (Wiltschko 2014)
[subject [T [Ant [VP]]]]

with V acquiring the features of T/Ant via feature sharing

(39) *Externalization*
$V_{[PAST]}$ realized as *sliep*
$V_{[ANTERIOR]}$ realized as *heb geslapen*
$V_{[PAST, ANTERIOR]}$ realized as *had geslapen*

(40) *The status of periphrastic tense forms*
These simply occupy cells in the paradigm (Chumakina 2013, Spencer and Popova 2015)

(The alternative would need to explain the existence of gaps in the paradigm precisely where NS produces periphrastic complexes.)

(41) *Relevance for head movement*
The auxiliary undergoes verb movement (cf. (36b))

(42) *Argument*
a. The auxiliary in a periphrastic tense undergoes verb movement
b. The periphrastic tense forms are created in a separate Δ feeding into Ext ('Morphology')
c. It follows from b. that the auxiliary is not present in NS
d. Hence (at least this type of) head movement cannot be in NS
e. (a fortiori) Head movement cannot be syntactic

5. A-movement

(43) *Recall*
The V-*v* complex is created in a separate Δ

(44) *Continue to assume*
Argument positions are configurationally defined as a function of features of V/*v*

(45) *Generalized integrity (should have mentioned this earlier)*
Any $\alpha \in \delta$,
where δ is the output of Δ_1
and is fed into Num of Δ_2,
cannot be merged in NS of Δ_2

(a trivial extension of Lexical Integrity, cf. Lapointe 1980)

(46) *It now follows from (43)-(45) that*
Noun phrases cannot be generated in argument positions (i.e. inside vP)

(because they would be stuck inside vP = δ)

(47) *So 'A-movement' is 'base-generation'*
a. Noun phrases merged in GF-position (subject/object)
b. Assume: GF-feature is a function of merge (arguably first NP merged = subject)
c. Argument roles are features of vP = δ, unvalued for GF
d. What we need is a mechanism *valuing* argument features on δ = vP with GF values (i.e. feature sharing/Agree)

(48) *Passive*
a. assume a Voice head 'directing traffic'
b. Voice suppresses an argument role of the vP it c-commands …
c. … affecting morphological realization
d. GF-feature valuation follows automatically

(49) *Unaccusative/unergative*
Different argument features on VP/vP

(NB unergative may have an unvalued internal argument feature > no feature-induced crash)

(50) *Raising*
a. John seems to like Mary
b. It seems John likes Mary
c. * John seems likes Mary
d. * It seems John to like Mary

(51) *Explaining the pattern*
a. *seems* is arguably underspecified, so *John* values an argument feature of *like*
b. nothing new to say on *it*
c. (50c) points to (lg part) restrictions on morphological realization of finiteness
d. (50d) suggests that merging GF-subject *induces finiteness* (at least in English)
(NB, we know independently that finiteness is not a function of tense; Zwart 2014)

(52) *Aside: this derives Burzio's Generalization*
a. (i) ACC --> EA (if there is accusative case, there is also an external argument)
(ii) ¬EA --> ¬ACC (you can't have accusative case if there is no external argument)
b. Accusative case points to the presence of a higher GF (Zwart 2006), which values EA
c. Absence of EA is the effect of Voice, limiting the number of argument features to be valued by GFs (so it would yield a δ with a GF without argument feature)

Interim summary
(53) a. We've seen that in the model contemplated here, head movement and A'-movement cannot exist in NS.
b. But head movement in NS is impossible anyway, assuming morphology as part of Ext
c. and so is A-movement, assuming derivation layering (*cum* Generalized Integrity (45)).
d. This leaves us to consider A'-movement.

6. A'-movement

(54) *Key notion here*
No vacuous quantification (= Ext condition on the 'LF side')

(55) *Bijection principle* (Koopman & Sportiche 1982)
A variable is **locally** bound by one and only one A'-position.

(56) Who$_i$ did you see [e]$_i$?

(57) *Questions*
a. Why local? What does it mean?
b. Why 'one and only one' ? Does it follow from the mechanism in any way?

(58) *Restricted distribution of wh-operators* (cf Kayne 1994)
a. Left-peripheral
b. Only in clauses

(59) *No 'base-generation' (cf. A-movement)*
a. Does not explain distribution
b. Wh-operators are interpreted in GF-position (and hence associated with argument feature) (i.e. reconstruction/connectivity)

(60) *So there are two elements*
a. a variable (GF/argument)
b. an operator binding the variable (and being interpreted as being in the variable's position)

(61) *It follows that*
The variable must be in Num
(NB, we don't know that about the wh-operator)

(62) *Hypothesis*
a. Ext does not tolerate δ with an unbound variable (= (54))
b. To fix, merge δ with an operator binding the variable

(63) *This gives us*
a. Both clauses of the Bijection Principle (55): locality and one-on-one
b. Left peripheral position of the operator
c. Connectivity (depending on the definition of 'binding')
d. Limited distribution of the operator (potentially, if (62a) is related to propositionality)

(64) *And that would instantiate*
a case of δ feeding into Ext on the 'LF-side' (since the operator must be a δ)

(15)' *derivational interaction*

a. Num			✓
b. Ext	(i)	'PF'	✓
	(ii)	'LF'	✓

7. Consequences

(65) *Locality*
no δ ∈ Num may contain an unbound variable
(i.e. merge with operator first)

(66) *wh-islands*
*Who$_i$ do you wonder why$_j$ Bill kissed [e]$_i$ [e]$_j$

> you cannot include *why Bill kissed* in a Num with *wonder* etc. before binding *[e]$_i$*

(67) *Long distance 'movement'*
Who$_i$ do you think Bill kissed [e]$_i$

> Num = { you, think, Bill, kiss, [e] }
> no need for intermediate landing/successive cyclic movement

(68) *CED (subject/adjunct island)*
*Who$_i$ did [that Bill kissed [e]$_i$] bother you

> *that Bill kissed [e]* is δ, cannot be included in Num without merging with operator first

(69) *Coordinate Structure Constraint*
*Who$_i$ did we go to the movies and Bill kissed [e]$_i$

> conjuncts must be δ (Zwart 2005), so *Bill kissed [e]* needs to merge with operator first

(70) *Wh-in-situ*
a. not clear there is a single type (echo type, violating island conditions or not, etc.)
b. some types may not incur a ban on vacuous quantification violation (no variable)
c. but scope phenomena suggest the same kind of operator-variable interplay
(and there is morphological evidence for this in e.g. Singala, Kishimoto 2005)

> merge with empty operator (enforced by (62b))
> island violations (possibly) only apparent, because empty operator voids (65)

(71) *Scope interaction*

a. Who bought everything for Max	(wh > ∀)	OP	>	[e]	>	quantifier
(cf. Someone loves everyone)	(∃ >< ∀)					
b. What did everyone buy for Max	(wh >< ∀)	OP	>	quantifier	>	[e]

NB, the type *Who took everybody home last night* = scopal illusion (*who* = distributive)

> no need for QR

(72) *Vacuous movement*
a. Who [e] left (*did leave) b. Who did you see (*you saw)

> *did* = left edge marking of δ (= V2, Zwart 2005a), 'PF' thing
> linear order condition allowed ('if leftmost element is not a variable')

(73) *Parasitic gaps*
a. [Which papers]$_i$ did you file [e]$_i$ without reading [pg]
b. conditions: (i) there must be a variable, (ii) that does not c-command the parasitic gap

> clause containing pg must be δ (adjunct)
> not likely that there is an empty operator (*pace* Chomsky 1986), cf. limited distribution
> possibly: δ gets a free ride on the operator merged at Ext
(but not if pg is contained in a δ inside δ, given locality effects noted in Chomsky 1986)

(74) *Pied piping*
a. Whose book did you read > For which *x* | you read *x*'s book

> Connectivity (63c) gets us the interpretation of the variable as [*x*'s book]
> For operator status of *whose book* as a whole, cf. Rullmann 1988
(NB *whose book* is δ, hence has passed through its own Ext where reanalysis is possible, cf. Zwart 2009)

(75) *Wh-movement in other constructions*
a. topicalization: works essentially the same as wh-movement
b. relative clauses: not much to be said, except for head-internal type
c. clefts: essentially reduces to relative clauses
d. comparatives: not clear, may need to be re-evaluated (unification with subcomparatives?)
e. *tough*-movement: opacity effects follow from (45) Generalized Integrity (Zwart 2012)

8. A remaining problem

(76) *Evidence for successive cyclic movement*
a. morphological: adjustment of the intermediate complementizer/subject/verb
b. semantic: reconstruction into intermediate landing site

(77) *Morphological evidence* (Hoekstra & Zwart 1994)
a. Wie zei Jan (of) dat hij [e] gezien had
who said John $COMP_{WH}$ COMP he:NOM see:PART AUX:PAST.SG
'Who did John say he saw?'
b. Die zei Jan (*of) dat hij [e] gezien had
DEM said John $COMP_{WH}$ COMP he:NOM see:PART AUX:PAST.SG
'That one, John said he saw.'

(78) *Feature sharing*
a. ⟨ wie, δ ⟩, where δ = [Jan zei dat hij [e] gezien had]
b. so δ = [+wh], which can be morphologically realized on any head (in this case, C)
> I assume this will carry over to other cases, but more work needed

(79) *Semantic evidence*
a. ! Zichzelf denkt Jan dat ik [e] niet leuk vind
REFL think:3SG John COMP I:NOM NEG cute find:1SG
'Himself, John thinks I don't like.'
b. * Jan denkt dat ik zichzelf niet leuk vind
John think:3SG COMP I:NOM REFL NEG cute find:1SG
(intended) 'John thinks that I don't like him.'
> argument for intermediate landing presupposes (erroneously) verbatim reconstruction (cf. Fiengo & May's 1994 *vehicle change*, and wellknown Principle C violations)
> again more work needed

Bobaljik 1995 'In terms of Merge' MITWPL | Chomsky 1986 Barriers MIT Press | 1995 'Categories and transformations' in The Minimalist Program MIT Press | Chumakina 2013 'Introduction' Periphrasis OUP | Fiengo & May 1994 Indices and Identity MIT Press | Fortuny 2008 The emergence of order in syntax Benjamins | Hale & Keyser 1993 in The view from Bd 20 MIT Press | Hoekstra & Zwart 1994 De structuur van CP Spektator | Kayne 1994 The antisymmetry of syntax MIT Press | Kishimoto 2005 'Wh-in-situ and movement in Sinhala wh-questions' NLLT | Koopman & Sportiche 1982 'Variables and the bijection principle' TLR | Koster 1987 Domains and dynasties Foris | Kuratowski 1921 'Sur la notion de l'ordre dans la théorie des ensembles' Fundamenta mathematica | Lapointe 1980 A theory of grammatical agreement UMass diss | Rullmann 1988 'Referential dependency' MA-Thesis Groningen | Spencer & Popova 2015 'Periphrasis and inflection' in The Oxford Handbook of Inflection OUP | Wiltschko 2014 The universal structure of categories CUP | Zwart 2005 'The coordinate structure constraint: a minimalist perspective.' Talk Leiden | 2005a 'Verb second as a function of merge.' in The function of function words and functional categories Benjamins | 2006 'Structural case and dependency marking' CLS 42 | 2009 'Prospects for top-down derivation.' CatJL | 2012 'Easy to reanalyse' LIN | 2014 'The tense of infinitives in Dutch' in Zwartboek Univ of Groningen |2015 'Eliminating external merge' Talk Cambridge | 2017 'An argument against the syntactic nature of verb movement' Order an structure in syntax vol I Language Science Press