On the Form of Syntactic Representations and Restrictions on Recursion

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Amherst May 27 20009

(1) Given recursive Merge[h1]:

- Where do we find recursion, and where don't we find it.
- What formal mechanisms are necessary for an explanatory account of linguistic recursion? [h2]

(2) Context in which recursion is restricted.
→ infinitival complementation and verbal complexes (restructuring contexts)
(..Koopman and Szabolcsi (2000), Koopman (2002).. .)
(Dutch, English, Hungarian, German, (Italian, French..)

atoms of syntactic structure (can) impose restrictions on depth of embedding of phonological material of selected constituents.
This is part of the lexical entry, an idiosyncratic property of individual atoms, and one of the tings that make up "epp").
Depth: calculated on the output of the syntactic derivation: how many nodes dominate most deeply embedded material (min{0-n}, max{0-n}*; can be category sensitive. the effects may look prosodic, but can be distinguished to be structure dependent).*

- Sensitivity to Ph-size independently motivated: phonology (formulated in general in terms of syllable structure or prosodic structure)[1]:
  English –er: combines with a light foot.
  happy-er, big-er, *yellow-er
  -er, DEG, $epp_{A\{\{min1+\}\ max:light\ foot\}}$

- ph size restrictions: epp of individual atoms of structure
  (atoms can lack pronunciation themselves: cf English root C+Q: epp_T)[2]

Recursion in non-finite complementation.

English: Recursion with infinitives and lack of recursion with certain -ing complements (Ross 1972; *doubl-ing)

(3) V selects a to- infinitival complement, which can be merged with a verb that selects an infinitival complement, which can be merge with a verb that selects for an infinitival complement etc. .. .

[1] Amongst many others De lacy (2004),

[2] Perhaps: Hungarian progressive $[_{v+}$ $]_p$ prog [
Hungarian existential tense $[_{v+}$] v]T]

					[take apart the radio]
				[to	[take apart the radio]]
			try	[to	[take apart the radio]]
		to	try	[to take apart the radio]]	
		begin	[to	try	[to take apart the radio]
[I [want	[to	[begin	[to try		[to take apart the radio]]]]]

(4) English: Ross (1972). *doubl-ing filter (1972). "intelligent output constraint"
Longobardi (1981) double infinitive filter (Italian)

a. He began/started singing
b. He began to sing
c. He is singing
d. *He is beginning/starting singing
e. He is beginning/starting to sing

f. he kept signing
g. *he is keeping singing

h. * John's starting/trying singing

(5) *His keeping chanting ads bugs me
*Him keeping chanting ads?

(6) "Intelligent output condition":
not sensitive to linear adjacency
can be bled. (pseusoclefts)
"what I was attempting is playing the "Minute Walz with my nose"
Only with certain types of verbs ("restructuring" verbs, Cinque's hierarchy, "complex verb" formers (cluster formers)).
sensitivity to intervention of negation[3]
subject to regional variability speaker variability (Ross 1972 footnote21)[4]

..on the "recursive" side of English syntax.

Dutch: recursion of infinitives on the left (inverted) but not on the right

(7) Dutch verbal complexes shows restrictions on infinitive recursion (*doubl –ing) on one side of the verb, but not on the other (sequence of clusters: (remnant CPs) are OK)

V2 V1
*V3 V2 V1
*V3 V1 V2
V1 V2 V3

[3] Negation intervenes greatly reduces the strength of the violation: ?He is beginning not signing any radical petitions

[4] Ross (1972, fn 21) Some Southern speakers have informed me that they can find no doubl-ing violation in their speech except for the verb *keep* (and the be of the progressive..)

(you can invert once, but not twice, you can string 3/4 infinitives together otherwise as long as they end up "post" T. Orders matter for syntactic processes (focusing etc)
Analysis?

Dutch verbal complexes

Preliminaries:
MP:
How exactly is surface constituency build? (Kayne, 1984, 2000, 2003, 2005.. Sportiche, 2005, Williams (2003…)…) How much mileage can we get from purely local structure building Merge and (Re)merge (2003)?
(surprizing: starting point is different, but end result encodes traditional constituency (see Kayne 2003))

Theoretical assumptions.
What are the underlying atoms? very tiny! decompositional approaches

no difference syntax- morphology (shared with Distributed Morphology)

uses same primitives, same atoms, is constructed in the same way (Merge)

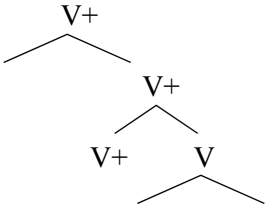
Bare phrase structure: only difference is a difference in size

no notion narrow syntax: there is a single system. (theme vowels, to, of, what determines where meaningless elements can be merged and how much variability can be accounted for by variable heights of merger?)

- Merge , Remerge (Move), Label
- atomic elements: LI: roots, categories, f categories, .. (tiny!! "nano"-syntax)
- Satisfy lexical properties locally.(Principle of Locality of Selection Sportiche, 2005)
- Cyclic spell-out;
- Cyclic interpretation (Higgenbotham.. Kayne..))

3 Particular ingredients in analysis of verb clustering (K&Sz 2000)
first ingredient:
1. cluster formation: (universal and universal configuration)
(dedicated head: V+ (Pred), combines with v, epp SC(VM).. locus of complex predicate formation)

(8)



[$_P$ home] /ϵ/ go
[$_N$piano] play
[$_P$up] call
[$_A$clean] make

into the room go

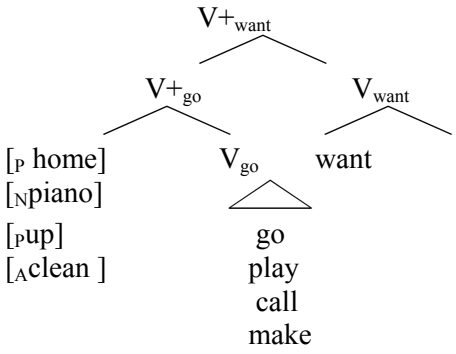
president-K elect
..

- These clusters: traditionally analyzed as syntactic incorporation or morphological compounding; (V selects for NP/DP). NB: in decompositional approaches with late spell out, and V selecting for N (never D!): these are simply small syntactic structures formed early in the derivation. (D [N V]

Second ingredient:
Restructuring verbs (verbs that participate in cluster formation), must form complex verbs (verb raising (epp v+), they also combine with bare-inf, te infinitives, or participles, related to 3rd ingredient)

- V+, (f), epp $_{v+}$, inf
  - (NB: attract v+: this is a slightly bigger category than V!, crucially not just V)

(9) Restructuring verbs must form verbal complexes (attract V+ of the type below) unviversal)



Third ingredient:
Infinitival verbs must combine with infinitival morphology.

(*10) /en/; inf, epp $_{vcat}$*
[Small clauses may have to combine with other functional material depending on their sizes; this is merged outside, and force evacuation)]

Where is infinitival morphology merged? what does it attract

→**Two possible bracketings**, derived by external merge/remerge
(11) en …. [$_{v+}$home [$_{v}$go

a. [$_{v+}$[piano [$_{v}$speel]] en] (one syntactic constituent:[v+ v inf] will perform the tasks of ing and v+ as a single constituent

b. [[$_{v+}$ home] [$_{inf}$[$_{v}$go] en]] (two separate constituents: v+, and inf)) v+ will have the distribution of v+; inf of infinitives

(12) Infinitives in Dutch German and Hungarian have variable constituent structures: BOTH STRUCTURES COEXIST (and have independent support:

can be input to derivational morphology! (now understood as the possibility of the N morpheme merging higher than v+ (Nthelitheos, 2005)

(13) Dutch: prefers its infinitives small;
German, Hungarian like to keep [SC +V] together (unless forced to do otherwise)
(English only likes its verbs small w.r.t. these predicates)

- Variability in structure of infinitives is a major factor in the different orderings found in verbal complexes: in structure A: V+ and inf satisfy both further properties of V and inf as one unit; in b they go their separate ways)

(14) verbal complexes are notorious for the fact that speakers allow and produce different orders: this is traditionally framed in terms of optionality of a movement process. [theoretically impossible. what to do with apparently optional processes? →multilingualism; →coexistence of different grammars)

NO OPTIONALITY. All movements are obligatory as expected; derivations are the same: surface variability depends on what structures infinitives allow (which themselves result from how you satisfy the requirements.)

Data: A gap within the verbal complex paradigm of standard Dutch
(curious w.r.t German, Hungarian and some Dutch dialects)

(15) Inversion/roll up : Vinf2 <V1 order (German V2 V1, Hungarian, V2 V1,..)

Diagnostic for inversion:
Inf occurs in the same position as other (small) small clause predicates
can be fronted; (a sequence of postverbal infinitives cannot in my speech)
follows (indefinite DP objects)
compatible with negation and focus; follows a focused element;
carries nuclear stress
..is excluded from infinitives: *inf (te) Vinf

No inversion of infinitives in V1 V2 V3 environment.

Inversion is restricted to V2 V1 (tense), but excluded in V1 V2 V3 environments, whether it is full inversion[i]:

(16) a. *zal will**en*** *schilder**en*** V1 V2.inf V3.inf
will want.INF paint.INF
'..will want to paint'

b. *zal schilderen willen *V1 V3.inf V2.inf
will paint.INF want.INF

c. *schilderen willen zal *Vinf3 Vinf2 V1
paint.INF want.INF will

Or remnant "V+" movement (climbing): (yielding 3-1-2 order)

(17) ***…schilderen zal willen** ***V.inf3 V1 V.inf2**
paint.INF will want.INF

Only English orders are allowed in this configuration.

(18) *…zal willen schilderen* V1 V2 V3
…will want.INF paint.INF

(19) The climbing order V3 V1 V2 (climbing) is excluded for infinitives, but fine for all other categories of small clauses, including participles.

(20) [adding labels]:
K&Sz: [$_{V+}$ op [$_{V}$ ~~bel~~] [~~zul~~) zal+T [$_{CP}$ [bell-en]..
traditional V raising [op ~~bell-en~~ [zal] bellen]

[$_{V1+}$ ~~V2~~ [~~V1~~]**Vf1** [$_{cp/tpl}$**Vinf2**..
[$_{V1+}$[$_{\mathbf{inf2}}$**V2inf**] ~~V1~~] **V$_{f}$1** (once is OK)

*[$_{V1+}$[$_{V2+}$**[$_{\mathbf{inf}}$V3inf** [$_{\mathbf{inf}}$**V2inf**] Vf1 (*twice)
*[[[Vinf3 [V2] [V1 Vf1 Vinf2 (no climbing)

[$_{V+}$PartV3 ~~V2 V1~~] Vf1 Vinf2

(SC3) V1 V inf3
V1 Vinf2 Vinf3 (Vinf4) (English order)
*V1 Vinf3 Vinf2
* V (tiniest)SC/%part3 Vinf2

(21) a. … *op* ~~*bel*~~ *zal bellen* 3- 1- 2
up will call.INF

b. … *schoon* ~~*maak*~~ *zal maken* 3-1-2
clean will make.inf

c. … *piano* ~~*speel*~~ *zal spelen* 3-1-2
piano will play.INF

d. …*naar LA* ~~*vlieg*~~ *zal vliegen* 3-1-2
to LA will fly.INF

e. … ge*schilderd* ~~*heb*~~ *zal hebben* 3_{Part} 1 2_{inf}
ge. paint.PART ~~have~~ will have.inf

f. *.. *schilderen* ~~*wil*~~ *zal willen* ***3_{inf} 1 2_{inf}**
paint.INF will want.INF

(22) The restriction on partial roll up (V1 V3 V2) and climbing infinitives is exceptional in the context of similar clusters in German, in Hungarian, and **in some dialects of Dutch** (Sand project, Barbiers et al 2005).

(23) Hungarian:

a. *Inversion* (K&Sz 2000:73 ex (105))

Nem fogok *dolgozni kezdeni* *akarni* V1 V4 V3 V2
not will-1sg work.INF begin.INF want.INF
'I will not want to begin to work'

b. *V+ climbing* (neutral clauses, no negation, focus, unmarked tense/aspect)

Dolgozni fogok *akarni* K&Sz 2000:74(108) V3 V1 V2
work.INF will-1sg want.INF
'I'll want to work'

(24) German climbing:

a. *Inversion*

weil Peter *Maria anrufen können will* VM4 V3 V2 V1
because Peter Maria up-call be-able want
`because Peter wants to be able to call up Mary'.

b. *Inversion of zu- infinitivals*

weil er zu schwimmen versuchte V2 V3.V1
because he to swim.INF tried
'because he tried to swim'

c. *Remnant VP+ climbing in zu-infinitivals:*

ohne singen ~~wol~~ zu wollen V3 $V1_{zu}$ V2
without. sing.INF to want.INF
'without wanting to sing'

d. *Remnant VP+ climbing in IPP environments in southern German dialects* (Den Besten and Edmondson 1983):

..singen hat wollen V3 V1 V2
sing.INF has want.INF
'…has wanted to sing'

(25) regional varieties of Dutch: Barbiers [2002]
Dutch Sand project:
V3 V2 V1 [311/349 speakers]
V3 V1 V2 [24/310 speakers]
V1 V2 V3 [75/310 speakers]

(26) The restriction on recursion looks accidental ...

Dutch /English vs. Hungarian/ German (some varieties of Dutch).
Italian (Longobardi 1981) vs French

(27) How does the restriction on recursion follow?

- a semantic account? no..
- a cyclic-spell out account (Richards, 2007)
  - must be a Phase boundary to linearize these
    different P boundaries for different speakers? variable ones?

- a pure phonological output constraint (ph):
- a ph constraint stated on the output of the output of the syntactic derivation; part of the lexical representation

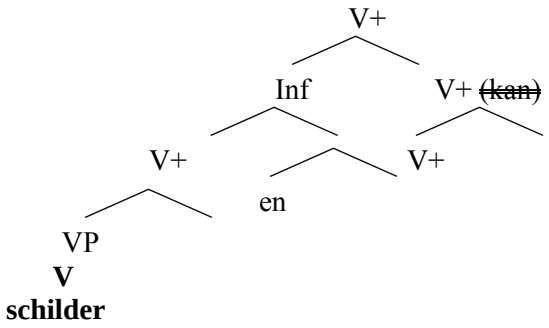
(28) A syntactic based account:
inspect the structures: see what context are allowed and what is not:

size: depth of embedding of pronounced material, sensitive to category(inf).

(29) A filter which takes the most complex attested case as representing the upper bound on allowable complex structure.

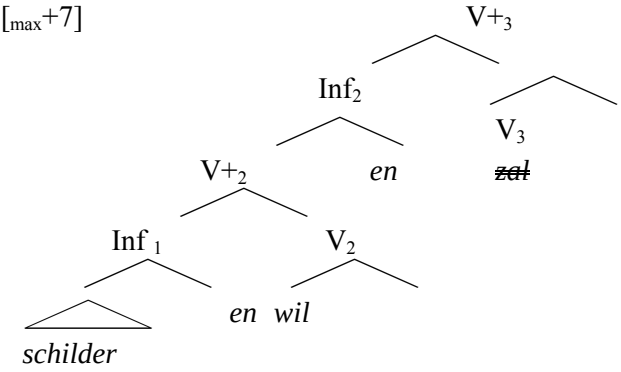
(30) Pred/e,V+ $_{\text{epp (V+ [ph(inf)min (0), max(4)])}}$

At the end of the derivation, (ph,Inf) must be [min (0) Max(4)]



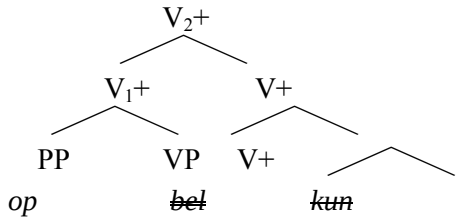
(31) Adding another restructuring verb will violate the max size (increases depth of embedding by at least +2]):.

(1) *[$_{\text{max}}$+7]



(32) Other cases of remnant V+ climbing are fine: since these V+s never contain Inf, and hence can continue to grow in complexity with each additional cycle, happily climbing up:

(2)



(33) Finally, the filter allows English orders (V1 V2 V3), because these orders do not involve any complexity in Spec, VP+ (the infinitive is contained in a CP and distributes like a CP.

Alternative accounts?: just phonology

(34) phonology: Den Besten and Broekhuis 1989, and Broekhuis 1992
V3 V2 V1 ruled out by prosody

(i) inverted infinitives must carry primary stress
[(ii) small clauses must carry nuclear stress
(iii) Only one primary stress allowed before the finite verb (Dutch)

(35) *…*schílderen wíllen zal*
… paint.INF want.INF will
'..will want to paint'

(36) ** dat je hem toch niet áárdig vínden kan*
that you him prt. not nice find.INF can
'that you cannot seriously consider find him nice'

Destressing will not help: probably because stress assignment is fixed at an earlier cycle, and is assigned to the most deeply embedded element, carried up (phase : no tinkering with finished cycles)

(37) * SCHILdren willen zal
* willen SCHILDeren zal
* schilderen WILlen zal

But: this account cannot explain *3-1-2: only one inverted infinitive before the finite verb it ends up with nuclear stress:

(38) ***schílderen zal willen** *zal willen schílderen*
paint.INF will want.INF

Broekhuis 1992 (tentatively) proposes that this string is excluded by a "parsing" constraint, which is caused by the mixing up of infinitives. Cannot be right on the basis of internal patterns in Dutch (Dutch allows this with participles, and crosslinguistically or microparametrically (German, Hungarian some Dutch dialects show no problems!)

(39) Recursion by itself is fine as expected:
what causes a problem is an (idiosyncratic) spell out property.

the epp: requires a specifier (of type x), with ph properties (size (depth of embedding, syllable structure, prosodic structure)

(40) Why would you want to keep your structures small? it keeps the derived structures small! It "flattens" out the recursive structure, and it cuts big parts into piece V1 V2 V3 V4 (V2 V3 V4 etc are all the only elements in their own CPs), dependents end up preceding V+

Doubl-ing

Must be analyzed in the same way: linear order is not relevant, to VPs are in their own CPs. [see slides]

Questions about typology

Hungarian neutral clauses:

Within the Hungarian language area: Szendrői (2004); Szendrői and Tóth (2004)
(i) What happens if only ph specification that some head selecting for v+ imposes on is prosodic: (certain foot structure): → no effects of recursion are found.

(ii) What happens if size is important? effects of recursion should be found.

→ A case where 2 recursions are fine but a third is not (so it is not a question of one vs many) (K&Sz 2000).

Neutral clauses: (unmarked tense and aspect, no focus, no negation)

Lightest VM must 'climb' to Foc(neut): *(must be analyzed as remnant movement)*
baffling difference between Hungarian speakers: K&Sz 2000, p.124; Szendroi and Toth (4/5 speakers around Szeged).

(41)

	Ph-Light						dialect A	dialect B
a.	Haza	fogok	akarni	menni		4-1-2-3-	OK	OK
	home	will-1	want.inf	go.in				
	I'll want to go home							
b.	Haza	fogok	akarni	kedzeni	menni	5-1-2-3-4	OK	*
	home	will.I	want.inf	begin.inf	go.inf			
	'i'll want to begin to go home							
c	dolgozni	fogok	akarni			3-1-2	OK	OK
	work.inf	will.I	want.inf					
d	dolgozni	fogok	akarni	kedzeni		4-1-2-3	OK	*
	work.inf	will	want	begin.in				

Dialect B: shows restrictions on recursion sensitive to number of embedding:

you can do it twice (a), but not three times!

Dialect A: only seems sensitive to prosodic structure: it requires a V+ which gets nuclear stress. (this happens to be the most deeply embedded V+, Cinque, 1995)

Beyond infinitives:

- Cases where recursion is restricted (epp).

German genitives:

(42) Gen1 Gen2
Marias sorgfältige Beschreibung Ottos
Maria's accurate description of Otto

Gen1: only proper names and pronouns: Gen1: restricts size to highest D.

(43) *??Des Zeugens/*Dieser Frau/*Meiner Schwester / sorgfältige Beschreibung Ottos*
The witness'/ this woman's/my sister's /careful description of Otto

(44) Marias sorgfältige Beschreibung des Zeugen/ dieser Frau/ meiner Schwester
Maria's careful description of the witness/this woman/my sister

Variability in Verb second. Verbs that can not undergo verb second
recursion of "de" phrases. (postnominal); Romance vs Greek, vs Malagasy

(45) le portrait de Rembrand de Picasso de Jean

recursion of Topics vs no recursion of Topic;
recursion of Voice (Malagasy): (as long as a phase boundary intervenes)

Restrictions on morphology: recursion is difficult or impossible.
[nation-al]-iz-]at-] ion] al-iz-ation] (al-ization-al)
(no meaning)
causative recursion (Wolof, Javanese,)

→ can be ruled out by 'selection':
-al tolerates only a 'small phpiece' of structure as its dependent.

(partial) References

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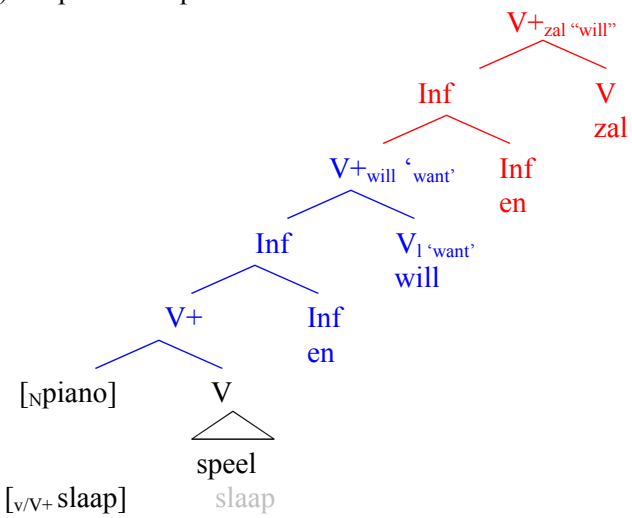
(slightly) simplified output: 3-2-1



*in Dutch, OK in German, Hungarian and some dialects of Dutch;