

# Tocharian object clitics and the derivation of SOV<sup>1</sup>

Neil Ashton  
nma38@cornell.edu

Cornell University

The 13th Diachronic Generative Syntax Conference

---

<sup>1</sup>This research was supported by the Social Sciences and Humanities Research Council.

## Greenberg's Universal 25 (U25)

“If the pronominal object follows the verb, so does the nominal object.”  
 (Greenberg 1963 apud Roberts 2010, 63)

OV	DP-obj	V	Pron	V
VO	V	DP-obj	V	Pron
Romance, etc.	V	DP-obj	Pron	V
×	DP-obj	V	V	Pron

## U25 in syntactic theory: Roberts 2010

- This is as predicted by the “defective goal” theory of Romance pronoun proclisis detailed in Roberts 2010, *Agreement and Head Movement*
- U25 is cast there as a generalization about movement: the movement that leads to Romance-style proclisis is triggered by a proper subset of the triggers of DP movement
- Roberts’ theory is stated in terms of the AGREE-driven “Derivation by Phase” framework (Chomsky 2001, 2008) as augmented by two hypotheses

## Roberts' representational hypothesis

- Clitic pronouns are featurally defective w.r.t. full DPs—mere bundles of  $\phi$ -features lacking a “categorical D feature” (Cardinaletti & Starke 1999, Déchaine & Wiltschko 2002, Mavrogiorgos 2007)
- They are basically nominal, and their special syntax derives from their structural deficiency (vs. approaches treating preverbal clitics as “CliticP” functional projections above V, e.g. Sportiche 1995, Stabler 2001)

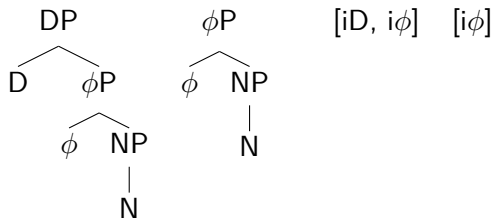


Figure: Structures of full and clitic pronouns in Déchaine & Wiltschko 2002 (left) and Roberts 2010 (right)

## Roberts' procedural hypothesis

- AGREE between a probe and a goal possessing a subset of its syntactic features (a “defective goal” with respect to the probe) “exhausts the content of the goal ... therefore the operation is not distinguishable from the copying involved in movement” (60), and it produces “the PF-effect of movement” (61)
- This derives (Romance-style) pronoun proclisis: the  $\phi$ -probe on  $v^*$  exhausts the content of  $\phi$ -pronouns and incorporates them
- DP movement is triggered by EPP-features and Edge Features—so full OV results from “an EPP-feature on  $v^*$ ” (63), which is a parameter of variation (unlike the  $\phi$ -probe on  $v^*$ )
- Hence U25: DP movement requires a proper superset of the triggers of  $\phi$ -pronoun movement

# The problem of Tocharian

- Tocharian<sup>2</sup> word order is problematic for both the weak and strong versions of U25
- Weakly: it exhibits the “unattested” SOV : *SV<sub>pro</sub>* word order
- Strongly: both pre-verbal DPs / strong pronouns and post-verbal clitics are *derived by movement from base position*, which should be impossible

---

<sup>2</sup>I will only discuss Tocharian B data, but I expect that my results transfer straightforwardly to Tocharian A.

## Tocharian word order

Tocharian is SOV with DP objects and “strong” pronouns, “SVO” with object clitics

- (1) pañäkte waiyke-welyñe naksate  
Buddha lying-speech reproved  
“The Buddha reproved the lying speech” (333a8/9)
- (2) su ci klāte ñyātsene  
he you led danger.LOC  
“He led you into danger” (93b1)
- (3) yāmornta ñitkāre -ne  
deeds urged -him  
“The deeds egged him on” (DA-1a1)

## Tocharian clitics are clitics

- So Tocharian is a clear counterexample to the “weak” U25 ...
- But is it relevant to a theory of syntactic clitics, i.e.  $\phi$ -pronouns?
- Yes: tests for clitic status from Mavrogiorgos 2007 (ultimately from Kayne 1975, Cardinaletti & Starke 1999) show that post-verbal pronouns are “special clitics” (Zwicky 1977) of the  $\phi$ -pronoun type
- Clitic pronouns contrast with strong pronouns w.r.t. all of these tests

## Clitic diagnostics: summary

- Can't be modified
- Can't appear in left-peripheral positions
- Limited distribution (clitic positions  $\subset$  DP positions)
- Prosodically restructure with hosts
- Phonologically reduced w.r.t. tonic pronouns
- Undergo “climbing” in restructuring contexts

## Modification

Clitic pronouns cannot be modified by any type of modifier; full pronouns (functioning as determiners) can

- (4)    cai    ʃñaʃʃi    ñiś mäs̄sāre  
 these self.ADJ me forgot  
 “These ‘own people’ (= relatives) have forgotten me” (TEB-63-01)
- (5)    tumem̄ cai    ostaññi    nāksante -ne  
 then    these domestic rebuked -him  
 “Then these housemates rebuked him” (PK AS 18A)

## Left dislocation

Clitic pronouns cannot occur in left-peripheral positions (unless dragged along with a fronted VP); full pronouns can be topicalized, focalized, etc.

- (6) ñake ce<sup>w</sup> wes pälwāmo  
 now him we lament  
 “(Once he lamented others,) now we lament *him*” (46b2)
- (7) tumem cewäs alyaik tswāre  
 thus this.ALL others adhered  
 “Thus the others adhered to *this* one” (431b1)

## Clitic positions $\subset$ DP positions

Clitic pronouns occur in a proper subset of the possible positions of corresponding tonic forms—DPs *can* appear post-V, but only with VP focalization; clitics cannot appear pre-V

- (8)    yarke peti      ñaštär sū  
          honor flattery seeks he  
          “Seek honor and flattery is what he does” (33b3)

## Prosodic restructuring

- Clitic pronouns form a prosodic word with their host verb, shifting its accent rightwards; tonic pronouns do not
- This is visible thanks to accent-conditioned vowel shifts: /ǎ/ → [a], /á/ → [ā]

(9) nésǎṃ : nesáṃ-ne

(10) ākemṃ : akémṃ-ne

(11) náḵsǎṃ : nākḵsámṃ-ne

# Phonological reduction

Clitic pronouns are clearly phonologically reduced w.r.t. their tonic equivalents

1SG	-ñ	ñís, ñi
2SG	-c	ci, tañ
3SG	-ne	ceṃ?

## Clitic climbing

Tocharian clitic pronouns attach to certain non-subcategorizing functional verbs in what appears to be Romance-style “clitic climbing” with restructuring verbs

- (12) spāntai wentsi cämpim -cä  
 trustfully speak.INF be.able.1SG.OPT -2SG  
 “may I be able to speak to you trustfully” (248b2)
- (13) āppa ate yāmtsi päknastar -ñ  
 father away do intend -1SG  
 “father, do you intend to send me away?” (83a5)
- (14) auntsante -ne ścīre makāstsi  
 began -him hard make.run.INF  
 “they began to make him run hard” (88a2)

# Tocharian object movement

- So Tocharian object clitics are analyzable as  $\phi$ -pronouns ...
- But are they relevant to Roberts 2010's generalizations about DP and  $\phi$ -pronoun movement?
- Yes: OV order is derived by movement—as is *V<sub>pro</sub>* order!

## High vs. low negation

Tocharian has two negation operators: one high in the CP, one minimally outside VP

- (15) mā no wnołmy aikenträ  
 NEG PRT beings know  
 “But beings don’t know” (3b6)
- (16) cisa nta kca mā prāskau  
 you.PERL PRT INDEF NEG fear.1SG  
 “Compared to you, I fear nothing” (298)

## Movement over negation

VP negation intervenes between O and V in unmarked low-negated sentences—impossible if OV is a (surface) constituent, most simply derived by movement of O over V and Neg (Koopman 2005, Whitman 2005)

- (17) *ṣamāne ytāri mā aištār ...*  
 monk road NEG knows  
 “If a monk doesn’t know the road ...” (330a2)
- (18) *plāś aṣkār mā lywāsta*  
 reply back NEG sent.2SG  
 “You haven’t sent back a response” (492a3/4)
- (19) *tu mā pälskanam*  
 this NEG think.about  
 “He doesn’t think about it” (DAM-507a9)

## Movement over adverbs

Other adjuncts (or specifiers of VP-external adverb projections ala Cinque 1999) also intervene between O and V

- (20) warporṣe mai klātsāt  
 sensations perhaps suppress.2SG.SUBJ  
 “You will perhaps suppress the sensations” (91a2)
- (21) ykāṃṣälñe ṣek warästrä  
 aversion always practices  
 “He always practices ‘shunning’” (8b7)
- (22) Upanandem māka nāksante  
 U. greatly rebuked.3PL  
 “They greatly rebuked U.” (B337)

## Non-movement of non-DP complements

Clausal arguments typically appear to the right of V (presumably in their base-generated position)

- (23) mā alyek watkäskau käskor weṃtsi  
 NEG others order gossip speak.INF  
 “I don’t orders others to tell gossip” (596a5/6)
- (24) mā cāñcan -me āyor aitsi  
 NEG please -them gifts give.INF  
 “They don’t like to give gifts” (K-6a2)

## Clitics ≠ complements of V

Surface *V<sub>pro</sub>* cannot be the VP (raised or otherwise): *pro* can be the *indirect* object (or “affectee” possessor), which is certainly not the complement of V but a specifier (perh. of ApplP (Pylkkänen 2008) or BenP (Bowers 2010) in the “first phase” functional embedding of the verb root)

- (25) parso lywāwa -ś  
 letter sent -2SG  
 “I sent you a letter” (B 492 a3)
- (26) ārhānte ... pelaikn= ākṣā -ne  
 arhat law proclaimed -3SG  
 “The arhat proclaimed the law to him” (42a2)

## V raises

The verb itself has raised into the IP domain, potentially appearing above stranded VP adverbs

- (27) spārtalñent      ācārānta      muskauw      attsaik  
 good.behaviors good.conducts disappeared completely  
 “Good behaviors and conducts have completely disappeared”  
 (12b2)
- (28) tu    nke weñau                      anaiśai  
 that PRT speak.1SG.SUBJ clearly  
 “(What I have said,) that I will say clearly” (K-2a5/6)

## Clitics raise

Similarly, the clitics which are right-adjacent to the verb have raised over these same adverb attachment sites

- (29) pācer cwimp ... kwātär -ne taṅsa  
 father his call.out.to him with.love  
 “His father calls out to him with love” (88b1)
- (30) kreñc no cai po krentämne śarsäskem -ne eñwetstse  
 good.PL PRT these all good make.known it anew  
 “For the good are making it known to the good anew” (5b1)

## Where are arguments?

- Both DP objects and  $\phi$ -pronouns move into their surface position, with DPs raising higher than  $\phi$ -pronouns: but where have they gone?
- Problematic for simplest version of Roberts' theory: "Cliticization, since it is triggered purely by AGREE, ... appears to be incompatible with an EPP-feature on the probe" (62)
- An EPP-feature on  $v^*$  is out; EPP-raising of a remnant VP to [Spec, TP] is out (DP *subjects* presumably satisfy the EPP-feature on T)
- Assuming only independently motivated functional projections as potential landing sites, Topic projections in an articulated left periphery (LP; Rizzi 1997) might work (cf. Julien 2001) ...
- But this is factually wrong:<sup>3</sup> DPs stay below the LP within the IP

<sup>3</sup>Contra my submitted abstract.

## Subjects are below Focus

- To be consistent with the semantics of high and low TopicP (Frascarelli & Puglielli 2007), subject DPs should be in high TopicP (= AboutTopP) above Focus, objects in low TopicP (= FamiliarTopP) below Focus
- But unmarked subject DPs are consistently below Focus-fronted DPs, so not in high TopicP (and by transitivity, objects cannot be in low TopicP)

(31) ñake ce<sup>w</sup> wes pälwāmo  
 now him we lament  
 “Now we lament *him*” (46b2)

(32) cwi wes tā onkorñai pintwāt aiskem  
 him we this pudding alms give.1PL.SUBJ  
 “It’s to *him* that we will give this pudding as alms.” (107a6)

## VP (vP) fronting drags along DP objects

Assuming that “VP fronting” moves an IP-internal constituent below TP (say  $v(*)P$ ) to [Spec, FocP], if DP objects have vacated the IP and are in low Topic, VP-fronting should ignore them—but rather they are carried along, showing that objects are *not* in TopicP

(33)  $\text{\textit{sa}\text{ñ}\text{-a}\text{ñ}\text{m}} \text{\textit{pal}\text{ā}\text{mai}} \text{\textit{ñ}\text{ā}\text{s}}$   
 myself praised I  
 “I praised myself” (46a5)

(34)  $\text{\textit{men}\text{ak}} \quad \text{\textit{yam}\text{ā}\text{ṣṣ}\text{ā}\text{m}} \text{\textit{po}\text{-ai}\text{y}\text{śi}}$   
 comparison makes omniscient  
 “The Omniscient makes a comparison” (407a4)

## Definiteness effects do not obtain

No definiteness restrictions obtain for SOV sentences, despite Topics being “old information” (in some sense); hence S and O are not likely to be “Topics” in the usual sense

- (35) tanāpate ṣamāneṃ śwātsiś kālatär, ...  
 benefactor monk eat.INF.ALL invite  
 “If a benefactor invites a monk to eat, ...” (331b2)
- (36) Dhanike ñem ṣamāne ... or kamāte  
 D. name monk wood gathered  
 “A monk named D. ... gathered wood” (Thomas, 1957:124)

## A Minimalist Grammar analysis (inspired by Roberts)

- Tocharian argument movements (O over V over *pro* over ...) emerge naturally from the importation of the “defective goal” treatment of clitic pronouns into the Minimalist Grammar formalism (Stabler 1997, Stabler and Keenan 2003, Kobele 2006)
- In MGs, features of expressions must be checked, and checking applies locally under Merge (= Move), so “[iD, i $\phi$ ]” will necessarily undergo one more Merge operation than “[i $\phi$ ]”
- The Tocharian (and Romance, Hittite, ...) word order patterns fall out from independently motivated feature specifications of functional heads

# MG basics

- MG is a fully lexicalized formalism: an MG grammar is a lexicon, and the language it generates is the closure of the lexicon under the two universal functions Merge and Move
- A lexical expression consists of a string yield paired with a sequence of syntactic features, which must be checked by Merge or Move (with other expressions bearing matching features) for the derivation to converge
- MGs are strongly derivational: derived trees are superfluous (MGs as used here are *treeless*), and a compositional semantics can be read directly off the derivation itself (Kobele 2006)

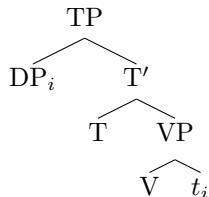
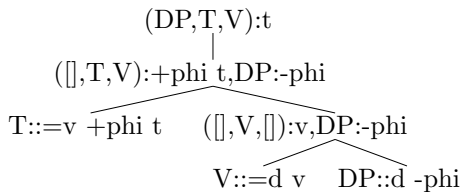
# Example MG lexicon, derivation, and derived tree

['T'] :: [=v, +phi, t].

['V'] :: [=d, v].

['DP'] :: [d, -phi].

(spec,head,comp) : syn1, syn2 ... syn $n$ , mover1, mover2 ... mover $m$



## “Stop AGREEing! Keep Moving!”

- Roberts' redefined AGREE is (in MG terms) already a type of Move, since it potentially affects string yields
- Hornstein 2009: AGREE is conceptually redundant and empirically unnecessary given Move; the ubiquity of displacement and the dispensability of C-command as a primitive both argue against AGREE as the basic syntactic operation
- Formal MG work in the past decade generally concurs: “‘Agree’ as a grammatical operation is simply movement with particular interface effects” (Kobele 2006, 163)

# The split $v^*P$

- Standard  $v^*$  conflates two projections,  $v^*$  and  $Voi$ ;<sup>4</sup> the former is [+d], the latter is [+phi]
- Cf. Richards 2010's  $v_C$  and  $v$ , where “ $v_C$  is related to  $v$  in the way that C is related to T” (14)—namely, in that the latter “inherits” its  $\phi$ -features from the former
- Subjects are presumably directly parallel in familiar cases: C/Fin is [+d], T is [+phi]
- Internal arguments are base-merged in the extended projection of an acategorical root, and “short object movement” is universal
- No “EPP-features” (etc.) are necessary given [+d] and [+phi]

---

<sup>4</sup>Inspired by, but not identical to, Bowers 2010's  $Voi$ ; also cf. Bowers 2002's Tr.

## Fragment grammars for object clitics

Holding constant the representation of clitic and “strong” pronouns and the inventory of functional projections and positing only those features which are reflected in the morphology, we can immediately generate the correct word order for Tocharian, French, and Hittite

[cl] :: [n, -phi].

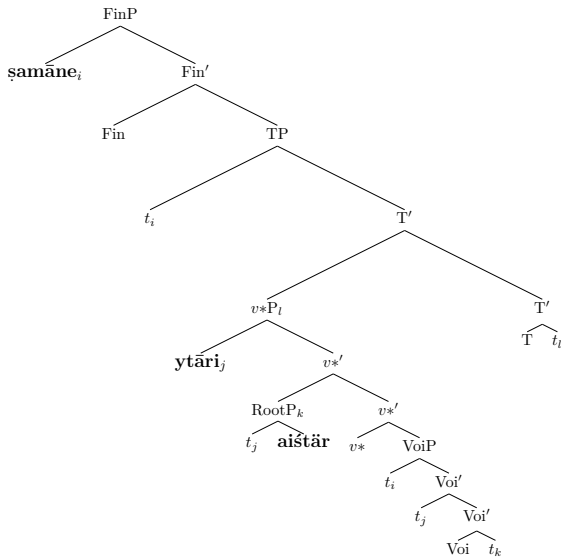
[dp] :: [n, -phi, -d].

## Tocharian fragment

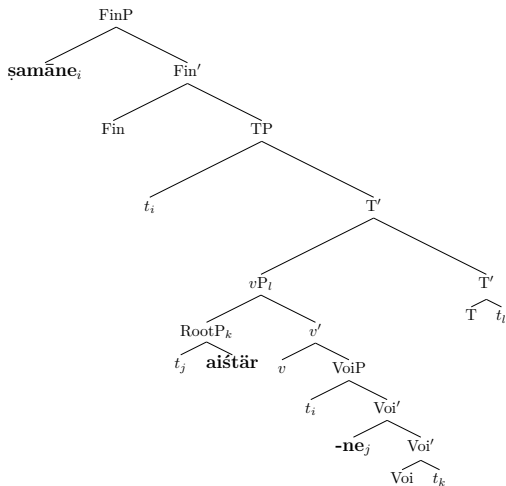
- Tocharian root projections are [-v] and move to  $v(*)$ , skipping Voi (hence no consistent morphological marking of transitivity on the inflected verb)
- $v(*)$ , not the root, is [-t], and  $vP$  moves to T: when root-to- $v$  movement is blocked (e.g. by an intervening restructuring verb), the root projection does not move for tense, and the root surfaces in the infinitive

```
[root] :: [=n, root, -v].
[] :: [=root, +phi, =n, voi].      % Voi
[] :: [=voi, +v, v, -t].          % v
[] :: [=voi, +v, +d, v, -t].      % v*
```

# Derived tree for “The monk knows the road”



# Derived tree for “The monk knows him”



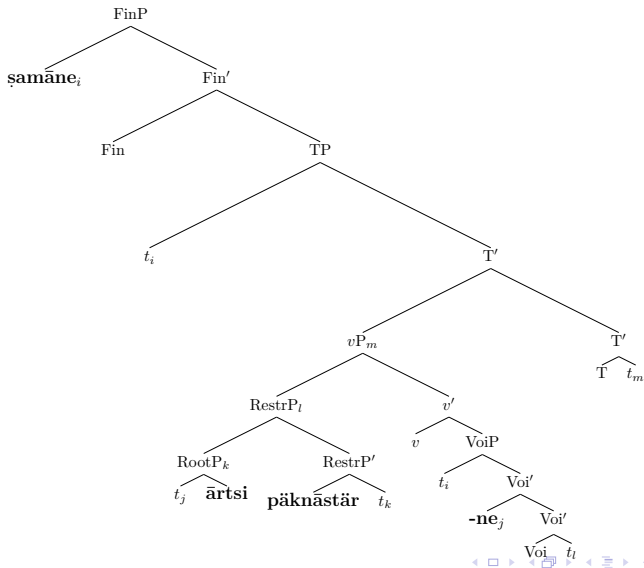
## Tocharian clitic climbing

- “Clitic climbing” results from a verb root being selected by a “restructuring verb” functional projection (cf. Roberts 2010 79ff.’s treatment of restructuring verbs as functional heads)
- The root selected is prevented from merging directly with the  $v(*)$  projection that merges with Tense; hence it remains in the infinitive
- The root and its dominating functional projections (effectively a complex root) share a single, clausal [+phi] projection

[intend] :: [=root, +v, root, -v].

[begin] :: [=root, +v, root, -v].

# Derived tree for “The monk intends to forsake him”



## French fragment

French is minimally different from Tocharian:

- Voi is [-t], capturing the sensitivity of the tensed auxiliary to “(un)ergativity” in terms of VoiP-to-T movement
- Root is *not* [-v] in periphrastic preterites: it remains an acategorical root (participles are not fully verbalized; cf. Baker 2003 on adjectives)

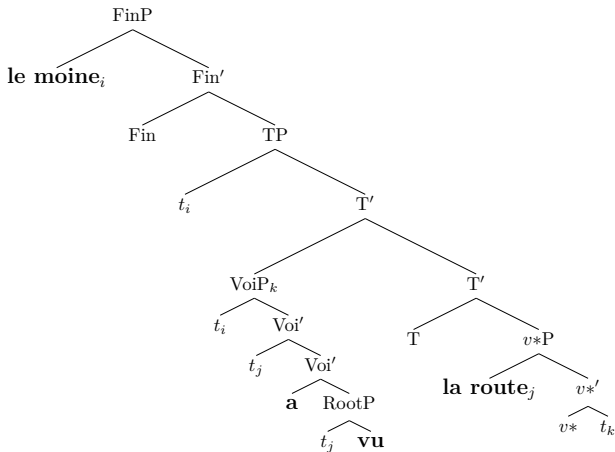
[root] :: [=n, root].

[] :: [=root, +phi, =n, voi, -t].      % Voi = Aux

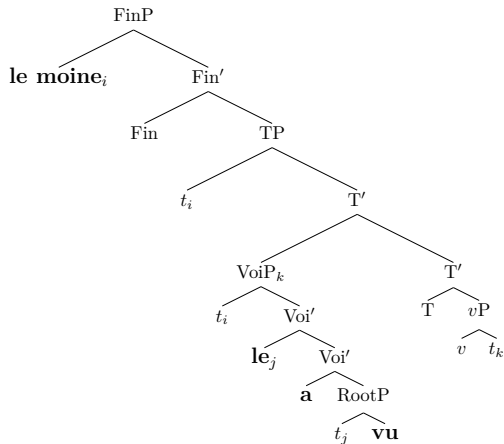
[] :: [=voi, v].      % v

[] :: [=voi, +d, v].      % v\*

# Derived tree for “Le moine a vu la route”



# Derived tree for “Le moine l’a vu”



## Towards a Hittite fragment

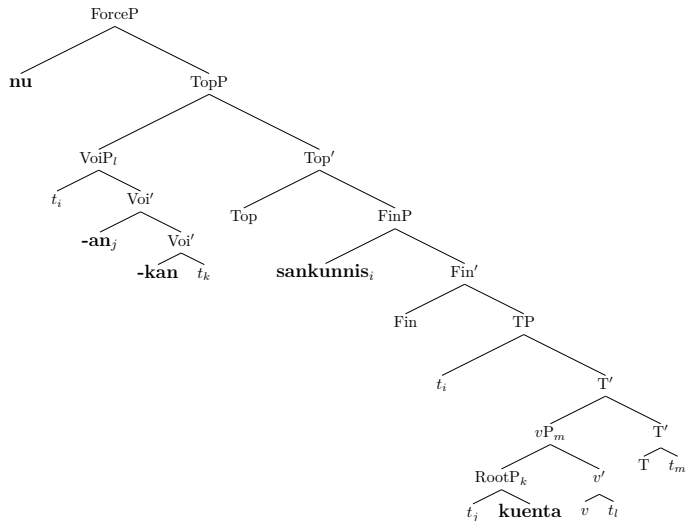
Hittite is even more minimally different from Tocharian:

- Movements to above Voi create a remnant VoiP which can easily be extracted
- Hittite exploits this: its grammar would be identical to Tocharian's except for [-top] on Voi and additional left-peripheral projections
- “Wackernagel clitics” thus correlate with an active left periphery: “It seems to be an empirically correct observation that languages with second-position clitics have scrambling” (Roberts 2010, 68)

[ ] :: [=fin, +top, top].

[nu] :: [=top, force].

# Derived tree for “The priest killed him”



## Residual issues

- Ditransitives will necessarily require either more functional projections or, more likely, a treatment ala multiple *wh*-movement
- The optionality of [+d] on  $v^*$  creates a potential for deviant derivations: a [c1] merged in Voi lands in [Spec, TP] and a [dp] merged in Root lands in [Spec, FinP]!
- We could attribute this to semantics (ala Chomsky 2001's optional EPP feature on  $v^*$  for semantically-motivated object shift)—or we could refashion [d]-checking as something like structural Case (e.g. object DPs begin as [n, -phi, -acc] and  $v^*$  is [+acc])
- This latter option is appealing: structural Case is no longer “uninterpretable” but exists to prevent semantically deviant derivations

## A semantics for [-phi] and [-d]

- We can give MGs a directly compositional semantics by associating each syntactic feature (sic!) with a semantic value and monotonically building up a semantic expression with every feature-checking operation
- $\phi$ -pronouns therefore ought to have a *proper subset of the interpretive content* of DPs and strong pronouns (= R-expressions)
- This is correct:  $\phi$ -pronouns are merely anaphors that point to discourse referents, R-expressions are updates to the prominence-ranked discourse referent store as well as anaphors pointing to the updated value
- This perspective is afforded by *dynamic semantics*, particularly Update with Centering (Bittner 2009, 2011)

# Update with Centering: compositional discourse representation

- Dynamic theories of semantics construe natural language meaning as *context change potential*, i.e. the potential to update an information state representing the linguistic context
- Anaphora and discourse-prominence are central notions in dynamic semantics (unlike in static semantics, in which they are peripheral)
- Bittner's Update with Centering theory represents the information state as a set of pairs of stacks ( $\top \perp$ -lists) that track discourse referents and rank them by prominence; all semantic composition happens in terms of update and anaphora

# R-expressions as updates

Proposed denotation sequence for the features of  $[dp] :: [n \text{ -}\phi i \text{ -}d]$ :

- $[-d]$  : an update introducing an individual referent
- $[-\phi i]$  : an anaphor pointing to a topical individual
- $[n]$  : a predicate on individuals

# Example denotations: $v^*P$

$$\llbracket v^* \rrbracket \sim \llbracket [=voi, +d, v] \rrbracket = \lambda P \lambda Q. Q^\perp; P \quad (1)$$

$$\llbracket Voi \rrbracket \sim \llbracket [=root, +phi, voi] \rrbracket = \lambda P \lambda x. [BCK \perp \varepsilon = x]; P \quad (2)$$

$$\llbracket kick \rrbracket \sim \llbracket [=n, root] \rrbracket = \lambda N. [kick \langle \perp \varepsilon \rangle, N \langle BCK \perp \varepsilon \rangle] \quad (3)$$

$$\llbracket \text{the man} \rrbracket \sim \llbracket [=n, -phi, -d] \rrbracket = ((\lambda x. \text{man} \langle x \rangle), \perp \delta, [x_\delta | x \in \perp \delta^\Rightarrow]) \quad (4)$$

$$\llbracket v^*P \rrbracket = [x_\delta | x \in \perp \delta^\Rightarrow]^\perp; [BCK \perp \varepsilon = \perp \delta]; [kick \langle \perp \varepsilon \rangle, \text{man} \langle BCK \perp \varepsilon \rangle] \quad (5)$$

# Example denotations: $vP$

$$\llbracket v \rrbracket \sim \llbracket [=voi, v] \rrbracket = \lambda P.P \quad (6)$$

$$\llbracket Voi \rrbracket \sim \llbracket [=root, +phi, voi] \rrbracket = \lambda P \lambda x.[BCK \perp \varepsilon = x]; P \quad (7)$$

$$\llbracket kick \rrbracket \sim \llbracket [=n, root] \rrbracket = \lambda N.[kick \langle \perp \varepsilon \rangle, N \langle BCK \perp \varepsilon \rangle] \quad (8)$$

$$\llbracket him \rrbracket \sim \llbracket [=n, -phi] \rrbracket = ((\lambda x.masc \langle x \rangle), \perp \delta) \quad (9)$$

$$\llbracket vP \rrbracket = [BCK \perp \varepsilon = \perp \delta]; [kick \langle \perp \varepsilon \rangle, masc \langle BCK \perp \varepsilon \rangle] \quad (10)$$

# UC and syntactic structures

- The growing acceptance of “left-peripheral” functional projections, i.e. the syntactic representation of “information structure”, virtually commits today’s syntacticians to a dynamic semantics
- The traditional notion of “subject” and “object”, *arbitrarily* reified in the “two-probe” / structural Case approach to argument licensing, receives a coherent explanation in dynamic terms, particularly those of UC: the subject and object are the most prominent referents on the  $\top$  and  $\perp$  stacks of the information state
- Centering-based anaphora also allows frees us from all problems of variable and anaphor indexation

# Conclusion

- The MG formalism furnishes a natural formal vehicle for the “defective goal” analysis of clitic pronouns
- A slightly augmented representation of the “split IP” allows us to maintain the defective goal analysis for Tocharian (as well as Romance and Hittite)
- The syntactic analysis of clitics as structurally deficient is corroborated by a directly compositional dynamic semantics in which they are also *interpretively* deficient
- No formal or representational machinery above the bare-bones MG formalism is necessary to capture these (admittedly basic!) phenomena