# Periphrastic constructions and the structure of participles

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# Participles & "identity"

Identity of participles across periphrastic constructions:

(1) Synchronic (non-?)identity: perfect/passive participle "syncretism" in German (and English, Romance ...):

a. Die Livia hat die Schildkröte **gewaschen** (*perfect*)
   The Livia has the turtle washed

b. Die Schildkröte wurde **gewaschen** (*eventive/verbal passive*)
   The turtle was washed

c. Die Schildkröte ist **gewaschen** (*adjectival/stative passive*)
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- ≈ same affix in different contexts
- Synchronically "identical" in terms of their synsem-features, internal functional structure, "attachment site"....? (Wegner 2019)
- Category of the participle(s)? "Ptcp"? "Adj/a"? Something else?

# Participles outside of periphrastic constructions

Lowe 2017: Three-way distinction for adjectival/nominal modification (a, b ≈ 'prenominal'/'postnominal' participles):

(2) a. **Attributive**: the *happy/dancing* man.
b. **Predicative**: the man went home, *happy/dancing*.
c. **Predicated**: the man was *happy/dancing*.

Participles are used in all three contexts ((2c) ≈ adjectival/stative passive in (1c)), but are rarely treated together. Are these all "identical"? Do they have the same syntactic & semantic properties?

- What exactly do the auxiliaries contribute in the perfect vs. passive?

# Today's goals

- We will review accounts that operate without dedicated categories for participles & auxiliaries, but treat them as contextually conditioned realizations of specific functional heads → Distributed Morphology.
- We will then apply this type of approach to the complex participial systems of **Classical Greek** (CG) and **Classical Sanskrit** (CS) to derive the different periphrastic perfect systems of these two languages.
- Implications:
  - Deriving the behavior of **deponents** in periphrastic constructions in CG and CS.
  - Explaining the behavior of attributive and predicative participles in CG.
  - → a unified account of participles across contexts (periphrastic/nonperiphrastic)

# Background: Participles & periphrastic constructions

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- **Participles**: deverbal adjectives that are integrated in a verbal paradigm; nonfinite verbal forms or "adjectival verb forms" (Lowe 2015).
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In DM: differences in participial syntax result from different attachment sites of the participial suffix.

- Embick 1997, 2000, 2004b, Anagnostopoulou 2003, 2014, Alexiadou et al. 2007, Alexiadou & Anagnostopoulou 2008, Alexiadou et al. 2015, Baker & Vinokurova 2009, Baker 2011, Harley 2009 ...

# Background: participles

Example: **Modern Greek**: Two types of "passive" participles: *-menos* (*-**men**-o-s*) vs. *-tos* (*-**t**-o-s*).

- Holton et al. 1997: 234ff., Embick 1997: 134ff., Anagnostopoulou 2003, Alexiadou & Anagnostopoulou 2008, Alexiadou et al. 2015.

(3) *-menos* vs. *-tos* participles

| Verb | *-menos* | *-tos* | |
|---|---|---|---|
| *vrazo* | *vras-menos* | *vras-tos* | 'boiled' |
| *psino* | *psi-menos* | *psi-tos* | 'grilled' |
| *anigo* | *anig-menos* | *anih-tos* | 'opened; open' |
| *klino* | *klis-menos* | *klis-tos* | 'closed' |

(*-tos* ≈ verbal adjective)

# Background: participles

(4) Differences between *-menos* and *-tos* (Anagnostopoulou 2003, Alexiadou & Anagnostopoulou 2008, Alexiadou et al. 2015):

| | *-menos* | *-tos* |
|---|---|---|
| event implications | ✔ | ✗ |
| used in periphrastic constructions | ✔ | ✗ |
| licenses manner adverbs | ✔ | ✗ |
| compatible with agent *by*-phrase | ✔ | ✗ |

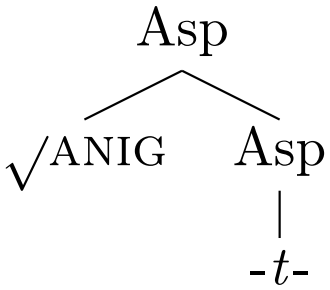
(5) *To psari itan tiganis-**meno** / *tigan-**ito** apo tin Maria.*
the fish was fry-PTCP / fry-PTCP by the Maria
"The fish was fried by Maria" (Alexiadou et al. 2015: 156)

# Background: participles

Anagnostopoulou 2003, Alexiadou & Anagnostopoulou 2008, Alexiadou et al. 2015:

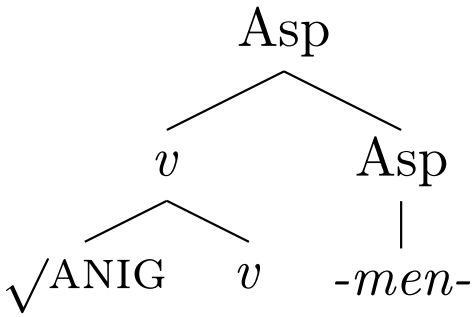
- *-tos* attaches directly to the root, (6).
- *-menos* either selects $v$ ("target state participles"), (7a) or $v$+Voice ("resultant state participles"), (7b).

(6) MG *tos*-participles: *anih-t(os)* 'open'

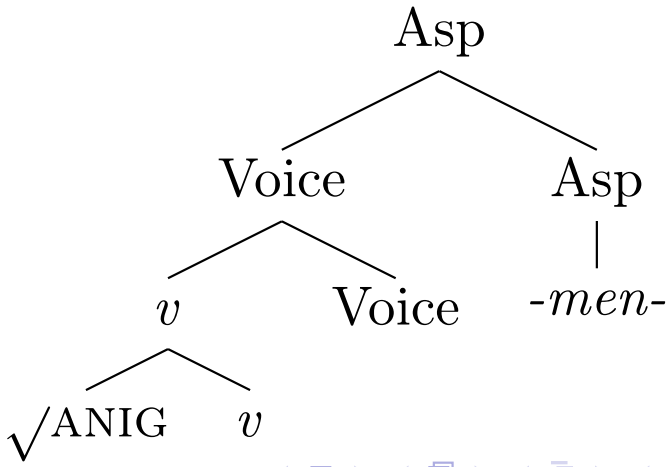



(7) MG *menos*-participles: *anig-men(os)* 'opened'

a.




b.



# Participles, summary

- "Paradigmaticity" is a non-issue in DM—the "verbal properties" of participles arise because these forms *share structure* with the corresponding finite forms (we'll see exactly how much structure).
  - Cf. Bobaljik 2002, 2008 on "paradigm effects" in DM.

Additional assumptions (to be motivated)

- "PTCP" (participial/nominalizing morphology) spells out Asp if there is no verb movement to T (or Agreement with T is blocked).
  - Embick 2000, 2003, 2004b, Alexiadou & Anagnostopoulou 2008, Bjorkman 2011, Alexiadou et al. 2015.

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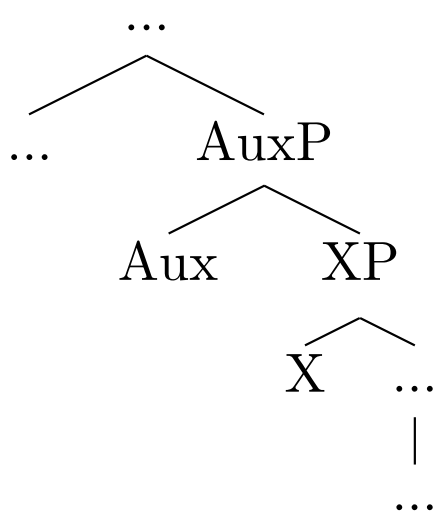
  - Embick 2000, 2003, 2004b, Alexiadou & Anagnostopoulou 2008, Bjorkman 2011, Alexiadou et al. 2015.
- "PTCP" = a contextual allomorph of Asp.
  - Can realize different features of Asp (e.g., perfective vs. imperfective).
  - Can realize Asp in different environments, e.g. adjacent to Voice[±ext.arg.]—difference between AG active and nonactive/middle participles, Grestenberger 2018, 2020.

# Background: auxiliaries

Standard approach(es) (e.g., Kayne 1993, Cinque 1999): Auxiliaries select/are selected by particular inflectional categories (e.g., progressive Asp in English) and project:

(8)



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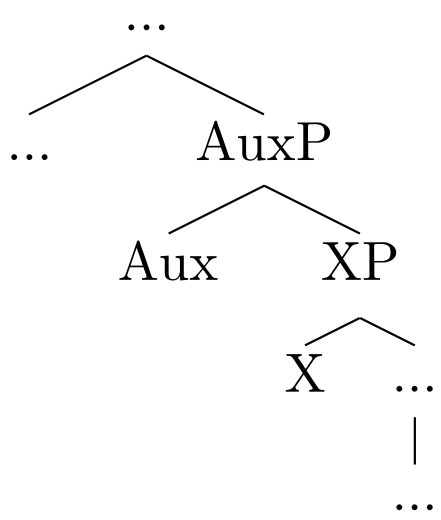


Bjorkman (2011): Auxiliaries are not selected by other syntactic elements, and hence do not project. Instead, they pick up "stranded" inflectional features when Agreement has failed.

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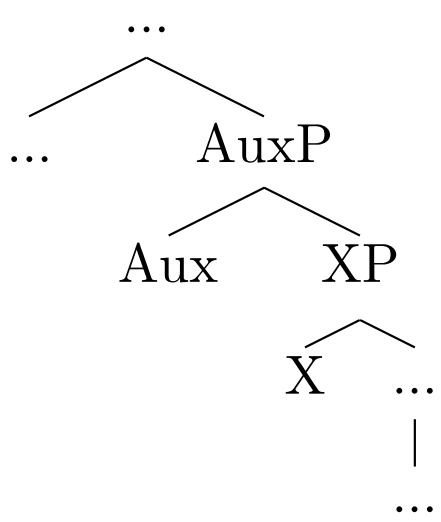


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Two patterns of auxiliary use in periphrastic constructions:

- The "additive" pattern
- The "overflow" pattern

# Background: auxiliaries

- **The "additive" pattern**: A particular context (e.g., progressive, or passive) *always* requires use of an auxiliary. If two AUX-contexts are combined, the auxiliaries are added or "stacked up".

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(9) Example: The English progressive, passive, and passive progressive (Bjorkman's ex.)

a. The cake **was** eaten.
b. The children **were** eating the cake.
c. The cake **was being** eaten.

Both the passive, (9a), and the progressive, (9b) by themselves require use of a BE auxiliary, and the passive progressive (past, in this case) in (9c) adds these two auxilaries together.

# Background: auxiliaries

- **The "overflow" pattern**: An auxiliary is required only if two particular contexts are *combined*, for example, passive and perfect, like in Latin, (10).

(10) Latin perfect, present passive, and perfect passive (ex. modifed from Bjorkman 2011: 27).

a. Puellae crustulum **consumpserunt**.
girls small.pastry-ACC eat-3PL.PFV
"The girls ate the little pastry."

b. Crustulum **consumitur**.
small.pastry eat-3SG.PRES.PASS
"The little pastry is (being) eaten."

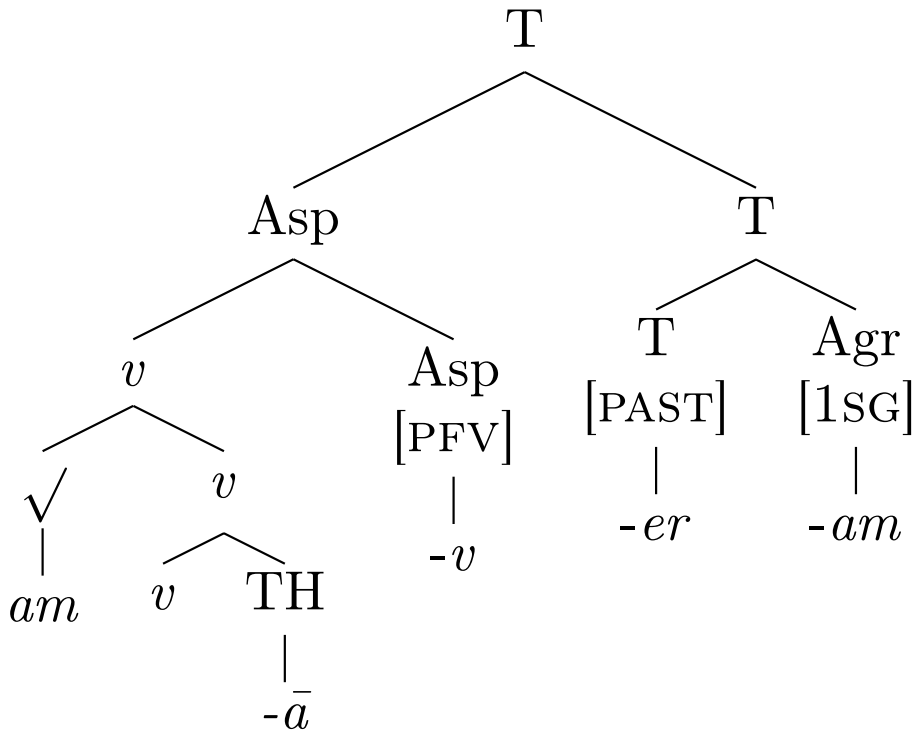
c. Crustulum **consumptum est**.
small.pastry eat-PASS.PTCP be.3SG.PRES
"The little pastry was / has been eaten."

The perfect active, (10a), and the present passive, (10b), are synthetic, but the combination of perfect + passive in (10c) gives rise to a periphrastic construction with a BE auxiliary.

# Explaining the patterns

Embick 2000 (also Embick 1997: 226ff.): The Latin periphrastic perfect is the result of lack of verb movement to T. Synthetic verb forms are complex heads built by cyclic head movement and left adjunction, e.g., (11) (Lat. pluperf. *amāveram* 'I had loved', cf. Embick 2000: 196–7).

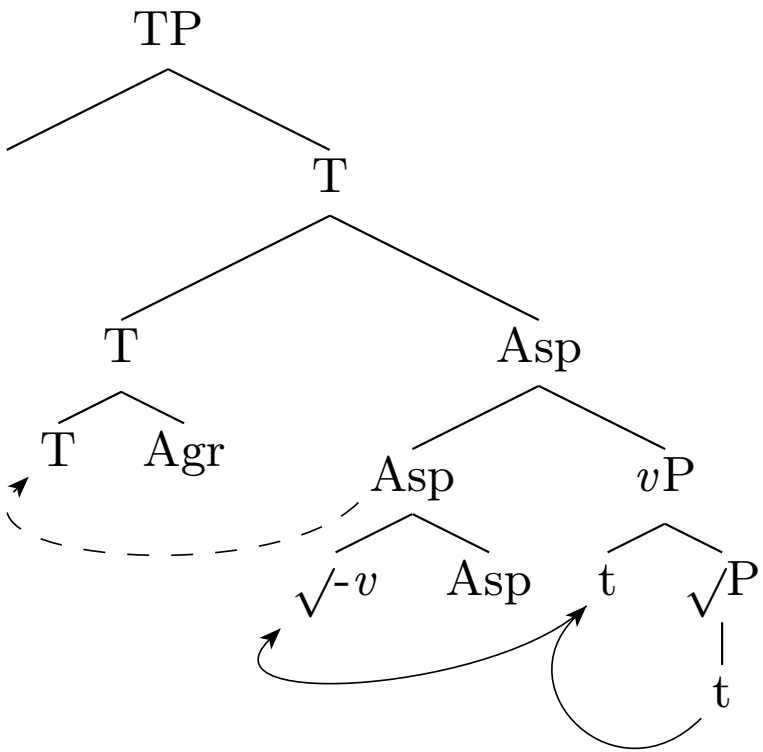
(11)



# Explaining the patterns

In analytic forms, the movement is interrupted: root-to-$v$-to-Asp movement takes place like in synthetic forms (solid arrows in (12)), but the resulting complex head cannot move to T (dotted line; ex. based on Embick 2000: 214).

(12)



# Explaining the patterns

→ "Overflow" pattern: T/AGR features on T are "stranded" and a dummy verb BE is inserted in order to phonologically realize them, while the complex $\sqrt{}$-$v$-Asp head in (12) is realized by a nonfinite form (= the perfect participle).

- Embick stipulates that movement to T is blocked in the perfect in the presence of the (interpretable) feature [PASS] on $v$.
  - ... also in deponent verbs, which Embick analyzes as lexically possessing a [PASS] feature on the root

Bjorkman 2011: analytic forms follow from properties of Agree + *markedness* of certain features.

# Explaining the patterns: Bjorkman 2011

Three core assumptions:

1. Agreement is upwards ("Reverse Agree", "Upwards Agree", e.g., Wurmbrand 2012, Zeijlstra 2012, Bjorkman & Zeijlstra 2019), cf. (13).
2. Marked features can block Agree:
   - Only *marked* features are visible for Agree & can potentially act as intervenors.
   - Markedness = *semantic markedness*: both the marked and the unmarked (or elsewhere) value of a given feature can be morphologically realized, but only the marked value will be relevant to Agree.
   - Markedness varies cross-linguistically (e.g., PFV is the marked value of Asp in Latin, but unmarked in Arabic, where IPFV is marked).
3. Failure to Agree can leave inflectional features "stranded", triggering the insertion of auxiliaries.

- Cf. earlier "Affix Hopping": inflectional morphology originates "high" and has to be combined with V via language specific head movement or Lowering operations → These operations can *fail*.

# Reverse Agree

(13) *Reverse Agree* (Bjorkman 2011: 42)
Agree is a relationship between two features such that an unvalued feature [F:_] receives a value of a feature [F:val] of the same type iff:

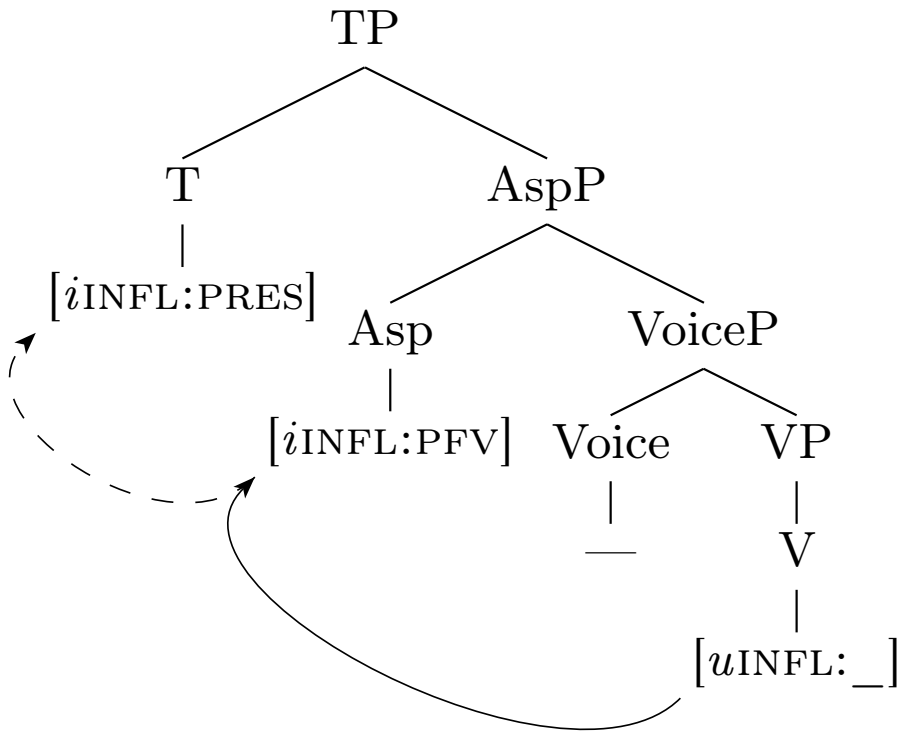
a. A head $\alpha$ containing [F:_] is c-commanded by a head $\beta$ containing [F:val].
b. There is no head $\gamma$ containing a matching feature [F:(val)], such that $\gamma$ c-commands $\alpha$ and $\beta$ c-commands $\gamma$.

Example: Deriving the synthetic perfect & present passive and the periphrastic perfect passive in Latin.

- Marked feature on Asp: [*i*INFL:PFV], marked feature on Voice (= Embick's *v*): [*i*INFL:PASS].

# Illustration: the Latin perfect

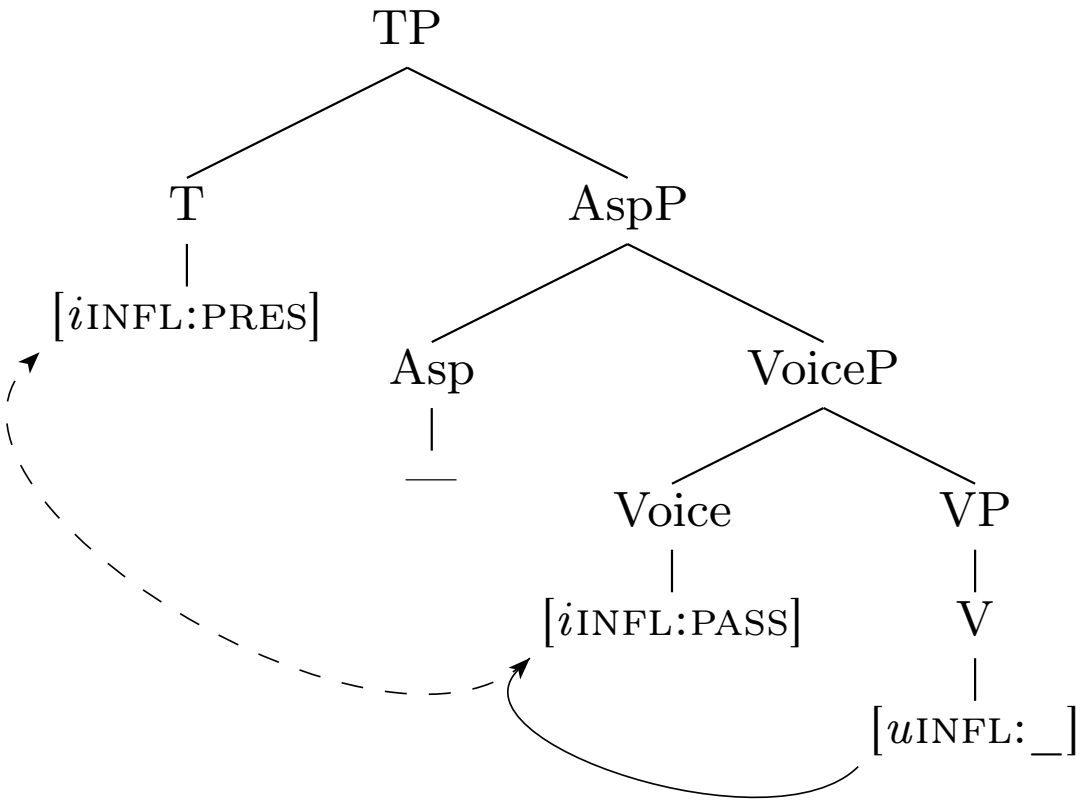
(14) Latin perfect active: *consumpserunt* 'they ate' (Bjorkman 2011: 72)




- The verb agrees directly with the marked inflectional feature on Asp because there is no marked feature on Voice, hence no intervenor.
- the verb moves to Asp (bold arrow); head movement depends on prior Agree.
- The verb is now in a local relationship with T and can agree with its inflectional features (dashed line) → no features are stranded → synthetic verb form.

# Illustration: the Latin present passive "overflow pattern"

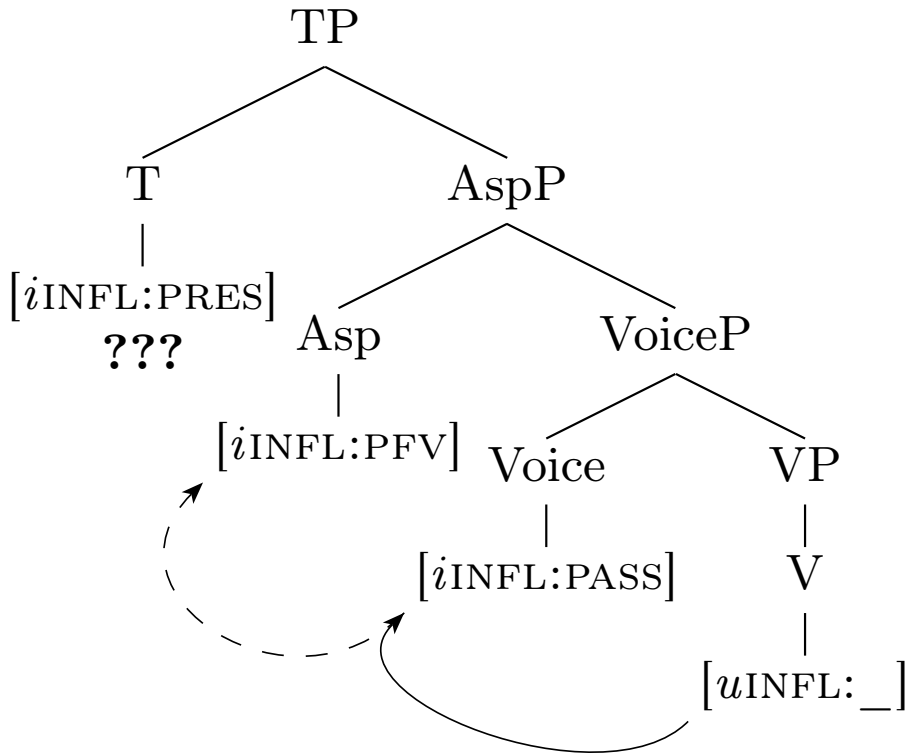
(15) Latin present passive: *consumitur* 'it is eaten' (Bjorkman 2011: 72)




- The verb agrees with the marked feature [PASS] on Voice and moves to Voice (bold arrow).
- No marked feature on Asp: the verb agrees with [*i*INFL] on T → no features are stranded.

# Illustration: the Latin perfect passive

(16) Latin perfect passive: *consumptum est* 'was consumed':

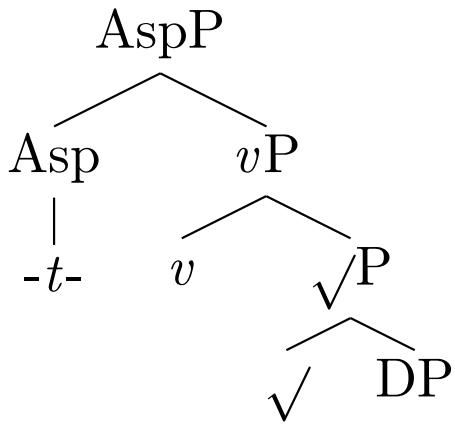



- The verb agrees with and moves to Voice, where it agrees with the marked [PFV] feature on Asp (dotted line).
- The marked [PASS] feature on Voice blocks further movement to Asp; [PFV] on Asp now acts as an intervenor for further agreement
- V cannot agree for Tense and [PRES] on T is stranded. → the default auxiliary BE picks up stranded T/Agr features.

# Further assumptions

Embick (2000) analyzes the "participial" suffix -*t*- in perfect passive participles like *consump-**t**-um* (n.) in (16) or *am-ā-**t**-us* (m.) 'loved' as the default realization of the functional head Asp when Asp has not raised to T:

(17) *am-ā-t-us* (Embick 2000: 219, ex. (45))




(18) Realization of Asp (not raised to T), Embick 2000: 218 (ex. (44))

a. -*nt*- ↔ [pres]
b. -*s*- ↔ [ ]/ _ (List)
c. -*t*- ↔ [ ]

# Implications

Several advantages:

- No need to stipulate designated functional categories for auxiliaries ("AuxP") and participles ("PtcpP")—a participle is a verb that has not moved to T (Embick) or agreed with T (Bjorkman).
- Periphrastic constructions appear to "supplete a paradigm" (like in the Latin perfect passive) because they morphologically realize the same syntactic structure as the synthetic forms—the difference lies in interaction of Agree with marked features.
- Periphrastic forms of **deponents** (verbs with active syntax, but passive morphology) preserve the active syntax, (19).
  - Because they are *lexically* specified for [PASS] (Embick, Bjorkman), which acts as an intervenor just like a syntactic [PASS] feature.

(19)
a. *hortor* 'I exhort': *hortātus/-a sum* 'I have exhorted'
b. *loquor* 'I speak': *locūtus/-a sum* 'I have spoken'
c. *sequor* 'I follow': *secūtus/-a sum* 'I have followed'

# Implications

Open issues:

1. Distribution of different auxiliaries (BE, HAVE), light verbs? (Not today's topic)
2. Cross-linguistic variation: which features trigger periphrasis where, and why?
3. What to do with participles/nonfinite verb forms outside of periphrastic constructions?

→ We will look at (2) and (3) more closely by comparing variation in the participial/periphrastic perfect systems of Classical Greek and Sanskrit.

# Periphrastic constructions in Classical Greek

# The Greek verbal system

- PERSON: 1, 2, 3. (infl. endings)
- NUMBER: Sg., Dual, Pl. (infl. endings)
- VOICE: active/nonactive ("middle"; infl. endings)
  - In the aorist/perfective stem: also passive, marked by a (derivational?) affix *-th(ē/e)-*. Probably not Voice but (inchoative) *v* (Grestenberger Forthcoming).
- ASP: imperfective/perfective; perfect (?), marked on the stem via derivational affixes.
- TENSE: present/past (or: past/nonpast?), marked on the infl. endings (+ past tense prefix, "augment")
  - Future is treated as Mod.
- MOD: indicative, future, subjunctive, optative, imperative: derivational suffixes (except ipv.: endings)

# The present stem

(20) CG (thematic) present stem: active & nonactive finite & nonfinite forms (1Sg.) of *lū́ō* 'release' (ipv. excluded); preliminary segmentation.

| | | pres. | ipf. | pres.subj. | pres.opt. |
|---|---|---|---|---|---|
| act. | 1sg. | lū́-ō | é-lū-on | lū́-ō | lū́-oi-mi |
| | ptcp. | lū́-ōn m., lū́-ousa f., lū̃-on n. | | | |
| | inf. | lū́-ein | | | |
| nonact. | 1sg | lū́-omai | e-lū-ómēn | lū́-ōmai | lū-oí-mēn |
| | ptcp. | lū-ómen-os m., lū-omén-ē f., lū-ómen-on n. | | | |
| | inf. | lū́-esthai | | | |

# The aorist stem

(21) CG (sigmatic) aorist stem: active & nonactive finite & nonfinite forms (1Sg.) of *lū́ō* 'release' (ipv. excluded); preliminary segmentation.

| | | aor. | aor.subj. | aor.opt. |
|---|---|---|---|---|
| act. | 1sg | é-lū-s-a | lū́-s-ō | lū́-s-ai-mi |
| | ptcp. | lū́-s-ās m., lū́-s-āsa f., lũ̄s-an n. | | |
| | inf. | lũ̄-s-ai | | |
| nonact. | 1sg | e-lū-s-ámēn | lū́-s-ōmai | lū-s-aí-mēn |
| | ptcp. | lū-s-ámen-os m., -ē f., -on n. | | |
| | inf. | lū́-s-asthai | | |

# The perfect stem

(22) CG perfect stem: active & nonactive finite & nonfinite forms (1Sg.) of *lúō* 'release' (ipv. excluded)

| | | perf. | pluperf. | perf.subj. | perf.opt. |
|---|---|---|---|---|---|
| act. | 1sg | lé-lu-k-a | e-le-lú-k-ē | le-lú-k-ō | le-lú-k-oi-mi |
| | Ptcp. | le-lu-k-ós, etc. | | | |
| | Inf. | le-lu-k-énai | | | |
| nonact. | 1sg | lé-lu-mai | e-le-lú-mēn | (periphrastic) | (periphrastic) |
| | Ptcp. | le-lu-mén-os, etc. | | | |
| | Inf. | le-lú-sthai | | | |

- The perfect is formed via **reduplication** and takes special endings in the finite forms (though in CG these are very similar to the aorist endings).

# The future

(23) CG future of *lū́ō* 'release' (ipv. excluded)

| | | fut. | fut.opt. |
|---|---|---|---|
| act. | 1sg | lū́-s-ō | lū́-s-oi-mi |
| | Ptcp | lū́-s-ōn, -ousa, -on | |
| | Inf | lū́-s-ein | |
| nonact. | 1Sg. | lū́-s-omai | lū-s-oí-mēn |
| | Ptcp | lū-s-ómen-os, -ē, -on | |
| | Inf. | lū́-s-ethai | |

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| | Ptcp | lū-s-ómen-os, -ē, -on | |
| | Inf. | lū́-s-ethai | |

... *but* in Attic the future is often *medium tantum*, i.e., only takes the nonactive endings (more below).

# The perfective passive

(24) Perfective passive ("passive aorist")/perfective future forms of *lúō* 'release'

| | aor. | aor.subj. | aor.opt. | aor.fut. | aor.fut.opt. |
|---|---|---|---|---|---|
| 1sg | e-lú-thē-n | lu-th-ṍ | lu-the-íē-n | lu-thḗ-s-omai | lu-thē-s-oí-mēn |
| Ptcp | lu-th-eís, lu-th-eĩsa, lu-thén | | | lu-thē-s-ómen-os, -ē, -on | |
| Inf | lu-thẽ̃-nai | | | lu-thḗ-s-esthai | |

- The "passive" suffix looks more like a verbalizing suffix than a Voice suffix and is restricted to the perfective ("aorist") stem.

# Summary: CG participles

(25) Classical Greek participles (m.)

| | Active | Nonactive |
|---|---|---|
| a. Present | lū́-ōn, -o-**nt**-os | lūó-**men**-os |
| b. Aorist | lū́s-ās, -a-**nt**-os | lūsá-**men**-os |
| c. Perfect | leluk-ṓs, -**ot**-os | lelu-**mén**-os |
| d. Future | lū́s-ōn, -o-**nt**-os | lūsó-**men**-os |
| (e. Future perfect | | lelūsó-**men**-os) |
| f. Aorist passive | luth-eís, -é-**nt**-os | |
| g. Pfv.fut. passive | | luthēsó-**men**-os |

# Summary: CG participles

(25) Classical Greek participles (m.)

| | Active | Nonactive |
|---|---|---|
| a. Present | lū́-ōn, -o-**nt**-os | lūó-**men**-os |
| b. Aorist | lū́s-ās, -a-**nt**-os | lūsá-**men**-os |
| c. Perfect | leluk-ṓs, -**ot**-os | lelu-**mén**-os |
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- present, aorist, perfect, and future participles (rows a–d): verbal stem (root plus verbal stem-forming morphology) + *-nt-* ("active participle") or *-men-* "middle participle" + plus gender/case morphology.
- Exception: the perfect *active* participle suffix is *-ot-*/*-os-*.
  - Nom.sg.m. *-ōs* < *-ŏ̄(t)s* ← PIE *-u̯ŏ̄s-*/*-us-*; Nom.sg.n. *-os* < *-u̯os*; cf. the f. perfect ptcp. Nom.sg. *-uĩa* < *-usi̯a* < *-us-ih₂*.

# The CG periphrastic perfect

- Initially (Homeric/archaic Greek), only the *perfect* participle (+ *eĩnai* 'be' and *ékhein* 'have') is used periphrastically, and this construction also predominates in CG.
- In CG, the aorist and present participles also begin to be used with auxiliaries (cf. Bentein 2013b), and this contintues into post-Classical Greek (less systematically).
- We'll focus on deriving the periphrastic perfect forms, summarized in (26) (based on Smyth & Messing 1956: 182–183 for Classical Greek; cf. also Aerts 1965, Bentein 2012a, 2012b, 2013b).

# The CG periphrastic perfect

(26) Periphrastic perfect constructions in CG; AUX = *eĩnai* (1Sg. *eimí*) 'be'.

| | Participle | | Auxiliary | | |
|---|---|---|---|---|---|
| | act. | nonact. | act. | nonact. | |
| a. Perf.act. | lelukṓs | | eimi | | 'have released' |
| b. Perf.pass. | | leluménos | eimi | | 'have been released' |
| c. Pluperf.act. | lelukṓs | | ẽ̃n | | 'had released' |
| d. Pluperf.pass. | | leluménos | ẽ̃n | | 'had been released' |
| e. Perf.subj.act. | lelukὸs | | ṍ | | 'shall release' |
| f. Perf.subj.pass. | | leluménos | ṍ | | 'shall be released' |
| g. Perf.opt.act. | lelukὸs | | eíēn | | 'might release' |
| h. Perf.opt.pass. | | leluménos | eíēn | | 'might be released' |
| i. Fut.perf.act. | lelukὸs | | | ésomai | 'will have released' |
| j. Fut.perf.pass. | | leluménos | | ésomai | 'will have been –//—' |

# Feature analysis

- *Additive* pattern: a periphrastic construction is always present in a particular context → the perfect.
- Features of Voice (active/nonactive) are always expressed on the participial part of the periphrastic construction: active participle in the active forms, nonactive/middle participle in the nonactive/middle forms.
- ... while the auxiliary is *always* morphologically active (unlike in Sanskrit!)
  - ... with the exception of the future perfect, which is a special case.
- Unlike in Latin, the relevant feature in CG is [NONACT] (marked) rather than [PASS].
  - "passive" is one of several contexts in which nonactive/"middle" morphology is found.

# Features: Voice

Canonical contexts of **active** vs. **nonactive** inflectional endings in finite forms (alternating verbs):

(27) Voice alternations in Classical Greek:

| Function | **Nonactive** | Active |
|---|---|---|
| **Anticausative** | *daío-mai* 'burn, blaze' (itr.) | *daí-ō* 'burn sth.' |
| **Reflexive** | *loúo-mai* 'wash myself' | *loú-ō* 'wash sth.' |
| **Selfbenefactive** | *phéro-mai* 'carry (away) for myself' | *phér-ō* 'carry, bear' |
| **(Medio)passive** | *theíno-mai* 'am struck, killed' | *theín-ō* 'kill, strike' |

- → **Voice syncretism** (Embick 1998, 2004a): the same morphological exponent (here: nonactive/NONACT) surfaces in different syntactic environments.
  - MG: Embick 1998, 2004a, Alexiadou & Anagnostopoulou 2004, Alexiadou 2012, 2013, Alexiadou & Doron 2012, Alexiadou et al. 2015, etc.; CG, Sanskrit: Grestenberger 2018, 2020; Modern Albanian: Rivero 1990, Kallulli 2007, 2013.

# Features: Voice

- active vs. nonactive morphology in CG = determined by features of **Voice**.
  - Cf. Kratzer 1996, Embick 1998, 2004a, Kallulli 2007, 2013, Harley 2013, Alexiadou et al. 2015, Schäfer 2017, etc.

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- Voice syncretism follows from a particular condition on the realization of Voice in a specific syntactic context:

(28) Voice → Voice[NonAct]/_ No DP specifier
(Alexiadou et al. 2015: 102, after Embick 2004a: 150)

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(28) Voice → Voice[NonAct]/_ No DP specifier
(Alexiadou et al. 2015: 102, after Embick 2004a: 150)

- ACT = elsewhere.

→ [NONACT] reflects a VoiceP without an external argument DP (Voice[-D] or Voice[-ext.arg.]).

# Features: Asp

- In Latin, the marked feature on Asp was [PFV], but this won't work for CG: the perfective/aorist stem is consistently *synthetic*.
  - The aorist and the present participle do begin to be used in periphrastic constructions in CG: the aorist participle in anterior/perfective periphrastic constructions, and the present participle in stative and progressive periphrastic constructions—but these, too, differ functionally from the periphrastic perfect.
  - We also begin to see more variation in terms of auxiliary selection around this time (*eimi* 'be', *ékhō* 'have', *méllō* 'be about to', *thélō* 'want'; cf. Bentein 2013b on CG and Bentein 2012a on post-CG).
- We need a feature that uniquely distinguishes the perfect stem from the aorist and present stem.
- Reed (2014): binary features on Asp:
  - aorist: [+aor,-perf]
  - present: [-aor,-perf]
  - perfect: [-aor,+perf]

# Features: Asp

Problems:

- Descriptive—doesn't bring us any closer to understanding what exactly distinguishes these stems semantically.
- In particular, it does not explain why the periphrastic perfect and pluperfect constructions (*lelukṓs eimi*, *lelukṓs ẽ̃n*, etc.) came to functionally replace the inherited *synthetic* perfect and pluperfect (*léluka*, *elelúkē̄*) in Classical and post-Classical Greek.
- ... and why, at the same time, the synthetic perfect increasingly merges formally with the synthetic aorist into a perfective/anterior preterit-like stem (cf. Haspelmath 1992, Bentein 2012b, 2013a).

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→ Since the (Homeric/pre-Classical) synthetic perfect, and especially the perfect participle, are usually characterized as *resultative* (Schwyzer 1939: 768, Haspelmath 1992, Bentein 2012a, 2012b, 2013a, Napoli 2017) it seems reasonable to assume that the feature that distinguishes the pre-Classical synthetic perfect from the aorist is **[RES]**.

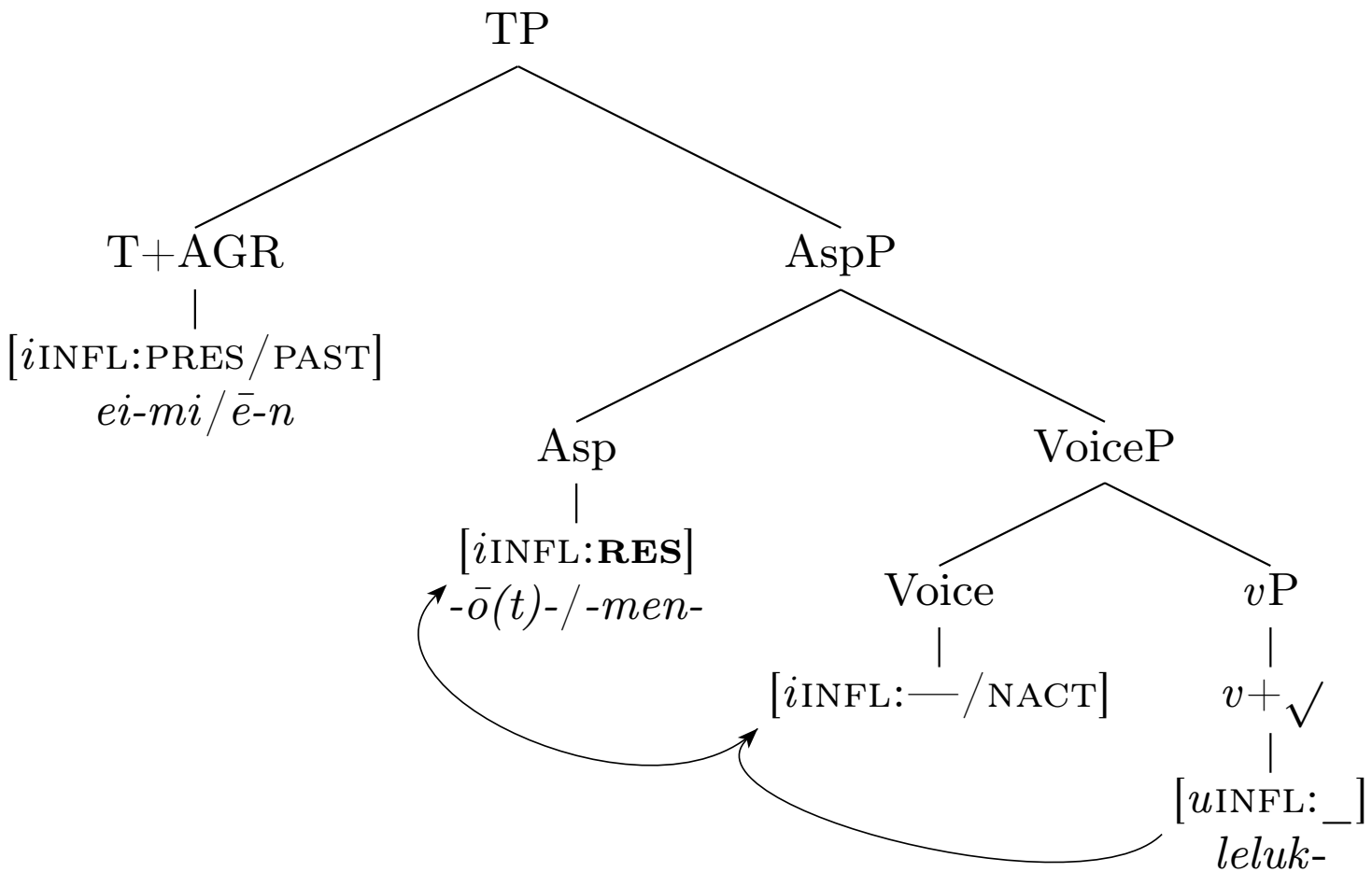
# Features: Asp

- Since the periphrastic perfect and pluperfect express a (resultative) state, it looks like these periphrastic constructions effectively replace the synthetic perfect in its resultative use ...
- ... while its anterior past use merged with the aorist.
- Which would suggest that the feature [RES] was reanalyzed in some fashion between Homeric and Classical Greek:
  - From an unmarked to a marked feature, preventing the hitherto synthetic form from appearing?
  - From a feature on $v$ to a feature on Asp?
  - Both?

# Deriving the perfect indicative

Marked feature [RES] on Asp; perfect & pluperfect active/nonactive periphrastic forms: *le-lu-k-ot/os- ei-mi/ē-n* 'have/had released', *le-lu-men- ei-mi/ē-n* 'have/had been released'.

(29)



# Analysis

- Like in the periphrastic perfect passive in Latin, the copula BE picks up the stranded T and Agr features on T, either present (in the perfect) or past (pluperfect).
- The participial morphology in (29) realizes Asp under different conditions, cf. (30) (Grestenberger 2018, 2020; based on Embick 2000: 218).

(30) Spell-Out conditions for CG participles:

a. Asp ↔ *-men(os)*/ Voice[-ext.arg] _

b. Asp ↔ *-nt-*: elsewhere

- Environment for active/nonactive participial morphology = the same as for the finite forms
- Asp must be linearly adjacent to Voice, but not T: otherwise we would expect a regular nonactive *finite* form.

→ Participial morphology spells out Asp when Asp has not moved to T.

Hypothesis: "perfect" feature [RES] intervenes and blocks movement

# Analysis

The Spell Out conditions for Asp in (30) need to be refined:

- Asp in finite contexts, when it has moved to/agreed with T?
- Allomorphy of the perfect active participle?

(31) Vocabulary Items for CG Asp, revised

| | | | | |
|---|---|---|---|---|
| a. | Asp[RES] | ↔ | -ot-/-os- | /$v$/Voice[+ext.arg.]⌢_ |
| b. | Asp | ↔ | Ø | /⌢_⌢T |
| c. | Asp | ↔ | -men- | /Voice[-ext.arg.]⌢_ |
| d. | Asp | ↔ | -nt- | |

- The perfect active participle suffix, (31a) is the most highly specified allomorph of Asp.
  - Its VI in (31) pretty much formalizes the context "perfect active participle", which may not be elegant, but seems unavoidable.
- Asp in (31b) is specified for concatenation (indicated by ⌢) with T —this is Asp in (finite) synthetic forms.
- (31c) is the condition on realization of *men(os)*, cf. (30)
- (31d) is the elsewhere form ("active" -*nt*-).

# Implications

- Verbal stem-forming morphology, i.e., "present", "aorist" stem-forming morphology, is treated not as aspectual morphology (viewpoint aspect) but as verbalizing morphoplogy/lexical aspect.
- This follows from the approach outlined so far in which participial morphology realizes Asp, since verbal stem forming-morphology regularly co-occurs with participial morphology.

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- This follows from the approach outlined so far in which participial morphology realizes Asp, since verbal stem forming-morphology regularly co-occurs with participial morphology.
- But it is also independently warranted:
  - Verbal stem-forming morphology in the present, aorist, and perfect stems displays a great deal of idiosyncratic/root-dependent allomorphy.
  - It also occurs immediately adjacent to the root.
  - The "perfective passive" (valency changing) morpheme -*th(ĕ)*- is in complementary distribution with other verbal stem-forming morphology—this would be odd if the latter spelled out Asp, but is expected if it spells out a verbalizing/argument structure-related projection $\rightarrow v$ (Grestenberger Forthcoming).

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- This analysis may also hold for the "simple future" stem; but more needs to be said about the future perfect and future perfect passive.

# Summary of the pieces

- verbal stem-forming morphology = $v$
- [NONACT] = Voice (active = elsewhere)
- [RES] = "marked" on Asp; participial morphology spells out Asp

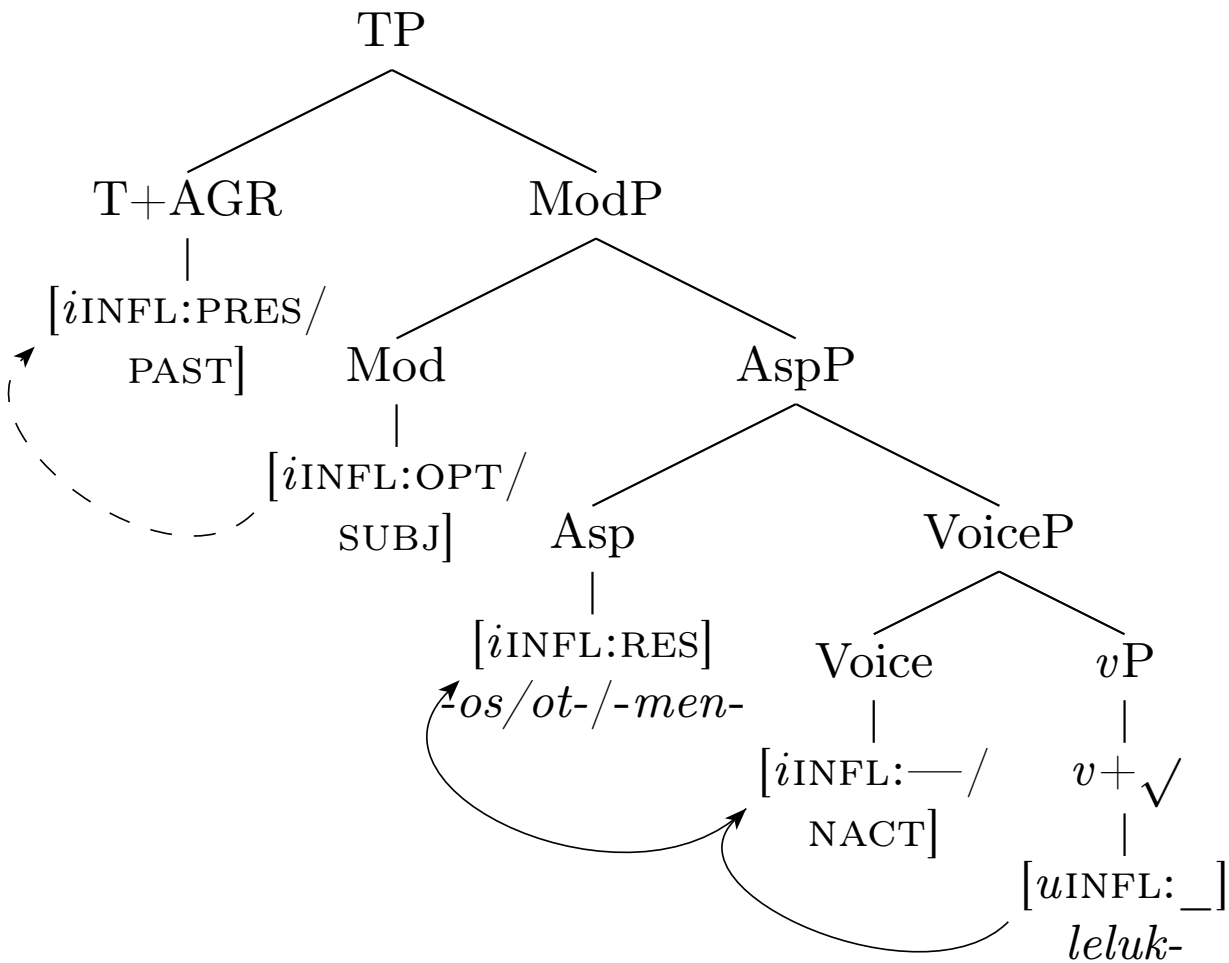
Still to be accounted for:

- The perfect subjunctive & optative
- The future perfect

# The modal forms

Optative & subjunctive morphology are expressed on the auxiliary: *le-lu-k-ot/os-ō/e-iē-n* 'shall/might release', *le-lu-men- ō/e-iē-n* 'shall/might be released' → marked Mood features on a designated functional projection ModP.

(32) Perf.opt./subj.:



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- The fact that Mood features are expressed on the *auxiliary* in the CG periphrastic perfect distinguishes the Greek "additive" pattern from that seen in English: English expresses stranded features on separate auxiliaries, as in the passive progressive
- By contrast, CG seems to have only *one* feature that causes trouble, [RES], and does not seem to restrict movement in the way English does.
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- Therefore the marked/visible features on Voice ([NONACT]) and Mod ([SUBJ/OPT]) will never become intervenors and trigger periphrastic constructions, because head movement can always extend the domain of V ($= \sqrt{}$-$v$).
- The only factor that blocks movement is [RES] on Asp.

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In other words, we get

(33)

| | |
|---|---|
| le-lu-mén-os | é-so-mai |
| PERF-$\sqrt{}$-PTCP.NONACT-M.SG | be-FUT-1SG.NONACT |

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In other words, we get

(33) le-lu-mén-os é-so-mai
PERF-√-PTCP.NONACT-M.SG be-FUT-1SG.NONACT

rather than

(34) *le-lū-só-men-os ei-mi
PERF-√-FUT-PTCP.NONACT-M.SG be-PRES.1SG.ACT

# The future perfect

However, the use of the perfect rather than the future perfect participle follows from our analysis so far:

- The perfect/[RES] feature on Asp blocks movement and triggers Spell-Out of Asp as a participial form.
- Therefore higher inflectional features relating to tense and modality, like [FUT], will have to be "picked up" by the auxiliary, just like [SUBJ] and [OPT].
- Future as Mod: Grestenberger 2016 for CG; cf. Giannakidou 2014.
  - The future marker *-se/o-* diachronically continues one (or several) *desiderative* stem-forming suffixes inherited from PIE (*-$h_1$s(e/o)- or variants thereof).
  - It is possible that this desiderative origin of the future is what is responsible for the (quasi-)obligatory nonactive morphology in the (Attic) future (Kemmer 1993: 79ff. argues that inherently desiderative or volitional verbs tend to take nonactive morphology cross-linguistically).

The nonactive morpholoy on the auxiliary in the periphrastic future perfect in (33) is all the more vexing because *eimi* 'be' is otherwise *activum tantum* (it only takes the active endings). However, ...

# The future of the future perfect

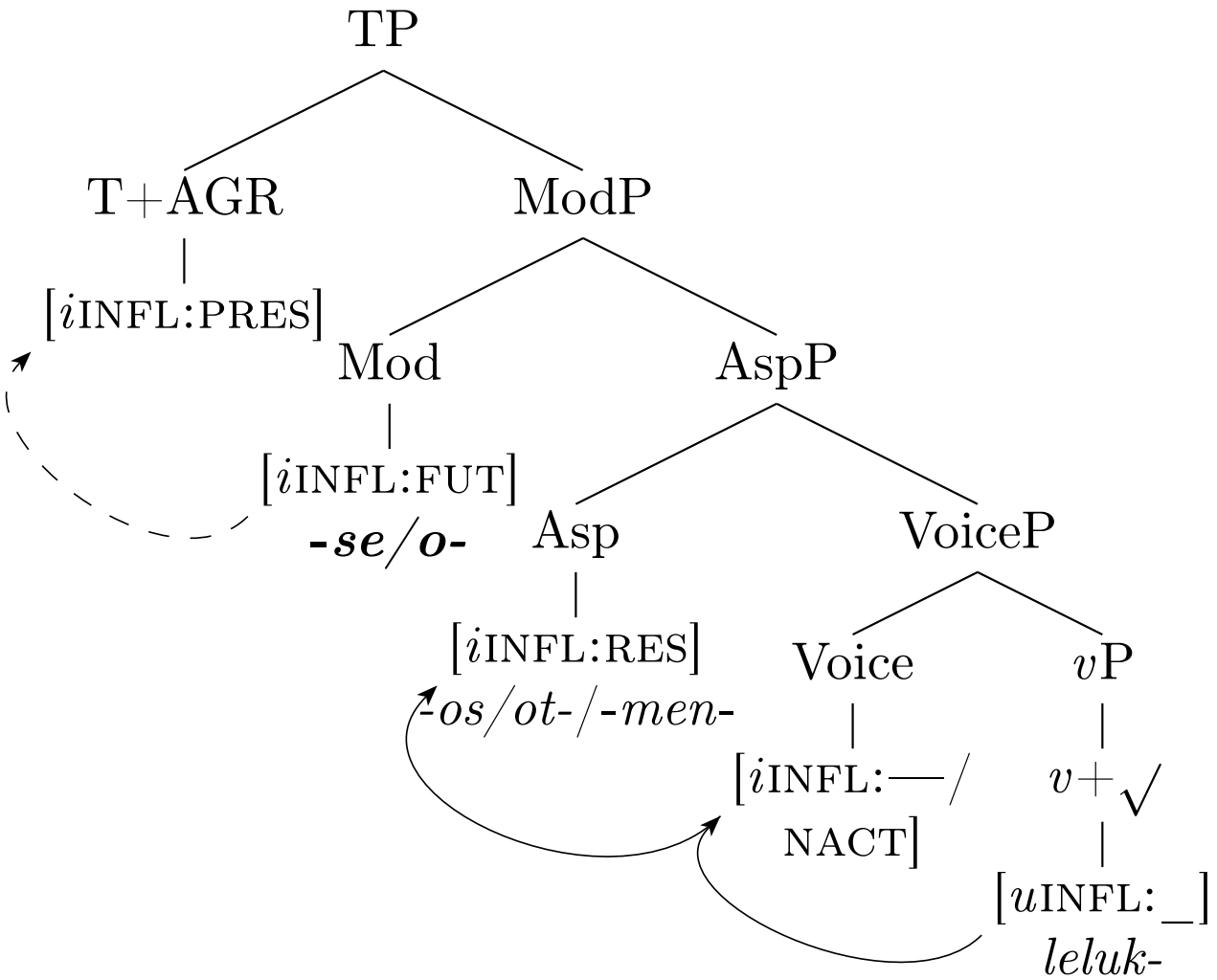
... we already hinted that the CG future often surfaces with obligatory *nonactive* endings, even if the corresponding aorists and presents are active (cf. e.g. Schwyzer 1939: 781). This results in a very distinctive pattern of "semi-deponency" for many stems, cf. (35).

(35) CG semi-deponents

| Pres.: act. | Fut.: Nonact | Meaning |
|---|---|---|
| *aeíd-ō* | *aeí-so-mai* | '(will) sing' |
| *akoú-ō* | *akoú-so-mai* | '(will) hear' |
| *hamartán-ō* | *hamartḗ-so-mai* | '(will) miss, fail' |
| *baín-ō* | *bḗ-so-mai* | '(will) walk, go' |
| *plé-ō* | *pleú-so-mai* | '(will) sail' |

# The future perfect

(36) Future perfect: *le-lu-k-ot/os- e-so-mai* 'will have released', *le-lu-men-e-so-mai* 'will have been released'



# The future perfect

- [RES] on Asp blocks movement and triggers insertion of active/middle participle, depending on context (= feature of Voice)
- [BE] is inserted to pick up the stranded features on Mod and T (like in the optative and subjunctive)
- ... but FUT has its own requirements (cf. "semi-deponency" in (36)): it triggers insertion of obligatory *nonactive* endings.
  - This may be a fairly surface-y morphonological requirement of Mod[FUT]⌢T/Agr; or it may be because Mod[FUT] actually modifies the verb's argument structure ("affectedness"?). Either way works for us.

Additional evidence: The future perfect of *deponents* uses the perfect *middle*/nonactive participle + the middle/nonactive future auxiliary (Smyth & Messing 1956: 183):

(37) *apo-le-logē-**mén**-os* *é-so-mai*
PRVB-PERF-speak-PTCP.NONACT-M.SG BE-FUT-1SG.PRES.NONACT
"I will have defended myself"

# Summary

- Assuming [RES] on Asp blocks movement, the periphrastic perfect patterns can be derived assuming that
  - The participles realize Asp (contextually conditioned by Voice([NONACT])
  - The BE-auxiliary picks up stranded features on T(+Mod), using default active inflection.
  - The exception: The future perfect auxiliary uses *nonactive* inflection because of an independently attested property of the future suffix.

(38) Periphrastic perfect constructions in CG, summary

| | Participle | | Auxiliary | | |
|---|---|---|---|---|---|
| | act. | nonact. | act. | nonact. | |
| Perf.act./nonact. | lelukṓs | leluménos | eimi | | 'have (been) released' |
| Pluperf.act./nonact. | lelukṓs | leluménos | ẽ̃n | | 'had (been) released' |
| Perf.subj.act./nonact. | lelukὸs | leluménos | ō̃ | | 'shall (be) release(d)' |
| Perf.opt.act./nonact. | lelukὸs | leluménos | eíēn | | 'might (be) release(d)' |
| Fut.perf.act./nonact. | lelukὸs | leluménos | | ésomai | 'will have (been) ...' |

# The Sanskrit periphrastic perfect

# The Sanskrit perfect: synthetic vs. periphrastic

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- However, Classical Sanskrit (CS, ca. 500 BCE – 500 CE) also uses a periphrastic perfect construction that differs quite interestingly from the CG periphrastic perfects.
- It uses the accusative of a verbal (abstract) noun in -*ā* plus the *finite synthetic perfect* of an auxiliary
  - Usually *kṛ* 'do, make' or *as* 'be', more rarely *bhū* 'be(come)'; Whitney 1879: 347ff., Delbrück 1888: 426f., Macdonell 1910: 365, Gotō 2013: 123.

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- It uses the accusative of a verbal (abstract) noun in *-ā* plus the *finite synthetic perfect* of an auxiliary
  - Usually *kṛ* 'do, make' or *as* 'be', more rarely *bhū* 'be(come)'; Whitney 1879: 347ff., Delbrück 1888: 426f., Macdonell 1910: 365, Gotō 2013: 123.
- Productive in making the perfect to derived verbal (present) stems such as the causative, intensive, and desiderative, but also to vowel-initial roots in which reduplication would be phonotactically problematic.
- In some cases, it occurs besides or replaces an inherited synthetic perfect:
  - *veda* 'knows' : *vidām cakāra* 'has known'; *bibhāya* 'is afraid' : *bibhayām cakāra* 'has feared'

# The CS periphrastic perfect

(39) Sanskrit periphrastic perfects

| | root | verbal noun | aux. | | meaning |
|---|---|---|---|---|---|
| | | | act. | nonact. | |
| simple perf. | *vyā* | *vyayām* | *cakāra* | *cakre* | 'has (been) covered' |
| | *bhī* | *bibhayām* | *cakāra* | — | 'was afraid' |
| | *vid* | *vidām* | *cakāra* | *cakre* | 'has (been) known' |
| caus.perf.act. | *budh* | *bodh-ay-ām* | *cakāra* | (*cakre*) | 'has (been) caused to wake |
| deponent | *īḍ* | *īḍām* | | *cakre* | 'has praised' |
| | *idh* | *indham* | | *cakre* | 'has ignited' |

- verbal stem-forming morphology on the verbal noun vs. perf., voice, tense and agreement morphology on the auxiliary.
- Crucially, this is also the case for deponent verbs: Deponents always select the *middle* perfect form of the auxiliary, whereas verbs which alternate between active and middle morphology in the non-perfect stems also alternate in the perfect auxiliary.

# Analysis

- Kiparsky (2005): The CS periphrastic perfect is only used when the formation of the expected reduplicated synthetic perfect is prevented because of a synchronic restriction against reduplication of certain root structures, namely $\bar{\text{V}}$C and VCC, or to stems that do not allow reduplication (like the causative).

# Analysis

- Kiparsky (2005): The CS periphrastic perfect is only used when the formation of the expected reduplicated synthetic perfect is prevented because of a synchronic restriction against reduplication of certain root structures, namely V̄C and VCC, or to stems that do not allow reduplication (like the causative).
  - However, some V̄C- and VCC-roots actually have (inherited) synthetic perfects in Vedic & Classical Sanskrit:
    - *idh* 'ignite' has *īdh-**é*** (cp. *indhā́m cakr-**e*** in (39))
    - *īḍ* 'praise' has *īḍ-**e*** (cp. *īḍām cakr-**e*** in (39)).
  - Roots that can be regularly reduplicated, like *vyā*, *bhī*, and *vid*, also form periphrastic perfects if the inherited perfect is not used as an anterior perfect, but as a "stative"/present: *veda* 'knows' : *vidām cakāra* 'has known'; *bibhāya* 'is afraid' : *bibhayām cakāra* 'has feared'
  - Synthetic perfects are regular for causative stems—which cannot be reduplicated; but taken together, the restriction seems to be structural rather than phonological (or "morphological").

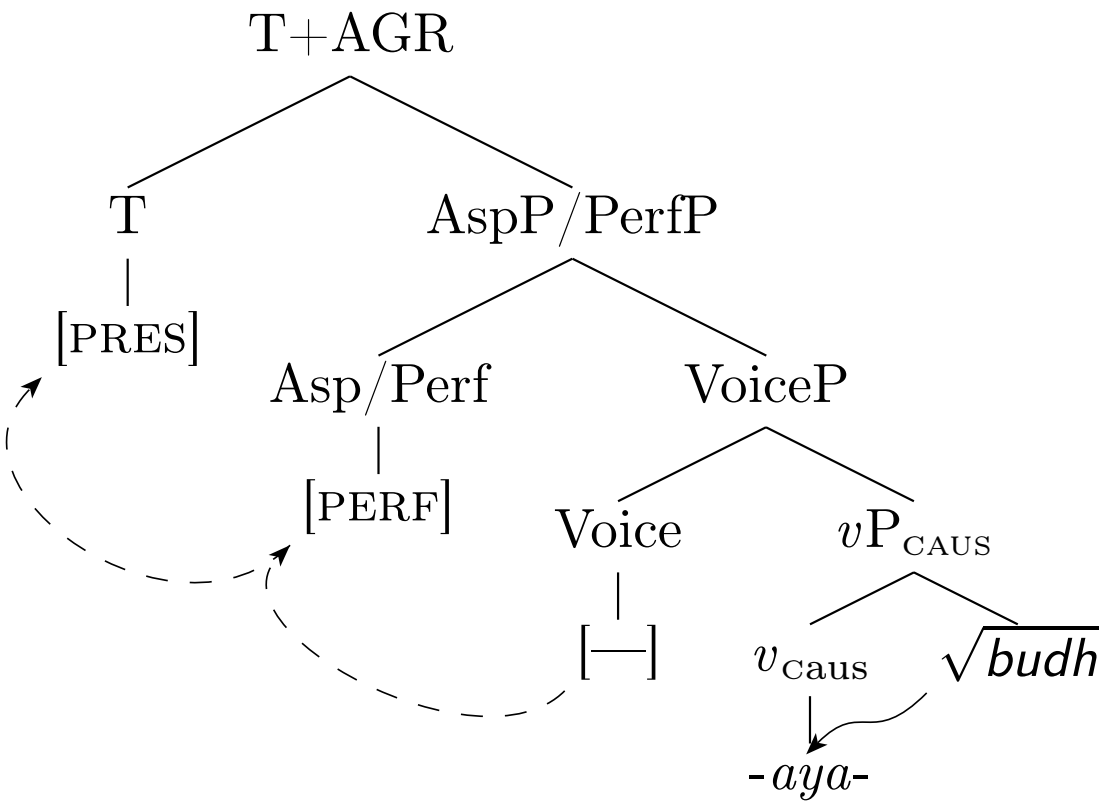
# Proposal

- Unlike in CG, in CS the perfect feature itself can't be the problem → the auxiliary itself *is* structurally a synthetic perfect.
- The fact that perfects from denominal, causative, desiderative ...stems turn up as periphrastic constructions suggest that the problem originates "lower" in the structure → $v$ is the culprit.
- If "marked" $v$ (causative, etc.) blocks movement of the verb, upwards Agree/Move will be potentially blocked by a higher marked feature. Proposal: [PERF] is such a feature.
- Result: Any inflectional features above $v$ are "stranded" and need to be picked up.

→ Like in CG, this only works if Agreement & Movement work in tandem.

# Proposal

(40) *bodh-ay-ā- ca-kār-a*
√-CAUS-VN PERF-AUX-3SG.PERF



# The CS periphrastic perfect and deponency

The CS periphrastic perfect provides further arguments against an Embick-style feature [PASS] (or [NONACT]) on deponent roots:

- If the deponent status of, e.g., *īḍ* were determined by a [PASS]/[NONACT] feature on the root, there is no reason why a nonactive *auxiliary* should be selected when the root itself is in a voice-neutral nominal form.
- Rather, the mismatch seems to happen when certain roots interact with the functional structure associated with Voice and T/Agr.
- In (40), auxiliaries are inserted to pick up "stranded" inflectional features when movement of the verb is blocked. In the CS periphrastic perfect of deponents, we see both the feature [PERF] and the feature [NONACT] expressed on the auxiliary → the *auxiliary* picks up whatever feature causes deponency.

# The CS periphrastic perfect and deponency

Grestenberger 2014, 2018, 2019: Deponency (in the narrow sense, (41)) is caused by a *noncanonical* agent that is merged below the canonical agent-introducing functional projection Voice → Voice is realized as nonactive by (42).

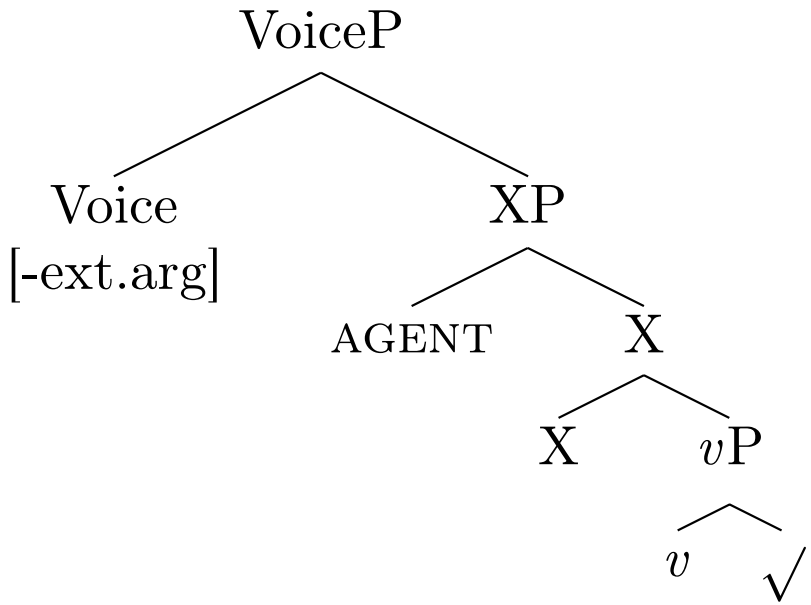
(41) Narrow deponency (Grestenberger 2018: 23):
In an active–nonactive voice system, a deponent is a verb with an agent subject that appears in a syntactically active context and is morphologically nonactive.

(42) Voice → Voice[NonAct]/_ No DP specifier

# Structure of deponents

Grestenberger 2018: noncanonical agent below VoiceP = reanalyzed applicative/benefactive argument:

(43)



# Structure of deponents

- Distribution of act/nonact follows from (42) (no "exceptions" needed)
- If participial morphology spells out Asp (above Voice), we expect deponent participles (in Greek, Sanskrit) to preserve the morphosyntactic mismatch → this is correct.
- We *do not* expect to see the mismatch surface in nominalizations that do not contain Voice → also correct, cf. Sanskrit verbal nouns in (39)
  - ... also verbal adjectives in Sanskrit & Greek (Grestenberger 2018, 2020).

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→ behavior of deponent participles across contexts (periphrastic/non-periphrastic) follows from the assumptions made so far.

- What about CG participles in non-periphrastic contexts?

# Attributive and predicative participles; deponent participles in CG

# Attributive vs. predicative participles

= reduced relative clauses (Kayne 1994, Cinque 1999), but with differing internal structure (Sleeman 2011):

(44) prenominal vs. postnominal eventive passive participles (Sleeman 2011: 1574)

a. a book [ recently published ]
b. a book [ that has recently been published ]
c. a [ recently published ] book
d. *a [ that has recently been published ] book

Sleeman argues that postnominal participles project to CP, whereas prenominal ones don't:

(45) a. postnominal:
[$_{DP}$ the [$_{CP}$ [book]$_i$ [AspP [*vP* [sent [t$_i$ to John by Mary]]]]]]
b. prenominal:
[$_{DP}$ the [$_{FP}$ [$_{AspP}$ recently [$_{vP}$ [sent]]] [$_{F'}$ [book]]]]

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- ... if the same holds for CG, it would lead us to expect that the same conditions for Spell Out of Asp with participial morphology as in the periphrastic constructions hold: participial suffixes spell out Asp that has not moved to T
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- ... if the same holds for CG, it would lead us to expect that the same conditions for Spell Out of Asp with participial morphology as in the periphrastic constructions hold: participial suffixes spell out Asp that has not moved to T
  - In this case, because there is no T.
- We also predict that attributive/predicative participles:
  - do not bear their own tense specification
  - but express (pfv/ipfv) aspect like the corresponding finite verbs (because they contain Asp)
  - can take accusative objects/be transitive (because they contain $v$/Voice)
  - can be modified by manner- and event-oriented adverbs (because they contain $v$)
  - can be passive with demoted agents (because they contain Voice)
  - deponent participles: preserve the mismatch (i.e., nonactive participles with active syntax).

# Predicative participles

- Passive (demoted agent/cause), present stem:

(46) Hdt., *Hist.* 2.29.2

tò ploĩon oíkhetai **pheró-men-on** **hupò**
the boat.NOM goes.off carry.PRES-PTCP.NACT-NOM.SG.N by
**iskhúos** toũ rhóou
strength.GEN the.GEN current.GEN

"... the boat gets lost, **carried off by the strength of the current**."

# Predicative participles

- Mofification by manner- and event-oriented adverbs such as *eũ* 'well', *pálin* 'again, re-' and *biaióteron* 'violently':

(47) Thuc., *Pelop. War*, 3.89.5

... tὲn thálassan kaì eksapínēs **pálin**
the.ACC sea.ACC and suddenly again
**epispō-mén-ēn** **biaióteron** tὲn epíklusin
recoil.PRES-PTCP.NACT-ACC.SG.F violently the.ACC flood.ACC
poieῖn
do.PRES.INF

"... the sea, suddenly **recoiling again violently**, causes the flood."

# Predicative participles

Participles regularly form the complement of verbs of perception (Rijksbaron 2002: 117ff.:)

(48) Complement of perception/ECM verb:

soì melétō tò entheũten hókōs mè se ópsetai
you.DAT take.care.IPV thereupon such.that NEG you.ACC will.see
**i-ónt-a dià thuréōn**
go.PRES-PTCP.ACT-ACC through doors.GEN

"Take care thereupon so that she does not see you **going through the door**." (Hdt., *Hist.* 1.9.3)

→ No finite T in ECM complements (on nominalizations/complementation cf. Wurmbrand & Lohninger 2020)

# Attributive participles

... modify a noun (pre- or postnominally), aspectual distinctions (present vs. aorist) are preserved (Rijksbaron 2002: 131f.).

(49) Hdt., *Hist.* 1.1.2:

en tẽ̃i nũn **Helládi** **kaleo-mén-ēi**
in the.DAT now Greece.DAT call.PRES-PTCP.NONACT-DAT.SG.F
**khōrẽ̃i**
land.DAT.F

"in the **land** (that is) now **called Greece**."

# Substantivized participles

= attributive participles modifying a null N?

(50) Substantivized, transitive (Hdt., *Hist.* 4.133.2):

ándres Íōnes, **eleutheríēn** hḗkomen **humĩn**
men Ionian.PL freedom.ACC be.present.1PL you.DAT.PL
**phéro-nt-es**
bring.PRES-PTCP.ACT-NOM.PL

"Ionians, we are here to bring you freedom/**bringing you freedom**"

(51) Xen. *Hell.* 5.1.19:

epì pollàs naũs **ke-ktē-mén-ous**
against many.ACC ships.ACC PERF-buy-PTCP.NONACT-ACC.PL.M

"against (those) **who have bought** many ships"

# Absolute constructions

≈ clause-modifying adjuncts, genitive absolute (GA): "a participle agreeing in the genitive with its own subject, which is not identical with the subject of the leading verb, is said to stand in the genitive absolute." (Smyth & Messing 1956: 457)

(52) Passive GA with agent *by*-phrase (Hdt., *Hist.* 1.19.1; George 2005: 24)

| | | | | |
|---|---|---|---|---|
| tôi | dè | duōdekátōi | éteï | lēíou |
| the.DAT | PTCL | twelfth.DAT | year.DAT | crop.GEN |
| **empipra-mén-ou** | | **hupò** | **tês** | **stratiês** ... |
| burn.up.PRES-PTCP.NACT-GEN | | by | the.GEN | army.GEN |

"In the twelfth year, when the crops **were being burned by the army**, ..."

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"In the twelfth year, when the crops **were being burned by the army**, ..."

In CG, the genitive absolute can also be transitive:

(53)

| | | |
|---|---|---|
| taũta | **eipó-nt-os** | autoũ |
| this.ACC | say.AOR-PTCP.ACT-GEN.SG | he.GEN.SG |

"**having said** this/after he had said this" (Plato)

# Deponent participles

"Narrow deponency" (cf. (40)): Deponents are **noncanonical nonactive** verbs with an agent subject and active (mostly transitive) syntax = narrow deponency.

- CG deponent verbs conistently have *transitive menos*-participles, the mismatch is preserved.

(54) Deponent *dízēmai* 'seek sth.', ptcp. *dizḗmenos* (Hom., *Od.* 1.261-2)

ǒikheto gàr kaì keĩse thoês epì nēòs Odusseùs
went PTCL and there swift.GEN on ship.GEN Ulysses.NOM
**phármakon andro-phónon dizḗ-men-os**
poison.ACC man-slaying.ACC seek.PRES-PTCP.NACT-NOM.M

"And then Ulysses went into his swift ship, **seeking (some) man-slaying poison**."

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  - Note that these are environments which are independently analyzed as "tenseless"!
- The behavior of deponent participles follows from the assumption that these verbs have a *noncanonical agent*, but that participial formation proceeds like in non-deponent verbs (= spells out Asp).
- When there *is* a finite T, Agreement/movement can fail if a marked feature intervenes/blocks movement (**PFV**/**PASS** in Latin, **RES** in CG, marked features on $v$ in CS)
  - Again, failure to Agree, upwards Agree, etc. ... have been independently motivated (Bjorkman 2011 etc.)

# Open issues/future work

- Other periphrastic constructions in Greek, Sanskrit?
- Diachrony: how/why does feature markedness, movement, etc., change?
- Further typological/cross-linguistic extensions?
- Exact mechanism of movement vs. agreement in CG, CS? Closer link between movement and agreement than in Latin, English ...?
- RC structure of (pre-nominal/post-nominal) attributive & predicative participles? (cf. Lowe 2015 for Vedic Sanskrit)
- Other nonfinite forms? Infinitives, "verbal adjectives", etc.

# Thank you!

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