Auxiliary verb constructions and the morphosyntax of verbal inflection*

Bronwyn M. Bjorkman
Northeastern University

1   Introduction

A pattern of auxiliary use that is widely attested, but rarely discussed, is exemplified in (1):

(1)   Latin perfect passive auxiliary
    a. *amavi* 'I loved, I have loved.' (perfect)
    b. *amor* 'I am loved.' (passive)
    c. *amatus **sum*** 'I was loved, I have been loved.' (perfect **AND** passive)

- An **"overflow"** pattern of auxiliary use: cases where we see an auxiliary only when two inflectional categories **co-occur**.

- Contrasts with languages where auxiliary verbs are associated with single inflectional categories: e.g. passive and progressive *be* in English (an **additive** pattern).

Goal of this talk: to demonstrate the relevance of the overflow pattern for a theory of auxiliaries in particular, and inflection in general.

Proposal: the overflow pattern can only be accounted for in a system where auxiliaries reflect increased inflectional complexity. Auxiliary verbs realize inflection that is unable to combine with the main verb.

    This move can account for variation in auxiliary patterns via two straightforward factors:

    1. A language's choice of which features are syntactically **specified**, or **marked**.

    2. The distribution of **head movement** within the inflectional domain.

---

2 Two patterns of auxiliary use

As mentioned above, the **additive** pattern of auxiliary use is a familiar one.

English is an example of a language with additive auxiliaries: certain inflectional categories "come with" an auxiliary (2a-b). If multiple auxiliary-taking categories co-occur, multiple auxiliaries appear (2c).

(2) a. The children **were** eating the cake.   *Progressive*
     b. The cake **was** eaten.   *Passive*
     c. The cake **was being** eaten.   *Progressive Passive*

It is the **overflow** pattern, however, that is the focus of this talk.

- In the overflow pattern, **individual** categories do not require the use of an auxiliary, but certain **combinations** of categories do.

Latin, as we've seen, shows an overflow interaction between **aspect** and **voice**.

Simple forms exist for both the perfect and the passive in isolation (3a-b), but the perfect passive requires an auxiliary (3c):[1]

(3) a. Puellae   crustulum   **consumpserunt**.
         girl-PL.NOM small.pastry-ACC eat-PL.PFV
         'The girls ate the little pastry.'   *Perfect*
     b. Crustulum   **consumitur**.
         small.pastry-NOM eat-PRES.PASS
         'The little pastry is (being) eaten.'   *Passive*
     c. Crustulum   **consumptum est**.
         small.pastry-NOM eat-PASS.PTCP **be**.3SG.PRES
         'The little pastry was / has been eaten.'   *Perfect + Passive*

Arabic is another example of a language with an overflow pattern of auxiliary use.[2]

Simple forms exist for the (present) imperfective and past (perfective) (4a-b), but an auxiliary appears in the past imperfective (4c) (examples from Benmamoun 2000, ex. 27-29).

(4) a. **darasa**
         study.PAST.PFV.3SGM
         'He studied.'   *Past*
     b. **ya-drusu**
         3M-IMPF.study
         'He studies.'   *Imperfective*
     c. **kaana   ya-drusu**
         be.PAST.3SGM 3M-IMPF.study
         'He was studying / He used to study.'   *Past + Imperfective*

---

[1]Thank you to Jennifer Faulkner and Elena Innes for help producing these Latin examples. Also, note that this pattern holds not only of regular passives, but also of deponents – verbs that are syntactically transitive but morphologically resemble passives (Embick, 2000).

[2]Data here is from Standard Arabic, but the same pattern arises in regional varieties.

Bronwyn M. Bjorkman

**Kinande** also shows an overflow interaction between **aspect** and **tense**.

Simple verb forms exist for past and for various aspects (imperfective, progressive, incompletive, and inceptive), as we see in (5a-b). An auxiliary appears, however, in a past tense aspectual form.[3]

(5)   a.   tw-**á**-húma
        1PL-PAST-hit
        'We hit (recently, not today)'   *Recent Past*

    b.   tu-**nému**-húma
        1PL-PROG-hit
        'We are hitting'   *Progressive*

    c.   tw-**á-bya**   i-tu-**nému**-húma
        1PL-PAST-**be** LNK-1PL-PROG-hit
        'We were (recently, not today) hitting.'   *Recent Past + Progressive*

2.1   Against syntactically represented auxiliaries

The additive pattern has lent itself to various **syntactic** representations of auxiliaries:

- as the head of associated functional projections, as in (6a),

- as the head of its own phrase, in a selectional relationship with a semantically-interpreted functional projection, as in (6b),

- or as the head of one of a sequence of nested VPs (or vPs), as in (6c).

(6)   a.   b.   c.
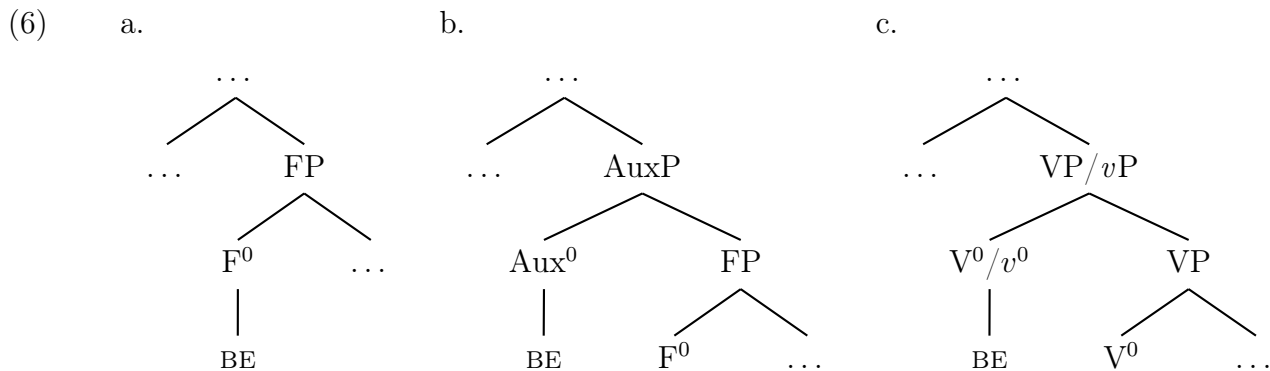
None of these representations is compatible with the overflow pattern, where no **single** syntactic category is correlated with the presence of BE.

- There is no single head X^0 that could be selectionally related to BE.

- If BE were selected, it would be by two heads in combination – this would be **non-local** selection.

The overflow pattern thus appears to be incompatible with an account of auxiliaries in purely selectional/syntactic terms.

---

[3]Data from my own field work, and that of Patrick Jones (p.c.).

Similarly, BE cannot *syntactically* projected to solve some *morphological* problem.

- Often suggested that BE occurs in response to a *deverbal* participle: an auxiliary is syntactically required to provide the clause with a verb.

  → On such an account, the English passive and the Latin perfect passive involve auxiliaries because the main verb appears in a non-verbal participial form (*eaten / consumptum*).

- Once again, the overflow pattern is a problem:

  → If we think that certain *heads* are deverbalizing, then Latin is a problem: neither the perfect nor the passive would be deverbalizing on its own, so it would be only the *combination* of the two that would result in a 'deverbal' participle.

  → Even if we think that it's particular *morphology* that is deverbalizing, Arabic and Kinande are a more serious problem.

  We see the **same** morphology in both the present aspectual forms – which don't require an auxiliary – and past aspectual forms – which do require an auxiliary.

  So it cannot be that these verb forms are "deverbal", and uniformly require an auxiliary for that reason.

The overflow pattern instead motivates a **structural** account of the inflectional "failures" that give rise to auxiliary verbs.[4]

- **Syntactic** in that it is the inflectional system that determines what inflectional information is (un)able to be united with the main verb.

- **Morphological** in the sense that it is the morphological properties of inflection – the fact that it is realized as **affixes** – that causes auxiliary BE to occur.

3 Unifying auxiliary patterns: locality and markedness

Accounting for overflow auxiliaries in terms of inflectional *failures* requires a system of verbal inflection with the following three basic properties:

1. Inflectional information is associated with a separate position from the verb.

   - i.e. with functional positions above the verb, as in almost all work since Chomsky (1957)

2. This information can fail to combine with the verb

   - All syntactic mechanisms that combine verbs and inflection (Lowering, head movement, Agree) apply only in some structural contexts.

3. When inflection fails to combine with the verb, it is realized on a default auxiliary (BE).

   - Widely assumed since Chomsky (1957), formalized by Lasnik (1981) as the Stray Affix Filter, though applied to DO-support rather than auxiliary BE.

---

[4]Though only auxiliary BE is discussed here, much the same approach will apply to copular and predicative BE as well. Proposals in a similar spirit, though often confined to the additive pattern of English, are articulated in Dechaine (1993, 1995), Schütze (2003), and Cowper (2010), and implicitly assumed by both Embick (2000) (for Latin) and Arregi (2000) (for Basque), among others.

The central question: *when* does inflection fail to combine with a main verb?

Common to all approaches: inflection combines with a verb only **locally**.

But what is the relevant locality relation?

Not absolute locality: assuming that a category like tense is always in the same absolute position relative to the base position of the verb, absolute locality cannot explain why tense is sometimes realized on V^0 and sometimes on an auxiliary.

***Relativized* locality:** (Rizzi, 1990, et seq.) inflection is prevented from combining with the verb – *stranded* – whenever some other inflectional category is closer than it to V^0.

Consider English auxiliaries

- In the English-type additive pattern, an auxiliary occurs for **each** inflectional category beyond the first:[5]

Tense	She **wrote** the book.	0 auxiliaries
Tense + Aspect	She **was writing** the book.	1 auxiliary
Tense + Voice	The book **was written**.	
Tense + Aspect + Voice	The book **was being written**.	2 auxiliaries

- In many approaches it is the syntactic presence of auxiliaries *as verbs* that prevents higher inflectional heads from being related to the main V^0.

   → Already seen that this is incompatible with overflow auxiliaries.

- What we can say instead is that only the **most local** inflectional head to V^0 can establish a relationship with it. All higher inflectional heads are *stranded*:[6]

(7)   a. **wrote** (Tense)   b. **was writing** (Tense + Aspect)

---
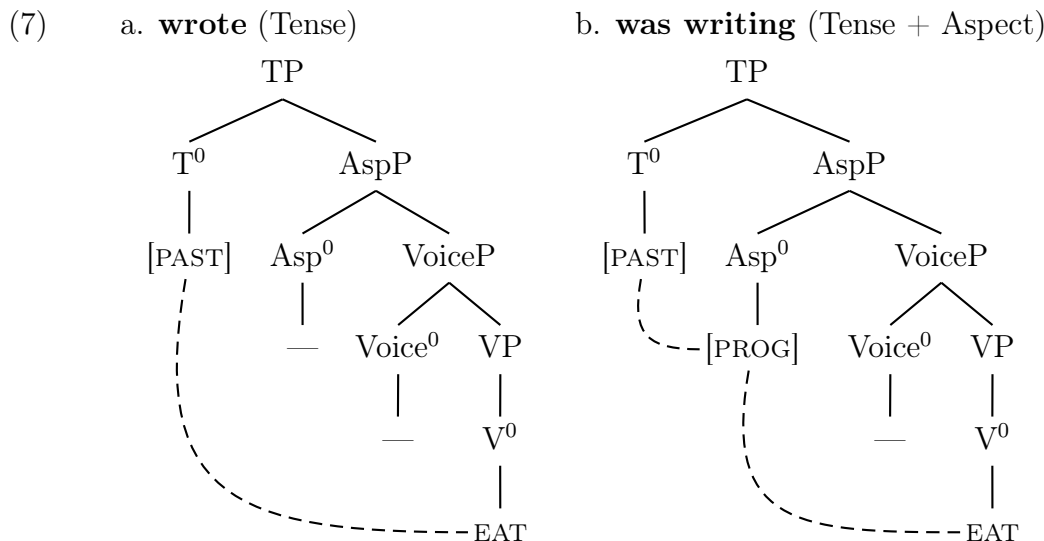
[5]We could also consider reduced relatives as contexts in which there is no tense, but only aspect or voice. There, also, no auxiliary is required.

[6]The dotted lines in (i) indicate the relationship between inflectional heads and the verb. As represented in these trees, the locality of verbal inflection is enforced by making each inflectional functional head itself a target for higher inflectional features. This foreshadows the discussion in section A, where I propose that Agree is the mechanism responsible for manipulating inflectional information.

c. **was being eaten** (Tense + Aspect + Voice)

TP
T⁰
AspP
[PAST]
Asp⁰
VoiceP
[PROG]
Voice⁰
VP
[PASS]
V⁰
EAT
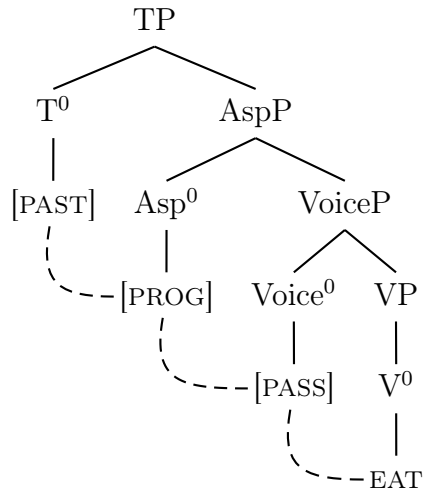
A hidden assumption: (7) relies on non-progressive aspect and active voice not "counting" for locality.
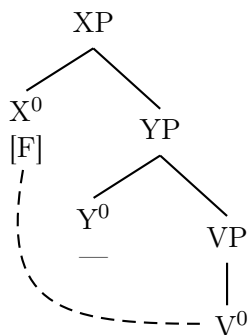
Natural, from the perspective of English morphosyntax, but **why?**

> **Markedness:**
>
> A head should only count as most local to V⁰ if it is in fact **syntactically specified** for inflectional information.
>
> Certain values of certain heads may be **unspecified** for inflectional features, and thus not involved in the syntactic manipulation of inflection.

(8)

XP
X⁰
[F]
YP
Y⁰
—
VP
V⁰

- This builds on the concept of **markedness** originally developed in the context of phonology, but long extended to morphology and syntax (Jakobson, 1939; Greenberg, 1966; Olsen, 1997; Comrie, 1976; Dahl, 1985).

- Just as specific markedness relations can vary across languages, the choice of specified and unspecified features will vary.[7]

In the next section, I show that variation in markedness/specification, which can be established on independent grounds, is sufficient to account for different patterns of auxiliary use.

---

[7]In principle, heads without specified inflectional features could simply be syntactically absent; here, however, I assume that they are present but lack inflectional features.

4 Illustration: Auxiliaries in Arabic and Latin

This section illustrates that auxiliary verbs can be consistently accounted for as a response to stranded inflectional features – once we establish which features are marked/specified.

- Having already discussed these factors in relation to English, in this section I illustrate how they account for the overflow patterns of Arabic and Latin.

4.1 Arabic

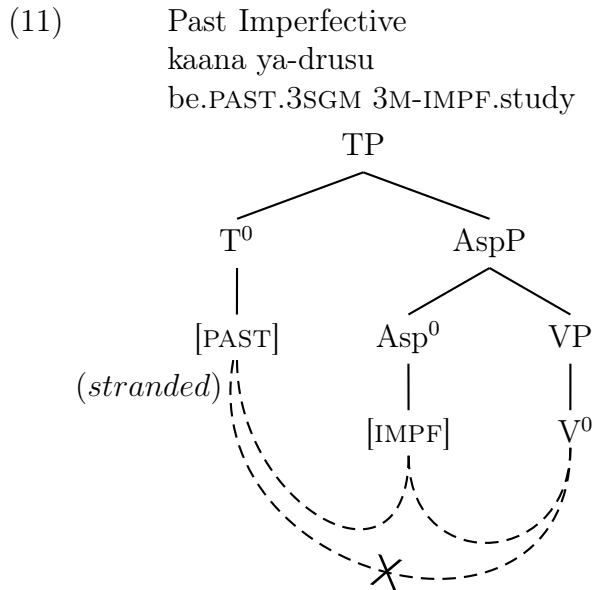Recall from (4), repeated in (9), that while Arabic has simple imperfective and past forms, an overflow auxiliary appears in the past imperfective:

(9)   a.   darasa
           study.PAST.PFV.3SGM
           "He studied."
      b.   ya-drusu
           3M-IMPF.study
           "He studies."
      c.   kaana   ya-drusu
           be.PAST.3SGM 3M-IMPF.study
           "He was studying / He used to study."

- I have proposed that the tensed auxiliary in (9c) diagnoses a *failure* of tense inflection to combine with the main verb.

- Why does this problem not arise in either (9a) or (9b)? Because both involve only one specified inflectional head:

  → Asp^0 is unspecified in the **perfective**.

  → T^0 is unspecified in the **present**.

(10)   a.   Past (Perfective)
            darasa
            study.PAST.PFV.3SGM

       b.   (Present) Imperfective
            ya-drusu
            3M-IMPF.study
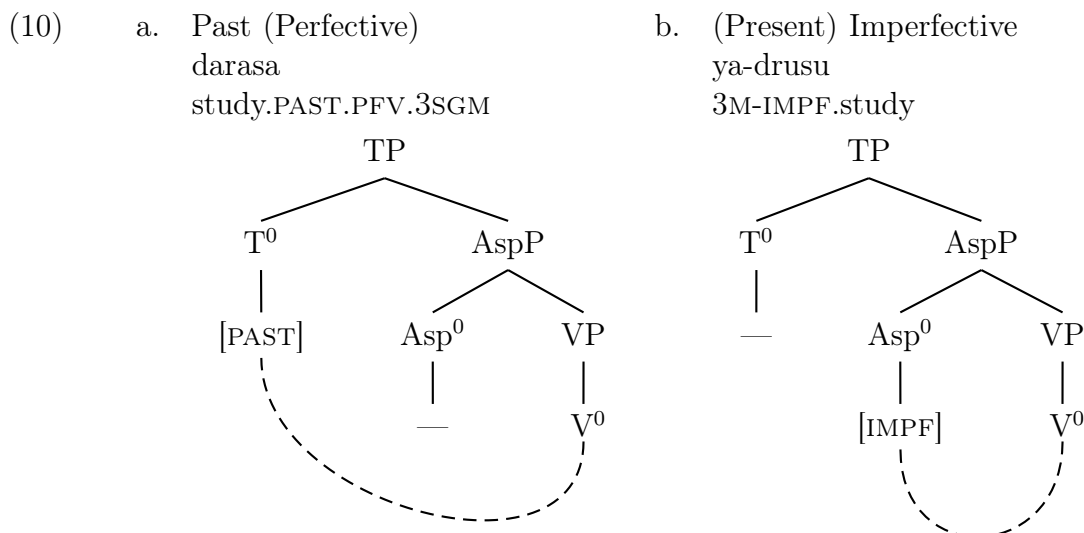
- In the **past imperfective**, by contrast, both T^0 and Asp^0 bear inflectional features. As a result, Asp^0 intervenes between T^0 and V^0, causing the features of T^0 to be stranded:

(11)   Past Imperfective
         kaana ya-drusu
         be.PAST.3SGM 3M-IMPF.study

```
                        TP
                   ┌─────┴─────┐
                  T⁰          AspP
                   │        ┌───┴───┐
               [PAST]     Asp⁰     VP
           (stranded)      │        │
                        [IMPF]      V⁰
```

4.1.1   Independent evidence for these feature specifications:

Evidence for unmarked perfective comes from the occurrence of "perfective" morphology in contexts where we would expect either imperfective or no aspect at all.

   The past *imperfective* provides such a context: its auxiliary is **morphologically** *perfective*:

(12)   **kaana**   ya-drusu
       be.PAST.**PFV**.3SGM 3M-IMPF.study
       "He was studying / He used to study."

- The auxiliary in (12) occupies a position of **aspectual neutralization**: an environment in which we do not expect to find aspectual contrasts preserved.

   The form of the auxiliary suggests that perfective is **unmarked**: that it comes "for free" with syntactically specified past.

Evidence for unmarked present

   1. Arabic does not require a copula BE in the present (13), but does in both the past and future (14a-b):

(13)   a.   ʔibnuh ṭaalib-un
            son.his student-NOM
            "His son is a student."   (Benmamoun, 2000, 43, ex. 23b)

(14)   a.   kaana   ʔibnuh ṭaalib-an
            be.PAST.3SG.M son.his student-ACC
            "His son was a student."

b. sa-ya-kuunu ṭaalib-an
FUT-3M-be student-ACC
"He will be a student." (Benmamoun, 2000, 43, ex. 22b, 24)

2. Benmamoun (1999, 2000) argues that present T^0 is not active for head movement (while past T^0 is), *because* it is not specified for inflectional features.

This is based on evidence that the present imperfective verb is syntactically *lower* than a past-inflected verb.

- Present imperfective verbs are optionally negated by the "non-verbal" negative element *laysa*: Benmamoun (2000) argues this is because such verbs do not move to an unspecified T^0 (via Neg^0).[8]

- Benmamoun demonstrates that certain idomatic expressions in Moroccan Arabic *require* VSO order in the past perfective, but strongly disprefer it in the present imperfective, as shown in (15).[9]

  VSO word order has been attributed to V^0-to-T^0 movement with a VP/vP-internal subject (Carnie and Guilfoyle, 2000, citing Mohammed 1988 and Fassi Fehri 1993).

  Combined with (15), this suggests that *past perfective* verbs move to T^0, while *present imperfective* verbs do not.[10]

(15) a. baraka llahu fii-k
bless.PAST.3SGM God in-you
"May God bless you."
b. llah y-barik fii-k
God 3M-bless.IMPF in-you
"May God bless you." (Benmamoun, 2000, 57, 18a-b)

---

[8]Similarly, in Egyptian Arabic negation is *required* to occur as a verbal affix *ma-* in the past tense, but can occur as an independent particle *miš* in the present imperfective, which Benmamoun (2000) argues is evidence that the present imperfective verb can remain *in situ*.

[9]Benmamoun reports that the judgements extend to other varieties of Arabic, and that the same (non-absolute) preference for pre-verbal subjects in the present imperfective extends to colloquial speech. Sam Alxatib (p.c.) reports that the word order preference holds for the present imperfective in Palestinian Arabic also.

[10]This does require a small revision to the analysis of verbal inflection in Arabic: V^0 must move to T^0 when the two are inflectionally local to one another, as in the past perfective. Following Benmamoun, I propose that it is the absence of inflectional features in T^0 that prevents it from attracting V^0 in the present imperfective. We will see in section 4.2 that the distribution of head movement can have other consequences for auxiliary distribution, allowing V^0 to be local to more than one inflectional head.

4.2 Latin

Recall from (3), repeated in (16), that in the relevant paradigm, Latin uses an auxiliary only in the combination of the perfect and the passive, as in (16c).
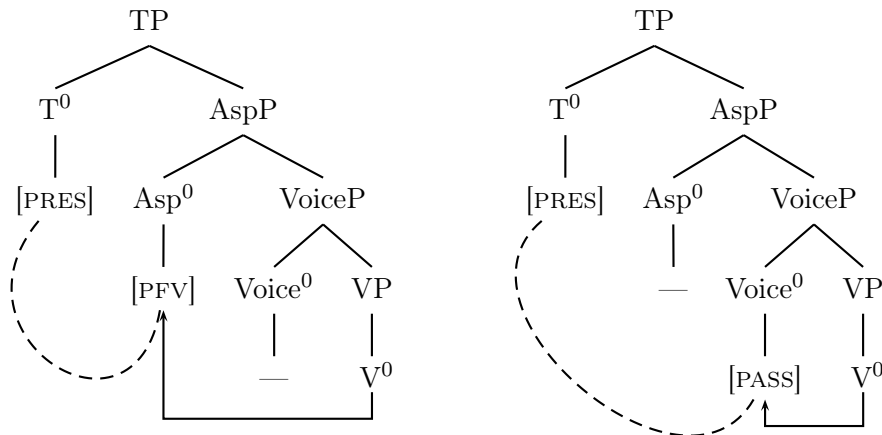
(16) a. Puellae   crustulum   **consumpserunt**.   *Perfect*
          girl-PL.NOM small.pastry-ACC eat-PL.PFV
          "The girls ate the little pastry."
      b. Crustulum   **consumitur**.   *Passive*
          small.pastry-NOM eat-PRES.PASS
          "The little pastry is (being) eaten."
      c. Crustulum   **consumptum est**.   *Perfect + Passive*
          small.pastry-NOM eat-PASS.PTCP **be**.3SG.PRES
          "The little pastry was / has been eaten."

- In all cases in (16), the main verb shows inflection for **two** inflectional categories.

- This can be accounted for by **head movement** of V^0 to intermediate projections, allowing inflectional features of higher heads to be interpreted in a position containing the verb.

- Just as languages differ as to whether they have V^0-to-T^0 or V^0-to-C^0 movement, they will differ (perhaps arbitrarily) as to whether head movement occurs on a smaller scale within the clause.
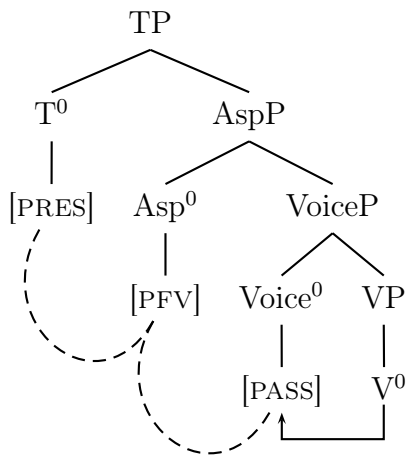
(17)
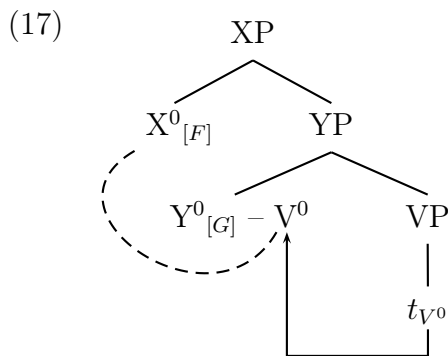
- To account for the distribution of auxiliaries, I propose that *active* Voice^0 and *imperfective* Asp^0 are not featurally specified.

- As a result, in the *perfect* and the *passive* V^0 is local to either Asp^0 or Voice^0. The verb thus bears inflection appropriate to the most local head, but also undergoes head movement to it. From this higher position it is local to T^0.

10

Bronwyn M. Bjorkman

(18) a. **consumpserunt** (Perfect)
   eat-PL.PFV

       TP
      /   \
     T^0 AspP
     | / \
   [PRES] Asp^0 VoiceP
       | / \
      [PFV] $Voice^0$ VP
         | |
         — V^0

b. **consumitur** (Passive)
  eat-PRES.PASS

       TP
      /   \
     T^0 AspP
     | / \
   [PRES] Asp^0 VoiceP
       | / \
      — $Voice^0$ VP
         | |
        [PASS] V^0

- When **both** Voice^0 and Asp^0 contain specified features, the overflow interaction arises: assuming that there is **no** head movement between these positions, V^0 will remain in Voice^0, in which position it will be inaccessible to T^0, stranding T^0's features.[11]

(19) **consumptum est**   (Perfect Passive)
  eat-PASS.PTCP **be**.3SG.PRES

       TP
      /   \
     T^0 AspP
     | / \
   [PRES] Asp^0 VoiceP
       | / \
      [PFV] $Voice^0$ VP
         | |
        [PASS] V^0

4.2.1 Independent evidence for these feature specifications

As in the case of Arabic, this analysis of the Latin system rests on specific assumptions about feature markedness: that both present and past T^0 are specified for inflectional features, but that **imperfective** Asp^0 and **active** Voice^0 are unmarked, and thus unspecified.

---

[11]This analysis is similar to Embick's (2000) analysis of the Latin perfect passive. On his account Latin T^0 is stranded in the perfect passive because T^0 was unable to attract Asp^0 precisely when Asp^0 contains passive features. The disadvantage of Embick's proposal is that it requires head movement between two positions to be *variable*, depending on other syntactic features present on a head.

- Converging evidence for the proposal that **both** present and past are specified features in Latin is the fact that Latin, in contrast to Arabic, has both present and past tense copular forms of BE.

- Along the same lines, finite verbs in Latin occur in the same high structural position in both the present and the past. Embick (2000) argues that this is the result of verb movement to T^0.

- Regarding unspecified imperfective Asp^0, we once again find evidence from the morphological form of aspectual auxiliaries.

  In Latin (as in the modern Romance languages) this verb shows **imperfective** morphology despite the fact that the clause as a whole has a **perfect** interpretation. The perfective auxiliary is not possible in the same environment:

(20)   Crustulum   **consumptum erat**/*__fuit__.
       small.pastry-NOM eat-PASS.PTCP **be**.3SG.PAST.IMPF/*__be__.3SG.PAST.PFV
       "The little pastry had been eaten."

- (20) again represents an environment **aspectual neutralization**, and thus provides evidence that the morphological imperfective in Latin does not necessarily reflect the presence of imperfective inflectional features.

4.3   Summary of the system

- In this section we have seen that a very simple model of verbal inflection can account for the overflow pattern of auxiliary use, when taken together with the idea that auxiliary BE realizes stranded inflectional features.

  1. Heads that introduce inflectional features themselves prevent higher inflectional heads from being local to V^0.

  2. Some inflectional feature values are **unspecified** (unmarked), and heads with such values do not block locality between higher heads and V^0.

  3. **Head movement** may bring a head (i.e. V^0) into local relationships with more than one higher functional head

- Different patterns of auxiliary use arise from variation in (2) and (3): which feature values are specified, and where in the clausal spine there is head movement.

5   Conclusion

- I have argued that auxiliaries are a morphological response to **failures** of the inflectional system: cases in which inflectional features fail to unite with the main verb.

- This move is *necessary* to account for the **overflow** pattern of languages like Latin, Arabic, and Kinande, but applies to the **additive** pattern of languages like English as well.

Issues for further research

- Further corroborating evidence for the required distribution of head movement.

- Other criteria for feature markedness.

- Extension to other auxiliaries: HAVE and auxiliary selection (Bjorkman, 2011); verbs of motion and position; etc.

References

Adger, David. 2003. *Core Syntax*. Oxford University Press New York.

Aikhenvald, Alexandra Y., and R. M. W. Dixon. 2007. *Serial verb constructions: a cross-linguistic typology*. Oxford University Press.

Aoun, Joseph E., Lina Choueiri, and Elabbas Benmamoun. 2010. *The syntax of Arabic*. Cambridge University Press.

Arregi, Karlos. 2000. Tense in Basque. Ms. MIT.

Baker, Mark C. 2008. *The syntax of agreement and concord*. Cambridge University Press.

Benmamoun, Elabbas. 1999. Arabic morphology: The central role of the imperfective. *Lingua* 108:175–201.

Benmamoun, Elabbas. 2000. *The feature structure of functional categories: A comparative study of Arabic dialects*. Oxford University Press.

Bjorkman, Bronwyn M. 2011. BE-ing Default: the Morphosyntax of Auxiliaries. Doctoral Dissertation, MIT.

Bjorkman, Bronwyn M. to appear. Go get, come see: motion verbs, morphological restrictions, and syncretism.

Cardinaletti, Anna, and Giuliana Giusti. 2001. "Semi-lexical" motion verbs in Romance and Germanic. In *Semi-lexical categories: The funtion of content words and the content of function words*, ed. Norbert Corver and Henk C. van Riemsdijk, 371–414. Walter de Gruyter.

Carnie, Andrew, and Eithne Guilfoyle. 2000. *The syntax of verb initial languages*. USA: Oxford University Press.

Chomsky, Noam. 1957. *Syntactic structures*. The Hague, Mouton.

Chomsky, Noam. 1998. Minimalist inquiries: the framework. *MIT Occasional Papers in Linguistics* 15.

Comrie, Bernard. 1976. *Aspect: an introduction to the study of verbal aspect and related problems*. Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.

Cowper, Elizabeth A. 2010. Auxiliary Verb Insertion. Handout from ACL/CLA Conference.

Dahl, Östen. 1985. *Tense and aspect systems*. Oxford: Basil Blackwell.

Dechaine, Rose-Marie. 1993. Predicates across categories: Towards a category-neutral syntax. Doctoral Dissertation, University of Massachusetts at Amherst.

Dechaine, Rose-Marie. 1995. One *be*. *Linguistics in the Netherlands* 12:73—88.

Demirdache, Hamida, and Miryam Uribe-Etxebarria. 2000. The primitives of temporal relations. In *Step*

by step: Essays on minimalist syntax in honor of Howard Lasnik, ed. Roger Martin, David Michaels, and Juan Uriagereka. Cambridge, MA: MIT Press.

Den Dikken, Marcel, and Eric Hoekstra. 1997. Parasitic participles. *Linguistics* 35:1057–1090.

Embick, David. 2000. Features, syntax, and categories in the Latin perfect. *Linguistic Inquiry* 31:185–230.

Emonds, Joseph E. 1978. The verbal complex V'-V in french. *Linguistic Inquiry* 21:49–77.

Fassi Fehri, Abdelkader. 1993. *Issues in the structure of arabic clauses and words*. Dordrecht: Kluwer Academic Publishers.

Giorgi, Alessandra, and Fabio Pianesi. 1997. *Tense and aspect: From semantics to morphosyntax*. Oxford University Press, USA.

Greenberg, Joseph H. 1966. *Language universals: With special reference to feature hierarchies*. The Hague: Mouton & Co.

Haegeman, Liliane, and Terje Lohndal. 2010. Negative concord and (multiple) agree: a case study of West Flemish. *Linguistic Inquiry* 41:181–211.

Jakobson, Roman. 1939. Signe zéro. In *Mélanges de linguistique offerts a Charles Bally*, 143–152. Georg et Cie. S.A.

Klein, W. 1994. *Time in language*. Routledge.

Kusumoto, K. 1999. Tense in embedded contexts. Doctoral Dissertation, University of Massachusetts.

Lasnik, Howard. 1981. Restricting the theory of transformations: A case study. In *Explanation in linguistics: The logical problem of language acquisition*, ed. Norbert Hornstein and David Lightfoot, 152–173. London: Longman.

Lasnik, Howard. 2000. *Syntactic structures revisited: Contemporary lectures on classic transformational theory*. The MIT press.

Merchant, Jason. 2011. Aleut case matters. In *Pragmatics and autolexical grammar: In honor of Jerry Sadock*, ed. Etsuyo Yuasa Yuasa, Tista Bagchi, and Katharine P. Beals, 382–411. Amsterdam: John Benjamins.

Mohammad, Mohammad. 1988. On the parallelism between IP and DP. In *Proceedings of WCCFL VII*, ed. Hagit Borer, volume 7, 241–254.

Olsen, Mari B. 1997. *A semantic and pragmatic model of lexical and grammatical aspect*. New York: Garland Publishing.

Pollock, Jean-Yves. 1989. Verb movement, universal grammar, and the structure of IP. *Linguistic Inquiry* 20:365–424.

Preminger, Omer. 2009a. Breaking agreements: Distinguishing agreement and clitic doubling by their failures. *Linguistic Inquiry* 40:619–666.

Preminger, Omer. 2009b. Failure to agree is not a failure: Agreement with post-verbal subjects in Hebrew. *Linguistic Variation Yearbook* 9:241–278.

Preminger, Omer. 2011. Agreement as a fallible operation. Doctoral Dissertation, MIT.

Rizzi, Luigi. 1990. *Relativized minimality*. MIT Press.

Schütze, Carson T. 2003. When is a verb not a verb? *Nordlyd* 31:400–415.

Smith, Carlota S. 1991. *The parameter of aspect*. Kluwer Academic Press.

Tenny, Carol L. 1987. Grammaticalizing aspect and affectedness. Doctoral Dissertation, MIT.

Tenny, Carol L. 1994. *Aspectual roles and the syntax-semantics interface*. Kluwer Academic Publishers.

Wiklund, Anna-Lena. 2005. *The Syntax of Tenselessness: On Copying Constructions in Swedish*. Umeå: Umeå University, Faculty of Arts, Philosophy and Linguistics.

Wurmbrand, Susi. 2003. *Infinitives: Restructuring and clause structure*. Mouton de Gruyter.

Wurmbrand, Susi. 2010. Parasitic morphology in germanic: Consequences for the theory of feature checking. *Ms., University of Connecticut. Storrs. [Detailed handout available at: http://wurmbrand.uconn.edu/Susi/Agree.html]* .

Wurmbrand, Susi. 2011. Reverse Agree. Lecture Notes. Retrieved from: http://wurmbrand.uconn.edu/Papers/Agree-and-Merge.pdf.

Bronwyn M. Bjorkman

Zeijlstra, Hedde. 2010. There is only one way to agree. Talk given at GLOW 33, Wroclaw, Poland.
Zwicky, Arnold M. 1969. Phonological constraints in syntactic descriptions. *Papers in Linguistics* 1:411–463.

A   Choosing a mechanism for verbal inflection

This talk is primarily concerned with **general** properties required of a system of inflection, in light of the overflow pattern of auxiliary use.

In this appendix I turn to more concrete proposals for the mechanism involved.

Recall the requirements for this mechanism:

1. It must be able to combine higher inflection with a lower verb (so that "stranded" inflection is realized by auxiliaries that are higher than V^0).

2. It must be constrained by (relativized) locality, so that only the closest inflection to the verb can combine with it.

Movement based theories of inflection (Affix Hopping, Lowering, Raising) do satisfy these requirements.

- However, no movement-based approach can provide a generalized theory of auxiliary occurrence.
  - → Languages with parallel auxiliary profiles differ precisely in whether they have verbs *in situ* or in T^0 – thus whether they would exhibit Lowering or Raising.
  - → Classic example: **English** vs. **French** (Emonds, 1978; Pollock, 1989)
- Similarly, movement-based approaches encounter problems when the same inflectional morphology appears on more than one verb:
  - → Serial verb constructions (Aikhenvald and Dixon, 2007) and "quasi-serial" constructions (Zwicky, 1969; Cardinaletti and Giusti, 2001; Bjorkman, to appear)
  - → Inflection doubling in Germanic languages (Den Dikken and Hoekstra, 1997; Wiklund, 2005; Wurmbrand, 2003, 2010, a.o.)
  - → If inflection is a head that moves (or is moved to), shouldn't appear in more than one place.

Conclusion: Verbal inflection is manipulated via abstract features.

The most widely assumed such mechanism is **Agree** (Chomsky, 1998).

However. . .

- An advantage of Lowering and Raising: Inflection $\approx$ functional heads above V^0
  - → This accords with the semantics of temporal/inflectional composition (Tenny, 1987, 1994; Smith, 1991; Klein, 1994; Giorgi and Pianesi, 1997; Kusumoto, 1999; Demirdache and Uribe-Etxebarria, 2000, among many others).
- "Off the shelf" Agree **lacks** this property:
  - → Chomsky (1998): Agree is triggered by unvalued/uninterpretable features that search for **lower** features to be valued by.
  - → Features on T^0, Asp^0, etc., would have to be unvalued (and uninterpretable) in order to trigger Agree; the **target** of Agree would be **valued** features on V^0.

- One solution: "reverse" the directionality of Agree, allowing **downward** feature valuation.

- An increasing body of work argues for this possibility, including: Baker (2008); Haegeman and Lohndal (2010); Zeijlstra (2010); Merchant (2011); and Wurmbrand (2011).

In Bjorkman (2011) I adopt the "reversed" definition of Agree in (21):

(21)　　*Agree*
　　　　Agree is a relationship between two features such that an unvalued feature [F:＿] receives the value of a feature [F:val] of the same type iff:
　　a.　　A head α containing [F:＿] is c-commanded by a head β containing [F:val].
　　b.　　There is no head γ containing a matching feature [F:(val)], such that γ c-commands α and β c-commands γ.

- The condition in (21b) represents the relativized locality property of Agree. This applies, however, only if all inflectional features are of a single **type**, and if all inflectional heads are potential **targets** of inflectional Agree.

　　$\rightarrow$ Adapting Adger (2003): inflectional features are all [INFL:*val*], with possible values PAST, PROG, PASS, etc. Verbs are merged with an unvalued inflectional feature ([*u*INFL:＿]). Any head with a valued inflectional feature **also** carries [*u*INFL:＿] (exception: T^0 bears only a valued inflectional feature).[12]

- Relativized Minimality gives rise to the desired *locality* of inflection: functional heads bearing inflectional features will act as **intervenors** for Agree from higher heads:

(22)
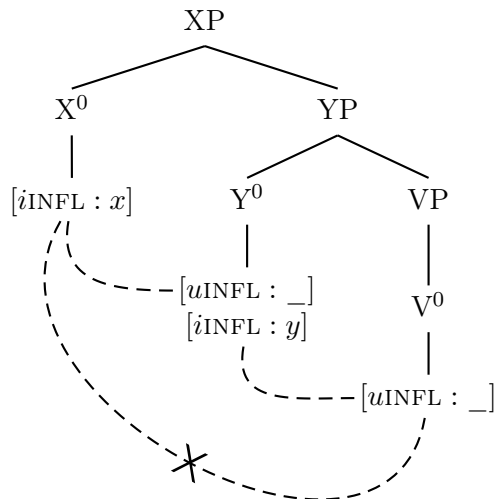
- The "stranded" features are *syntactically* perfectly happy: it is in the *morphological* component that they trigger insertion of an auxiliary, according to something like the following principle.[13]

> Auxiliary BE is inserted post-syntactically to support verbal inflectional features that are realized as affixes but which are morphologically interpreted in a head that does not contain V^0.

---

[12]Alternatively we could suggest that unvalued inflectional features do not actually result in a derivational crash, but instead act only as *triggers* for Agree when it is possible. This is in the spirit of a series of proposals by Preminger (2009a,b, 2011), who proposes that φ-agreement should be understood as an operation that is required when possible, but that nonetheless can fail without the derivation crashing.

[13]The morphological mechanisms whereby auxiliary BE is inserted are discussed at greater length in section 2.3.6 of Bjorkman (2011).