

Appl's got gravity: head movement, have-raising, and the evolution of *(have) got*

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Roadmap

- §1 Introduction
- §2 *Do*-support
- §3 Gravity effects in *have*-raising
- §4 Derivational timing and locality

1 Introduction

This talk is about why English *have* raises sometimes and not other times:

- (1) a. **Have** I eaten enough jam? (perfect *have*)
- b. Did Jim **have** his car break down? (affective *have*)
- c. **Have** you any jam? (possessive *have* in NBrE¹)
- d. Do you **have** any jam? (possessive *have* in AmE)

Main empirical question:

Why does *have* raise when it does in each dialect?

New data from the Scots Syntax Atlas: in some Scots varieties, whether possessive *have* raises depends on the definiteness of the possessee (Smith et al. 2019):²

- (2) a. **Have** you any money for the meter? (indefinite possessee)
 - b. Do you **have** that charger with you? (definite possessee)
- (adap. Thoms et al. forthcoming:10-11)

Thoms et al. claim the difference between (2a) and (2b) is that the latter contains an Appl(icative) head, required in definite possession.³

¹AmE refers to most American Englishes; NBrE refers to some northern British Englishes.

²This is also probably true in some British Englishes (Heycock 1994: 239).

³Even if the difference isn't Appl, it's presumably still below *have*.

→ This makes Appl a **non-intervening blocker** of head movement (HM):

- (3) [_{CP} do [_{TP} you ...have ...[_{ApplP} **APPL** that charger with you ?]]]
- ↑ × ↓

Main theoretical question:

How can non-intervening blockers be modeled in theories of HM?

1.1 A preview of my proposal

The core intuition:

Certain heads act as 'gravity wells', preventing higher heads from raising.

This is predicted by a reinterpretation and slight modification of Arregi & Pietraszko's (2021) Generalized Head Movement:

- (4) **Generalized Head Movement (GenHM)**
 - a. Heads with [hm] combine with heads below them to form head chains.
 - b. Head chains are linearized at the highest component head with [*], or at the highest component head if none have [*].

My proposal: Walls and wells

- (5) a. By default heads chain together, and these chains are linearized as high as possible.
- b. Heads with [#] place **walls** below them which block head chain formation across them.
- c. Heads with [*] are **gravity wells**, attempting to linearize overt morphology at their position.

The interaction between walls, wells, and derivational timing/locality yields one prediction not present in GenHM:

- (6) When there is wall between a null gravity well Z and the next highest overt head X, and X is the highest head in its spellout domain, then X may not form a head chain with the head above it.

→ When *have* doesn't raise, it's because of (6).

2 Do-support

→ To understand *have*-raising, an analysis of *do*-support (its alternative) is needed.

In English, auxiliaries generally raise under interrogatives, negation, and verum focus, while lexical verbs stay put and trigger *do*-support:

- (7) a. I should dance. → **Should** I dance?
 b. Jam tastes good. → Does jam **taste** good?

In diagrams like (8), heads in a chain are connected by lines, and the linearization position of each chain is represented by its bottommost point:⁴

- (8) a. Interrogatives b. Auxiliaries c. Declaratives
-

Problem: In (8a), T doesn't form a chain with V, meaning it must have [#]. But T can't have [#], because it forms a chain with Aux in (8b).

Solution:⁵ T doesn't have [#], but Voice does:

- (9) a. Interrogatives b. Auxiliaries
-

Thus $V \rightarrow T$ is blocked, but $Aux \rightarrow T$ is not.

New problem: how do V and T combine in declaratives like (8c)?

Solution: Merger Under Adjacency (Bobaljik 2002; Harley 2013): V and T merge through adjacency after linearization (Harizanov & Gribanova 2019).⁶

Takeaway

It will be important throughout this talk that Voice has [#].

⁴The bottommost point will be placed between nodes when I wish to stay agnostic.

⁵Arregi & Pietraszko (2021) have a different solution to this ('Split by Intervention' and 'Orphan Assignment'), but it isn't able to model non-intervening blockers.

⁶This is returning to the pre-GenHM idea of *do*-support as a lack of $V \rightarrow T$ (Chomsky 1957).

3 Gravity effects in *have*-raising

§3.1: The Scots definiteness contrast

§3.2: Causative, affective, and light verb *have*

§3.3: Perfect *have*

§3.4: Modal *have*

§3.5: *Have got*

3.1 The Scots definiteness contrast

Thoms et al. (forthcoming) assume that definite possession in some Scots dialects makes use of Appl, while indefinite possession doesn't:

- (10) a. Definite possession b. Indefinite possession
-

→ The parameters in (11) plus the provisional rule in (12) derive all and only the attested variation in possessive *have*-raising:

- (11) a. Whether Appl has [*] or not.
 b. Whether Appl is used for indefinite possession or not.

(12) Gravity effects in head movement (to be revised)

For every head with [*], the next highest head can't form head chains with heads above it.

- (13) a. American English b. Some British and Scots c. Other British and Scots
- | | | |
|------------------------------------|-------------------------------------|--------------------------------------|
| C _{+Q} T Vc Appl* | C _{+Q} T Vc (Appl) | C _{+Q} T Vc (Appl*) |
| <u>do you have any jam?</u> | <u>have you any jam?</u> | <u>have you any jam?</u> |
| <u>do you have the jam?</u> | <u>have you the jam?</u> | <u>do you have the jam?</u> |

Deriving the attested variation in possessive *have*-raising

(13a): Appl has [*] and is used for all possession, so *have* never raises.

(13b): Appl doesn't have [*], so *have* always raises (no matter whether Appl is used for indefinite possession or not).

(13c): Appl has [*], but is not used for indefinite possession, leading to the definiteness contrast.

Crucially we don't predict the unattested dialect:

(14) *An unattested, impossible dialect:*

- a. Do you have any jam?
b. Have you the jam?

3.2 Causative, affective, and light verb *have*

Causative, affective, and light verb (CAL) *have* never raise:

- (15) a. Did you **have** a conversation with Marion's son already? (light verb)
b. Did you **have** your men get the jam already? (causative)
c. Did you **have** your car break down earlier? (affective)

CAL-*have* as Voice (cf. Myler 2016)

→ *Have* never passivizes:⁷

- (16) a. * That charger **is had** (by you).
b. * Your men **were had** get the jam already (by you).
c. * Your car **was had** break down earlier (by you).

→ Voice canonically introduces external arguments with unspecified causer/experiencer roles.

⁷Light verb *have* sometimes passivizes. But this is marginal and unproductive:

- (i) A conversation **was had** (? with Marion's son) (?? by Joel).

Most HM theories can't unify CAL *have* and possessive *have* because they have different raising properties. Now we can chalk this up to the structure below *have*.

→ I argue CAL-*have* never raise because they dominate a gravity well:

- (17) a. Causative/affective *have* b. Light verb *have*
-

Deriving the lack of CAL *have*-raising

English little-*v* has [*]. Thus *have* can't raise in (17a) and (17b).

Problem: Why is Voice₂ pulled down, and not Voice₁, in (17a)?

Solution: Revise the claim in (12):

(18) **Gravity effects in head movement** (*still to be revised*)

For every head with [*], the next highest head **with overt morphology** can't form head chains with heads above it.

→ Voice₂ is the target because it has overt morphology, while Voice₁ doesn't.⁸

Finding the same lower head in both (17a) and (17b) explains why in all dialects CAL *have* patterns as a unit with regards to *have*-raising.

⁸I assume throughout the talk that *have* is the allomorph of transitive Voice when the head directly below it lacks overt morphology.

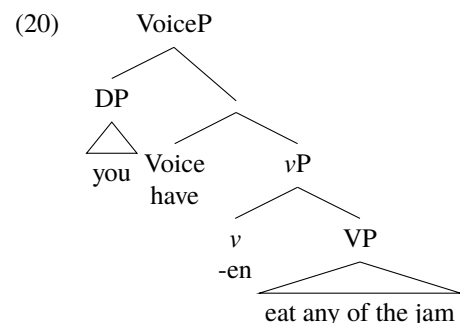
3.3 Perfect *have*

Having unified possessive *have* and CAL *have*, I turn to perfect and modal *have*.

Perfect *have* always raises and co-occurs with participials:

(19) **Have** you **eaten** any of the jam?

Problem: Assuming *have* is Voice, perfect *have* immediately dominates little-*v*:



Since little-*v* is a gravity well, (18) predicts that perfect *have* never raise.

Solution: Revise our claim again:

(21) **Gravity effects in head movement** (*just one more revision*)
 For every head with [*] **without overt morphology**, then the next highest head **with overt morphology** can't form head chains with heads above it.

Deriving perfect *have*-raising

Because little-*v* has overt morphology in (20), (21) does not apply.

Cross et al. 2019: a similar structure for Kanien'kéha (Mohawk) stative perfects⁹

Perfect *have* could also be a separate item in Asp, but...

- That wouldn't unify *have*.
- The same modification in (21) will be required again.

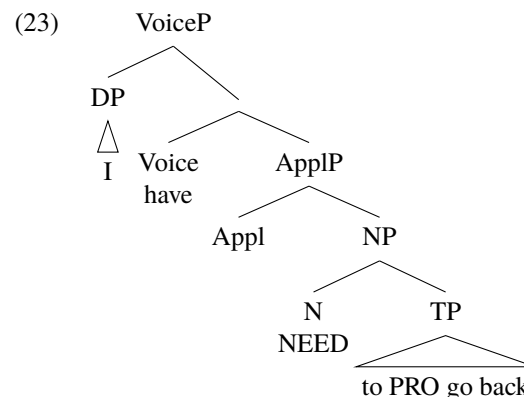
⁹I do not go into depth on interpretation here. The intuition is that little-*v* is stative and creates a state of 'having eaten the jam', saturated by the external argument.

3.4 Modal *have*

The last canonical use of *have* to be unified is modal *have*:

(22) I **haven't** to go back until September. (Thoms et al. forthcoming: 30)

I assume that modal *have* is underlyingly possessive:



Here English *have to* is on the surface identical to Italian *avere bisogno di*:

(24) *ho bisogno di tornare*
 have.1s need to return
 'I have to go back.'

Facts explained if modal *have* is underlyingly possessive

- Modal *have*-raising seems accepted only by dialects which also accept possessive *have*-raising.
- (*Have*) *got* can only be used as a possessive and modal.

3.5 Have got

All that's left to unify *have* is *have got*.

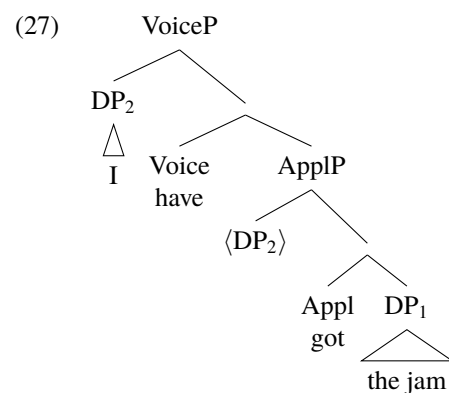
Interestingly, while English *have* is very polysemous:

- (25) a. Marion **has**¹⁰ a party for national penguin day every year. (light verb)
 b. Marion **has** her son go get some jam for the party. (causative)
 c. Her son **has** his car break on the way to the store. (affective)
 d. Finally, he **has** the jam in his hands. (possessive)
 e. He knows he **has** to get back quickly. (strong modal)
 f. But when he arrives, everyone **has** already eaten! (perfect)

Have got is less polysemous. It can only be possessive and modal:

- (26) a. ~~Marion **has got** a party for national penguin day every year.~~
 b. ~~Marion **has got** her son go get some jam for the party.~~
 c. ~~Her son **has got** his car break on the way to the store.~~
 d. Finally, he's **got** the jam in his hands. (possessive)
 e. He knows he's **got** to get back quickly. (strong modal)
 f. ~~But when he arrives, everyone's **got** already eaten!~~

→ The only element present in both possessive and modal *have* that is never present in its other uses is Appl. Thus I propose that *got* is a realization of Appl, as in (27).



Problem: Without the change in (21), Appl should stop *have* from raising in dialects where Appl is a gravity well. But *have* always raises in *have got*:

- (28) **Has** Dumbledore got a spare wig on him?

Solution: Since Appl has overt morphology (*got*), the rule doesn't apply. This is independent motivation for the change in (21), restated below as (29).

Recap

§3.1: The attested microvariation in possessive *have*-raising is predicted through parameterizing Appl's [*] feature.

§3.2: Causative, affective, and light verb *have* never raise because they dominate a null gravity well.

§3.3: Perfect *have* isn't blocked from raising because its gravity well is overt.

§3.4: Modal *have* is underlyingly possessive *have*.

§3.5: *Got* in *have got* is Appl, explaining its restricted polysemy.

→ The absence of *have*-raising is always due to the following rule:

- (29) **Gravity effects in head movement** (= (21))

For every head with [*] **without overt morphology**, the next highest head **with overt morphology** can't form chains with any heads above it.

Problem: How can we make this rule less vague and stipulative?

Solution: With reference to derivational timing and locality.

¹⁰As in, 'hosts', not as in 'has on her calendar'.

4 Derivational timing and locality

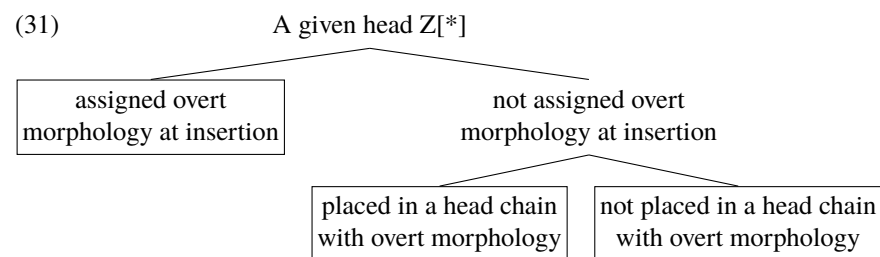
Here I motivate, specify, and restrict my analysis down to the following claim:

(30) The [*] feature of heads is a desire for overt morphology.

Everything here + everything that [*] does in GenHM can be reduced to (30).

4.1 Specifying derivational timing and locality

Assume that (30) is true. For a given head Z with [*] there are three possibilities:



Z is assigned overt morphology at insertion

→ its [*] feature is satisfied.

Z is placed in a head chain with overt morphology

→ it pulls the overt morphology to itself and linearizes it there.

(A rephrasing of the [*] feature's role in GenHM.)

Overt morphology stolen up a head chain

Due to the bottom-up nature of head chain linearization, overt morphology will always be linearized at the highest gravity well in a chain: first the lowest well will pull it in, then the next lowest well will steal it, and so on.

Z is not assigned overt morphology at insertion, or placed in a head chain with overt morphology

→ it bars the next highest head from forming chains with heads above it.¹¹

¹¹Crucially, this scenario arises when there are heads with [#] intervening between Z and overt heads on either side – Z is unable to pull in overt morphemes across walls.

BUT... this only targets phase heads.

One crucial restriction

- Z can't stop head chains from forming in the phase below it
(since that happens before Z knows it's null)
- Z can't stop head chains from forming in the same phase as it
(head chain formation precedes phonological insertion, so Z still doesn't know it's null)
- Z can't stop head chains from forming in phases above it
(Z needs to know that its target is overt before blocking head chains)

→ Z can only target cross-phasal head chains

(where it can see that a higher head has overt morphology before that head can form a chain with higher heads)

- morphological HM is strictly local, obeying the HMC (Travis 1984)
- only chaining a phase head and the next highest head can be blocked

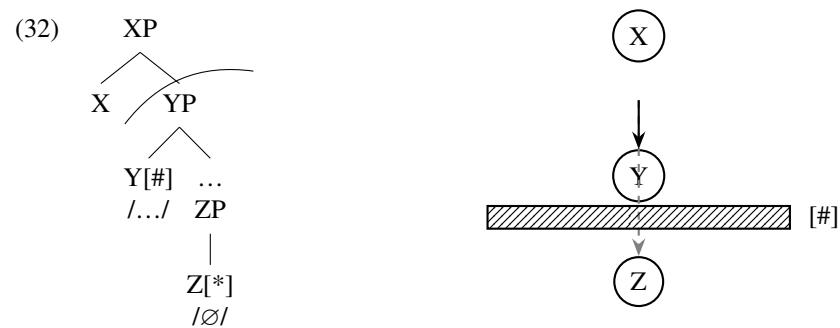
4.2 Modeling gravity

Why does [*] still have an effect when Z isn't connected to overt morphology?

→ It helps to model head chains as objects in physical space:

- By default, all heads chain together and are linearized high
- [#] features act as large walls in the derivation, preventing heads from forming chains across them
- [*] features act as gravity wells, pulling in heavy (overt) objects

Head chain linearization is modeled using diagrams like (32):



Reading gravity diagrams

(32): *have-raising* is blocked:

- Z is a head with [*] and no overt morphology (e.g. Appl or *v*).
- Y is a phase head with [#] and overt morphology (e.g. *have*).
- There are no heads between Y and Z with overt morphology.

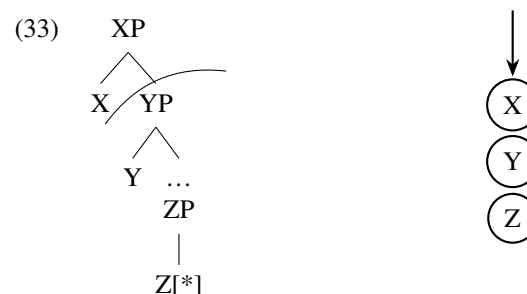
Assume that the general flow of gravity is upwards, and that:

- [*] features act as heavy objects, attractors of overt morphology.
- [#] features act as walls placed directly below the heads they live on.

The crucial insight of gravity

In (32), Z attracts Y towards it, but the wall created by Y's [#] feature blocks them from forming a head chain. But *just like with gravity*, Y is still pulled down against the wall, and thus can't form a head chain with X.

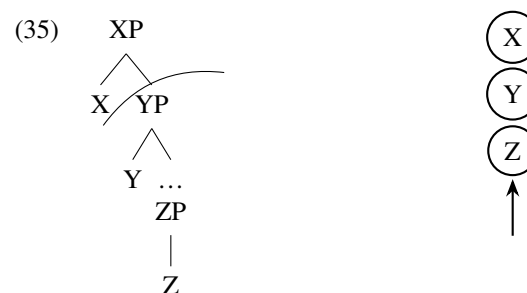
(33) is the same scenario but without the wall [#] feature on Y:



(34) is the scenario in which Z lacks [*], and Y has [#] (*have-raising*):



Finally, (35) is the scenario in which Z lacks [*], and Y lacks [#] – the ‘default’ behavior for head chaining:



Some more interactions for the same configuration:

	X		X[#]	
	Y	Y[#]	Y	Y[#]
Z	[XYZ]@X	[XY]@X,[Z]	[X],[YZ]@Y	[X],[Y],[Z]
Z[*]	[XYZ]@Z	[X],[Y],[Z]	[X],[YZ]@Z	[X],[Y],[Z]

5 Conclusion

- By allowing null gravity wells to condition higher *have*-raising, we have means of understanding...
 - that possessive *have*-raising is parameterized by the presence and feature content of Appl
 - that causative, affective, and light verb *have*-raising is blocked by a null gravity well little-*v*
 - that perfect *have* isn't blocked from raising, because the little-*v* it dominates is overt
 - that modal *have* patterns with possessive *have* because it is underlyingly possessive
 - that *got* in *have got* is Appl
- Understanding the interaction between [*] and [#] features derives both canonical head linearization effects and the gravity effects discussed here

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6 Appendix

Appendix Roadmap

- §6.1 *Have got* diachronically
- §6.2 Bare *got* diachronically and synchronically

6.1 *Have got* diachronically

This subsection

The title of this talk promises discussion of the historical evolution of *have got* – unfortunately this was cut for time.

→ I argue that my analysis of *have*-raising lends further explanatory adequacy into this history.

The first uncontroversial attestation of stative *have got*:

- (36) *Thou **hast got** more haire on thy chinne, then Dobbin my philhorse has on his taile.* (Shakespeare 2000)

Not the British present perfect *have got*, uncontroversially shown in (37):

- (37) I had got to the party early that night.

The Merchant of Venice was written at the tail end of the Elizabethan period (1558-1603ce), marked by loss of V-to-T movement (Kroch 1989, Biberauer & Roberts 2008):

- (38) a. before: [_{TP} John [_T walk-eth] [_{VP} walk]]
 b. after: [_{TP} John [_T -eth] [_{VP} walk-eth]]
 (adap. Biberauer & Roberts 2008: 245)

→ The loss of V-to-T movement: Voice gained a wall [#]¹²

I assume that while diachronic syntactic shifts need not necessarily have clear motivations, they do often influence and even primarily cause each other (Biberauer & Roberts 2008).

Main Claim

→ The birth of *have got* was primarily caused/made possible by the loss of V-to-T movement.

V-to-T movement first made it possible to distinguish between auxiliaries (Voice and above) and lexical verbs (below Voice) by whether they raised or not.

¹²Actually this may have happened in two steps, with Neg gaining a wall first, and then losing it, or with Aux gaining a wall first (Haerberli & Ihsane 2016).

Learners faced a new analytic decision: *is Appl a gravity well* [*]?

most BrE: no, Appl does not have [*]

most AmE: yes, Appl does have [*]

→ In British dialects, possessive and modal *have* continued to raise, while in American dialects, Appl's gravity well triggered *do*-support instead:

- (39) a. Have you any spare jam? (British)
b. Do you have any spare jam? (American)

But the British version was dispreferred by some dialects, because elsewhere in English questions were only AuxSVO, never VSO

Some British dialects accepted this and continued to learn grammars with *have*-raising, but others started to reanalyze (39a) as AuxSVO with a null V.

This structure had an almost equivalent meaning, and the same surface structure, as the already-existing perfect of *get*: *have got*.

→ Near-equivalence led to takeover: the underlying structure for possessive and modal sentences was mapped to the phonological form *have got* in acquisition, and *got* was reanalyzed as an overt realization of the Appl head in absence of a dominating lexical verb.

The Boon

Most analyses of *have got* agree it came from the perfect of *get* but don't have a reason why (Fodor & Smith 1978, Crowell 1959, Solomon 1982, Chalcraft 2009, Schulz 2012, Lorenz 2016). Now we have a reason.

6.2 Bare *got* diachronically and synchronically

Bare *got* shows the same restricted polysemy as *have got*:

- (40) a. ~~Marion got a party for national penguin day every year.~~
b. ~~Marion got her son go get some jam for the party.~~
c. ~~Her son got his car break on the way to the store.~~
d. Finally, he **got** the jam in his hands. (possessive)
e. He knows he **got** to get back quickly. (strong modal)
f. ~~But when he arrives, everyone got already eaten!~~

I assume the birth of bare *got* was caused by the phonological erosion of *have*.¹³

The first attestation I could find of bare *got* was in 1849 New York (*Corpus of Early English Correspondence* 1988):

- (41) *They got no principles.* (Knickerbocker XXXIV, 12)

The phonological erosion of *have* was analyzed differently by different dialects.

In some, what used to be *have* remained as a null allomorph, and so in these dialects *have* still appears in interrogatives and tag questions:

- (42) a. Have you got a lot of papers to write?
b. You got a lot of papers to write, haven't you?

Many varieties of African American English instead reanalyzed *got* as a main verb, and started using *do*-support with interrogatives and tag questions:

- (43) a. Do you got a lot of papers to write?
b. You got a lot of papers to write, don't you?

In many (if not all) dialects, the phonological erosion of *have* did not target agreement – specifically, the third-person singular present-tense morpheme */-s/*.

This explains why bare *got* with third-person singular subjects is specifically degraded (Solomon 1982, Tagliamonte, D'Arcy & Jankowski 2010, Tuomola 2019):

- (44) a. She*(*'s*) got a lot of papers to write.
b. They(*'ve*) got a lot of papers to write.

Finally, in some African American English varieties, third-person singular (or perhaps animate; see McLaughlin (2014)) agreement is marked directly on the reanalyzed lexical verb:

- (45) She *gots* a lot of papers to write.

¹³Note that this process also presumably occurred with *had better*:

- (i) You better finish this paper now.