

Ellipsis in a modular perspective*

Craig Sailor

University of Edinburgh
cwsailor@gmail.com

Cambridge SyntaxLab

1 March 2021

1 Introduction

When the generative study of ellipsis began in the 60s, one of the fundamental tasks was to identify the nature of the silent ellipsis site:

- Is it projected in the syntax at all? If so, what is its composition?
 - ▶ An atomic null proform, or silent syntactic structure?
- These important questions have since been (all but) settled, with most ellipsis theorists agreeing that ellipsis sites correspond to fully-fledged, normal syntactic structures...
 - ▶ ...albeit ones without any phonological content.

This conclusion invites its own questions, though, and these are far from settled.

- By what means are elided structures rendered silent?
- At what stage in the derivation from structure-building to externalization does this take place?

Surprisingly little progress has been made on these questions, though one persistent idea is all but taken for granted:

- “Ellipsis is deletion at PF.”

To evaluate this statement, I adopt a strictly modular perspective regarding the interface between syntax and phonology.

- Viewed from this perspective, it turns out that accounts relying on phonological deletion fare quite poorly.
- Assuming we don’t want to give up on strict modularity, then, we must pursue alternatives.

After presenting some cyclic interactions between ellipsis and morphology as explananda, I consider what a modularity-friendly approach to ellipsis might look like.

- The most promising candidate seems to be one that takes the silence of ellipsis to be non-application of Late Insertion.

2 Starting assumptions

I adopt the following initial assumptions:

- (1) a. Derivation by phase and the PIC (Chomsky 2001, et seq.)
b. Late Insertion (Halle 1990, Halle and Marantz 1993, et seq.)
c. Strict Modularity (inc. a feed-forward Y-model of grammatical architecture: Chomsky 1965)

*Material in the latter half of this talk is drawn from Sailor (to appear). For judgments and/or helpful feedback, I thank Güliz Güneş, Grace Kuo, Anikó Lipták, Heather Newell, Andrés Saab, Shanti Ulfsbjorninn, two anonymous reviewers, and the audiences at the *Timing of Ellipsis* SLE workshop (Tallinn, 2018), the *Sluicing@50* workshop (Chicago, 2019), the *CASTL FishFeed* (Tromsø, 2019), the *Symposium by Team Stowell* (Greenwich, 2019), and the *Linearizing Constituents Across Domains* workshop (online, 2020).

The last item is rarely discussed explicitly in interface work (from a syntactic angle).

- I lay out a few consequences of this premise below, and then use them as a metric for evaluating theories of ellipsis.

Module: A domain-specific cognitive system dedicated to carrying out a single narrowly-construed computation.

- They take input (formulated in a vocabulary proprietary to that module);
 - Perform their computation automatically;
 - Output the result (requiring translation if it is to be used as input for another module).
- (2) **Some definitional properties of modules** (Chomsky 1965, Fodor 1983, Segal 1996, Jackendoff 1997, Scheer 2012:\$36)
- Domain Specificity*: each module has its own proprietary vocabulary; one module cannot understand the vocabulary of another module.
 - Encapsulation*: the computation within a module is bounded by its own input, which is fixed for each iteration; it is blind to the activity and information of other modules.
- (3) **Domain Specificity in a linguistic context**
- Proprietary vocabularies:
 - Syntax: formal features, categories, phrases...
 - Phonology: distinctive features, segments, x-slots...
 - How to violate: a level (or an individual operation) which has simultaneous access to more than one vocabulary (e.g. accessing both syntactic and phonological information within the same module).
- (4) **Encapsulation in a linguistic context**
- Input-boundedness (no external additions mid-computation)¹
 - Syntax: the Lexical Array (from List 1) / workspaces
 - Phonology: linearized segmental and skeletal information (from List 2)
 - How to violate: a level (or an individual operation) which is able to add new information not originally present in the input mid-computation (i.e. an Inclusiveness violation in MP terms).

I also employ a standard Minimalist heuristic:

- (5) **The Minimalist critique** (or, rather, its consequence):
If we don't need it, we can't have it

- This will have bite when it comes to evaluating inter-modular redundancy.

See Newell and Sailor (in progress) for further discussion of these assumptions and their consequences for the syntax-phonology interface.

- Now on to ellipsis.

3 Holding theories of ellipsis to a strictly modular standard

3.1 Background on ellipsis and Merchant's [E]-feature

The study of ellipsis is primarily concerned with three questions (for an overview, see Merchant 2018):

- The *structure* question: how much structure (if any) is there in an ellipsis site?
 - ▶ General consensus: ellipsis sites can be shown to be syntactically complex, e.g. in their ability to allow subextraction (see the *surface anaphora* of Hankamer and Sag 1976).
 - ▶ By and large, they are syntactically mundane: just regular constituents, an intuition going back to Ross (1969). (But stay tuned.)
- The *identity / recoverability* question: what sort of relation must hold between an ellipsis site and its antecedent?
 - ▶ Differing views: either syntactic identity, semantic identity, or some combination of the two (see Merchant 2018:\$2.6)

¹More has to be said to accommodate recursive systems.

- ▶ (Most of the vast ellipsis literature is concerned with this question.)
- The *licensing* question: what syntactic configurations can ellipsis arise in?
 - ▶ Guiding observation: identity / recoverability isn't enough; we can construct examples of ellipsis that “you can think but you can't say” (**You shouldn't [play with rifles], because to [-] is dangerous.*)
 - ▶ The consensus hasn't changed in decades: ellipsis must be licensed in the syntax by particular heads.²
 - Sadly, the demise of the ECP took along with it the only real progress made on generalizing over these ellipsis-licensing heads (Lobeck 1995).³

The current state of the art, following the work of Merchant (2001, i.a.):

- Since licensing is syntactic, there must be an E(ellipsis)-feature borne by all and only the licensing heads.
 - ▶ [E] is satisfied under Agree (potentially at a distance: Aelbrecht 2010), but that's all that syntax does.
 - ▶ What constrains the distribution of [E] – i.e., why only some heads bear it and not others – is still poorly understood.
- The remaining effects of ellipsis arise entirely at the interfaces, following “instructions” encoded on [E].
 - ▶ LF is instructed to impose some form of identity (e.g. mutual entailment modulo focus-closure);
 - ▶ PF is instructed to generate the silence that characterizes ellipsis...somehow.
 - The latter is why ellipsis is commonly referred to as simply “deletion at PF”.

3.2 Ellipsis isn't “deletion at PF”

What does “deletion at PF” actually mean? Surprisingly few attempts to be explicit.

- To his credit, Merchant does offer some initial suggestions (emphasis mine), despite it being orthogonal to his interests:
 - ▶ Merchant (2001:60): “the [E] feature will indicate [that] its sister is not to be prosodically incorporated into the PF structure at all.”
 - ▶ Merchant (2004:671): “...a familiar kind of **morphologically triggered syncope**: here the morphological trigger is [E] and the syncopated element is TP. This is the entirety of ‘PF-deletion’ [...] The non-pronunciation is entirely controlled by the actual phonology (that component which takes a PF structure as its input), in ways familiar from studies of morphologically determined syncope phenomena, **here merely applied to a larger prosodic unit.**”
 - “...(how this should be implemented in current models of phonology is not germane to my interests here).”
 - Point of order: it can't be implemented.
 - Scheer (2011:616): “No phonological theory is suited for the manipulation of this kind of object, which phonologists look at like an ant looks at a jumbo jet.”
 - ▶ Merchant (2008:134): “...we can view [E] to be **something like a suprasegmental**, but with the unusual effect of parsing its complement IP into a prosodically unrealized category. [...] PF-‘deletion’, in this view, is the result of **a feature in the syntax**”
- But the modularity problems are plain:
 - ▶ Even putting aside well-placed criticisms of [E] as being mostly descriptive, it poses a serious modularity problem if formulated this way.
 - ▶ Domain Specificity cannot allow “a feature in the syntax” “to be something like a suprasegmental”.

²The head-licensing generalization can be traced back to Zagana (1982), with precursors in Bresnan (1976) and Sag (1976).

³Roughly, Lobeck's analysis subjected ellipsis sites to the ECP, and, based on the claim that the licensing heads all bore strong agreement, assigned those heads the status of proper head-governors for their ellipsis sites. Subsequent work has gone on to show that ellipsis sites cannot be analyzed on par with null pronominals, nor are their licensing heads always bearers of strong agreement; thus, the problems with Lobeck's analysis extend beyond those arising solely from technological changes under Minimalism.

Even overlooking the details, it seems any PF-deletion approach will fail. A more general problem looms:

- If we take “deletion” to mean “removal of phonological material”,⁴ then the “at PF” bit has to mean “in the phonology”:
 - Manipulation of the phonological vocabulary can only happen within that module (Domain Specificity).
- One idea that won’t work: the phonology deletes a phrase corresponding to the ellipsis site.
 - Problem: phonology doesn’t work with phrases (see Scheer quote above).
 - You’re thinking, “well prosodic phonology does!”
 - But actually, if we take Minimalist assumptions seriously, then it doesn’t, and it can’t. In brief:
 - Direct Syntax approaches are strong modularity violators (no Domain Specificity)
 - Indirect Reference approaches respect modularity, but duplicate the work of syntax, violating (5).⁵
 - See Pak (2008), Samuels (2009, 2011), Scheer (2011:§706), and Newell and Sailor (in progress).
- Another idea that won’t work: the phonology deletes the individual words that collectively make up the ellipsis site.
 - But where do its marching orders come from? If ellipsis is effected in the syntax (see below), then there’s another Domain Specificity problem lurking:
 - The syntax would then be in the business of marking terminals with “delete me” diacritics only legible within the phonology.
 - Diacritics violate Domain Specificity by definition, since their job is to smuggle bits of one module’s vocabulary into another (Scheer 2012:§95).

So “deletion at PF” is a non-starter when viewed through the lens of strict modularity:

- Deletion would either have to operate on a too-large structure,
- Or it would need diacritic instructions.

But just in case these purely theoretical arguments don’t convince you, how about an empirical argument:

- We turn now to evidence that ellipsis bleeds allomorphy.
- Assuming morphology strictly precedes phonology (Kalin 2020), this is further evidence against phonological deletion.

4 Tone sandhi in Taiwanese and the Segregated Transfer of ellipsis sites (Sailor *to appear*)

4.1 What the interaction of ellipsis and tone sandhi can tell us about the timing of ellipsis

Taiwanese (Southern Min / Min Nan) is a lexical tone language, and is famous for its tone sandhi pattern (“TTS”).

- If a syllable bearing a lexical (“citation”) tone is in non-XP-final position,⁶ it undergoes a predictable tonal alternation, surfacing with another tone instead.⁷
- Throughout, I **bold** syllables that have undergone sandhi (example adapted from Simpson and Wu 2002:74).

⁴We could of course take “deletion” to mean “removal of structure (which then can’t be pronounced)”; this is the tack taken in Murphy and Müller (to appear), for instance, resuscitating some of the earliest generative ideas about ellipsis. Along these same lines is Banerjee (2020), who argues that ellipsis leads to obliteration (terminal removal) in the morphological component prior to Late Insertion. I may return to this below if I remember.

⁵An even weaker version of prosodic phonology reduces the inventory of “prosodic constituents” to the inventory of Spell-Out domains (Kratzer and Selkirk 2007, a.o.), making prosodic constituency superfluous: again see (5). This reduction seems to pose problems for prosodic phonology (see Scheer 2012:§122), but see below for discussion of ellipsis.

⁶This is an oversimplification, as adjunction complicates the characterization of the sandhi domain: essentially, the final syllable of an XP will undergo sandhi just in case that XP is an adjunct. For extensive discussion of these and other complications, see Chen (2000: ch. 10); these do not bear on the present discussion, so I leave them aside.

⁷Taiwanese and Xiamen (Southern Min) tone sandhi involves circular chain shift, a type of counterfeeding opacity that is notoriously difficult to capture in both rule-based and OT-style frameworks. Neither this property nor the actual tones involved (citation or sandhi) bear on the present discussion, which is only concerned with where and when sandhi takes place; therefore, I leave discussion of them aside. See Chen (1987, 2000) and Zhang et al. (2006), among others, for extensive discussion.

- (6) **na-si A-sin m-khi, A-hui ma b-e khi.**
 if A-Sin NEG-go A-Hui also NEG-IMPF go
 'If A-Sin doesn't go, then A-Hui also won't be going.'

So this is a process that looks like it cares about syntactic structure,⁸ and yet it seems to manipulate phonological material.

As we'll now see, it consistently seems to apply after ellipsis has taken place:

- Ellipsis seems to create new XP-final configurations, as far as the TTS 'rule' is concerned (but see below)
- i.e., syllables that would've undergone sandhi if ellipsis hadn't taken place instead arise in citation form.

First consider data from Taiwanese predicate ellipsis ("VPE"; see Sailor and Kuo 2010 for details):

- (7) a. **A-Ying chang b-o khi hak-hau, tan-si A-Ha u khi hak-hau.**
 A-Ying yesterday NEG-PERF go school but A-Ha PERF go school
 'A-Ying didn't go to school yesterday, but A-Ha did go to school.'
- b. **A-Ying chang b-o khi hak-hau, tan-si A-Ha { u / *u } ~~{ khi hak-hau }~~.**
 A-Ying yesterday NEG-PERF go school but A-Ha PERF
 'A-Ying didn't go to school yesterday, but A-Ha did.'

The crucial contrast is between *u* 'PERF' in (7a) vs. (7b):

- In the former, *u* is in a non-XP-final position, and thus undergoes sandhi;
- In the latter, *u* evidently finds itself in an XP-final position at the relevant point, and thus appears with its citation tone.

This effect arises in other ellipsis environments as well, e.g. in nominal ellipsis:

- (8) a. **Chi-Beng beh sann pun chhe, A-Ying beh si pun chhe.**
 Chi-Beng buy three CL books, A-Ying buy four CL book
 'Chi-Beng bought three books, and A-Ying bought four books.'
- b. **Chi-Beng beh sann pun chhe, A-Ying beh si { pun / *pun } ~~{ chhe }~~.**
 Chi-Beng buy three CL books, A-Ying buy four CL
 'Chi-Beng bought three books, and A-Ying bought four.'

- In (8a), *pun* 'CL' undergoes sandhi as usual in non-XP-final position.
- In (8b), *pun* is in XP-final position at PF, and thus cannot undergo sandhi, arising instead with its citation tone.

Thus, ellipsis seems to have taken place by the time tone sandhi is assessed...

- ...on the assumption implicit in Merchant (2001, inter alia) that an elided XP can be sent to PF with other cycle-internal material adjacent to it such as the classifier *pun*. (We return to this below.)

Of course, the probative value of these facts is inherently limited by the timing of tone sandhi:

- If TTS happens very late in the phonology, then the fact that ellipsis precedes it would tell us relatively little about when the silence of ellipsis takes hold.
- Indeed, there are reasons one might assume that TTS applies rather late:
 - ▶ Superficially, it seems to be a system of phonological rules manipulating lexically-specified tones; so, obviously, linearization and Late Insertion need to precede it
 - ▶ Some studies even claim that phonetic information influences the application of TTS (Zhang et al. 2006);
 - Could be taken to indicate that TTS occurs near the very end of the phonological computation, at the phonology-phonetics interface.

⁸For arguments that Taiwanese tone sandhi domains cannot be defined prosodically, see Chen (1987:143) and Tsay and Myers (1996:399). The above arguments against prosodic constituency cross-apply here, as well.

- If correct, the facts above would be telling us little more than “the silence of ellipsis arises at some point before the very end of phonology”—a trivial conclusion.

However, there is at least one significant reason to believe that TTS actually applies much earlier than this:

- There is substantial evidence suggesting that TTS is not actually a phonological process, but rather the effect of contextual allomorphy in the DM sense (Bobaljik 2000)
 - ▶ If correct, would mean that the effects of TTS arise outside the phonology module completely, namely during Late Insertion (where allomorphy is handled)
- This allomorphy-based approach to TTS was first proposed in Tsay and Myers (1996), motivated primarily on theory-internal grounds.⁹
- But since then, compelling evidence has come from work showing the sheer non-productivity of TTS.
 - ▶ Several nonce-word experiments in the literature have shown it to be largely unproductive: for instance, the experiment in Zhang et al. (2006) resulted in just 11.5% correct application of tone sandhi to nonce words, with the overwhelming majority (82.9%) undergoing no change in tone whatsoever, i.e. non-application.
 - ▶ Speakers simply fail to learn the system of opaque rules necessary to generate the sandhi system (see fn. 7).
 - Instead, they must store all sandhi and citation forms together as allomorphs.
 - Nonce-words can have no allomorphs, hence non-application.
 - See Chen et al. (2010) for experimental results supporting this view of TTS, and McPherson (2019) for recent extension of this view to the tone sandhi system in Seenku (Mande).
- In light of this, the ellipsis facts above become much more informative:
 - ▶ Evidently, **the silence of ellipsis is relevant to the allomorph selection calculus.**
 - ▶ That is, silence must arise no later than at Late Insertion.

4.2 Interim summary

So the hits keep coming for a phonological deletion approach to ellipsis:

- Deleting during the phonology is just too late, even if you could make it work from an MP-friendly modular perspective (and you can't).
- In Sailor (to appear), I attempt to sidestep this problem by reexamining the assumption that ellipsis sites are syntactically “innocent”.
 - ▶ The hope was that cyclicity alone could deliver the above facts.
 - ▶ I review this argument below before revisiting the modularity issue, which will lead us to adopt a recent proposal about the nature of Late Insertion.

4.3 Not ordering of rules, but ordering of cycles: the Segregated Transfer of ellipsis sites

Traditional view from Ross (1969), Merchant (2001, inter alia): ellipsis is syntactically innocent—it doesn't interfere with the normal proceedings of that component.

- Aelbrecht (2010): it actually isn't innocent—it can bleed phrasal movement out of the ellipsis site.
- Such interactions mean that ellipsis cannot be strictly post-syntactic; it must be triggered within the same module as – and earlier than – any movement operation it disrupts.

⁹In brief, Taiwanese tone sandhi poses a challenge for some phonological theories that draw a strict distinction between phrasal phonology on one hand and lexical phonology on the other: like many sandhi systems, it seems to apply at the phrasal level (i.e. it is not word-bounded), but it nevertheless exhibits characteristics more consistent with lexical phonology (e.g. it has exceptions, it is not fully productive, etc.). See Tsay and Myers (1996) for discussion and references (and see Scheer 2012: ch. 3 for an entirely non-phrasal approach to external sandhi phenomena).

- ▶ Aelbrecht's proposal, refining Merchant's [E] feature implementation: ellipsis is triggered upon satisfaction of [E] (via Agree, potentially at a distance) as soon as the ellipsis licensing head bearing it is Merged.¹⁰

Satisfaction of [E] leads to immediate Transfer of the ellipsis site to the interfaces, thus rendering it inaccessible for subsequent syntactic operations under the model of cyclicity developed in Chomsky (2001).

- That is, ellipsis can induce what are essentially PIC effects, accounting for limited extraction possibilities in certain structural configurations.¹¹
- I refer to this component of Aelbrecht's analysis as *Segregated Transfer*:
 - ▶ Each elided XP undergoes Transfer to the interfaces alone, immediately upon satisfaction of [E], without any other material external to XP;
 - ▶ The elided XP is thereby segregated from the rest of the syntactic derivation as soon as it is licensed.

The Segregated Transfer property of ellipsis accounts for its capacity to interfere with movement (and other syntactic operations: see below), but it also makes **a previously unnoticed prediction**:

- Ellipsis should also interfere with post-syntactic operations: those that need ellipsis-internal and ellipsis-external material to be visible simultaneously within the same cycle.
- Segregated Transfer ensures that material in an elided XP never shares a post-syntactic cycle with material external to XP, even if they are both contained within the same minimal cyclic domain in the narrow syntax.
 - ▶ Late Insertion would never get the chance to impose the contextual allomorphy needed for TTS, since it wouldn't have access to the relevant context within a single cycle (and on subsequent cycles, ellipsis has already applied, so the context is missing for a different reason¹²).
 - ▶ This is also entirely in keeping with the modularity-minded phonological literature arguing that Spell-Out domains are the only "chunks" that phonology gets to work with (Pak 2008, Samuels 2009, 2011, Newell and Piggott 2014, D'Alessandro and Scheer 2015, a.o.).

Thus, the above data involving ellipsis and TTS can be seen as directly attesting this prediction.

- This has clear advantages over standard approaches in which ellipsis sites are Transferred as usual, alongside ellipsis-external material within the same spell-out domain.
 - ▶ (See Appendix for further justification of Segregated Transfer from a syntactic perspective.)

While this links the syntactic and post-syntactic properties of ellipsis in a pleasing way, it doesn't commit us to a mechanism for actually generating the silence (hence the 'sidestep' mentioned earlier).

- It tells us the cyclic status of an ellipsis site, but not how silence is delivered within that cycle.
- I discuss some possibilities in the remainder of the talk.

5 A modularity-respecting candidate and its consequences: silence as non-insertion

Returning to the earlier task of identifying a modularity-friendly mechanism responsible for the silence of ellipsis, one option exists in the literature:

- Ellipsis doesn't involve deletion at PF, but rather *non-insertion*.

¹⁰It is crucial to Aelbrecht's timing-based account that [E] does not wait until the end of the cycle to undergo Agree; it must happen as soon as the ellipsis licensor bearing [E] is Merged. The urgency with which this feature must be satisfied is not unique to [E]: it has been taken as a common property of features since at least Chomsky (2000), as Aelbrecht (2010:101) notes. This has straightforward analogues in more recent theories of Agree, as well: see the FIND(*f*) operation of Preminger (2014:96), for example.

¹¹Despite this, Aelbrecht (2010:§3.2.4) argues convincingly for a dissociation between the set of elidable XPs on the one hand and the set of phasal XPs on the other.

¹²As Heather Newell (p.c.) points out, this requires us to rule out a Duke-of-York derivation in which the effect of ellipsis is undone on subsequent Late Insertion cycles. I adopt this assumption without further justification.

- ▶ Immediate bonus: no phonological deletion operation required; makes use of independently-needed machinery; can deliver p-side Segregated Transfer effects (but not s-side effects).
- A minority view, even though it's been around as long as Merchant's 'deletion at PF':
 - ▶ First proposed in Bartos (2000, 2001), and adopted and/or explored in Kornfeld and Saab (2004), Saab (2008), Sailor (2021), and even Merchant (2015:207), among others.
- But how does it actually work?

One implementation: licensing marks terminals internal to the ellipsis site with "don't insert on me" features.

- When Late Insertion encounters such a feature, it simply doesn't add List 2 material to that terminal.
- Seems promising: Late Insertion requires access to the syntactic vocabulary anyway, so no Domain Specificity violation (hence these features aren't "diacritics", strictly speaking)
- Problem: the addition of arbitrarily-many "don't insert on me" features mid-computation is a clear Inclusiveness violation, the MP name for an Encapsulation problem: (4).
 - ▶ So we still run afoul of strict modularity with this implementation.

An alternative: Saab (to appear)

- We can overcome the Encapsulation problem by adopting a very early proposal about Late Insertion (Halle 1990):
 - ▶ Late Insertion isn't *additive* (as above), but rather *replacive*:
 - It doesn't add List 2 item to a terminal; rather, it replaces a placeholder variable on that terminal.
 - (See Halle 1990 and Embick 2015:§4.2 for further details on this distinction.)
 - ▶ With this assumption, Saab's solution is to take ellipsis to be removal of this variable within the syntax.
 - Thus, terminals inside an ellipsis site simply fail to provide an input for a replacive Late Insertion operation.
 - Encapsulation is respected: nothing new is added mid-computation.
 - (This of course requires the placeholder variables to be present in the input to the syntactic module, suggesting that they are part of List 1 entries; see Embick 2015:§4.2 for some relevant discussion.)
- This seems to get us what we want, but it carries at least two consequences worth discussing.

Consequence 1 (Sailor 2021): if a non-insertion approach to ellipsis is right, then roots cannot be phonologically prespecified (contra Embick 2000, Borer 2009, 2014, among others)

- They must acquire their phonological features during Late Insertion, as other terminals do¹³
- The problem is straightforward: if roots have phonological prespecification, they are not candidates for Late Insertion (by design: see Embick 2015:§2.3.1)
- But if roots bypass Late Insertion with their phonological prespecification intact, then a non-insertion model of ellipsis should have no silencing effect on them, contrary to fact.
 - ▶ In other words, prespecification predicts a clear functional/lexical divide:
 - Only functional categories should be silenced, leaving lexical categories' inherent phonological features intact.
 - This is directly contradicted by a variety of phrasal ellipsis phenomena, including predicate ellipsis, clausal ellipsis (e.g. sluicing, stripping), etc.

(9) Jessica was saying that Tom tried to buy something, but I don't know...

Sluicing

a. ...what $\{-_{CP}$ Jessica was saying that Tom tried to buy $t_i\}$.

¹³Though whether this involves "free choice" insertion vs. competition is an independent question: see Marantz 1995 and Harley 2014, respectively.

b. *...what [_{CP} Jessica ~~was~~ say(ing) ~~that~~ Tom tri(ed) ~~to~~ buy t_i]

- So either:
 - ▶ (i) the silence of ellipsis is not the result of non-insertion (we go back to the drawing board), or
 - ▶ (ii) no terminal can enter the syntactic derivation already bearing phonological features.
- Given that we already have a strong argument from modularity for adopting non-insertion, we should reject (i).
 - ▶ The good news is there are already compelling arguments for (ii) independent of ellipsis (see esp. Harley 2014)
 - ▶ So ellipsis provides an additional theory-internal argument going in the same direction.

Consequence 2: Something must be said about cyclicity, otherwise we have a problem.

- At a glance, a non-insertion approach is counter-cyclic:
 - ▶ Ellipsis of a very large constituent would seem to require Late Insertion to go back into completed cycles to undo prior instances of lexical insertion (see fn. 12).
 - ▶ This is doubly problematic for the replacive approach to Late Insertion that Saab adopts:
 - In such a case there isn't even anything for Late Insertion to replace—the placeholder variable was swapped out for a List 2 item on a prior cycle
 - If that variable is an essential part of the input to Late Insertion, it cannot operate twice on the same terminal.
- There are various ways of overcoming this; one option comes from a recent proposal in Murphy and Müller (to appear):
 - ▶ For reasons having nothing to do with Late Insertion, they argue that ellipsis is successive-cyclic in a striking way:
 - Ellipsis licensing proceeds bottom-up during the derivation, such that all cyclic domains within an ellipsis site are themselves also ellipsis sites.
 - In other words, ellipsis of TP (e.g.) requires independent ellipsis of the VP within it.
 - See Murphy and Müller (to appear) for an implementation that respects cyclicity (details left aside here).
- See Saab (to appear: fn. 6) for further discussion.

Thus, non-insertion (assuming a replacive model of Late Insertion) seems like a viable, modularity-respecting option for generating the silence of ellipsis.

6 Conclusion

This talk has attempted to highlight some consequences of strict modularity for the theory of ellipsis.

- In particular, two fundamental properties of modules seem to rule out common approaches involving “deletion at PF”
 - ▶ Domain Specificity requires each module's vocabulary to be proprietary;
 - ▶ Encapsulation prohibits addition of new input mid-computation.
- These properties, alongside a basic Minimalist heuristic to avoid redundancy (5), spell trouble for “deletion at PF”:
 - ▶ Any of various possible implementations runs afoul of these premises.
- While it remains an open question to what extent the various properties of ellipsis can be reduced to independently-needed processes (e.g. cyclicity: see the Segregated Transfer effects above),
 - ▶ An approach to the silence of ellipsis involving non-insertion (à la Saab *to appear*) seems to fare the best against these criteria.

References

- Aelbrecht, Lobke. 2010. *The syntactic licensing of ellipsis*. Amsterdam/New York: John Benjamins.
- Banerjee, Neil. 2020. Ellipsis as obliteration: Evidence from Bengali negative allomorphy. In *Proceedings of the Linguistic Society of America*, ed. Patrick Farrell, volume 5, 133–143. Linguistic Society of America.
- Bartos, Huba. 2000. VP-ellipsis and verbal inflection in Hungarian. *Acta Linguistica Hungarica* 47:3–23.
- Bartos, Huba. 2001. Sound-form non-insertion and the direction of ellipsis. *Acta Linguistica Hungarica* 48:3–24.
- Bobaljik, Jonathan. 2008. Where's phi? Agreement as a post-syntactic operation. In *Phi theory: phi-features across interfaces and modules*, ed. Daniel Harbour, David Adger, and Susana Béjar, 295–328. Oxford University Press.
- Bobaljik, Jonathan David. 2000. The ins and outs of contextual allomorphy. *University of Maryland Working Papers in Linguistics* 10:35–71.
- Borer, Hagit. 2009. Roots and categories. Talk given at the 19th Colloquium on Generative Grammar, University of the Basque Country.
- Borer, Hagit. 2014. Wherefore roots? *Theoretical Linguistics* 40:343–359.
- Bresnan, Joan. 1976. The form and functioning of transformations. *Linguistic Inquiry* 7:3–40.
- Chen, Matthew Y. 1987. The syntax of Xiamen tone sandhi. *Phonology Yearbook* 4:109–149.
- Chen, Matthew Y. 2000. *Tone sandhi: Patterns across Chinese dialects*. Cambridge University Press.
- Chen, Szu-wei, James Myers, and Jane Tsay. 2010. Testing the Allomorph Selection Hypothesis in Taiwanese tone sandhi. In *Proceedings of the 22nd North American Conference on Chinese Linguistics (NACCL-22) & the 18th International Conference on Chinese Linguistics (IACL-18)*, ed. Lauren Eby Clemens and Chi-Ming Louis Liu, volume 1, 283–300.
- Chomsky, Noam. 1965. *Aspects of the theory of syntax*. MIT Press.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. Roger Martin, David Michaels, and Juan Uriagereka, 89–155. MIT Press.
- Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. Michael Kenstowicz, chapter 1, 1–52. MIT Press.
- van Craenenbroeck, Jeroen. 2017. VP-ellipsis. In *The Blackwell companion to syntax*. Blackwell, second edition.
- D'Alessandro, Roberta, and Tobias Scheer. 2015. Modular PIC. *Linguistic Inquiry* 46:593–624.
- Embick, David. 2000. Features, syntax, and categories in the Latin perfect. *Linguistic Inquiry* 31:185–230.
- Embick, David. 2015. *The morpheme: A theoretical introduction*. Walter de Gruyter.
- Fodor, Jerry A. 1983. *The modularity of mind*. MIT Press.
- Halle, Morris. 1990. An approach to morphology. In *Proceedings of NELS 20*, 150–184. GLSA.
- Halle, Morris, and Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In *The view from Building 20*, ed. Ken Hale and Samuel Jay Keyser, 111–176. MIT Press.
- Hankamer, Jorge, and Ivan Sag. 1976. Deep and surface anaphora. *Linguistic Inquiry* 7:391–426.
- Harley, Heidi. 2014. On the identity of roots. *Theoretical Linguistics* 40:225–276.
- Jackendoff, Ray. 1997. *The architecture of the language faculty*. MIT Press.
- Johnson, Meredith. 2015. Ellipsis is derivational: Evidence from Hocak VPE. In *Proceedings of the 49th annual meeting of the Chicago Linguistic Society*.
- Kalin, Laura. 2020. Morphology before phonology: A case study of Turoyo (Neo-Aramaic). *Morphology* 30:135–184.
- Kornfeld, Laura, and Andrés Saab. 2004. Nominal ellipsis and morphological structure in Spanish. In *Romance languages and linguistic theory 2002*, ed. Reineke Bok-Bennema, Bart Hollebrandse, Brigitte Campers-Manhe, and Petra Sleeman, 183–198. John Benjamins.
- Kratzer, Angelika, and Elisabeth Selkirk. 2007. Phase theory and prosodic spellout: The case of verbs. *The Linguistic Review* 24:93–105.
- Lobeck, Anne. 1995. *Ellipsis: Functional heads, licensing, and identification*. Oxford University Press.
- Manetta, Emily. 2020. Expanding the typology of Verb Second VPE: The case of Kashmiri. In *Rethinking verb second*, ed. Rebecca Woods and Sam Wolfe, chapter 31, 723–744. Oxford University Press.
- Marantz, Alec. 1995. “Cat” as a phrasal idiom: Consequences of late insertion in Distributed Morphology. Ms., MIT.
- McCloskey, James. 1991. Clause structure, ellipsis and proper government in Irish. *Lingua* 85:259–302.
- McPherson, Laura. 2019. Seenku argument-head tone sandhi: Allomorph selection in a cyclic grammar. *Glossa* 4:1–41.
- Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford University Press.
- Merchant, Jason. 2004. Fragments and ellipsis. *Linguistics and Philosophy* 27:661–738.
- Merchant, Jason. 2008. Variable island repair under ellipsis. In *Topics in ellipsis*, 132–153. Cambridge University Press.
- Merchant, Jason. 2013. Diagnosing ellipsis. In *Diagnosing syntax*, ed. Lisa Lai-Shen Cheng and Norbert Corver, 537–542. Oxford University Press.
- Merchant, Jason. 2015. On ineffable predicates: Bilingual Greek-English code-switching under ellipsis. *Lingua* 166:199–213.
- Merchant, Jason. 2018. Ellipsis: A survey of analytical approaches. In *The Oxford handbook of ellipsis*, ed. Jeroen van Craenenbroeck and Tanja Temmerman, chapter 2, 19–45. Oxford University Press.
- Murphy, Andrew, and Gereon Müller. To appear. Derivational ellipsis and Vehicle Change. In *The derivational timing of ellipsis*, ed. Anikó Lipták and Güliz Güneş. Oxford University Press.

- Newell, Heather, and Glyne Piggott. 2014. Interactions at the syntax-phonology interface: Evidence from Ojibwe. *Lingua* 150:332–362.
- Newell, Heather, and Craig Sailor. In progress. Minimalism and the syntax-phonology interface. In *The Cambridge handbook of Minimalism*, ed. Kleanthes Grohmann and Evelina Leivada. Cambridge University Press.
- Pak, Marjorie. 2008. The postsyntactic derivation and its phonological consequences. Doctoral Dissertation, University of Pennsylvania.
- Preminger, Omer. 2014. *Agreement and its failures*. MIT Press.
- Ross, John R. 1969. Guess who? In *Papers from the 5th regional meeting of the Chicago Linguistic Society*, ed. Robert Binnick, Alice Davison, Georgia Green, and Jerry Morgan, 252–286. University of Chicago.
- Saab, Andrés. 2008. Hacia una teoría de identidad parcial en la elipsis. Doctoral Dissertation, Universidad de Buenos Aires.
- Saab, Andrés. To appear. Ellipsis: its way from syntax to morphology. In *The derivational timing of ellipsis*, ed. Anikó Lipták and Güliz Güneş. Oxford University Press. Available online at: lingbuzz/004522.
- Sag, Ivan. 1976. Deletion and logical form. Doctoral Dissertation, MIT.
- Sailor, Craig. 2009. Tagged for deletion: A typological approach to VP ellipsis in tag questions. Master's thesis, UCLA.
- Sailor, Craig. 2018. The typology of head movement and ellipsis: A reply to Lipták and Saab (2014). *Natural Language & Linguistic Theory* 36:851–875.
- Sailor, Craig. 2021. Ellipsis and the phonological prespecification of roots. Ms., University of Tromsø.
- Sailor, Craig. To appear. The morphophonology of ellipsis: evidence for Segregated Transfer. In *The derivational timing of ellipsis*, ed. Anikó Lipták and Güliz Güneş. Oxford University Press.
- Sailor, Craig, and Grace Kuo. 2010. Taiwanese VP ellipsis and the Progressive Prohibition. Presented at the joint meeting of IACL-18 and NACCL-22. Available online at http://craigsailor.net/papers/sailor_kuo_IACL18_2010.pdf.
- Samuels, Bridget. 2009. The structure of phonological theory. Doctoral Dissertation, Harvard University.
- Samuels, Bridget. 2011. A minimalist program for phonology. In *The Oxford handbook of linguistic minimalism*, ed. Cedric Boeckx, 574–594. Oxford University Press.
- Scheer, Tobias. 2011. *A guide to morphosyntax-phonology interface theories: How extra-phonological information is treated in phonology since Trubetzkoy's Grenzsignale*. De Gruyter Mouton.
- Scheer, Tobias. 2012. *Direct interface and one-channel translation: A non-diacritic theory of the morphosyntax-phonology interface*, volume 68.2 of *Studies in Generative Grammar*. De Gruyter Mouton.
- Schuyler, Tamara. 2001. Wh-movement out of the site of VP ellipsis. In *Syntax at Santa Cruz volume 3*, ed. Séamas Mac Bhloscaidh, 1–20. UCSC Linguistics Department.
- Segal, Gabriel. 1996. The modularity of theory of mind. In *Theories of theories of mind*, ed. Peter Carruthers and Peter K. Smith, chapter 9, 141–157. Cambridge University Press.
- Simpson, Andrew, and Zoe Wu. 2002. IP-raising, tone sandhi, and the creation of S-final particles: evidence for cyclic Spell-Out. *Journal of East Asian Linguistics* 11:67–99.
- Thoms, Gary, and Craig Sailor. 2018. When silence gets in the way: Extraction from *do*-ellipsis in British dialects. In *NELS 48: Proceedings of the Forty-Eighth Annual Meeting of the North East Linguistic Society*, ed. Sherry Hucklebridge and Max Nelson, volume 3, 145–154.
- Toosarvandani, Maziar. 2009. Ellipsis in Farsi complex predicates. *Syntax* 12:60–92.
- Toosarvandani, Maziar. 2018. Persian. In *The Oxford handbook of ellipsis*, ed. Jeroen van Craenenbroeck and Tanja Temmerman, chapter 35, 934–961. Oxford University Press.
- Tsay, Jane, and James Myers. 1996. Taiwanese tone sandhi as allomorph selection. In *Proceedings of the Twenty-Second Annual Meeting of the Berkeley Linguistics Society*, 395–405.
- Zagona, Karen. 1982. Government and proper government of verbal projections. Doctoral Dissertation, University of Washington.
- Zhang, Jie, Yuwen Lai, and Craig Turnbull-Sailor. 2006. Wug-testing the “tone circle” in Taiwanese. In *Proceedings of WCCFL 25*, ed. Donald Baumer, David Montero, and Michael Scanlon, 453–461. Cascadilla Proceedings Project.

Appendix: syntactic arguments for Segregated Transfer (Sailor *to appear*)

Segregated Transfer and phrasal movement

XP-movement out of ellipsis sites is generally possible: this is now treated as definitional of ellipsis (Merchant 2013).

- Wh-movement out of TPE and VPE are cases in point (Ross 1969, Merchant 2001, Schuyler 2001):

(10) I know what I like and what I don't ~~like t_{wh}~~ .

- Thus, syntactic operations like wh-movement can therefore proceed unhindered by ellipsis. But must they?
 - ▶ Is there any possible way that ellipsis could precede a syntactic operation such as phrasal movement?
 - ▶ The answer is clearly “no” if the two are in entirely separate modules, i.e. if ellipsis were simply “deletion at PF”.
 - We would need to find evidence of a bleeding order – that is, a configuration in which wh-movement is blocked just in case ellipsis takes place – to conclude that ellipsis can precede movement.

Aelbrecht (2010): ellipsis bleeds XP-movement if the former is triggered before the latter.

- Based on what we know about the features that drive each, i.e. what attracts XPs and what licenses ellipsis (i.e. hosts [E]).
 - ▶ Her evidence comes from Modal Complement Ellipsis in (varieties of) Dutch, which bleeds e.g. object wh-extraction:

(11) *Dutch* (Aelbrecht 2010:103)

- a. Ik weet niet wie Thomas MOET uitnodigen t_{wie} , maar ik weet wel **wie** hij niet MAG uitnodigen t_{wie} .
 I know not who Thomas must invite but I know AFF who he not is.allowed to.invite
 ‘I don’t know who Thomas HAS to invite, but I do know who he isn’t ALLOWED to invite.’
- b. *Ik weet niet wie Thomas MOET uitnodigen t_{wie} , maar ik weet wel **wie** hij niet MAG ~~uitnodigen t_{wie}~~ .
 I know not who Thomas must invite but I know AFF who he not is.allowed to.invite
Intended: ‘I don’t know who Thomas HAS to invite, but I do know who he isn’t ALLOWED to.’

- Aelbrecht: when wh- moves, where it lands, and when ellipsis is triggered are all relevant factors.
 - ▶ Different values for each of these variables will lead to different movement-ellipsis interactions.
- If ellipsis had not applied, the wh-phrase in (11b) would have been permitted to move as normal.
 - ▶ It is only in the context of ellipsis that such movement is blocked, on the logic that the domain from which it must move is opaque by the time movement would be triggered. (See Aelbrecht 2010:§3.3 for extensive discussion.)

Segregated Transfer and head movement

This logic can be extended to head movement as well.

- Head movement out of an ellipsis site is possible in principle, as in V-stranding VPE environments (McCloskey 1991):

(12) Dúirt mé go gceannóinn é agus cheannaigh ... ~~t_{VP} $t_{cheannaigh}$...~~.
 said I C buy.COND.ISG it and buy.PST
 ‘I said that I would buy it and I did.’ (*lit.* ‘...and bought.’)

- And again, this would follow if head movement preceded ellipsis...
 - ▶ ...or if head movement simply weren’t the sort of thing that could be bled by ellipsis in the first place.

However, we do see evidence of ellipsis bleeding head movement.

- This arises when head movement is triggered later than ellipsis, as in Mainland Scandinavian (e.g. Norwegian, below).
 - ▶ VPE is triggered by T, bleeding verb movement (for verb second), which isn’t triggered until C (Sailor 2018):

- (13) a. *Johan leste ikke *Lolita*, men Marie leste.
 Johan read.PAST not *Lolita*, but Marie read.PAST
Intended: ‘Johan didn’t read *Lolita*, but Marie did.’
 b. Johan leste ikke *Lolita*, men Marie **gjorde**.
 Johan read.PAST not *Lolita*, but Marie do.PAST
 ‘Johan didn’t read *Lolita*, but Marie did.’
- The analysis proposed in Sailor (2018) has since found striking crosslinguistic support from Kashmiri (Manetta 2020), another V2 language.
 - ▶ Unlike Mainland Scandinavian, the finite verb undergoes movement to T independent of V2.
 - ▶ This predicts that Kashmiri ought to have V-stranding VPE, since V-to-T ought to bring the verb out of the ellipsis site prior to its Transfer (assuming T is the licenser of VPE in Kashmiri).
 - As Manetta argues at length, this is exactly what we find (see her §4.2 on evidence for independent V-to-T in the language; data below from her §3.2):

- (14) *Kashmiri* (Manetta 2020: ex. (29))
 A: Təm buuz zi miiraa di-yi mohn-as kitaab yaa shiil-as ciTh.
 3SG.ERG hear.PERF that Mira give-FUT Mohan-DAT book or Sheila-DAT letter
 ‘He heard that Mira will give Mohan a book or Sheila a letter.’
 B: Na, miiraa di-yi nI.
 No Mira give-FUT NEG
 ‘No, Mira will not give (Mohan a book or Sheila a letter).’

- The V-stranding VPE pattern in (14) is only possible in this language because Segregated Transfer is not triggered until a point in the derivation at which the finite verb has left the VP, which allows it to survive ellipsis.
- This is unlike the Mainland Scandinavian verb, which remains trapped in the VP until after Segregated Transfer has taken place, upon Merger of T.
 - ▶ The key ingredient in Kashmiri syntax that generates the pattern we see above is independent V-to-T movement, which Mainland Scandinavian does not have.
 - ▶ Thus, Kashmiri attests a prediction arising from Sailor (2018), and thus provides further support for Segregated Transfer as a core mechanism of ellipsis.

Segregated Transfer and agreement

Now let’s look at a case of ellipsis interacting another quintessentially syntactic phenomenon: agreement.¹⁴

First, agreement into an ellipsis site is possible in principle.

- For example, existentials agree with associates inside VPE sites (van Craenenbroeck 2017):
- (15) a. I didn’t think there would be a jazz pianist at Mr. Gatsby’s party, but there { was / *were }.
 b. I didn’t think there would be jazz pianists at Mr. Gatsby’s party, but there { *was / were }.

- Ellipsis doesn’t disrupt agreement here, suggesting that ellipsis can take place after agreement.

This does seem to be an ordering effect, because ellipsis can disrupt agreement in other circumstances.

- I review Johnson’s (2015) work on Hocak (Siouan), which deserves more attention that it has received to date.

Hocak has obligatory object agreement on little-*v* with certain predicates, as in (16a).

- This language also has a type of “low” VPE in which little-*v* is stranded and filled with *do*.¹⁵

¹⁴Agreement has been argued to be post-syntactic (Bobaljik 2008), but see Preminger (2014: §9.2) for many convincing arguments against this.

¹⁵This is reminiscent of *do*-ellipsis in British English (Thoms and Sailor 2018). See also Persian little-*v*-stranding VPE (Toosarvandani 2009, 2018 and Sailor 2009:59-62).

- In just such VPE cases, object agreement on little-*v* becomes impossible:

(16) *Hocqk* (Johnson 2015: ex. (14)-(15))

- Cecil-ga nee *(h_i)-hoj_i an_{aga} Hunter-ga šge nee *(h_i)-hoj_i
Cecil-PROP me 1OBJ-hit and Hunter-PROP also me 1OBJ-hit
'Cecil hit me, and Hunter hit me too.'
- Cecil-ga nee h_i-hoj_i an_{aga} Hunter-ga šge (*h_i')-u_u
Cecil-PROP me 1OBJ-hit and Hunter-PROP also 1OBJ-do
'Cecil hit me, and Hunter did too.'

- As Johnson convincingly argues, this is a case of ellipsis bleeding agreement.

- ▶ Specifically, the probing little-*v* fails to find a suitable goal, the predicate having been elided immediately upon satisfaction of [E].¹⁶ (See Preminger 2014 for discussion of such agreement failures independent of ellipsis.)

As a pattern specific to ellipsis contexts, this is a Segregated Transfer effect:

- Agreement is only bled just in case the goal has undergone ellipsis as part of a larger constituent whose Transfer to the interfaces is triggered prior to probing for agreement.
- A theory of ellipsis which does not appeal to Segregated Transfer would have to explain this – along with the other ellipsis-syntax interactions in this section, and the ellipsis-morphology interactions laid out in §4 – by some other means.
 - ▶ The outlook for a unified alternative seems dim.

¹⁶See Johnson (2015) for many important details, including the arrangement of the relevant triggering features. In brief, if the position hosting object agreement / *do* is truly little-*v*, then [E] must be located below this position, but above the predicate ellipsis site (see Sailor 2018 for further discussion of the positioning of triggering features). This is an especially low position for [E], but nothing rules this out, particularly given the existence of the predicate ellipsis types mentioned in fn. 15. Despite these atypical properties, though, this phenomenon just looks like run-of-the-mill surface-anaphoric predicate ellipsis (e.g. you can extract out of it): see Johnson (2015:§3).