Argument Ellipsis as External Merge after Transfer

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Abstract

Argument Ellipsis (AE) is a productive process in Hebrew, but some arguments resist ellipsis – precisely those that do not denote individuals. This constraint, a reflection of a general constraint on variables in natural language, is captured if AE sites are descended from a *pro* element that is derivationally replaced by a constituent recoverable from the antecedent. This must occur after spellout (to escape pronunciation) but prior to LF (to allow overt subextraction). The proposed analysis integrates novel data as well as recent findings from studies of AE in East Asian languages, and offers a new derivational path to ellipsis, which invokes neither PF-deletion nor LF-copying.

1. Introduction

It is now customary to classify analyses of ellipsis in natural language as falling under one of two approaches: PF-deletion or LF-copying (see Merchant 2019 for a recent survey). While the PF-deletion approach has come to dominate the literature on NP ellipsis, VP ellipsis and TP ellipsis (sluicing), LF-copying has come to dominate the literature on Argument Ellipsis (henceforth, AE).[1] Focusing on Hebrew (with occasional forays into East Asian languages), the present study attempts to approach AE afresh, integrating the positive aspects of both approaches while not falling under either of them.

The motivation for a novel approach comes from what appears to be an insoluble empirical paradox: AE displays two conflicting sets of properties, one consistent with PF-deletion, the other consistent with LF-copying, but taken *together* – consistent with neither. On the one hand, overt material can be extracted from AE sites, indicating that they are not purely LF-objects. On the other hand, the range of elidable arguments is severely constrained by a *semantic* property, which can only be stated over interpretable objects – *not* PF structures. The paradox seems to stem from a conflict between strongly representational views of ellipsis, and calls for a strongly derivational alternative, at least in the domain of AE.

The empirical novelty of the present study, which pushes in the direction of the derivational solution, consists in identifying the semantic property that is shared by all instances of AE: The elided category must be of type <e>. A range of arguments of higher types – predicates, predicate modifiers and generalized quantifiers – resist AE *even when fully recoverable* from the local linguistic context. I assimilate this phenomenon to a broader constraint on possible variables in natural language, one that has been contemplated before, in various forms (Chierchia 1984, Baker 2003, Landman 2006, Poole 2017).

To qualify as a variable, however, the AE site cannot be just an ordinary syntactic constituent, which happens to be silent. It must be a variable in the syntax. This points towards a version of the *pro*-replacement theory of ellipsis, where the syntactic gap is initially generated as a *pro*, which later gets replaced by a copy of the antecedent.

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[1] Exceptions exist on both sides. For analyses of AE in terms of PF-deletion, see Cheng 2013 and Takahashi 2020.

How much later? Not too late (e.g., at LF), when it no longer possesses phonological features that can survive on material extracted from it. Yet not too early either, or it would undergo spellout, defeating ellipsis.

We are then led to propose that *pro*-replacement occurs at the phase level, immediately after the spellout operation (TRANSFER). While the merged argument goes unpronounced, material extracted from it to the phase edge will "escape silence" by being spelled out at the next phase level. Thus, we resolve the paradox presented above, a paradox of derivational opacity: A property observed on the surface (the constraint on the semantic type of the AE site) is explained by reference to a previous derivational stage (in which *pro* occurs) that is wiped out by subsequent operations. In spirit, then, this study aligns with recent advances in ellipsis studies that capitalize on derivational accounts (see the papers in Lipták and Güneş forthcoming).

The structure of this article is as follows. Section 2 presents the basic properties of AE in our test language, Hebrew, mainly drawing on Landau 2018. Section 3 examines two options of restricting AE by semantic type. One, due to Tomioka 2003 and Bošković 2018, restricts AE sites to properties, type <e,t>. The other, developed here, restricts them to individuals, type <e>. The latter view meshes better with the broader claim that variables *in general* are restricted to this type.

Section 4 is the empirical core of the article. It presents five different environments where AE fails because it applies to an argument whose denotation is not in the domain of individuals. Section 5 demonstrates that such arguments *can* be elided as part of genuine VP ellipsis, thus bolstering the case that AE cannot be reduced to V-stranding VP ellipsis.

Section 6 presents the analysis. First, it is argued that PF-deletion cannot capture the semantic type constraint on AE, and further fails to explain why deaccenting is not similarly restricted. Evidence for subextraction from AE sites is then presented, which furthermore displays morphosyntactic connectivity with the base position; thus, LF-copying is also ruled out. The idea of External Merge after TRANSFER is then introduced, as a natural extension of Internal Merge after TRANSFER ("covert movement"), and illustrated in actual derivations. Section 7 discusses remaining issues and open questions. Contrary to earlier claims, it is shown that genuine quantificational arguments resist AE, as predicted. We then briefly consider the implications of the present analysis for the broader concern with mechanisms of ellipsis, and the challenge of accounting for the selective availability of AE across languages. Section 8 concludes the article.

2. AE in Hebrew

In general, internal arguments of verbs in Hebrew can go missing if their content can be recovered from context. Deictic and topical antecedents can provide the necessary content to some extent, although not as freely as this happens in discourse *pro*-drop languages ("radical *pro*-drop"). Below we focus on the properties of object gaps when they are identified by *linguistic* antecedents and how they differ from regular pronouns. Our discussion and data are extracted and simplified from Landau 2018.[2]

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[2] Landau's (2018) main concern is to vindicate the AE analysis over its competitors – *pro*-drop, Ā-variable and V-stranding VP ellipsis (VSVPE). Most of the data cited in this section is neutral between

To begin with, AE sites support strict or sloppy readings, unlike pronominal objects.

(1) a. Gil nika et ha-šulxan šelo axarey še-Yosi nika ___.
         Gil cleaned ACC the-table his after that-Yosi cleaned
         'Gil cleaned his table after Yosi did.'   (*strict or sloppy*)

     b. Gil nika et ha-šulxan šelo axarey še-Yosi nika oto.
         Gil cleaned ACC the-table his after that-Yosi cleaned it.ACC
         'Gil cleaned his table after Yosi cleaned it.'   (only *strict*)

An AE site accepts a disjunctive antecedent; in the same context, a pronoun only allows the E-type reading.

(2) A: cilamti knesiya o katedrala, ani lo batuax.
        photographed.1SG church or cathedral I not sure
        'I photographed a church or a cathedral, I'm not sure.'

     B: gam ani cilamti ___.
        also I photographed.1SG
        'I also photographed a church or a cathedral.'

     B': gam ani cilamti ota.
         also I photographed.1SG it
         'I also photographed the one that you did.'

Unlike pronouns, the AE site can be construed with "quantificational" meaning (though see section 7 for whether the term is appropriate here).

(3) a. afiti harbe ugiyot. Mixal gam afta ___ /#otan.
         baked.1SG many cookies Mixal also baked.3SG.F them
         'I baked many cookies. Mixal did too.'

     b. ani makir kol student ba-kita ha-zot.
         I know every student in.the-class the-this
         Gam ata makir ___ / #oto.
         also you know him
         'I know every student in this class. You do too.'

AE sites allow nonspecific readings, in contrast to pronouns.

(4) A: lo niš'ar li kesef.
        not remained to.me money
        'I have no money left.'

     B: li niš'ar ___ /*oto.
        to.me remained *it
        'I have some money left.'

As the name suggests, AE is not limited to DPs, and freely occurs with PP arguments as well.[3]

(5)   A: šalaxti   matana la-horim   šeli.
          sent.1SG gift   to-parents   my
          'I sent a gift to my parents.'

      B: ani   šalaxti   praxim ___.
         I   sent.1SG   flowers
         'I sent them flowers / I sent mine flowers.'

Finally, AE sites can occur inside islands. Furthermore, the antecedent argument and the AE site need not follow identical verbs. Both properties are illustrated in the example below.

(6)   A: karata   et   ha-sefer šelo?
          read.2SG.M ACC   the-book his
          'Did you read his book?'

      B: lo   na'im   li   ki   afilu lo   kaniti ___.
         not   pleasant to.me   because even not   buy.1SG
         'I feel bad because I haven't even bought it.'

To sum up, AE is a robust phenomenon in the grammar of Hebrew, displaying all the characteristic properties that have been documented in the extensive literature on this phenomenon, which mostly comes from East Asian languages.[4] In particular, AE sites support a wide range of readings that cannot be subsumed under a simple *pro*-drop analysis. Nonetheless, and this point is critical for the discussion below, we will see that AE sites do pattern consistently with pronouns in a number of ways (section 4). Hence, we will face an apparent paradox: Although not *interpreted* as pronouns, AE sites and pronouns are subject to parallel distributional constraints. If the two are fundamentally distinct, why this parallelism? A resolution of this paradox will emerge from the analysis developed in section 6.

3. Is AE regulated by semantic type?

AE has many consequences for syntax, so it is not surprising that most of the literature frames the fundamental question of the distribution of AE in syntactic terms. Yet the question of distribution is logically independent of the question of syntactic properties. It may well be the case that AE is subject to an overarching semantic distributional constraint, from which some of the syntactic properties follow. Indeed, if certain syntactic properties of AE cannot be plausibly traced to syntax or to PF, it makes sense to look for semantic explanations. This line of thought has been in minority in the AE literature because the empirical pressure to appeal to semantics (beyond the obvious conditions of recoverability and parallelism) has been rather

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[3] In section 6.2 I return to AE of clausal complements.
[4] See Park 1997, Oku 1998, Kim 1999, Aoun and Li 2008, Abe 2009, Saito 2007, 2017, Cheng 2013, Takahashi 2006, 2008, 2013, 2014, Simpson, Choudhury and Menon 2013, Duguine 2014, Lee 2014, Sato 2014, 2015, 2016, Sato 2019, Cyrino & Lopes 2016, Sato and Karimi 2016, Bailyn 2017, Rasekhi 2018, Han et al. 2020, Sakamoto 2020, Soltan 2020.

negligible. In section 4 I try to rectify this empirical picture, revamping the motivation for a semantic constraint. The present section lays down the foundations for a semantic-type-based perspective on the distribution of AE.

Section 3.1 discusses previous proposals taking this perspective: Tomioka 2003 and Bošković 2018. Both advance the idea that AE boils down to *predicate ellipsis*, that is, the AE site hosts a property-denoting constituent, type <e,t> (*pro* or a silent syntactic phrase). After laying it out, I discuss the theoretical and empirical shortcomings of this approach. Section 3.2 presents the framework for an alternative analysis: variables in natural language are individual-denoting, type <e>. Section 3.3 then implements this idea in the domain of AE and works out the empirical predictions that are put to test in section 4.

3.1   Previous proposals: elided arguments are of type <e,t>

Tomioka (2003) proposed that null arguments in Japanese (and by extension, in Korean and Chinese) are derived by property anaphora. An all-purpose *pro* of type <e,t> underlies the broad range of readings afforded by such null arguments: referential, bound variable, E-type, sloppy readings, indefinite and NP anaphora. Tomioka observes that the referential uses of *pro* can be derived using the same semantic tools that are independently required to derive <e>-type readings of NPs in Japanese, a language without determiners: Existential closure and the Iota type-shifting.[5] The appeal of this approach is in the explanation that it offers for the following generalization (Tomioka 2003:336).

(7)   *Discourse* pro-*drop generalization*
       All languages which allow discourse *pro*-drop allow (robust) bare NP
       arguments.

Thus, bare NP languages make available the semantic operations that license property-denoting arguments in the syntax (see Chierchia 1998), and discourse *pro*-drop is just such an argument – that happens to be null. Tomioka recognizes that the correlation only goes one way: Bare NPs occur in many languages which do not license discourse *pro*-drop. These languages, however, may utilize null determiners, and so would not harbor the semantic tools that generate the wide range of readings associated with AE.

The idea that AE and discourse *pro*-drop are non-arbitrarily linked has been taken up in later works. Saito (2007, 2017) maintains that AE is derived by copying an LF object antecedent and merging it in the LF structure of the elliptical clause. In addition, *pro* is available by default as an LF object for insertion. What LF objects and *pro* crucially share is absence of uninterpretable case features, hence both incur no violation of Full Interpretation at LF.[6] This is only possible, according to Saito, in

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[5] The proposal, of course, assumes that Japanese and similar radical *pro*-drop languages do not employ null determiners; thus, property meanings can be converted to individual-meanings only post-syntactically.

[6] In support of this analogy, Saito notes that AE and *pro* similarly extend to the same kind of PPs – locative and temporal PPs but not manner and reason PPs. However, if absence of syntactic checking of uninterpretable features were sufficient to license AE (= LF-copying), PPs and CPs – which do not check Case – would be eligible to ellipsis in English-type languages, contrary to fact (see Cheng 2013:190).

agreement-less languages, where no uninterpretable features occur on v and T that would remain unchecked if arguments are syntactically missing.

Slightly revising this picture, Sakamoto (2020) proposes that AE is derived by substituting an LF object for a syntactic *pro* (rather than merging it directly with the verb), which essentially goes back to Lobeck's (1995) original analysis. If no replacement occurs, *pro* is discourse licensed. In contrast, agreement-licensed *pro*, as in Spanish, projects a branching structure, which is ineligible for LF-replacement. The analysis to be developed in section 6 differs from Sakamoto's in *when* it takes *pro*-replacement to occur, but shares with it the fundamental point that the AE site starts out as a null pronominal – an assumption that will prove critical to understanding a whole new range of facts.

These ideas are integrated in Bošković 2018, which returns to Tomioka's original type-based restriction on AE and connects it to a general theory of the difference between "DP-languages" and "NP-languages". Strengthening Tomioka's proposal, Bošković restricts LF-copying to predicates only, namely to elements of type <e,t>. English-type languages, then, lack AE because its DP arguments are of type <e> (and a copied NP would never become an <e>-type entity, as the language lacks the type-shifting tools that are active in NP-languages). Following Cheng 2013, Bošković assumes that AE languages are a subset of NP-languages, that is, languages that lack a definite determiner, and thus project nominals as bare NPs. Finally, in order to account for the selective availability of AE even in NP languages, Bošković follows Saito 2007 and Şener & Takahashi 2010 in assuming that only arguments that are not associated with an agreeing functional head may be elided.

(8)   *Main claims of Bošković 2018*
        (See Bošković 2018: ex. 10, 14, 20)

        a.   LF-copying is limited to elements of type <e,t>.
        b.   AE is limited to NP-languages.
        c.   AE is blocked in agreement environments.

The <e,t>-based analysis of Tomioka and Bošković has undeniable advantages, e.g., in shedding light on the crosslinguistic interaction of AE and clitic-doubling and in tying together a number of interpretive properties that are not easily accommodated under the alternative approaches (see in particular Tomioka 2014). Furthermore, Bošković (2018) is no doubt correct on one fundamental point of methodology: Evidence for semantic type restrictions on the range of permissible AEs is, *ipso facto*, evidence for the LF-copying approach and against the PF-deletion one. For it is only at LF, and never at PF, that the semantic type of the constituent to be elided is visible. Although the analysis below draws quite the opposite conclusions regarding the range of permissible AEs, it does so by following the same logic that guided Bošković 2018.

Nevertheless, I will argue that (8a-b) are false.[7] (8a) is a puzzling stipulation, unrelated to any independent grammatical principle. In fact, the alternative restriction

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[7] (8c) is possibly false as well: Basque manifests AE of object despite the presence of object agreement (Duguine 2014). Since the status of the anti-agreement parameter of Saito (2007, 2017) is not at the focus of the present article, I will not discuss it any further.

that I propose below is nearly opposite – limiting LF-copying to elements of type <e> (see (21)). This restriction *does* fall under a much broader constraint that applies to all variables in natural language (see the next section).

On the empirical side, we will see in section 4 that (8a) makes just the wrong predictions. Property-denoting arguments robustly resist AE. This is shown here systematically for Hebrew, but sample data from Japanese and Korean reveal the same pattern. The non-elidability of manifestly predicative arguments is extremely surprising if (8a) holds, but falls out naturally from the present alternative.

Turning the crosslinguistic picture, (8b) also looks dubious. While consistent with the extensive research on East Asian languages, as well as a few Slavic languages, it faces considerable obstacles elsewhere: Basque (Duguine 2014), Brazilian Portuguese (Cyrino and Lopes 2016), Hebrew (Landau 2018), Persian (Rasekhi 2018) and Egyptian Arabic (Soltan 2020) all use overt definite determiners, hence they are DP-languages in Bošković's sense; yet they clearly display AE with all its characteristic syntactic and semantic properties. Moreover, none of them qualifies as discourse *pro-drop*, which falsifies the alleged connection between that property and AE as well (Saito 2007, 2017, Sakamoto 2020). The full crosslinguistic terrain of AE, therefore, is considerably more varied than previously thought. While I have nothing to offer in regard to the important typological questions that arise from this state of affairs, I believe it is impossible to do justice to the current state of knowledge within the confines of (8b).

3.2 Towards an alternative: Variables in natural language are type-restricted

Ellipsis gaps are but one type of linguistic variable. Other types include pronominal anaphora and movement gaps. A broader perspective, then, may seek general constraints that cut across these different elements. Indeed, that variables in natural language are constrained, and interestingly so, in what they may range over, has been repeatedly observed in the literature. In this section I trace the history of this idea, which forms the kernel of the present analysis.

Chierchia (1984) distinguished between individuals and properties on the one hand, and higher types, on the other hand, which are associated with *functors* (determiners, prepositions, adverbs etc.). He proposed (p. 83) the *"No Functor Anaphora" Constraint,* which states that variables in natural language can range over individuals or properties only. Consequently, no anaphoric process may apply to functors.

Chierchia recognized that the domain of individuals must include more than simple objects and animate beings. He mentioned (p. 87) times and degrees, to which we can add places, reasons and other abstract entities.

(9) a. The time of his arrival is June 15.
     b. John's height is amazing.
     c. He pointed to (the place) where she hid.
     d. The reason for this development is unexpected.
     e. The possibility of failure paralyzed him.

He also noted that non-predicative adverbs like *almost*, *again* and *too* resist anaphoric processes – they can neither serve as antecedents to proforms like *thus* and *so* nor be answers to *how*-questions (I return to the former test below).

Baker (2003) advances a related constraint on anaphora in the context of his theory of lexical categories. Within this theory, nouns are privileged in possessing "a criterion of identity", which allows one to determine whether two Xs are the same thing (e.g., *That is the same man that you saw yesterday* vs. #*That is the same long as this*). It is this property – embodied in the noun's referential index – that allows nouns to enter anaphoric relations and excludes other categories from such, even when the intended meanings are perfectly sensible ((10a-b) are from Kayne 1984:139).

(10) a. Albania's destruction of itself grieved the expatriate community.
     b. * The Albanian destruction of itself grieved the expatriate community.

In (11b), *it* can refer to the event of Chris's being sick but not to the property *sick* (Baker 2003:129).

(11) a. Chris has a disease$_i$. It$_i$ also made Pat miss work.
     b. Chris is sick. It also made Pat miss work.

In practice, Baker does allow non-nominal anaphora such as the event-referring *it* in (11b), and predicate (PredP) *pro*-forms such as the English *so* and French *il*. What he emphasizes is that bare APs or VPs, not embedded inside a PredP, can never antecede anaphoric pronouns (p. 131); similarly, there are no reflexive AP- or VP-pronouns.

(12) a. ?? John beat the iron flat and Mary beat the copper so.
     b. *I caught a big fish and they caught a so bird.

The peculiar status of *such* and *so* is clarified in Landman's (2006) extensive work on variable in natural languages, to which I now turn.

Landman advances a more stringent version of Chierchia's "No Functor Anaphora" Constraint, which excludes even property-anaphora.

(13) *No Higher-Type Variables Constraint (NHTV)*
     Variables in the LFs of natural languages are of type <e>.

The NHTV faces potential challenges in three areas: (i) *pro*-forms like *so* and *such* that appear to take property- or relation-denoting antecedents; (ii) movement of predicates or adverbials, which appears to leave variables (traces) of higher types; and (iii) ellipsis of predicative categories.

Beginning with (i) and following observations by Carlson (1977), Landman points out (p. 45, 48) that although *such* may appear to take modifier/property-antecedents in examples like (14a-b), it cannot do so in examples like (14c-d).

(14) a. *Old* ladies… *such* ladies…
     b. Cats *without tails*… *such* cats…
     c. People *in the next room*… ??*such* people (are obnoxious).
     d. Men *that Jan fired this morning*… ??*such* men…

Carlson's insight was that *such* is restricted to taking *kind* antecedents. Because *people in the next room* does not invoke any specific kind, (14c) is unacceptable. Indeed, if the intended kind can be recovered from context, the examples improve dramatically (e.g., *I can't stand the people in the next room. Such people are obnoxious*, where the recovered kind is *loud people*).

Landman provides a decompositional analysis of *such* wherein it spells out the phrase *so like* (for syntactic evidence for the phrasal status of *such*, see Landman 2006:39-45). *So* is a variable over kinds and *like* is a relation between kinds and individuals; applied to its complement NP, *such* = [*so like*] attributes the property of instantiating the kind anaphorically retrieved by *so*. In fact, an overtly phrasal counterpart of *such* with the same semantics is *like that*, which explicitly incorporates the anaphoric pronoun *that*. Crucially, under this analysis, the anaphoric element *so* (or *that*) is of type <e>, given that kinds are among the entities in the domain of individuals.[8]

Turning to case (ii) – movement of predicates/adverbials and predicative ellipsis – two solutions suggest themselves. First, at least locations and times can plausibly be taken to denote individuals (see (9)); thus *where/when*-questions pose no problem. VP-fronting and predicate movement, in turn, display obligatory reconstruction (Heycock 1995, Takano 1995). This means that at LF there is no operator-variable structure because the higher-type element is interpreted in its base position. Indeed, as Poole (2017) convincingly argues, the type-restriction on possible traces is the most straightforward explanation for the generalization that displaced predicates obligatorily reconstruct (see below).

Poole revisits a curious correlation that Postal (1994) discovered. Postal identified a series of Ā-extractions in English – which he termed *B-extractions* – that are impossible to launch from certain syntactic environments. One such environment is the name argument of a naming verb (like *name, call, nickname, baptize*), which may undergo *wh*-movement (Postal's *A-extraction*) but not topicalization, specifically of the contrastive type (Postal's *B-extraction*). The following pair is from Postal 1994:164.

(15) a.   What$_i$ did they name him t$_i$?
     b. * Raphael$_i$, I wouldn't call anybody t$_i$.

Restrictive and nonrestrictive relativization exhibits a parallel contrast (Poole 2017:25).

(16) a.   Helen disliked the nickname$_i$ that Irene always called the cat t$_i$.
     b. * Helen disliked that nickname$_i$, which Irene always called the cat t$_i$.

Postal argued that B-extractions (like contrastive topicalization and nonrestrictive relativization), in fact, involve a silent resumptive pronoun which itself undergoes movement (to its antecedent). Because certain positions resist pronouns – Postal called them *antipronominal environments* – they cannot launch B-extractions. The

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[8] Landman (p. 98) only briefly discusses predicative *so* (e.g., *I thought she would be happy, but she certainly doesn't seem so*), suggesting a parallel treatment, in analogy to *that way*. An alternative analysis for all predicative *pro*-forms would be to assume that they denote "nominalized properties" in Chierchia's (1984, 1985) sense, that is, the individual correlates of properties.

position of the name argument of a naming verb is one such environment, as can be independently verified (Postal 1994:169).

(17)   * He named his daughter Lucille$_i$ but I didn't name mine it$_i$.

Poole (2017:26), however, points out that name arguments are also blocked from undergoing QR; compare the available inverse scope in (18a), where the individual-denoting object undergoes QR over the subject, with the unavailable inverse scope in (18b), where the name argument cannot.

(18)   a.   A (different) child called every cat Garfield.
       b.   A (# different) child called the cat every nickname.

The antipronominal property of name-argument gaps cannot explain (18b), which should naturally fall together with (15b) and (16b). What ties these cases together, according to Poole, is that they all require movement to leave a variable (trace) in a position which is s-selected as a property. Enter the NHTV (or some version of it): Because variables are restricted to the semantic type of individuals, the resulting LFs are uninterpretable.[9] On this view, the antipronominal property is a correlation rather than a cause; weak pronouns denote individuals and so cannot substitute property-denoting arguments, as in (17).[10]

That the name argument of naming verbs denotes a property is extensively defended in Matushansky 2008. Matushansky observes that in many languages, that argument bears the hallmarks of a predicate: Languages that introduce standard names with the definite article (like German) do not use it for the name argument of naming verbs; other languages mark it with the designated particle or case that is used with predicates (Welsh, Korean, Russian, Finnish), as partly seen even in English examples like *Let's label/define/designate this node **as** VP*. And languages with case agreement on predicates (Latin, Greek, Icelandic) apply that process to the name argument of naming verbs as well.

Semantically, on Matushansky's analysis, this name argument denotes a set of individuals that bear that name according to some naming convention (as provided by the verb – nicknaming, baptising, etc.). The naming convention, in turn, is a relation between individuals and phonological strings ("names"), the latter of type <n>. The name argument is therefore a predicate of type <e,<n,t>>. I gloss over further details

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[9] I am oversimplifying Poole's account. Poole proposes that *traces* must range over individuals (The *Trace Interpretation Constraint, TIC*) and argues (p. 228) that this constraint cannot be subsumed under the NHTV because traces are converted to anaphoric definite descriptions that *contain* a variable (Fox 2003, Sauerland 2004). The TIC has the effect of ruling out both property-type traces and generalized-quantifier (GQ) type ones. GQ-traces (of type <<e,t>,t>) would allow semantic reconstruction (for scope) to dissociate from syntactic reconstruction (for binding); but previous work has established that the two go together (Romero 1998, Fox 1999). Nevertheless, Poole acknowledges that the NHTV and TIC should be unified at some deeper level. From the perspective of the present discussion, AE sites start out their derivational live hosting a *pro*-variable (section 6), so it makes sense to keep to Landman's framework and the NHTV.

[10] Demonstrative pronouns are acceptable in antipronominal environments (e.g., *Irene liked the name Snowflake, and she called the cat that/*it*; Poole 2017:31). Drawing on various syntactic and semantic considerations, Poole (p. 217) argues that they are type-shifted to denote a property. Alternatively, demonstrative pronouns are phrasal modifiers (see Leu 2007 and the reference therein), already interpreted as predicates. When used referentially (e.g., *I saw that*), they modify a null noun denoting THING.

since they are not relevant to the main point, which is, to repeat: The name argument of naming verbs does not denote an individual.

Following Postal 1994, Poole discusses three other antipronominal environments: The associate of *there*-constructions, the color-naming adjective in change-of-color verbs, and predicate nominals. All display the same correlation between resistance to weak definite pronouns and failure of B-extractions. I only illustrate the third one below (Poole 2017:27-28,31).

(19) a. * Erica wanted to become a teacher$_i$ and she became it$_i$.
      b. * A math teacher Erica became t$_i$ / made out of Alex t$_i$.

In sections 4.4-4.5, I show that naming verbs and predicate nominals are also two environments where AE fails.

We now come the third and final potential challenge to the NHTV: predicate ellipsis (subsuming VP-ellipsis). Does this process produce higher-type variables at LF?

In fact, as Landman (2006:136) observes, if predicate ellipsis is derived by PF-deletion, it poses no challenge to the NHTV. On this analysis, ellipsis sites contain a fully interpreted syntactic structure at LF. The predicate gap is not a variable, hence vacuously satisfies the constraint on variable types. Interestingly, Landman notes (p. 138, fn. 73) that if ellipsis is to be analyzed as LF-copying of the antecedent predicate into "an empty node", nothing much changes, since the ellipsis site again would not be occupied by a variable at LF.

But what is this empty node? Radically empty nodes are not a theoretical possibility in current minimalist syntax. The LF-copying analysis, in fact, originally assumed that the ellipsis gap hosts an empty pronominal, *pro*, which gets replaced at LF (Lobeck 1995). Clearly, *pro* is a variable. Whether its semantic type is visible to the NHTV is actually not so clear, given that it does not survive to the semantic interface, having been replaced by a syntactic constituent by then. I return to this point in section 6.3, where the mechanism of AE to the presence of *pro* is laid out.

3.3   The present proposal: elided arguments are of type <e>

We have seen that, to the extent that previous literature addressed the question of semantic type restrictions on ellipsis, two views have emerged.

(20) a. *The property-restriction view*
          Ellipsis is LF-copying → restricted to type <e,t> (Tomioka, Bošković).

      b. *The no-restriction view*
          Ellipsis is PF deletion → no semantic type restriction (Landman).

At the same time, a wide range of evidence suggests that something like the NHTV is correct – variables in natural language, often realized as *syntactic gaps*, are restricted to type <e>. This evidence does not comfortably harmonize with either (20a) or (20b). These two views simply do not lead us to expect that ellipsis sites should be restricted to type <e>. Yet in section 4 I will show that the empirical profile of AE, at least in Hebrew and potentially in other languages too, is best described in such terms. This evidence, then, will motivate a new account of ellipsis, to be spelled out in section 6.

To deal with the distribution of AE, I propose the following conditions.

(21) *Consequences of the NHTV*
    a. Elided arguments are restricted to type <e>.
    b. Weak definite pronouns are restricted to type <e>.
    c. Therefore: There is a tight correlation between environments that resist AE and environments that resist weak definite pronouns ("antipronominal").

Notice that (21c) emphatically states a correlation, not a cause. As shown in section 2 and in ample previous work, AE sites are *not* pronominal in their interpretation, allowing a range of readings unavailable to pronouns (overt or not): mass, nonspecific, quantificational, disjunctive and sloppy readings. Saying that there is a systematic set of environments from which both AE and pronouns are excluded does not imply that they are the same thing (e.g., both tense and agreement are excluded from infinitives without being the same thing). Rather, it implies that both phenomena are governed by a common constraint – in this case, the NHTV. Now, it remains to be explained *why* AE is subject to the NHTV if it does not host a pronoun. In section 6 I argue that while the AE site does not host a pronoun *at LF* (the input to semantic interpretation), it does host one, namely *pro*, throughout part of the derivation. This analysis holds the key to the correlation stated in (21).

4. Impossible AE

In this section I discuss five different environments in which AE is blocked in Hebrew. These are all *argumental* environments; some predicate, normally a verb, selects a particular argument, but this argument cannot undergo ellipsis under identity with a locally available antecedent. Since recoverability is not at stake, something else must be responsible for the failure of AE; I argue that it is condition (21a). In some cases, the elided argument obviously does not denote an individual; in other cases this is not obvious, so independent evidence will be presented to that effect.

The five environments are these: (i) Chunks of non-decomposable idioms; (ii) argumental adverbs; (iii) argumental measure phrases; (iv) names in naming verbs, and (v) predicate nominals. Case (ii) involves a non-nominal argument without a suitable weak proform. All the other four cases, however, take nominal arguments that nonetheless cannot be pronominalized, confirming condition (21b) as well.

4.1 Chunks of non-decomposable idioms

The distinction between decomposable and non-decomposable idioms was first made by Nunberg, Sag and Wasow (1994), who distinguished between "idiomatic phrases" (non-decomposable) and "idiomatically combining phrases" (decomposable). A rich syntactic and psycholinguistic literature has since uncovered its numerous consequences. For a recent overview with specific evidence from Hebrew, see Fadlon et al. 2018.

In the present context, the relevant aspect of the distinction is this: Chunks of decomposable idioms are denotational – even if this denotation is mediated by some metaphoric inference – whereas chunks of non-decomposable idioms are not. One way of failing to denote an individual, that is, failing condition (21a), is failing to

denote at all. We therefore expect the latter type of idiom chunks to resist AE and the former type to allow it. This is indeed what we find.

Examples (22)-(27) involve different kinds of non-decomposable idioms; in all of them, the boldfaced idiom chunk cannot serve as antecedent for AE in the second sentence.

(22)   A: xatafti   kazot maka še-ra'iti   **koxavim**.
        got.1SG such blow that-saw.1SG stars
        'I got hit so hard that I felt dizzy.'
        B: * ani rak   nisrateti,   az lo   raiti ___.
          I   only got-bruised.1SG so not   saw.1SG
          ('I only got bruised so I didn't feel dizzy.')

(23)   A: ma ixpat li   ma hem omrim, ani lo   dofeket **xešbon**.
        what care to.me what they say.PL I   not   knock.F.SG account
        'What do I care about what they say, I don't give a damn.'
        B: * OK, aval any ken dofeket ___.
          OK but I yes knock.F.SG
          (OK, but I do.')

(24)   A: ha-bank   hoci   li   **et ha-mic**   ad
        the-bank   extracted.3M.SG to.me ACC the-juice   until
        še-išer   li   halva'a.
        that-approved.3M.SG   to.me loan
        'The bank put me through hell until they approved my loan.'
        B: * ken, gam ha-bank   šeli hoci   (li) ___ / *oto
          yes   also the-bank   my extracted.3M.SG (to.me) / it.ACC
          'Yeh, my bank did too.'

(25)   A: ma ata   tofes   **taxat** (aleynu)?
        what you   grab.M.SG ass   on-us
        'Why do you behave so arrogantly (to us)?'
        B: * ani? ani lo   tofes ___.
          I   I   not   grab.M.SG
          ('Me? I don't.')

(26)   A: Maradona maxnis   et   Messi **la-kis**   **ha-katan**.
        Maradona put.inside.M.SG ACC Messi   to.the-pocket the-small
        'Maradona is way better than Messi.'
        B: * hu gam maxnis   et   Ronaldo ___.
          he also put.inside.M.SG ACC Ronaldo
          ('He's also way better than Ronald.')

(27)   A: hu   xipes   axar bito   šanim, aval he'ela **xeres be-yado**.
        he searched   after daughter.his years but drew.up clay in-hand.his
        'He searched for his daughter for years to no avail.'
        B: kol mi še-xipes   ota he'ela *(xeres be-yado).
        every who that-searched her drew.up clay in-hand.his
        'Everybody who searched for her failed.'

Now compare decomposable idioms. Chunks of such idioms are denotational. For examples, *gšarim* 'bridges' in (30) is readily construed as "potentially useful connections". For this reason, such idiom chunks are much more hospitable to AE.[11]

(28) lama kol ha-zman   mapilim   alay   tikim ve-alexa   lo mapilim ___?
     why all the-time   drop.M.PL on-me   files and-on.you not drop.M.PL
     'Why do they always assign unpleasant duties to me and not to you?'

(29) A: sagru   lanu et **ha-berez** lifney   šana.
        closed.3PL to.us ACC the-tap   before   year
        'They cut off our budget a year ago.'
     B: lanu sagru ___ / oto   lifney   šnatayim.
        to.us closed.3PL it.ACC   before   two.years
        'They cut off ours two years ago.'

(30) A: lo   hayiti maci'a   lexa   lisrof   **gšarim**
        not   was.1SG advise.M.SG to.you   to.burn bridges
        ba-mosad   ha-ze.
        in.the-institution the-this
        'I wouldn't advise you to burn your bridges in this institution.'
     B: ani lo   soref ___, aval ein   li   kavana   laxzor.
        I not   burn.M.SG but not.exist to.me   intention to.return
        'I don't, but I have no intention to return.'

(31) A: ha-hitnahagut ha-muzara šelo hidlika   li   **nura   aduma**.
        the-behavior   the-strange his   lit.up.3F.SG to.me   light.bulb red
        'His strange behavior raised my suspicion.'
     B: le-kulanu hi   hidlika ___.
        to-all.of.us she   lit.up.3F.SG
        'It did so for all of us.'

Notice that pronominal anaphora to the antecedent idiom chunk is possible in (29) but not in (24), confirming (21b). This test cannot easily be applied to the other cases, in which the idiom chunk is either nonspecific or a dative locative PP.[12] Yet the pronominalization asymmetry is clearly evident with definite idiom chunks, as shown below.

[11] There is some inter-speaker variation in the extent to which individual examples are judged acceptable, yet the set in (28)-(31) is overall clearly distinguishable from the set in (22)-(27), which is ungrammatical for all speakers. The attested variation in AE within decomposable idioms possibly reflects the fact that "decomposability" is a gradient scale, and different speakers may draw the line at different points along that scale.
[12] Dative pronouns in Hebrew are necessarily human-denoting (Francez 2006), ruling out pronominalization of the idiom chunk in (26).

(32) *Non-decomposable idiom*
    * Gil hoci   oti   min ha-kelim, ve-az   higia
      Gil took.out.3M.SG me.ACC from the-dishes and-then arrived.3M.SG
      axiv   ve-himšix   le'hoci   oti   **mehem**.
      brother.his and-continued.3M.SG to. took.out   me.ACC from.them
      ('Gil drove me mad, but then his brothert arrived and continued doing so.')

(33) *Decomposable idiom*
    Gil   zara   li   melax al ha-pca'im, ve-az   higia
    Gil   sprinked.3M.SG to.me salt   on.the-wounds and-then arrived.3M.SG
    axiv   ve-himšix   lizrot   **aleyhem** melax.
    brother.his and-continued.3M.SG   to.sprinkle on.them   salt
    'Gil rubbed salt into the wound (on me), and then his brother arrived and
    continued doing so.'

A striking minimal pair is given in (34). Note that the verb *šavar* 'break' is construed as a causative verb in the decomposable idiom ('break someone's heart') but as an incohative verb in the non-decomposable idiom ('break one's own head'), leaving the object in the latter case with no separable semantic denotation.

(34) a. *Decomposable*
      šavar (le-mišehu) et   ha-lev
      broke (to-someone) ACC   the-heart
      'Break someone's heart'
      Causative paraphrase: Cause someone's feelings to turn into great sorrow.
      Metaphorical meaning of the idiom chunk *lev* 'heart': feelings
    b. *Non-decomposable*
      šavar et   ha-roš
      broke ACC the-head
      'Think very hard'
      Incohative paraphrase: Think so hard that your head breaks.
      Metaphorical meaning of the idiom chunk *roš* 'head': ?

We therefore expect *lev* 'heart' in the first idiom to license AE and pronominal anaphora, but *roš* 'head' in the second idiom to exclude both. This is indeed the case.

(35) a.   Rina šavra   le-Gil$_j$ et ha-lev$_i$ lifney šana,
          Rina broke.3F.SG   to-Gil ACC the-heart   before year
          ve-axšav Maya   šavra   lo$_j$ ___ / oto$_i$.
          and-now   Maya   broke.3F.SG   to.him   it
          'Rina broke Gil's heart a year ago and now Maya did.'
    b. * Rina šavra   et   ha-roš   al   ha-targil   ha-axaron,
          Rina broke.3F.SG ACC the-heart   over the-exercise   the-last
          ve-axšav Maya šavra   ___ / oto.
          and-now   Maya broke.3F.SG   it
          ('Rina thought very hard about the last exercise and now Maya did.')

It would of course be desirable to corroborate the claim that chunks of non-decomposable idioms are resistant to AE with further crosslinguistic evidence, bearing in mind the obvious fact that the set of such idioms is not given in advance and that its precise boundaries somewhat vary across speakers (see fn. 11). Not much relevant evidence is available; below I briefly review facts from Swahili, Greek and Japanese, which all seem to point to the need in further research.

Ngonyani (1996) cites the following example in Swahili, where the object of the idiom 'hit telephone' is missing from the second conjunct.

(36) dada a-li-pig-a **simu** na mama a-li-pig-a ___ pia.
sister 1SA-PST-hit-FV telephone and mother 1SA-PST-hit-FV also
'Sister called and mother did too.'

The example, however, is not conclusive, since 'hit telephone' can be plausibly assigned the decomposable meaning 'make call', in which the idiom chunk simply means 'call'. Thus, AE is not excluded.

In Greek too, idiom chunks can undergo ellipsis (Merchant 2018:246).

(37) a.   I   Elines politiki   tazun **lagus me petraxilia**,
        the   Greek politicians vow   rabbits   with   priests' habits
        ala   i   Amerikani politiki   pote   dhen tazun ___.
        but   the   American   politicians   never not   vow
        'Greek politicians promise the moon, but American politicians never do.'
    b.   To   pedhi tha   fai   **ksilo**,   ala   o   Kostas dhen tha (#to) fai ___.
        the   kid   fut   eats   wood   but   the   Kostas not   fut   it   eats
        'The kid will get hit, but Kostas won't.'

Like Ngonyani, Merchant advocates the V-stranding VP-ellipsis analysis for such examples; I take them to be derived by AE, assuming that V-stranding VP-ellipsis is not a viable analysis (Landau 2020a, b). In fact, it seems likely that the idiom in (37a) is decomposable, with the boldfaced chunk meaning something like "unattainable goals". Other idioms allowing AE in Merchant's paper are amenable to a similar analysis. (37b) is more challenging in that it is difficult to assign it a decomposable meaning. Merchant does note (fn. 6) that not all speakers allow the idiomatic reading under ellipsis. Pending further research, (37b) remains an open problem.

In Japanese, chunks of non-decomposable idioms cannot be scrambled, pronominalized or elided (Sato 2020). Scrambling and pronominalization are possible when the chunk belongs to a decomposable idiom. The status of AE is not entirely clear, though. Sato provides the following single example of a decomposable idiom, noting that six out of eight speakers rejected AE of the idiom chunk and two accepted it.

(38) Sato-kun-wa ukkari   koosyooaite-ni   **tenouti-o**
Sato-TIT-TOP inadvertently negotiating.partner-to palm.of.hand-ACC
misetesimatta. Suzuki-kun-wa raibarutasya-ni   {*e /sore-o} misetesimatta
showed   Suzuki-TIT-TOP competitor.company-to it-ACC showed
'Mr. Sato inadvertently showed his secret plan to his negotiating partner. Mr. Suzuki showed his secret plan to his competitor company.'

Although marked as ungrammatical by Sato, the AE option, as noted, was accepted by two out of eight speakers. In contrast, and consistent with the present proposal, Takahashi (2006:16,32) notes that the chunk *keri* 'end' in the following decomposable idiom may undergo AE (though not pronominalization).

(39) Taroo-ga   sono mondai-ni keri-o   tuketa-ra,
      Taroo-NOM   that issue-to   end-ACC   attached-when
      Hanako-wa   kono mondai-ni {*e* /*sore-o*} tuketa.
      Hanako-TOP   this issue-to   it-ACC   attached
      'When Taroo finalized that issue, Hanako finalized this issue.'

Given the paucity of evidence, it seems premature to declare that AE in Japanese fails with chunks of decomposable idioms.[13]

4.2 Argumental adverbs

As is well-known, AE is a productive process in Korean (Park 1997, Kim 1999, Saito and An 2010, Lee 2014, Han et al. 2020, Sakamoto 2020). Lee (2016:16) observed, however, that argumental adverbs resist AE.

(40) A: ku-nun yeuypalukey hayngtonghay-ss-ni?
         he-TOP   courteously   behave-PST-Q
         'Did he behave courteously?'
      B:* ani, hayngtonghaci   anh-ass-e.
          No behave   NEG-PST-DECL
          ('No, he didn't.')

Argumental adverbs are a curious hybrid: Their obligatory presence classifies them as selected arguments, while their semantic contribution classifies them as adverbs. Standard adverbs may or may not be elided in VP ellipsis (Sag 1976); when the grammar allows both options (as in (41a)), the choice is informed by parsimony and other pragmatic considerations (Moulton 2019).

(41) a.   John talked to us gently and Mary did too.
      b.   John talked to us gently and Mary did rudely.

Argumental adverbs, however, cannot escape VP ellipsis.

(42) a.   The first waiter treated us gently and the second one did too.
      b. *The first waiter treated us gently and the second one did rudely.

---

[13] As to the difference between ellipsis and pronominalization of the idiom chunk, Sato claims it follows from the LF-copying analysis of AE: "The body part in the antecedent clause… cannot serve as a suitable target for LF-copy because it has already become an unanalyzable part of the whole atomic VP by the time when the elided part in the elliptical clause is to be filled by LF-copy" (p. 272), but "a pronoun (overt or null) can be employed even when its antecedent is a part of a syntactically derived complex predicate at LF" (p. 273). This seems like a description of a puzzle rather than a solution. What allows discourse anaphora to access an "unanalyzable part of the whole atomic VP"? Note that truly unanalyzable units create anaphoric islands (Postal 1969, Ward, Sproat and McKoon 1991). On the present approach, no systematic discrepancy is expected between the accessibility of idiom chunks to pronouns and to silent constituents that replace pronouns.

(43) a.   John behaved well and Mary did too.
     b.   * John behaved well and Mary did badly.

(42a) and (43a) indicate that nothing prohibits deletion of argumental adverbs per se, as long as they are part of a larger ellipsis. The problem in (40B), then, is that the argumental adverb is targeted for ellipsis *by itself*; this seems to be impossible (also implying that the construction cannot involve VPE, disguised by V-stranding; see section 5).

Hebrew manifests exactly the same ban on ellipsis of argumental adverbs. In the context of the verbs *hitnaheg* 'behave', *nahag* 'treat' and *hitnahel* 'manage oneself', manner adverbs are obligatory. In sharp contrast to entity-denoting arguments, however, these argumental adverbs resist ellipsis.

(44) a.   * Yosi hitnaheg   yafe aval axiv   lo   hitnaheg ___.
         Yosi behaved.3M.SG   well but   brother.his not   behaved.3M.SG
         ('Yosi behaved well but his brother didn't.')
     b.   A: tinhag   ba-yeled   šeli   be-adinut.
           treat.FUT.2M.SG   in.the-child my   in-gentleness
           'Treat my child gently.'
         B: * al   tid'ag,   ani   enhag   (bo) ___.
            not worry.FUT.2M.SG I   treat.FUT.1SG (in.him)
          ('Don't worry, I will.')
     c.   * Trump hitnahel   (be-nivzut/kmo biryon),
         Trump managed.himself.3M.SG in-nastiness/like bully
         aval Biden   lo   yitnahel ___.
         but   Biden   not   manage.himself.FUT.3MSG
         ('Trump managed himself nastily/as a bully, but Biden won't.')

Note that these facts are different and independent of the adjunct-exclusion facts discussed in Landau 2018, 2020a. The latter facts reveal that standard VP-adjuncts cannot be captured under AE because they lie outside its syntactic scope; the result is grammatical nonetheless. The present facts reveal that argumental adjuncts cannot be captured under AE even though they *are* within its syntactic scope; the result is ungrammatical, and calls for an additional constraint, of the kind proposed in (21a). Since there are no adverbial pro-forms, (21b) cannot be tested for this class of cases.[14]

Another environment where manner adverbs are obligatory is in middle constructions. Once again, ellipsis of these obligatory adverbs is impossible.[15]

(45) a.   A: ha-žaket   šeli mitnake   be-kalut.
           the-jacket my cleans.3M.SG   in-ease
           'My jacket cleans easily.'

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[14] For arguments that English *so/thus* are not pro-adverbs, but rather denote properties of realizations of *event kinds*, see Landman 2006:83-92.
[15] Hebrew middle morphology is sometimes syncretic with passive morphology, as in (45b). The second clause in the latter thus has an irrelevant (and absurd) passive reading without the adverb – short poems are not written.

       B: šeli   gam mitnake   *(be-kalut).
          mine also cleans.3M.SG in-ease
          'Mine does too.'

  b.   širim   arukim nixtavim be-kalut;
       poems   long   write.M.PL in-ease
       širim   kcarim davka   lo   nixtavim *(be-kalut).
       poems   short   rather not   write.M.PL in-ease
       'Long poems write easily; short poems, in fact, don't.'

Whether obligatory adverbs in middles should count as "argumental" is not clear; yet the fact that they resist AE similarly to argumental adverbs suggests a common explanation. Indeed, if all these adverbs are predicate modifiers, their semantic type is $<<e,t>,<e,t>>$. Condition (21a) correctly predicts that they will all fail to undergo AE.

4.3 Argumental measure phrases

Measure phrases like *20 pounds* or *six hours* quantitatively specify the extent to which an event measures along some scale. While they are often found as optional adjuncts, certain verbs require such measure phrases as obligatory arguments (e.g., *This car cost *($6,000)*). It is these argumental measure phrases that are of interest here, for they sharply contrast with entity-denoting arguments is their resistance to AE. The sample below demonstrates that the nature of the scale – weight, duration, price or area – does not matter; the argumental measure phrase is consistently non-elidable.

(46) a.   A: ani šokel 70 kilo.
          I weigh.M.SG 70 kilo
          'I weigh 70 kilos.'
       B: ha,   ani kvar   mi-zman lo   šokel   *(70 kilo)!
          huh I   already from-time not   weigh.M.SG 70 kilo
          'Huh, I haven't weighed 70 kilos for a long time!'
  b.   ha-ma'araxa   ha-rišoona nimšexa   xaci ša'a,
       the-act   the-first   lasted.3F.SG half hour
       ve-ha-ma'araxa ha-šniya   gam nimšexa   *(xaci ša'a).
       and-the-act   the-second also lasted.3F.SG half hour
       'The first act lasted half am hour and the second one did too.'
  c.   A: ha-simla   ha-kxula ola   220 dolar.
          the-dress   the-blue costs.3F.SG 220 dollar
          'The blue dress costs $220.'
       B: ve-gam ha-simla   ha-aduma ola   *(220 dolar)?
          and-also the-dress   the-red   costs.3F.SG   220 dollar
          'And does the red one also cost $220?'
  d.   ha-xava   šelo ba-negev   mistara'at al pney
       the-farm   his   in.the-Negev sprawls   on face-of
       yoter me-150   dunam, ve-ha-xava   šelo ba-galil
       more than-150   dunams and-the-farm his   in.the-Galilee
       gam mistara'at *(al pney   yoter me-150   dunam).
       also sprawls   on face-of more than-150   dunam
       'His farm in the Negev sprawls across more than 150 dunams,
       and his farm in the Galilee does too.'

At first sight, the fact that measure arguments pattern with non-individual-denoting arguments is surprising. One might have thought that they denote degrees, which are in the domain of individuals. Indeed, traces that range over degrees are attested in various movement constructions; the LFs of examples (47a-b) contain the expressions below them.

(47) a. How tall is John?
    → λd.*John is* d-*tall*
  b. John is taller than Mary said he is
    → *λd.Mary said that he is d-tall*

However, a closer look at the syntactic and semantic properties of measure arguments reveals that they display the characteristic profile of *predicates*. Adger (1994:99-108) lists a number of contrasts between measure arguments and standard referential nominals. First, they are antipronominal (48); second, like other predicative positions, they reject strong quantifiers (49); third, they produce sharp ungrammaticality when extracted from weak islands, whereas referential arguments only produce mild or no deviance (50) (Rizzi 1990).[16]

(48) a. * Anson weighed 70 kilos and David weighed them too.
  b. * The conference lasted three weeks and the film festival lasted them too.

(49) a. The conference last many/*most weeks.
  b. Their family story spans hundreds of years/*each year.

(50) a. ? What do you wonder whether Anson saw?
  b. * What do you wonder whether the book cost?
  c.   What didn't you think that Anson saw?
  d. * What didn't you think that the book cost?

Furthermore, Adger noted that measure arguments cannot undergo scrambling in Turkish and Dutch because they do not introduce discourse referents, let alone familiar ones.

The semantic literature converges on the idea that measure arguments denote predicates, with views differing on the question – predicates of *what*? Schwarzchild (2005) takes them to denote predicates of intervals along some scale, Winter (2005) analyzes measure phrases as predicates of vectors, while Scontras (2014) analyzes them as simple predicates of individuals. The choice among these alternatives does not concern us here. What is important is measure arguments do not denote in the domain of individuals. Therefore, their resistance to pronominalization and to AE is predicted by (21).

4.4 Names in naming verbs

Evidence from antipronominal behavior and resistance to non-reconstructing movement suggests that the name argument of naming verbs is not individual-

denoting, as demonstrated in (15)-(18). We now observe that this environment in Hebrew is also antipronominal, and crucially, resists AE.

(51) a. Hi kar'a la-xatul šela Geršon lifney
   she called to.the-cat her Gershon before
   še-ani karati la-xatul šeli *(Geršon).
   that-I called to.the-cat my Gershon
   'She called her cat Gershon before I called mine Gershon.'
 b. * …. lifney še-ani karati la-xatul šeli oto.
   before that-I called to.the-cat my it.M.SG
   '… before I called my cat it.'

(52) a. A: Yosi kina et ha-ca'ad ha-ze ta'ut.
   Yosi dubbed ACC the-meaure the-this mistake
   'Yosi dubbed this measure a mistake'
   B: Od anašim kinu et ha-ca'ad ha-ze *(ta'ut).
   more people dubbed ACC the-meaure the-this mistake
   'More people did so.'
   B': * Od anašim kinu et ha-ca'ad ha-ze ota.
   more people dubbed ACC the-meaure the-this it.F.SG
   'More people did so.'

Recall that such name arguments are higher-type properties (Matushansky 2008). Given (21), it is not surprising that they can neither be pronominalized nor host the *pro* placeholder for AE.

4.5 Predicate nominals

Following Landman 2006 and Poole 2017, I assume that because predicate nominals do not denote individuals, they can neither bind traces at LF nor introduce antecedents for pronouns, see (19) (but see fn. 10). In line with (21), we also expect them to resist AE.

(53a) and (54) illustrate failure of ellipsis of a predicate nominal, used as a verbal complement and as a small clause predicate, respectively; (53b) illustrates the failure of pronominalization in the former.[17]

(53) a. hi hafxa le-menahelet axarey še-ha-bat šela
   she turned to-manager after that-the-daughter her
   hafxa *(le-menahelet).
   turned to-manager
   'She turned into a manager after her daughter had.'
 b. * … axrey še-ha-bat šela hafxa la.
   after that-the-daughter her turned to.her
   '… after her daughter turned to it.'

---

[17] The preposition *ke-* 'as' does not take weak pronouns as complements so this test cannot be applied in (54). A strong demonstrative pronoun would be acceptable (*ke-xaze* 'as such').

(54) ba-ma'arav tofsim   et   Stalin   ke-rodan   axzari
     in.the-west perceive.3PL ACC Stalin   as-despot ruthless
     aval lo   tofsim et   Putin *(ke-rodan axzari).
     but not   perceive ACC Putin   as-despot ruthless
      'In the west, people perceive Stalin as a ruthless despot but not Putin.'

These findings are in line with previous literature, which has recognized that AE cannot apply to adjectival predicates (see Gribanova 2020 on Uzbek and Portelance 2020 on Lithuanian).[18] The Hebrew facts are somewhat more compelling insofar as they teach us that even if one keeps to the core syntactic domain of anaphora – nominal expressions – predicates cannot undergo AE.

An apparent challenge to this generalization is posed by the following example, minimally different from (53a) in the choice of the finite verb.

(55) hi   nihyta (le-)menahelet axarey še-ha-bat   šela nihyta ___.
     she   became (to-)manager   after that-the-daughter her became
      'She became a manager after her daughter did.'

Although (55) appears to involve predicate ellipsis, I think it actually does not. The verb *nihya* 'become' is morphologically derived from *haya* 'be'. Not surprisingly, the latter can also be followed by an elided predicate (56a). In fact, in somewhat more formal Hebrew, *haya* 'be' renders the sense of *nihya* 'became' when followed by a dative-marked predicate nominal (56b).

(56) a.   hi   hayta   menahelet axarey še-ha-bat   šela hayta ___.
          she   was   manager   after that-the-daughter her was
           'She was a manager after her daughter was.'
     b.   hi   hayta   le-menahelet axarey še-ha-bat   šela hayta ___.
          she   was   to-manager   after that-the-daughter her was
           'She became a manager after her daughter did.'

Landau (2018) observes that Hebrew has Aux-stranding VP ellipsis of the English type. This construction is derived in two steps: (i) raising Aux to T, and (ii) ellipsis of AuxP. Crucially, it does *not* involve bare predicate ellipsis; the predicate is simply contained in a larger verbal constituent targeted for ellipsis, namely AuxP. I propose that (55) is similarly derived because *nihya* 'become' is just as much an auxiliary as *haya* 'be' is. Schematic structures (omitting irrelevant details) are shown below.

(57) a.   *PredP ellipsis in (53a)*
          * [$_{TP}$ ... [*hafxa$_i$*-T] [$_{vP}$ t$_i$ [$_{PredP}$ ~~le-menahelet~~]]]

     b.   *AuxP ellipsis in (55)*
          ✓ [$_{TP}$ ... [*nihyta$_i$*-T] [$_{AuxP}$ ~~t$_i$~~ ~~[$_{PredP}$~~ ~~le-menahelet~~]]]

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[18] I am aware of two potential counterexamples: Ellipsis of an AP-complement of *become* in Japanese (Takahashi 2006:ex.44b) and AP ellipsis inside a small clause in Serbo-Croatian (Bošković 2018:25, fn. 29). Future research should carefully analyze such examples to evaluate their import.

c. *AuxP ellipsis in (56)*
   ✓ [TP … [*hayta*ᵢ-T] [AuxP ~~tᵢ~~ [PredP *(le-)menahelet*]]]

Why, then, can (53a) not be derived in a parallel fashion, with raising of *hafxa* 'turned' out of VP, followed by VP ellipsis? Landau (2020a,b) argues that V-stranding VP ellipsis derivations, in fact, are not attested for principled reasons. Object gap sentences may be derived in various ways – Null Complement Anaphora, *pro*-drop, operator movement or AE – but V-stranding VP ellipsis is not one of them. In contrast, Aux-stranding AuxP derivations are possible and indeed attested in many languages.[19] The contrast between (53a) (with a lexical verb) and (55) (with an auxiliary) – which are otherwise near synonyms – provides striking support for this particular approach to the interaction of head movement and ellipsis.

A final question is this: How can ellipsis in (55) target a property-denoting constituent, in apparent violation of (21a), where all the cases of such ellipses discussed above were ungrammatical for this very reason? The straightforward answer is that VP ellipsis (of which AuxP ellipsis is an instance) is fundamentally different from AE, and is *ipso facto* exempt from (21a). As discussed in section 3.2, those elliptical constructions that are derived by PF-deletion of a syntactic constituent involve no variable at LF but a full syntactic structure; hence, the NHTV is irrelevant to them. VP ellipsis is one such construction, as amply argued in the literature (Johnson 2001, Merchant 2001, Aelbrecht 2010, van Craenenbroeck 2010, Baltin 2012, Aelbrecht and Harwood 2015).

Thus, PF-deletion of AuxP in (55) takes no heed of the semantic type of AuxP. On the other hand, (53a) and (54), which cannot be derived by VP ellipsis, must resort to AE. This process involves *pro*-replacement (the specifics of which are laid out in section 6) and is correspondingly constrained by (21a) to apply only to individual-denoting constituents. Ellipsis of predicates cannot arise from this mechanism.

5. Disconfirmation of V-stranding VP ellipsis

The empirical findings of the previous sections have one significant implication that I would like to highlight before moving on to the specifics of the analysis. As is well-recognized in the literature, it is notoriously difficult to tease apart AE from V-stranding VP-ellipsis (VSVPE), as the two derivations result in identical overt strings (i.e., [… V [e] …]). Consequently, a fair amount of sophisticated efforts have been put into distilling and refining the few decisive tests that do exist (Goldberg 2005, Gribanova 2013, Simpson, Choudhury and Menon 2013, Landau 2020a). The most robust test, which is the one most often used, involves the (non)inclusion of VP-adverbs in the ellipsis site (Park 1997, Oku 1998); see Landau 2020a for a recent study targeting this phenomenon in three languages (Portuguese, Russian and Hindi). Yet even this test is possibly more involved and less transparent than one would like (Funakoshi 2016, Oku 2016, Rasekhi 2018). Recently, Landau (2021) presented another test, based on the interaction of negation and a conjoined object, which yields a truth-conditional difference between VSVPE and AE. Nonetheless, it is desirable to design additional, reliable tests that can distinguish the two analyses.

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[19] The crucial difference, according to Landau 2020b, is whether the raised verb crosses a spellout domain (VP but not AuxP). When it does, its trace can no longer mediate the deletion instruction to PF.

The five syntactic environments that resist AE because they host arguments that do not denote individuals, in fact, provide us with five novel tests. All these environments should *allow* genuine VP ellipsis, which does not fall under (21a). Here I follow the mainstream view that VP-ellipsis is derived by PF-deletion; and PF-deletions are oblivious to restrictions on semantic type (though, of course, they are indirectly correlated with other contentful semantic restrictions via [E]-licensing and the notion of e-GIVENness, see Merchant 2001, 2004). If indeed we find that genuine VP ellipsis is free of the semantic type constraints discussed in section 4, the case for AE and against VSVPE as the correct analysis of object-gap sentences would appear to be incontrovertibly settled.

Hebrew allows such a minimal comparison as it manifests, alongside object gap sentences (here analyzed as AE), Aux-stranding VP gap sentences like (55)-(56), for which VP-ellipsis is the natural analysis. The auxiliary *haya* 'be' occurs with all nonverbal predicates, as well as verbal predicates in habitual and certain modal sentences (where the lexical verb shows up as a present participle). The examples below demonstrate that genuine VPE, in which both the verb and its argument(s) is/are missing, is insensitive to the semantic type of the argument.

(58) ✓*Chunk of non-decomposable idiom in VPE (cf. (25))*
      A: hu haya   tofes   **taxat** (aleynu).
          he was.3SG.M grab.PRTC.M.SG ass   on-us
          'He used to behave so arrogantly (to us).'
      B: mi   lo   haya ___?
          who not   was.3SG.M
          'Who didn't?'/ 'Who wouldn't?'

(59) ✓*Argumental adverb in VPE (cf. (44a))*
      Yosi   haya   mitnaheg   yafe lu axiv   haya ___.
      Yosi   was.3SG.M behave.PRTC.M.SG   well if brother.his was.3SG.M
      'Yosi would have behaved well if his brother had.'

(60) ✓*Measure argument in VPE (cf. (46b))*
      A: im   ha-scena   še-xataxnu,   ha-ma'araxa ha-rišoona
          with the-scene   that-cut.out.1PL the-act   the-first
          hayta   nimšexet   xaci ša'a.
          was.3SG.F   last.PRTC.SG.F half hour
          'With the scene we cut out, the first act would have lasted half an hour.'
      B: lo, hi lo   hayta ___.
          no it not   was.3SG.F
          'No, it wouldn't have.'

(61) ✓*Name arguments of naming verbs in VPE (cf. (51a))*
      A: ba-xayim lo   hayiti   kore   la-xatul   šeli Geršon.
          in.the-life not   was.1SG call.PRTC.SG.M to.the-cat   her Gershon
          'Never would I have called my cat Gershon.'
      B: ani makir   harbe   anašim še-hayu ___.
          I   know   many   people that-were.3PL
          'I know many people who would have.'

(62) ✓*Predicate nominals in VPE (cf. (53a))*

    Dana   niftera   lifney   sof   ha-doktorat. Beyn   im hayta
    Dana   passed.away before   end   the-doctorate between if was.3SG.F
    hofexet   le-marca min   ha-minyan u-veyn   im lo hayta ___,
    turn.PRTC.SG.F to-lecturer from the-order   and-between if not was.3SG.F
    barur še-haya   cafuy   la   atid   mazhir.
    clear that-was.3SG.M expected to.her   future   glorious
    'Dana passed away before the end of her doctorate studies. Whether she had
     turned into a regular faculty member or not, a bright future would have
     awaited her.'

The systematic contrast between object gap sentences and VP gap sentences in their tolerance to non-individual denoting arguments indicates very clearly that the former cannot be reduced to the latter; that is, it falsifies the VSVPE analysis, in line with the conclusions of Landau (2018, 2020a,b, 2021).

6. Analysis: *pro*-replacement after TRANSFER

In developing an analysis that is both empirically adequate and theoretically continuous with current understanding of syntactic computations and ellipsis, I will first set forth two boundary conditions. First, it will be shown that the mechanism of AE cannot be PF-deletion (section 6.1), although that mechanism is perfectly suited to other types of ellipsis. Then, it will be shown that LF-copying too is incapable of capturing certain properties of AE; specifically, the fact that overt subextraction is possible out of AE sites (section 6.2). These two conditions seem to produce an insoluble paradox, but section 6.3 will propose a way out: *pro*-replacement at the phase level, after TRANSFER, guarantees both non-pronunciation and an escape hatch for overt subextraction. Section 6.4 puts the system to work in two sample derivations.

6.1 The case against PF-deletion

The systematic exclusion of arguments that do not denote individuals from the domain of AE calls for a semantic constraint in the spirit of Landman's (2006) NHTV.

(63) *No Higher-Type Variables Constraint (NHTV)*
    Variables in the LFs of natural languages are of type <e>.

We will shortly see that in order to capture the AE data, the NHTV should be strengthened to apply beyond LF. But the fundamental cut is correct, as can be seen in the following summary of the findings from section 4.

(64) *Semantic types constrain AE*

	Semantic type	**AE**
Referential argument	<e>	✓
Chunk of non-decomposable idiom	–	*
Argumental adverb	<<e,t>,<e,t>>	*
Measure argument	<e,t> / <d,t> / <v,t>	*
Name in naming verb	<e,<n,t>>	*
Predicate nominal	<e,t>	*

In the context of the choice between PF-deletion or LF-copying as the appropriate analysis of a given ellipsis construction, table (64) makes a strong case against the former. By hypothesis, PF representations are stripped off semantic information, so they cannot depend on anything like the NHTV. Note that pushing back the semantic constraint into the syntax, as Merchant (2001) does with the presupposition of e-GIVENness encoded in the [E]-feature, is not an available option. There is certainly no *general* constraint against deleting nodes of type <e,t>, for example. This is precisely what VP-ellipsis and NP-ellipsis do. If the [E]-feature were to encode something as strong as the NHTV, these ubiquitous processes would become inexplicable. Once again, the reason they are unproblematic is because the [E]-feature regulates PF deletion and is not constrained by semantic type.

AE is fundamentally different; hence the conclusion that it does not utilize the [E]-route. This conclusion is already part of the mainstream view of AE (Saito 2007, 2017, Takahashi 2008, 2014, Sato 2019, Sakamoto 2020). What the present study adds to the picture is a novel set of arguments that makes variants of the LF-copying view particularly appealing for AE. Although we will eventually reject the mechanism of LF-copying, we will preserve one of its fundamental features: sensitivity to semantic types. This feature lies beyond the explanatory scope of PF-deletion.

Although AE in East Asian languages is not at the focus of this study, scattered observations in the literature suggest that the same semantic constraint attested in Hebrew AE applies in languages like Japanese and Korean as well (see (40) above). Sample data from Koprean confirm a point-by-point parallelism: AE is excluded in all the five environments examined above, and, when testable, simple pronouns are too (Heejeong Ko, p.c.).

(65) a. *Chunk of non-decomposable idiom*
        A: Cheli-ka   ip-ey   kemicwul-ul   chi-ess-ta.
           Cheli-NOM mouth-in   spider.web-ACC spin-PST-DEC
           'Cheli spun a spider web in (his) mouth.' (= 'Cheli starved.')
        B: * Mina-to   ip-ey ___ / kukes chi-ess-ta.
           Mina-too mouth-in   it   spin-PST-DEC
           (Intended: 'Mina starved, too.')

    b. *Argumental adverb*
        A: ceypal nay atul-eykey *(chincelhi)   tayhay-cwu-sey-yo.
           please my son-DAT   kindly   treat-give-HON-POLITE
           'Please treat my son kindly.'
        B: kekceng mal-ayo.   *Cey-ka tangsin atul-eykey __ tayhal-kkey-yo.
           worry   NEG-POLITE   I.NOM your   son-DAT treat- PROM-POLITE
           (Intended: 'Don't worry. I will treat him kindly.')

    c. *Argumental measure phrase*
        A: Na-nun mommwukey-ka   70 killo naka.
           I-NOM   weight-NOM   70 kilos weigh
           'I weigh 70 kilos.'
       B: * O! nay-ka mommwukey-ka ___/kukes   nakan-ci
           Oh I-NOM weight-NOM   it   weigh-since
           kkoay toy-ess-ne.
           pretty become-PST-DEC
           (Intended: 'Oh, it's been a long time since I did.')

    d. *Name in naming verbs*
       * Na-nun ney-ka   ney koyangi-lul ___ /kuekes(-ulo) pwuluki-ceney
        I-TOP   you-NOM   your cat-ACC   it(-as)   call-before
        nay koyangi-lul   Alex-lo   pwull-ess-e.
        my   cat-ACC   Alex-as   call-PST-DEC
        (Intended: 'I called my cat Alex before you did.')

    e. *Predicate nominal*
        A: Cheli-nun kyosa-lo   cal-ass-e.
           Cheli-TOP teacher-as   grow PST-DEC
           'Cheli grew into a teacher.'
        B: * Ku-uy   hyeng-to   ___ /ku-lo cal-ass-e.
           he-GEN   brother-too   he-as grow-PST-DEC
           (Intended: 'His brother did to.')

Further evidence that AE in Korean is constrained by semantic type is provided in Kim 2019. Kim observes that resultative nominal predicates (66a), possessee nominals of inalienable possession constructions (66b) and "verbal nouns" that form complex predicates (66c) all resist AE (Kim 2019: 70, 81, 124; RES is the predicative particle and LV is a light verb; note that (66b) allows an irrelevant reading where the missing *arm* is not recovered and Hani simply catches her older brother).

(66) a.   Mapepsa-nun twu-myeng-uy   wangca-lul   kaykwuli-lo mantul-ess-ta.
           magician-TOP two-CL-GEN   prince-ACC   frog-RES make-PST-DECL
           'A magician turned two princes into frogs.'
        * Manye-nun twu-myeng-uy   kongcwu-lul ___ mantul-ess-ta.

witch-TOP two-CL-GEN   princess-ACC   make-PST-DECL
(Intended: 'A witch turned two princesses into frogs.')

b.   Siwu$_i$-ka   caki$_i$-uy   ai-lul   phal-ul   cap-ass-ta.
      Siwu-NOM   self-GEN   child-ACC arm-ACC   catch-PST-DECL
      'Siwu$_i$ caught his$_i$ child on the arm.'

   * Hani$_j$-nun   caki$_j$-uy   oppa-ul   ___   cap-ass-ta.
      Hani-TOP   self-GEN   older.brother-ACC   catch-PST-DECL
      (Intended: 'Hani$_j$ caught her$_j$ older brother on the arm.')

c.   Mina-nun   ecey   sasum-ul   sanyang-ul   ha-ess-ta.
      Mina-TOP   yesterday deer-ACC   hunting-ACC LV-PST-DECL
      'Mina hunted deer yesterday.'

   * Siwu-nun   onul chamsay-lul   ___   ha-ess-ta.
      Siwu-TOP   today sparrow-ACC   LV-PST-DECL
      (Intended: 'Siwu hunted sparrow today.')

Kim proposes a configurational licensing condition: Only specifiers of phases can undergo AE. However, barring stipulations, it is not clear that standard objects of transitive verbs occupy specifier positions (e.g., one would be forced to argue that the object is a specifier in *John weighed potatoes* but a complement in *John weighed 80 kilos*, with no independent evidence). Rather, what seems clear (and Kim does note it) is that all the failed ellipses in (66) target predicative arguments. Specifically, the resultative nominal in (66a) is of type <e,t>; possessee nominals in inalienable constructions are relational nouns that introduce a possessor argument, thus of type <e,<e,t>> (Partee 1997, Vikner and Jensen 2002); and verbal nouns are argument-taking predicates (Grimshaw and Mester 1988), so that *sanyang* 'hunting' in (66c) is of type <e,<s,t>>, combining with the light verb *ha-* by Event Identification (Jung 2003). Kim's observations, therefore, fall entirely under the NHTV. In fact, Kim (2019:143) further observes that AE-resistant arguments also resist scrambling. If scrambling does not reconstruct, the resulting traces at LF would be of illicit higher types (Poole 2017), hence also excluded by the NHTV.

These facts are particularly challenging to the property-based view of AE espoused in Tomioka 2003 and Bošković 2018. While Hebrew is not an "NP language", Korean is; it should therefore harbor an <e,t>-type *pro*. Why can this *pro* not pick out property-denoting NPs as antecedents, not even the most straightfoward kind of them, a predicate nominal? If the property-based view of *pro* has any immediate prediction, it is that such NPs will make perfect antecedents for AE. The fact that they are not is extremely puzzling, and implies that for some unknown reason, *pro* must undergo type-shifting to an individual even in contexts that select for properties and *accept* property-denoting overt NPs. No such bizarre assumptions are needed on the present view, which takes *pro* to be individual-denoting to begin with, and derives the facts in (66)-(66) straightforwardly.

There is another property of AE that places it in opposition to well-established cases of ellipsis by PF-deletion, which concerns its relation to deaccenting. Tancredi (1992) famously argued that ellipsis is an extreme form of deaccenting, which allowed him to capture significant interpretive parallels between the two processes, like backgrounding, strict/sloppy readings, etc. (see also Chomsky & Lasnik 1993). While it is recognized that ellipsis imposes a stricter parallelism constraint than deaccenting

does (see Merchant 2001:15,17), there are no circumstances, to my knowledge, where *strictly identical* constituents license deaccenting but not ellipsis.

In this light, consider environments in which AE fails (italics below indicate deaccenting).

(67) A: ani šokel   70 kilo.
       I   weigh.M.SG 70 kilo
      'I weigh 70 kilos.'
    B: * ha,   ani kvar   mi-zman lo   šokel ___ !
       huh I   already from-time not weigh.M.SG
      'Huh, I haven't weighed 70 kilos for a long time!'
    B': ha, ani kvar   mi-zman lo   šokel   *70 kilo*!
      huh I   already from-time not weigh.M.SG 70 kilo
      'Huh, I haven't weighed 70 kilos for a long time!'

A measure argument can be deaccented if anteceded by an identical measure argument, but not elided. This is not a quirk of measure arguments; the observation generalizes, without exception, to all the kinds of ellipsis-resistant arguments discussed in section 4 (examples are omitted here for space reasons). In other words, the semantic constraint banning deletion of non-individual denoting arguments is inoperative in deaccenting.

It is certainly not surprising that a PF-operation like deaccenting is indifferent to semantic type constraints. What is of interest here is the discrepancy with ellipsis. If AE had been an "extreme form of deaccenting", namely a PF-operation, it would have been no different in this regard. Moreover, because parallelism is not at stake here (the antecedent and elided constituents are identical in (67B)), we cannot appeal to the familiar mismatches between deaccenting and ellipsis that hinge on the strength of the parallelism requirements to which they are subject. The natural conclusion is that AE is simply not a PF operation at all.

As it stands, though, the NHTV in (63) does not deliver the empirical results we need. All it requires is that LF-variables are of type <e>. But on the *pro*-replacement analysis, the ellipsis site does not host a variable (*pro*) at LF, the latter having been replaced by an LF-copy of the antecedent. That copy, in the usual case, will simply be some referential argument, with some lexical content and possibly phrasal structure. How can the NHTV restrict the semantic type of this constituent, which is not a variable?

It cannot. However, if we could somehow bring the anterior *pro* under the jurisdiction of (some modified version) of the NHTV, the desired result will follow: *pro* will be restricted to type <e>, and by transitivity, anything that replaces it will be too, assuming that replacement requires semantic type matching (in general, *pro*-forms can only pick out antecedents that match their semantic type).

The necessary modification in the NHTV is, in fact, a simplification. All we need to do is remove the qualification "at LF".

(68) *Generalized NHTV*
    Variables in natural languages are of type <e>.

(68) is stronger than (63) and requires variables *at any derivational stage* to be of type <e>. In fact, it goes all the way back to the lexical inventories of natural languages, and prohibits atomic *pro*-forms of higher types.[20] This does have the effect of ruling out all the impossible AE cases above. Specifically, copied arguments of higher types cannot be licensed in the ellipsis site because there is no appropriate *pro* for them to replace. No *pro* in the lexical inventory of natural languages can be replaced by a non-denotational idiom chunk, by an adverb, by a predicate nominal, etc.

Thus, by extending the scope of Landman's original NHTV, we preserve its positive consequences (see section 3) and also derive the semantic type constraint on AE. We now explain the correlation in (21c) and resolve the paradox from section 2: How come AE is *not* interpreted as a pronoun at LF and yet is subject to the same semantic type constraint as pronouns are? The answer is: AE sites indeed do not host a *pro* at LF but rather a fully-fledged syntactic structure. However, they derivationally descend from a syntactic *pro*, and it is this *pro* that bears the mark of the generalized NHTV – the restriction to type <e>.[21]

6.2 A challenge to *pro*-replacement at LF: Overt extraction

Now that we have set aside the PF-deletion approach, the precise implementation of LF-copying may take various forms. In the general literature on LF-copying, analyses mainly differ in what they take the target site to consist in *prior* to being filled by an LF copy of the antecedent.

(69)   *Implementations of LF-copying*

    a. *Merge/Substitution*
       (i)   The ellipsis site does not exist in the syntax and is only generated at LF (Oku 1998, Saito 2007, 2017, Takahashi 2006, 2008, 2013, 2014, Fortin 2011, Sato 2014, 2015, 2016, 2019).

       (ii)   The ellipsis site is an empty categorial frame in the syntax (Wasow 1972, Williams 1977, Elbourne 2005, Aoun & Li 2008, Chung, Ladusaw and McCloskey 1995).

    b. pro-*replacement*
      The ellipsis site hosts *pro* in the syntax.

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[20] Phrasal pro-forms may, of course, denote outside the domain of individuals, as their basic semantic type is shifted by functors they combine with (see fn. 10). Note that (68) predicts not only that AE sites cannot denote properties but also that they cannot denote generalized quantifiers, aligning with Poole's (2017) constraint on trace denotations. This is indeed true, as I briefly demonstrate in section 7, although the full case is laid out in work in progress.

[21] The present proposal associates *pro*-forms with reconstructed syntactic structure, but it does not imply that they cannot be associated with PF-deletion in other elliptical constructions. Indeed, certain varieties of VP ellipsis have been analyzed precisely in such terms: PF-deletion of a VP node that strands an overt *pro*-form (Baltin 2012 on *do so* anaphora in English, and Hauser, Mikkelsen and Toosanvardani 2007, Bentzen, Merchant and Svenonius 2013 on *gøre det/gjøre det* 'do it' anaphora in Danish and Norwegian, respectively). The *do so* case is fundamentally different in that the *pro*-form *so* is not a surrogate of the surface anaphor at all; rather, its *complement* is the target of ellipsis. The Scandinavian constructions do involve what seems like a property-anaphor, *det*, in the complement position of the light verb, but this is an illusion. Throughout the derivation and up to LF, the VP is a full syntactic structure, and *det* is inserted only at PF Thus, *det* is not a syntactic or semantic variable, and perforce is not subject to the Generalized NHTV.

(Yoshimura 1992, Lobeck 1995, 1999, Giannakidou and Merchant 1997, Sakamoto 2020)

Our argumentation allows us not only to rule out PF-deletion but also analyses of type (69a); a missing position, or just a bare category feature, are not referential elements that can be tagged with a semantic type restriction. Only *pro* can, which is indeed why we find a systematic correlation between AE-resistant and antipronominal environments.[22]

Nevertheless, I will depart from a *pro*-replacement analysis like Sakamoto's (2020) in one important respect: I will argue that the copying operation, as well as the replacement of *pro*, must take place *in the syntax*. This, of course, will raise the question of why the copied material is not pronounced in the ellipsis site; the next section answers this question. For now, let us review the reasons why a purely LF-copying analysis of AE is inadequate.

As a starting point, let me turn to the one type of argument that I have not touched upon so far in connection to AE: clausal arguments. The literature on AE in East Asian languages regularly extends it to clausal arguments as well, as they display no significant difference with nominal arguments (Saito 2007, 2017, Cheng 2013:102). This is true of Hebrew too. First, given a local antecedent, any propositional verb may occur with a silent complement. In this respect, clausal AE is different from Null Complement Anaphora of the English type, which is lexically selective.

(70) Gil hitpa'er še-ha-proyekt   šelo kibel   hamon maxma'ot.
      Gil boasted that-the-project his   received lots.of compliments
      Gam Ronit   hitpa'ara ___.
      also Ronit   boasted
      'Gil boasted that his project received lots of compliments.
      Ronit also did.'
      (cf. *Ronit also boasted ___).

A striking feature of ellipsis that is hard to test with nominal arguments but easy with clausal ones is the possibility of extraction from the elided domain, probably the strongest type of evidence that this domain hosts silent syntactic structure. While English NCA disallows extraction from the complement domain (Depiante 2001), Hebrew clausal AE allows it (see Cyrino & Matos 2006 for parallel observations in Portuguese).

(71) naxeš eyze   ma'amar   Dan hiskim   likro
      guess which   article   Dan agreed   to.read
      ve-eyze   (ma'amar) hu   serev ___?
      and-which (article)   he   refused
      'Guess which article Dan agreed to read and which (article) he refused *(to)?'

Even more tellingly, morphosyntactic connectivity is respected in these extractions, similarly to what is found in sluicing, as Ross (1969) famously observed. The verbs

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[22] (69b) can be viewed as a mirror-image of the early *Pronominalization* transformation of the 1960s: While the latter converted an NP into a pronoun under identity with antecedent NP, the former converts a pronoun into a DP under identity with an antecedent DP.

hika 'hit' and *hirbic* 'beat' are near synonyms, but differ in how they mark their object: *hika* marks it accusative, *hirbic* marks it dative. This distinction must be preserved when the object is extracted out of an elided clause, or ungrammaticality results.

(72) a. et   axiv,   ani batuax še-Yosi haya   make,
         ACC btother.his I   sure   that-Yosi was.3SG.M hit.PRTC.SG.M
         aval et/*le- axoto,   ani lo   batuax ___.
         but ACC/to- sister.his   I   not sure
         'His brother, I'm sure Yosi used to hit, but his sister, I'm not sure he used to.'
     b. le-axiv,   ani batuax še-Yosi haya   marbic,
         to-btother.his I   sure   that-Yosi was.3SG.M beat.PRTC.SG.M
         aval le-/*et   axoto,   ani lo   batuax ___.
         but to-/*ACC   sister.his I   not sure
         'His brother, I'm sure Yosi used to beat, but his sister, I'm not sure he used to.'

Such facts establish that AE extends to missing clauses in Hebrew (even if NCA is also available in some cases).[23] At the same time, however, they raise two thorny issues to the LF-copying analysis: (i) How is ellipsis of a propositional complement, which is of type <t> or <s,t>, compatible with the generalized NHTV, which restricts variables to type <e>? (ii) How can overt material be extracted from an LF constituent which, by hypothesis, is stripped off morpho-phonological information?

Consider question (i) first. In fact, there is a rich semantic tradition of assimilating propositional complements to (abstract) individuals: Individual correlates of propositions (Chierchia 1984), plural individuals (Potts 2002), content individuals (Kratzer 2006), content events (Moulton 2020) or attitudinal objects (Moltmann 2013). For a radical identification of propositions and individuals, see Liefke and Werning 2018. It is well-known that a wide range of grammatical processes treat nominal and clausal arguments alike. In the context of the phenomena discussed in section 3.2, which involve linguistic variables, it is enough to mention their uniform behavior vis à vis *wh*-questions and pronominal anaphora.

(73) a. What do you regret?
         My letter / That I wasn't kind to them
     b. John said a [nasty word]$_i$. I was offended by it$_i$.
     c. John said [that the storm was over]$_i$. I doubted it$_i$.

I cannot defend here at any length the general idea of "propositions qua individuals", or any one of its specific implementations. Nonetheless, I will assume, together with the authors cited above, that it is a credible idea: At some sufficiently general level of analysis, the denotation of clausal arguments and that of nominal arguments fall under the same ontological type. Let us assume, then, that the Generalized NHTV refers to

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[23] See Landau 2018:ex. (50) for Hebrew data on QR out of elided arguments and (a rare case of) overt subextraction out of an elided DP.

that type by <e>. It follows that alongside DP and PP arguments, CP arguments are also eligible for AE.[24]

The second question, of extraction out of an LF copy, is at the heart of Sakamoto's (2020) illuminating study of AE in East Asian languages. Following Saito 2007, Sakamoto argues that overt extraction out of elided arguments is disallowed. However, he points out that covert extraction – including QR and null operator movements – *is* allowed. This asymmetry naturally follows on the LF-copying analysis. LF-copying may feed covert extraction because the latter does not have any impact on PF; but it cannot feed overt extraction as the latter has phonological consequences. In light of this account, the fact that Hebrew (and Portuguese) does allow overt extraction from AE sites in (71)-(72) is puzzling and seems like prima facie evidence for a PF-deletion analysis after all.

The dilemma is real, but I would like to suggest that PF-deletion is not the right way out of it (for the reasons discussed in section 6.1). Before presenting a solution, let me point out that Sakamoto's neat dichotomy between (impossible) overt extraction and (possible) covert extraction out of elided clauses in Japanese has recently been called into question in Takahashi 2020. Takahashi observes that although long-distance scrambling is not possible out of elided complements, focus movement in clefts is possible; therefore, the LF-copying analysis is not entirely adequate even for Japanese.[25]

6.3 The proposal: *pro*-replacement *after* TRANSFER

This is where things stand. We know that AE does not apply at PF because it reveals semantic sensitivity. We capture this sensitivity, which is also revealed in antipronominal behavior, by positing that AE sites start out as *pro*. We also know that the derivational point at which this *pro* is replaced by a syntactic constituent cannot be as late as LF, since that constituent can launch extraction of overt material, which furthermore displays morpho-syntactic connectivity with the ellipsis site. This leads to a wholly syntactic derivation of AE: Both *pro*-insertion and *pro*-replacement take place before PF and before LF. The question we now have to address is this: how can a constituent, which is a syntactic object rather than an LF object, be left unpronounced?[26] I will approach this puzzle by taking a close look at the minimalist toolkit of phase-based derivation. The mechanism for deriving AE will emerge out of this toolkit as a logical consequence, hitherto unrecognized.

Prior to Minimalism, overt and covert movements were thought to be operations that take place in different modules of the grammar (May 1977, Huang 1982). Starting with Chomsky 1993, however, it became standard to assume a single syntactic module. The overtness of movement boiled down to which copy in the chain is targeted by spellout – essentially, a PF decision. An important updating of this picture occurred within the cyclic spellout model of the 2000s. Chomsky (2004) introduced

[24] This view receives interesting support from Korean, where CP complements can undergo AE if and only if they are nominal (featuring a nominalizer and/or a case marker, the latter sometimes optional), a property that also underlies their susceptibility to pronominalization (Sohn 2012).
[25] The interpretation of extraction data with topic-marked ('wa') constituents is not entirely settled; see Sakamoto 2020:62, fn. 1 and Takahashi 2020:fn. 20.
[26] On a Late Insertion model, the difference between the two is the presence of spellout instructions at the terminal nodes of the syntactic object vs. their absence from the LF-object.

the operation TRANSFER, which is triggered by the phase head, essentially shipping its complement to the interfaces and rendering them inaccessible to further computation. Classical cyclicity effects (*The Phase Impenetrability Condition*, PIC) are captured by allowing material within the phase's complement to escape only through movement to the phase edge prior to TRANSFER.

Within this model, Chomsky (2004:111) reformulates the overt/covert distinction as follows: "Internal Merge can apply either before or after TRANSFER, hence before or after Spell-Out. The former case yields overt movement, the latter case covert movement, with the displaced element spelled out in situ."[27]

What stands out in this proposal is the peculiar restriction to *Internal* Merge. The peculiarity is all the more outstanding in light of Chomsky's persistent claim that Internal Merge and External Merge are formally indistinguishable, two facets of the same conceptual necessity (Chomsky 2008, 2013, 2019). While External Merge is expressed in Predicate-Argument saturation, Internal Merge is expressed in displacement. Yet Merge itself does not "care" whether its relata are members of a single connected tree or not. Thus, it is not clear why only Internal Merge enjoys free ordering with TRANSFER. Although the application of *External* Merge after TRANSFER (or after Spell-Out, in earlier terminology) has not been contemplated in the minimalist literature, it is an inevitable theoretical option, which can only be excluded by stipulation.

(74) *Merge by TRANSFER combinations*

	Before TRANSFER	**After TRANSFER**
Internal Merge	Overt movement	Covert movement
External Merge	Overt Predicate-Argument Saturation	?

This formal lacuna – "covert predicate-argument saturation" – is nothing but AE, I submit. In particular, AE is the process by which arguments undergo External Merge after TRANSFER (henceforth, *EMAT*) in the ellipsis site. Such arguments are still accessible to semantic interpretation, but are not visible to PF, just like copies of Internal Merge are after TRANSFER (overt movement). Importantly, on this analysis, the copied argument need not be an LF-object, and as I will shortly argue – it *cannot* be so. It may well be a regular syntactic constituent specified with phonological (or spellout) information. Nonetheless, having been merged after TRANSFER in the

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[27] Chomsky further suggests that semantic interpretation is cyclically synchronized with phonological spellout, so that a single TRANSFER operation feeds both interfaces at every phase level. This cannot be strictly true if Internal Merge may either apply before or after TRANSFER: Before Internal Merge a *wh*-phrase is not interpretable, and after Internal Merge it is interpreted as an operator-variable chain. Thus TRANSFER to LF (if synchronized with TRANSFER to PF) would deliver two distinct objects, depending the timing of Internal Merge. Note also that there is nothing like the PIC on the semantic side; LF-structures must be able to ignore phase boundaries in order to construct configurations of long-distance binding.

ellipsis site, it will not be parsed at PF.[28] This holds the key to the possibility of overt extraction from the AE site (see below).

A number of issues need to be addressed at this point. First, why is *pro*-replacement the only way of achieving EMAT? What rules out simple substitution into an empty position, as in the family of proposals in (69a)? This is a crucial point. It is only in virtue of the underlying presence of *pro* in the AE site (prior to its replacement) that the effects of the Generalized NHTV are captured. Without *pro*, direct Merge of an LF-copy in the AE site would simply duplicate whatever semantic type the antecedent has. The "semantic channelling" that rules out predicative or adverbial arguments reflects the impact of the Generalized NHTV on *pro*. But why is *pro* necessary?

To answer this question, we should reconsider the status of the construct "LF-copy", so far borrowed unexamined from the ellipsis literature. The idea is that LF-structures of completed derivations, sometimes completed sentences, are available to the syntactic computation. In particular, Merge can access a constituent of such an LF-structure, however deeply embedded, and "reuse" it in a new derivation, merging it with the currently constructed syntactic object. However, it is doubtful that Merge or syntax should be granted such power (see Epstein, Kitagawa and Seely 2012 for arguments against granting such power). Restricting resources is a minimalist desideratum that should not be hastily compromised (Chomsky 2020). It is not so much that post-TRANSFER objects should not be accessible; they *are* accessible to Internal Merge ("covert movement"). Rather, it is that fully derived sentences, having been spelled out at PF and interpreted by the semantics, should not remain in the syntactic workspace at all, or else it may grow incredibly big and complex.

If this reasoning is correct, then the source of the "copied" argument is not the LF-structure of the antecedent clause at all. What could it be? Quite simply, a newly constructed phrase, that is identical to the antecedent argument. This phrase, say a DP, is assembled like any other DP is, from the lexicon, and at the right moment – just after TRANSFER at the phase level in which *pro* occurs, replaces *pro* (step-by-step derivations are presented below). Crucially, now, this DP has never gone TRANSFER, since it has never been part of any bigger structure before it replaced *pro*. It is therefore endowed with the ordinary spellout instructions that are associated with any lexical material.

We are now in a position to answer the first question: What rules out simple substitution into an empty position in the AE site? As just indicated, LF-copies are not available. The only thing that can be used to replace *pro* is a newly constructed syntactic phrase, which is obviously available in the workspace. However, in order to escape pronunciation in the AE site, it must undergo EMAT. This implies that the argument position is left unfilled until the phase level. I suggest that the grammar of c-selection simply does not tolerate empty positions (a corollary of bare phrase

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[28] In this respect the present proposal is also different from Fortin 2011, where Sluicing is analyzed as copying of the LF structure of an antecedent TP. Fortin assimilates this operation to sideward movement (Nunes 2004), a nontrivial step, since sideward movement requires access to a syntactic object embedded inside a bigger one; this powerful device is not needed on the present analysis. In addition, sideward movement is wedded to a complex algorithm responsible for PF-deletion of copies unrelated by c-command. Since the mechanism of "obtaining silence" in AE is fundamentally different from PF-deletion, I will not pursue this analogy here.

structure), whether radically empty or just "categorial frames". Syntactic nodes exist only insofar as they are projected from actual morphemes.

In short, direct substitution of an LF-copy in the AE site is impossible because LF-copies are not syntactically accessible objects (at least not from previously completed derivations). A newly constructed syntactic argument, in turn, contains spellout instructions, so must be merged after TRANSFER to go unpronounced.[29] But c-selection cannot be suspended that long; once V is introduced, its DP/PP/CP argument must be merged, and cannot wait until the phase head v is introduced. Thus, *pro* must be merged for the derivation to proceed properly.

A second, obvious, concern, is how to restrict EMAT so that it does not generate meanings that are wildly underdetermined by the overt string. For example, in an AE language like Hebrew or Japanese, why can the sentence *John ate,* uttered out of context, not be interpreted as *John ate [a veggie burger that was actually quite delicious]*, with the bracketed phrase undergoing EMAT?[30] Clearly, such a meaning is neither recoverable from the sentence itself nor from its surrounding context. It is therefore ruled out by *Recoverability of Ellipsis* (RoE), a more neutral term than Recoverability of Deletion. The familiar constraint on surface anaphora is operative here as elsewhere: The content of silent syntactic material must be recoverable from its immediate linguistic context. Notice that on this view, non-recoverable EMAT is syntactically (and often semantically) well-formed. It is not blocked grammar-internally, but simply produces utterances that are hopelessly uninterpretable in discourse.[31]

6.4 AE derivations

Let us now put together the different pieces of the analysis and illustrate how they are manifested in the derivation of AE. We will first consider a simple AE example and then an example with extraction out of the AE site.

(75) Gil ohev et   ha-šxuna   šelo, ve-Rina sonet ~~et   ha šxuna šela~~.
      Gil likes ACC the-neighborhood his   and-Rina hates ACC the-neighborhood her
      'Gil likes his neighborhood, and Rina hates hers.'

The derivation is depicted below, using English words for convenience.

(76) *Deivation of AE*
      <u>Syntax</u>
      a. Merge {*hates*$_V$,*pro*} $\rightarrow$ [$_{VP}$ *hates pro*]
      b. Merge {v,VP} $\rightarrow$ [$_{vP}$ v [$_{VP}$ *hates pro*]]
      c. Merge {v,*hates*} $\rightarrow$ [$_{vP}$ [*hates*$_i$ v] [$_{VP}$ *hates*$_i$ *pro*]]

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[29] Can *pro*-replacement occur before TRANSFER? If it can, the result would not be distinguishable from direct Merge of the argument, so the point is moot.

[30] I return below to the question of what determines whether a language allows AE or not.

[31] This raises the intriguing possibility that unconstrained EMAT may apply in inner speech, where RoE is not at issue, as the content of merged arguments, whether overt or not, is always recoverable to the speaker. It is well-known that inner speech has phonological structure (Langland-Hassan and Vicente 2018), which indicates that its constituents undergo TRANSFER to PF (later aborted en route to the speech articulators). The often-made observation that it is more fragmentary and abridged than overt speech may be partially explained in terms of pervasive use of EMAT.

d. Construct a DP argument: [DP *her neighborhood*]
e. TRANSFER VP　　　→[vP [*hates*i v] [VP ***hates~~i~~ pro***]]
f. Replace *pro* by DP → [vP [*hates*i v] [VP ~~*hates*~~i [DP *her neighborhood*]]]　**EMAT**
g. Merge {*Rina*,vP}→ [vP *Rina* [v' [*hates*i v] [VP ~~*hates*~~i [DP *her neighborhood*]]]]
h. Complete TP:
　→ [TP *Rina* [T' T [vP ~~*Rina*~~ [v' [hates~~i~~ v] [VP ~~*hates*~~i [DP *her neighborhood*]]]]]]

<u>PF</u>
Output string: *Rina hates*

<u>LF structure</u>
[TP *Rina* λx [T' T [vP ~~*Rina*x~~ [v' [hates~~i~~ v] [VP ~~*hates*~~i [DP *her*x *neighborhood*]]]]]]
[λx.x hates x' neighborhood](Rina)

<u>Semantics</u>
Verify recoverability of a parallelism domain that (reflexively) dominates the AE site.[32]

Note that the argument replacing *pro* in (76f) does not appear with a strikethrough because it has not undergone TRANSFER. Nevertheless, it is unpronounced, since it has been introduced after TRANSFER had applied to its phase. It is also apparent that EMAT is countercyclic, a property it shares with most implementations of LF-copying. This aberration may be tolerated for two reasons. First, EMAT's countercyclicity is restricted to a single phase, and if indeed, as Chomsky (2004) suggests, all conditions are evaluated at the phase level, EMAT is not registered as a violation. Second and more importantly, if the Extension Condition (barring countercyclic Merge) is rooted in linearization, as Fortin (2011) suggests, then countercyclic Merge of *silent* material, which is not linearized, may be harmless.

Consider next the derivation of extraction out of an AE site, again using English words for convenience. Below I assume that AP predicates project a phase head *a* (alternatively, a Pred head), and suppress irrelevant movement copies. Unmodified "Merge" means External Merge.

(77) le-axiv,　　　ani　batuax　še-Yosi　haya　　　marbic,
　　　to-btother.his I　　sure　　that-Yosi　was.3SG.M beat.PRTC.SG.M
　　　aval le-axotoi,　ani　lo　　batuax [~~še Yosi　　haya　　　marbic ti~~].
　　　but　to-sister.his I　not　sure　　that-Yosi　was.3SG.M beat.PRTC.SG.M
　　　'His brother, I'm sure Yosi used to beat, but his sister, I'm not sure he used to.'

(78) *Deivation of extraction out of an AE site*
　　　<u>Syntax</u>
　　　a. Merge {*sure*A,*pro*}　→ [AP *sure pro*]
　　　b. Merge {*a*,AP}　　　 → [aP *a* [AP *sure pro*]]
　　　c. Merge {*a*,*sure*}　　　→　　[aP [*sure*i,*a*] [AP *sure*i *pro*]]
　　　d. Construct a CP argument with extraction to its edge:
　　　　[CP [PP *to his sister*] *that* [TP *Yosi was beat* [PP ~~*to his sister*~~]]]

---

[32] Parallelism domains are relevant to recoverability whenever the ellipsis site contains a variable bound from the outside (Takahashi and Fox 2005), whether a pronoun (75) or a trace (77). There are more recent reformulations of this concept, but the choice among them is not relevant for the present concerns.

e. TRANSFER matrix AP: → [$_{aP}$ [*sure*$_i$,*a*] [$_{AP}$ ~~*sure*$_i$ *pro*~~]]

f. Replace *pro* by CP **EMAT**
→ [$_{aP}$ [*sure*$_i$,*a*] [$_{AP}$ ~~*sure*$_i$~~ [$_{CP}$ [$_{PP}$ *to his sister*] that [$_{TP}$ *Yosi was beat* [$_{PP}$ ~~*to his sister*~~]]]]]

g. Merge {*I*,*a*P}
→ [$_{aP}$ *I* [$_{a'}$ [*sure*$_i$,*a*] [$_{AP}$ ~~*sure*$_i$~~ [$_{CP}$ [$_{PP}$ *to his sister*] that [$_{TP}$ *Yosi was beat* [$_{PP}$ ~~*to his sister*~~]]]]]]

h. Internal Merge {[$_{PP}$ *to his sister*],*a*P}
→ [$_{aP}$ [$_{PP}$ *to his sister*] [$_{aP}$ *I* [$_{a'}$ [*sure*$_i$,*a*] [$_{AP}$ ~~*sure*$_i$~~ [$_{CP}$ [$_{PP}$ ~~*to his sister*~~] that [$_{TP}$ *Yosi was beat* [$_{PP}$ ~~*to his sister*~~]]]]]]]

i. Complete TopP
[$_{TopP}$ [$_{PP}$ *to his sister*] [$_{TP}$ I not sure … [$_{CP}$ [$_{PP}$ ~~*to his sister*~~] *that Yosi*…]]]

PF
Output string: *To his sister, I not sure*

Semantics
Verify recoverability of a parallelism domain that (reflexively) dominates the AE site.

Let us unpack this derivation. The argument to be elided is the CP constructed in (78d). The internal PP argument is the target of extraction out of the AE. A matrix probe can only target this argument if it is located at the edge of the CP. Notice that any spellout decisions made internally to the CP will be later "trumped", as the entire CP (except for the argument extracted to its specifier) will remain unpronounced, due to EMAT in the matrix clause. This is no different from other situations in which a CP copy is left unpronounced, e.g., *That Mary kept the letter was not immediately understood*: Any spellout decisions made inside the base copy of the fronted CP are trumped by the overarching instruction not to pronounce the entire copy.

EMAT of the CP in (78f) guarantees that its terminal nodes will not undergo spellout *within the matrix AP*, the spellout domain of the phase head *a*. Yet using edge-to-edge extraction and the systematic "loophole" afforded by the PIC, the extracted PP ends up in a higher spellout domain, and is ultimately pronounced wherever the top copy of its chain is, here [Spec,TopP]. Now we can see the critical difference between an LF-copying approach and the present analysis. Because the AE site comes to host a genuine syntactic object, along with its spellout instructions, overt material can be extracted from it. Furthermore, this material displays morphosyntactic connectivity with its base position (see (72)), just like any other type of extracted material. In this respect, the EMAT analysis aligns with the predictions of a PF-deletion analysis and against LF-copying.

Finally, semantic parallelism establishes identity between an elided domain with a movement variable inside of it and antecedent domain with a parallel variable. I assume that the machinery developed by Merchant (2001) to derive identity in analogous sluicing derivations is readily transposable to the present case. ∃-closure applies to free variables, and the contrastive extracted arguments induce alternatives that are each contained in the focus semantic value of the other, thus mutual entailment is guaranteed between the antecedent and the AE site.

7. Consequences and questions

In this section I touch upon issues that the present proposal raises, offering somewhat sketchy remarks due to space limitations. Some of these issues are addressed in work in progress, others await further research.

The first issue is the status of elided QPs. Generalized quantifiers are of type $<<e,t>,t>$, hence should fall together with the other "non-individual" types of table (64) in resisting AE. We expect the following outcome.

(79)   *Generalized NHTV* $\Rightarrow$ *AE of QPs

Initial appearance, however, suggests otherwise, as in (3), repeated below.

(80) a.   afiti   harbe ugiyot. Mixal   gam   afta   ___ /#otan.
             baked.1SG   many cookies Mixal   also baked.3SG.F   them
             'I baked many cookies. Mixal did too.'

      b.   ani   makir   kol student   ba-kita   ha-zot.
             I   know   every student in.the-class the-this
             Gam ata   makir ___ / #oto.
             also you   know   him
             'I know every student in this class. You do too.'

(80a) is not really informative, though. Cardinals and weak quantifiers like *many* may receive non-quantificational, modifier-denotations. In fact, Sato (2016) adopts a non-quantificational, choice-function analysis, to handle AE of wide-scope cardinal DPs in Singapore English. In general, as Tomioka (2014) observes, such elided arguments cannot solidly establish that AE applies to genuine quantificational phrases. It is noteworthy that the vast majority of studies purporting to show that AE applies to QPs restrict themselves to such examples, e.g., with the missing argument referring to 'three students' (Şener & Takahashi 2010, Cheng 2013, Sato 2014, 2015, Sato & Karimi 2016, Sakamoto 2020). Nonetheless, an early recognition of the contrast between grammatical ellipsis of weak quantifiers vs. ungrammatical ellipsis of strong quantifiers is found in Giannakidou & Merchant's (1997) analysis of Indefinite Object Drop.[33]

Let us focus on strong quantifiers, then. Examples with universal quantifiers, like (80b), may suggest that (79) is false. However, as Takahashi (2008:fn.9) observes, the reading obtained is very difficult to distinguish from an E-type reading. Notice that a *plural* pronoun in (80b) easily renders this reading.

(81) ani   makir   kol student   ba-kita   ha-zot. Gam ata   makir otam.
       I   know   every student in.the-class the-this also you   know them
       'I know every student in this class. You also know them.'

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[33] Giannakidou & Merchant's explanation is syntactic, though, unlike the present semantic explanation. They assume that strong quantifiers reside in D whereas weak ones attach below it. Because D is the head-licensor of nominal ellipsis, it cannot be included in the ellipsis site. Notice that this account cannot generalize to languages where AE applies to definite (hence, full DP) arguments, which nonetheless display a parallel ban on ellipsis of strong quantifiers. Below I sugggest that head-licensing is anyway operative in PF-deletion only, so it does not constrain AE (which is derived by EMAT).

Thus, we are left with a very narrow selection of strong quantifiers that can make an indisputable case for a generalized-quantifier denotation of an AE site. QPs headed by *most* are suitable, and Takahashi (2008:ex. 11,13) indeed provides such data; however, he notes that only the E-type reading is available to some speakers. Further complications internal to the LF-copying analysis arise, since these QPs are represented as operator-variable chains at LF, hence LF-copying "splits apart" the antecedent chain, copying only a variable (see Saito 2017). Some non-QR mechanism is then called upon to interpret elided QPs.

I would like to take a different tack and argue that these appearances notwithstanding, (79) is true; and indeed, the fact that it is a direct consequence of the present analysis is striking confirmation of this analysis, on a par with the evidence accumulated against AE of predicative types. Only sample evidence will be presented here; for a full exposition, I refer the reader to (Author, in progress).

A truly quantificational element in an AE site should interact scopally with other scope-bearing elements. Yet whenever the resulting reading of such an interaction is truth-conditionally distinct from what an E-type denotation produces – it is, in fact, absent. This strongly suggests that only the E-type denotation is available. Below, I demonstrate this point with three independent tests.

Consider first the interaction of universally quantified objects with negation.

(82) Rina lo   kar'a kol ma'amar   ba-rešima. $\neg >> \forall, \forall >> \neg$
      Rina not   read every article   in.the-list
      'Rina didn't read every article on the list.'

(83) a.   Rina kar'a kol   ma'amar   ba-rešima…
             Rina read every article   in.the-list
             'Rina read every article on the list…'
      b.   Yosi lo,   hu kara et   rubam. $\neg >> \forall$
             Yosi not   he read ACC   most.of-them
             'Yosi didn't, he read most of them.'
      c. # Yosi lo kara, hu kara et   rubam. $*\neg >> \forall$
             Yosi not read he read ACC   most.of-them
             ('Yosi didn't them, he read most of them.')

(82) is scopally ambiguous; the surface scope relation $\neg >> \forall$ is completely natural. The elliptical clauses (83b,c) are biased towards this surface scope, as the inverse scope would conflict with the following clause (if every article is such that Yosi did not read it, then he could not have read most of them). There is a sharp contrast between the stripping version (83b), in which the stranded negation can take scope over the QP inside the elided clause, and the AE version (83c), in which negation *cannot* scope over the elided argument.[34] This is readily understood if stripping involves PF-deletion of a VP or TP (Wurmbrand 2017, Johnson 2019), in which a genuine QP resides and is interpreted at LF, whereas AE proceeds by *pro*-replacement, which cannot apply to strong quantifiers. The object gap in (83c) can only receive an E-type reading, causing the conflict with the subsequent clause.

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[34] See Ahn and Cho 2011 for a parallel observation in Korean.

Because choice functions and E-type pronouns mimic wide scope quantification, a straightforward test for true quantification can target *narrow* scope readings. Indefinite DPs can be forced to take scope below universally quantified expressions when modified by *different* (focusing on its sentence-internal reading). Consider the following sentence.[35]

(84) kol   yeled   ciyer parcuf   šone,
     every boy   drew face   different
     ve-kol   yalda gam (*ciyra) ___.
     and-every   girl   also   (drew)
     'Every boy drew a different face, and every girl too.'

Without the verb, the second conjunct involves stripping; the remnant universal QP can easily distribute over the missing existential object QP, which undergoes PF-deletion together with the verb and possibly higher projections. With the verb pronounced, however, the object can only be missing by virtue of AE, which is ungrammatical, because the object is a generalized quantifier, falling outside the purview of AE.

As a third piece of evidence against quantificational meanings in AE, consider the mirror-image of (84), where a universal QP in object position takes scope over an existential QP in subject position via QR. As mentioned above, E-type readings mimic such wide-scope readings for universal QPs. We can force the true quantificational reading for the QR-ed universal QP by making the existential QP necessarily distributive, e.g., by modifying it with *šone* 'different'. Once this is done, the effect of AE becomes clear.

(85) a.   lifney xodšayim,   lakoax mesuyam exad hizmin kol parit.
         before two.months   customer specific   one   ordered every item
         'Two months ago, one specific customer ordered every item.'
     b.   ba-xodeš   še-avar, lakoax   šone   hizmin kol   parit.
         in.the-month   the-this customer   different ordered every item
         'This month, a different customer ordered every item.'
     c. ? gam ba-xodeš   ha-ze, lakoax   šone   hizmin ___.
         also in.the-month   the-this customer   different ordered
         'This month too, a specific different customer ordered every item.'

(85a) provides a context, in which the surface scope relation is favored by the specificity of the subject indefinite. (85b) is ambiguous between the external (free) and internal (bound) readings of *different*: Either a specific customer, different from the one in (85a), ordered all the items, or the customers that bought the items were all different from each other (the latter reading is obtained by QR). The AE sentence (85c), in fact, is somewhat marginal.[36] To the extent it is interpretable, only the former reading survives; under discussion is a specific customer. This follows from the generalized NHTV, as the bound reading of *different* requires the elided argument to be a genuine universal QP.

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[35] See Hoji 1998 for a related observation in Japanese.
[36] The reason for this marginality is the difficulty in associating an E-type pronoun with a singular universal QP (*all the items* is a better antecedent than *every item*). I suspect that the mixed results reported in Sato 2016:408 for parallel data in Japanese stem precisely from this difficulty.

I now turn to a number of broader consequences and open questions that are raised by the present study.

Our analysis combines features of both the PF-deletion and the LF-copying approaches, but invokes neither deletion nor copying. I have been assuming all along that PF-deletion is well-motivated for other elliptical constructions. But is LF-copying equally needed? Skepticism is warranted. The particular mechanism of LF-copying employed in previous analyses of AE, I argued, is inordinately powerful, requiring the workspace to include too many accessible syntactic objects. One may question the necessity of *Copy* itself as an elementary operation. *Copy* automatically occurs as part of Merge (internal or external), but it is not clear that it has a life of its own. The present analysis dispenses with it altogether: The argument merged in the AE site is not copied from the antecedent but independently assembled from the numeration (see derivations (76), (78)). To the extent that minimizing the inventory of basic operation is a desideratum of syntactic theory, this seems like a step in the right direction.

Consider next the issue of crosslinguistic variation, or more narrowly, the question of what the AE parameter is. Existing proposals, which tie the parameter to the presence/absence of scrambling, agreement, or agglutinative φ-morphology, cannot do justice to the data at its fullest diversity. I have nothing insightful to contribute to this challenging topic. Nonetheless, within the present proposal, one crosslinguistic distinction is already expressible: That is the distinction between AE languages that also allow discourse *pro* (like Japanese) and AE languages that do not (like Hebrew).

The distance between the two types of null arguments is not so big. In fact, both derivations start out the same way – with *pro* in the argument position. Discourse *pro* languages allow this *pro* to persist to LF because they possess whatever pragmatic strategies necessary to retrieve its content from context. Pure AE languages, like Hebrew, lack these strategies; an unreplaced *pro* at LF will remain uninterpretable, thus AE (by EMAT) is required in order to obtain an interpretable result.

This picture suggests two further loci of crosslinguistic variation. First, languages with no *pro* whatsoever, like Englsih, will obviously lack AE. Second, something must block AE in *pro*-drop languages that are *not* discourse *pro* languages, at least in some of them (e.g., Spanish; see Oku 1998). This was meant to be the role of the anti-agreement parameter, but exceptions exist, such as Hebrew, Russian, Basque, Persian, Egyptian Arabic and Brazilian Portuguese. I tentatively follow Sakamoto's (2020:233) intuition that *pro* in certain languages is too richly specified to be replaced by an argument. Spelling out the consequence of this hypothesis will take us too far afield, but it will likely involve comparing paradigms of overt pronouns and searching for additional contrasts between the syntactic activity of *pro* arguments in the relevant languages.

Finally, the present study brings into sharper focus certain differences between the two grammatical mechanisms of generating ellipsis in natural language, which, in one way or another, have always been acknowledged. The first mechanism, pioneered in Ross 1969, involves PF-deletion of syntactic constituents that are present at all derivational stages. The second one, pioneered in Wasow 1972, involves introducing a silent syntactic constituent at some derivational stage, in a position which was empty or nearly empty (= *pro*) prior to that stage. The two processes are subject to

similar, if not identical semantic parallelism constraints, but exhibit a number of important differences. Let me focus on two such differences that clearly emerge from the present study.

First, the issue of semantic type constraints. As argued extensively above, ellipsis by *pro*-replacement exhibits distributional restrictions that are naturally traced to restrictions on admissible semantic types for variables in natural language. This signature property is absent from ellipsis by PF-deletion, in which the ellipsis site is not a variable at any derivational stage. Any category of any semantic type may be elided at PF insofar as this elision is licensed syntactically. Thus, we have a powerful diagnostic tool to tease apart the two processes, whose outcomes are often deceptively similar.

Second, the issue of syntactic licensing. PF-deletion is sensitive to formal features of its syntactic environment in a way that *pro*-replacement is not. As is well-known, the [E]-feature that licenses ellipsis by PF-deletion can be very particular in what syntactic heads it chooses to lodge on, distinguishing between interrogative and relative C, finite and nonfinite T, root and epistemic modals, possessive and not possessive D etc. None of this sensitivity is attested in AE. For example, nowhere in the vast literature on AE has it ever been indicated that arguments can be elided only in finite but not in nonfinite clauses or only under root modals but not under epistemic ones. Such distinctions are simply not accessible to the mechanism underlying AE, which is *pro*-replacement by EMAT. This provides us with another powerful diagnostic tool to tease apart the two processes.

Questions now arise on the horizon of current understanding. While we understand why varieties of predicate ellipsis must involve PF-deletion (there being no suitable *pro* to mediate the other ellipsis strategy), we still miss a principled account of why AE *cannot* proceed by PF-deletion. Recall that if it could, we would fail to capture the generalized NHTV effects. Some pertinent ideas are found in Bošković 2014 and Sakamoto 2020. Bošković proposes that either phases or phase complements (= spellout domains) can be targeted by ellipsis. Sakamoto (2020:203) further proposes that phasal ellipsis is implemented by LF-copying while phasal complement ellipsis is implemented by PF-deletion. Note that the former corresponds to AE and the latter to Sluicing (deletion of the complement of the phase head C), VP ellipsis (deletion of the complement of the phase head Voice) and NP ellipsis (deletion of the complement of the phase head D).

However, the idea that PF-deletion can only target phase complements necessitates a dynamic approach to phases (Bošković 2014), given the well-known flexibility in the verbal projection targeted for ellipsis in sentences with a sequence of modals and auxiliaries. In addition, it must accommodate analogous Sluicing data, where the *wh*-remnant is followed by some left-edge constituents (Marušič et al. 2018, _ENREF_106Temmerman 2019).

The alternative, which keeps phases invariant, is to permit [E]-licensing to apply under c-command and not just under strict sisterhood, utilizing Agree on some independent formal feature (Aelbrecht 2010). Pursuing this direction, the absence of AE by PF-deletion turns into the question of what blocks the formation of an Agree relation between the [E]-bearing head and its c-commanding licensor. In Landau 2020b it is proposed that the [E]-bearing head X projects the elided XP (rather than

being its sister). This means that D, P and C, qua heads of argument phrases, should bear some common uninterpretable feature [uF], which is checked against the licensor head – be it v, Voice or T. Yet it is hard to imagine what that [uF] might be (can P agree with v or with T?). VP ellipsis and sluicing piggyback *independently* attested agreement relations (between V and T and between T and C, respectively). No comparable agreement relation seems to be available to mediate AE; perhaps there is nothing more to it. These are no more than suggestive remarks; future work will ultimately have to decide the matter.

8. Conclusion

Classical studies of ellipsis have focused on VP ellipsis, sluicing and NP-ellipsis. AE jumped onto the wagon relatively late, beginning in the end of the 1990s. It has always been recognized that AE is somewhat different from the better-understood elliptical processes, but many questions remained as to the nature of the differences. This study contributes to sharpening the differences and deriving them from fundamental syntactic principles.

At the empirical level, this study establishes a novel generalization: Elided arguments must be of type <e>, a special case of an overarching constraint on variables in natural language. This constraint rules out ellipsis of non-denotational idiom chunks as well as of a range of higher-type arguments: adverbial arguments, names in naming verbs, measure phrases and predicate nominals. Generalized quantifiers are also not allowed to undergo AE, once the relevant readings are carefully isolated. The fact that the constraint holds in languages unrelated genetically or areally as Hebrew and Korean suggests – pending further research – that it is somehow a fundamental, possiby universal feature of language.

This semantic type constraint on AE is naturally explained if the AE site hosts a silent variable, namely *pro*. To reconcile this conclusion with the robust evidence for internal structure, as well as with the existence of non-pronominal readings of the elided argument, I have proposed that *pro* is replaced by a syntactic argument during the derivation. That argument must be identical (in the relevant sense of "ellipsis parallelism") to the antecedent argument, but is not copied from it, since copying a subsconstituent of an LF structure is, presumably, not possible. This analysis resolves the surface paradox – the conflicting evidence both for *pro* and for syntactic structure – by reference to derivational opacity.

Finally, to explain how a syntactic constituent can be introduced without being pronounced, I proposed a natural extension of "post-TRANSFER Merge": While Internal Merge after TRANSFER results in covert movement, External Merge after TRANSFER results in AE: A fully interpreted argument that escapes spellout (although it may launch overt subextraction). As long as the content of this argument is recoverable from the local linguistic context (satisfying e-GIVENness), this operation is legitimate. In fact, it would take an unmotivated stipulation to allow internal but not external Merge after TRANSFER.

The emerging picture neatly divides into two types of ellipsis: PF-deletion vs. *pro*-replacement. The former type displays *syntactic* sensitivity to the environment of the ellipsis site, while the latter displays *semantic* sensitivity to its semantic type. Important questions remain about the crosslinguistic determinants of both options:

The relation to agreement, to *pro*-drop, the differential availability of AE in object and subject positions, potential overlaps between AE and Null Complement Anaphora, the status of null CPs etc. It is my hope that the understanding gained in the present study will foster research into these questions too.

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