

Type-restricted Argument Ellipsis and Generalized Quantifiers

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Abstract

Theories of argument ellipsis (AE) based on PF-deletion or LF-copying do not generate predictions as to possible constraints on the semantic type of the elided argument. Yet such constraints obtain, as documented in Landau to appear: Only $\langle e \rangle$ -type arguments can be targeted by AE. Focusing on quantificational arguments here, we show that when they yield readings expressible by $\langle e \rangle$ -type denotations, they may elide, but when they denote genuine generalized quantifiers, they may not. Utilizing the restricted range of interpretations made available by choice function binding and E-type pronouns, the analysis derives a number of peculiar scopal properties of indefinite NPs, quantifiers and exceptive phrases under argument ellipsis.

Keywords: argument ellipsis, quantification, strong quantifiers, semantic types, choice functions, negative concord, exceptives

1 Introduction

Intensive research on argument ellipsis (AE) over the last two decades has revealed many peculiar restrictions, which are not shared by other ellipsis processes like VP-ellipsis, sluicing and stripping. The literature on AE, mostly focusing on Japanese and Korean, offers a number of sophisticated analyses to deal with these restrictions. While each analysis may be well-motivated on its own grounds, they are often unrelated, or worse, mutually inconsistent. The present article is an attempt to pull together several such restrictions and argue that they all boil down to a single, universal constraint on AE. The major language under study here will be Hebrew, but I will make frequent references to closely parallel facts discussed in the East Asian scholarship.

My starting point is the following constraint on AE, extensively argued for in Landau to appear.

- (1) *Type-restricted AE*
Elided arguments must be of type $\langle e \rangle$.

(1) may seem counter-intuitive to readers well-versed in the ellipsis literature. After all, it is simple pronouns, including *pro*, rather than full DPs (pronounced or elided), that are supposedly restricted in their referential capacity, picking out only entities in

the domain of individuals (e.g., people, objects, times and places). The literature on AE takes great pains to demonstrate that the syntactic and semantic properties of at least some null objects go well beyond what *pro* can achieve, motivating ellipsis of a full DP instead. Why should elided DPs be restricted to type <e> when overt DPs plainly are not?

The answer provided in Landau to appear, in short, is that AE does not arise by simple PF deletion (which, indeed, is not expected to be sensitive to semantic types). Rather, it is derived in two steps. The initial occupant of the argument position is *pro*. At the phase level, but crucially *after* TRANSFER to PF, a full-fledged DP is externally merged instead of this *pro*. External Merge After TRANSFER (EMAT) explains why the argument is not spelled out in its base position. At the same time, it allows material within that argument to be extracted and spelled out at some higher phase, explaining the “surface anaphora” behavior of AE sites. EMAT is an inevitable option in a system that already entertains Internal Merge After TRANSFER (= covert movement; see Chomsky 2004). Naturally, it is subject to familiar parallelism and recoverability constraints that apply to ellipsis at large.

The bulk of Landau to appear is devoted to marshalling empirical support for (1). This support comes from scenarios in which arguments that do *not* denote individuals resist AE. One way this may come about is for the argument not to denote anything at all – as is the case with chunks of non-decomposable idioms, which are semantically empty. Other ways involve adverbial arguments, measure phrases, names in naming verbs and predicate nominals, all of which belong to higher semantic types, despite being true arguments (and not adjuncts). All these types of arguments resist AE.

By way of illustration, consider a few representative examples in Hebrew from Landau to appear. First, a standard instance of AE, which cannot be reduced to *pro*-drop, as the ungrammaticality of the pronoun in (2B) indicates.

(2) 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.’

Now consider non-decomposable idioms. The idiom *ra'a koxavim* '(Lit.) see stars' means to become momentarily dizzy and disoriented after being hit hard (usually on the head). The object *koxavim* ‘stars’ cannot undergo ellipsis in (3B).

- (3) 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.')

Argumental measure phrases resist AE, too.

- (4) 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 ____?
 and-also the-dress the-red costs.3F.SG
 ('And does the red one also costs \$220?')

And names in naming verbs, which denote relations between linguistic strings and individuals (Matushansky 2008), also resist AE.

- (5) * karati lo Xaim, aval hi lo kar'a lo ____.
 called.1.SG to.him Xaim but she not called.3.SG.F to.him
 ('I called him Xaim but she didn't.')

Some previous accounts analyze AE in terms of “property-anaphora” of type $\langle e, t \rangle$ – either *pro* (Tomioka 2003) or an elided NP (Bošković 2018). These proposals assume that an $\langle e \rangle$ -type denotation for the null argument is obtained via existential closure or iota type-shifting, but they generate no general expectation that predicative arguments will resist ellipsis (see Kim 2019 for further evidence from Korean that this is so).

The predictions of Tomioka 2003 and Bošković 2018, however, converge with those of Landau to appear when it comes to the application of AE to arguments denoting generalized quantifiers (GQ), type $\langle \langle e, t \rangle, t \rangle$: All three accounts exclude AE of GQs. Curiously, Tomioka (2003) and Bošković (2018) do not address this possibility at all; none of their data contain strong quantifiers as targets of AE. In a later study, Tomioka (2014) discusses two challenging cases, involving attempted AE of the quantifier *most* and of downward-entailing quantifiers; I return to these data in sections 2.3 and 3.3, respectively. Overall, to my knowledge, the question of whether

AE can apply to genuine GQs has not been tackled head on; the present article aims to fill in this lacuna.

The qualification “genuine” in the previous sentence is significant. As we will shortly see, the literature on AE commonly refers to ellipsis of “quantificational” arguments. However, upon closer inspection, many if not most of the cited examples do not speak unequivocally in favor of GQs being elided, since an alternative analysis is available, whereby the elided argument in fact denotes an individual. Therefore, special care must be taken when testing the predictions of (1) with quantificational arguments.

The structure of this article is as follows. Section 2 discusses existing data purporting to show that AE sites can display quantificational readings. I argue that much of the evidence can be alternatively described in terms of type- $\langle e \rangle$ null arguments: Strong quantificational readings are often interchangeable with definite pronouns, specifically E-type pronouns (section 2.1). Cardinal and weak quantifiers, on the other hand, admit a modificational reading, while their existential import arises from choice function binding. It is shown that the choice function analysis of elided indefinite DPs elegantly derives a surprising restriction on distributive readings that only shows up in elliptical contexts (section 2.2). Special attention is given to QPs headed by *most* (section 2.3) and the difficulties in establishing their precise semantic type under normal circumstances.

Section 3 focuses attention on five environments in which a quantificational reading of an argument is *only* obtainable via a GQ denotation; these are detected using interactions with other scope-bearing elements or by relying on inherent properties of particular QPs. It is shown that all five environments resist AE. In section 4 I present a minimal format for arguments against the competing analysis by V-stranding VP-ellipsis, based on the fundamental observation that ellipsis by PF-deletion should be completely indifferent to semantic types. Section 5 turns to several consequences of the analysis and challenges still facing it, and section 6 concludes.

2 "Pseudo-quantification" in AE sites

The extensive literature on AE contains many examples in which a missing argument receives a reading described as “quantificational”. It is important to realize that such informal descriptions cannot establish, short of careful linguistic argumentation, that the missing argument truly denotes a GQ; the extensions of the informal term “quantificational” and the technical term “a GQ” are distinct. In this section we will address a number of cases where the interpretation associated with the AE site can

either be rendered by a GQ *or* by some alternative representation. Moreover, these alternative representations are commonly invoked in the semantic literature on indefinite and quantified arguments, quite independently of ellipsis. The upshot will be that none of the facts surveyed in this section can be taken as compelling evidence for ellipsis of GQs, and some facts (concerning distributivity) are actually inconsistent with such an option. Section 3 will then proceed to motivate the stronger claim that further interpretive facts associated with AE do speak conclusively *against* ellipsis of GQs.

2.1 E-type pronouns disguised as universal QPs

Examples of AE sites with universal QP antecedents are not hard to find.

- (6) a. *Korean* (Ahn and Cho 2011:464)
 A: Cheli-ka nwukwuna cohaha-y.
 Cheli-NOM whoever like-DEC
 ‘Cheli likes everyone.’
 B: Tongswu-to ___ cohaha-y
 Tongswu-also like-DEC
 ‘Tongwu likes everyone, too.’
- b. *Hebrew* (Landau to appear)
 ani makir kol student ba-kita ha-zot.
 I know every student in.the-class the-this
 Gam ata makir ____.
 also you know
 ‘I know every student in this class. You do too.’

While universal QPs do not lend themselves to type <*e*> denotations, they often give rise to interpretations that *can* be so modeled. In particular, the object gaps in (6a-b) admit a definite description reading: *the people that Cheli likes, the students that I know*. E-type pronouns notoriously serve to deliver such readings, possibly even through some process of ellipsis (Elbourne 2001, 2008), and it is independently established that in other ellipsis environments, QPs give rise to systematic ambiguity between the quantificational and the E-type readings (Elliott and Sudo 2016).

Indeed, an overt plural pronoun in the object position produces just this reading.

- (7) a. *Korean* (Ahn & Cho 2011:464)
 A: Cheli-ka nwukwuna cohaha-y.
 Cheli-NOM whoever like-DEC
 ‘Cheli likes everyone.’
 B: Tongswu-to ku-tul-ul cohaha-y
 Tongswu-also he-PL-ACC like-DEC
 ‘Tongwu likes them, too.’
- b. *Hebrew* (Landau 2022)
 ani makir kol student ba-kita ha-zot.
 I know every student in.the-class the-this
 Gam ata makir otam.
 also you know them
 ‘I know every student in this class. You know them, too.’

Ahn & Cho (2011) reject the AE analysis and argue that an object *pro* can account for the entire range of readings of AE sites. While I disagree with this general conclusion (and the Korean facts themselves seem to require AE – see Lee and Kim 2010), it is quite plausible to posit an E-type *pro* in (6a-b); this would further explain why universally quantified arguments in other environments, which cannot be paraphrased by E-type pronouns, are not elidable (see section 3).

Indeed, Takahashi (2008), who explicitly advocates deletion of GQ-denoting arguments in Japanese, nonetheless admits that in many situations an E-type pronoun analysis generates indistinguishable interpretations (fn. 9). Maeda (2019: fn.5,8) also invokes *pro* to generate certain readings that are not derivable by AE of a QP. Thus, E-type pronouns seem necessary even on analyses that advocate AE of universal quantifiers; the question is whether the latter is doing any nonredundant work.

To avoid the analytic unclarity surrounding missing arguments with universally quantified readings, Takahashi focuses on AE of the strong quantifier *most*. However, neither the data nor the analysis of sentences with *most*-NPs speak conclusively in favor of GQ being elided, as we will see in section 2.3. Before that, we need to lay the ground for a non-quantificational analysis of existential DPs. Fortunately, much of that work has already been done in the semantic literature on choice functions. The next section draws insights from that literature that will prove particularly relevant to the understanding of AE and its interpretive properties.

2.2 Null arguments produced by choice functions

The occurrence of cardinal/weak quantifiers in AE sites has been widely documented in languages like Japanese, Turkish, Chinese, Bangla, Hindi, Malayalam, Singapore English, Javanese, Persian, Hebrew, Korean and Mongolian (Takahashi 2008, Şener and Takahashi 2010, Cheng 2013, Simpson, Choudhury and Menon 2013, Sato 2014, 2015, Sato and Karimi 2016, Landau 2018, Han et al. 2020, Sakamoto 2020). Two illustrative examples are given in (8).

- (8) a. *Persian* (Sato and Karimi 2016:6)
 Kimea se-tâ mo'alem-ro davat kard.
 Kimea three-CL teacher-DOM invitation did.3SG
 'Kimea invited three teachers.'
 Parviz ham ___ davat kard.
 Parviz also invitation did.3SG
 'Parviz also invited three teachers.'
- b. *Hebrew* (Landau 2018:5)
 afiti harbe ugiyot. Mixal gam afta ____.
 baked.1SG many cookies Mixal also baked.3SG.F
 'I baked many cookies. Mixal did too.'

One way of capturing the semantics of the missing arguments here is to take the cardinal and weak quantifier to be modifiers of type $\langle e,t \rangle$. That such denotations exist is independently witnessed in simple predications like *They are three/many*. The cardinal and weak quantifier may then combine with the NP they modify by Predicate Modification.

- (9) a. $[[\text{three}]] = \lambda X. |X| = 3$
 b. $[[\text{many}]] = \lambda X. |X| > n$ (where n is contextually determined)
 c. $[[\text{three teachers}]] = \lambda X. |X| = 3 \wedge \text{TEACHER}(X)$
 d. $[[\text{many cookies}]] = \lambda X. |X| > n \wedge \text{COOKIE}(X)$

In an argument position, the predicates in (9) serve to restrict the range of the variable introduced by D. This variable may then get a specific reference (through the assignment function) or be existentially bound, as in the classical theories of indefinites (Heim 1982, Diesing 1992, Kratzer 1995).

Alternatively, and in line with much current work, such cardinals and quantifiers may introduce choice functions that select the appropriate subset from the

NP-set, and are existentially bound at the matrix clause level (Reinhart 1997, Winter 1997). This treatment of indefinite and certain quantificational DPs under AE has been proposed for Japanese in Sato 2016 and Kurafuji 2019, and also for English object drop in “Reduced Written Register” (Weir 2017). Thus, the choice functional interpretations in (10a-b) deliver a set of three teachers and a set of many cookies, while their existential import comes from a base-generated quantifier over choice functions that is inserted at LF, producing (10c-d).

- (10) a. $\llbracket \text{three teachers} \rrbracket = f(\text{TEACHER}_{N=3})$
 b. $\llbracket \text{many cookies} \rrbracket = f(\text{COOKIE}_{>n})$ (where n is contextually determined)
 c. $\exists f[\text{CH}(f) \wedge \text{INVITE}(\text{Parviz}, f(\text{TEACHER}_{N=3}))]$
 d. $\exists f[\text{CH}(f) \wedge \text{BAKE}(\text{Mixal}, f(\text{COOKIE}_{>n}))]$

The choice functional account has a broader coverage than the modification account; in particular, it can account for certain quantificational readings beyond the reach of predication, as we will see in the next section. We will exploit this account again in sections 3.4-3.5, to explain the behavior of NPs with numerals and NPIs under AE. The important upshot here, as Tomioka (2014) observes, is that elided arguments with cardinal or weak quantifiers cannot solidly establish that AE applies GQ-denoting phrases.

It is worth asking whether there is any independent evidence pointing towards the choice function analysis as the correct approach to the interpretation of weak quantifiers under AE. In fact, certain surprising restrictions on distributive readings of elided plural indefinites provide such evidence.

The semantic literature is famously divided on the issue of whether existential closure applies to variables over choice functions, and if so, whether it is restricted to widest scope or not. While Kratzer (1998) rejects existential closure altogether (and treats all CF-variables as free), Reinhart (1997) and Winter (1997) assume that existential closure is freely available at any site. This assumption faces considerable difficulties, since so-called intermediate readings of indefinites are subject to a host of intricate restrictions (Geurts 2000, Schwartz 2001, 2010, Chierchia 2001). It is certainly not my intention here to settle this vexed issue, but rather to simply add one further observation, coming from AE, to the growing literature on choice functions.

As recognized in Matthewson 1999 and Guerts 2001, the scope-assigning mechanism for choice functions must be able to distinguish polarity-sensitive indefinites, whose scope is confined to downward-entailing environments, from polarity-neutral indefinites. The latter favor widest scope and may even force it in

certain languages. Matthewson describes two such indefinite series in St’át’imcets (Lilloet Salish), one enforcing widest scope, and the other (actually, a single polarity-sensitive determiner) requiring narrow scope under negation, question or modality. Let us set aside polarity-sensitive determiners, until section 3.5.

Matthewson points out that the St’át’imcets equivalents to *Three women shot a bear* and *Three women shot two bears* lack the distributive readings: There must be a total of one bear being shot in the first sentence and a total of two bears in the second one. Unlike English indefinites, which, as existential quantifiers, may avail themselves of GQ denotations, St’át’imcets indefinites (of the first series) are only interpretable as CF variables. Crucially, widest scope for all indefinite NPs explains the lack of distributivity (Matthewson 1999:112).

(11) $\exists f \exists g [CH(f) \ \& \ CH(g) \ \& \ (f(\text{three women}))^D \ \lambda x.\text{shot}(g(\text{bear}))(x)]$

The subject and object indefinite DPs introduce CF variables (*f* and *g*, respectively), both of which are existentially bound at the topmost level. Despite the fact that the distributive operator “^D” is attached to the subject, no distributive reading is obtained. The formula in (11) conveys that there is a *single* bear, picked by *g(bear)*, which was shot by each of the women in *f(three women)*. Matthewson takes the absence of distributive readings with numeral indefinites in St’át’imcets as decisive evidence in favor of treating them as unambiguous widest-scope choice functions.¹

Following this logic, languages that allow distributive readings for indefinite NPs must do so via an alternative semantic route, namely, by assigning a GQ denotation to the indefinite object, and allowing it to scope under the subject. In this light, consider the implications for AE. If AE is restricted to <e>-type arguments, it should block any distributive reading that crucially depends on a GQ denotation for the elided argument. We thus expect a contrast in the availability of distributive readings between overt and elided arguments, in languages where such readings are in principle available to indefinite DPs.

This prediction is indeed confirmed in Japanese (12a) (Yuta Sakamoto, p.c.) and in Hebrew (12b).

- (12) a. Taitei-no imiron-no kenkyuusha-wa ni-satu-no hon-o shuppansuru.
 most-GEN semantics-GEN researcher-TOP 2-CL-GEN book-ACC publish
 ‘Most semanticists publish two books.’
 Taitei-no toogoron-no kenkyuusha-mo *(ni-satu-no hon-o) shuppansuru.
 most-GEN syntax-GEN researcher-also 2-CL-GEN book-ACC publish
 ‘Most syntacticians also publish *(two books).’

- b. rov ha-semantika'im mefarsemim šney sfarim.
 most the-semanticists publish.M.PL two.of books
 rov ha-taxbiranim gam mefarsemim *(šney sfarim).
 most the-syntacticians also publish.M.PL two.of books
 'Most syntacticians also publish (two books).'

In these examples, only the distributive reading is sensible, and indeed, available when the indefinite object is present. However, AE renders the sentences uninterpretable, presumably because speakers cannot accommodate the anomalous scenario in which there are two books that most syntacticians repeatedly publish.

The lack of distributive readings under AE, now traced to wide scope CFs, explains an intriguing observation already noted in Hoji 1998:133 for Japanese, which is rarely addressed.

- (13) A: Subete-no nihonzin huuhu-ga betubetu-no gakusei-o suisensita.
 all-GEN Japanese couple-NOM different-GEN student-ACC recommended
 'Every Japanese couple recommended different students.'
 B: Subete-no amerikazin huuhu-mo ___ suisensita.
 all-GEN American couple-also recommended
 ≠ 'Every American couple also recommended different students.'

The distributive reading in (13A) implies that within each Japanese couple, the student recommended by the husband was different from the student recommended by the wife. No such reading survives in (13B), where the object is missing (presumably other readings are possible, but Hoji does not spell them out). This effect is consistently replicated with other distributed objects like *the same NP* and *each other* in Japanese.

Just the same ban on AE of distributed indefinite objects is attested in Hebrew.

- (14) kol yeled ciyer parcuř šone, ve-kol yalda gam (*ciyra) ____.
 every boy drew face different and-every girl also (drew)
 ('Every boy drew a different face, and every girl (did) too.')

A distributive reading is quite natural in the second conjunct when stripping applies (removing the verb); AE, however, sharply excludes it. If context does not provide a clear referent for *a different face* (on the so-called "external", or discourse-anaphoric reading of *different*), the sentence is judged as distinctly odd.

This is a rather striking finding. Hoji (1998) took it to invalidate the AE analysis, which he assumed, together with everyone else at the time, should yield indistinguishable predictions from VPE in this regard (note the felicity of (14)'s

translation in English). Yet given the overall weight of evidence in favor of an elliptical analysis for missing objects in Japanese and Hebrew, a different account must be sought. Such an account, I suggest, immediately springs from the combination of Matthewson’s insight and the idea that elided indefinite arguments *must* be construed as saturated choice functions. The “must” here is what supports the hypothesis in (1), for it is only in virtue of the principled exclusion of a GQ construal that the elided indefinite is forced to the choice-functional construal, explaining the absence of distributive readings. It is hard to see why otherwise Hoji’s observation should hold *only* of elided arguments.²

2.3 AE of ‘most NPs’

The behavior of *most*-NPs under AE is rather complex, and current understanding is too lacking to offer a single theoretical solution. Evidently, more crosslinguistic research is needed to resolve this issue. The goal of this section is to lay out the empirical complexities and argue that currently there is no strong argument from this empirical corner either for a GQ-denotation of AE sites. Indeed, the E-type and choice functional analyses may well be sufficient for *most*-NPs.

Consider the following example from Takahashi 2008:310.

- (15) Hanako-ga taitei-no sensei-o sonkeisiteiru.
 Hanako-NOM most-GEN teacher-ACC respect
 Taroo-mo ____ sonkeisiteiru.
 Taroo-also respect

- (i) ‘Hanako respects most teachers. Taroo respects them, too.’
 (ii) ‘Hanako respects most teachers. Taroo does, too.’

According to Takahashi, (15) admits two interpretations of the AE site – an E-type pronoun (i) or a genuine QP (ii). On the latter reading, the sets of teachers Hanako and Taroo like need not be identical. Nevertheless, Takahashi notes (fn. 7) that some speakers only accept the E-type reading. Moreover, when scrambled over an existential subject, the expected wide scope QP reading of the null *most*-NP disappears for some speakers, and only the E-type reading (the same set of teachers in antecedent and target clause) survives (Abe 2009:147). Thus, for certain Japanese speakers (whether a majority or not is not known), *most*-NPs lack a GQ-denotation when they are null.

Takahashi does not provide conversational contexts that bring out a truth-conditional difference between the two readings. The difference is admittedly subtle.

If Hanako respects a set of teachers H and Taroo a set of teachers T, then the two sets are identical on the E-type reading, but still overlap on the QP reading, due to the semantics of *most* (in particular, it is necessary that $|H \cap T| \geq 1$). One way of teasing apart the two readings is by explicitly assigning distinct cardinalities to the two majorities, thereby ruling out the E-type reading. This is done in the Hebrew example below.

- (16) Context: The class received 10 exercises as homework in math.
- a. Noa patra et rov ha-targilim. Niš'aru la rak šnayim.
 Noa solved ACC most the-exercises remained to.her only two
 'Noa solved most of the exercises. She had only two left.'
- b. Yariv gam ____. Niš'aru lo arba'a.
 Yariv also remained to.him four
 'Yariv did too. He had two left.'
- c. # Yariv gam patar ____. Niš'aru lo arba'a.
 Yariv also solved remained to.him four
 Lit. 'Yariv also solved. He had two left.'
- d. # Yariv gam patar otam. Niš'aru lo arba'a.
 Yariv also solved them remained to.him four
 'Yariv also solved them. He had two left.'

The stripping construction (16b) demonstrates that the QP reading is available under ellipsis, so long as the elided category *contains* the QP. This reading, however, is not available under AE in (16c), which sounds anomalous. The source of the anomaly, I propose, is an object *pro* receiving E-type reading, similarly to the overt object pronoun in (16d). First, the speaker states that Yariv also solved the eight exercises that Noa did, and then continues to state that he has four exercises left, which is inconsistent with the overall number of ten exercises. The fact that (16c) cannot escape this contradiction implies that it cannot avail itself to AE of a genuine GQ object.

In an attempt to address the concern that AE sites lack the QP reading when anteceded by *most*-NPs, Kurafuji (2019:22) provides the following example. Note that the QP object is scrambled over the subject in the antecedent clause, to allow scope ambiguity

- (17) Suugakka-de-wa, hotondo-no kyouzyu-o insei-no
 math.dept-in-CONT most-GEN professor-ACC graduate.student-GEN
 dare-ka-ga hihansi-tei-ru.
 who-∃-NOM criticize-PROG-PRES

Tetugakka-de-wa, ____ gakubusei-no dare-ka-ga
 philosophy.dept-in-CONT undergraduate.student-GEN who- \exists -NOM
 hihansi-tei-ru.

criticize-PROG-PRES

‘Lit: In the department of mathematics, most professors, some graduate student
 criticizes. In the department of philosophy, most professors, some
 undergraduate student criticizes.’

Kurafuji does not elaborate on the interpretation(s) of (17), other than stating that the AE site in the second sentence cannot correspond to an E-type pronoun because the professors in the two sentences refer to different sets. However, E-type pronouns may well express such “sloppy”-like interpretations if their (definite description) content is carefully spelled out. Suppose the descriptive content of the E-type null pronoun is “the majority of professors in his/her department”. The concealed pronoun *his/her* may then be bound by the local existential subject *some undergraduate student*, producing a distinct set of professors, which is nonetheless functionally linked to the students in a parallel way across the two sentences.

Do overt pronouns ever display such flexible meanings? In fact, they do. Tomioka (2014:256) cites the following example; note that the pronoun *them* in the second conjunct may pick out a distinct set of students from the one in the first conjunct.

- (18) Professor Smith gave most of his students As, but Professor Jones gave them Bs.

The following Hebrew example involves AE in the second conjunct and shares the relevant features with the Kurafuji's example (17).

- (19) Be-Tel Aviv, šoter exad šomer al rov snifey ha-bankim.
 in Tel Aviv cop one guards.3M.SG on most branches.of the-bank
 Be-Yerušalayim, šney šotrim šomrim ____ / aleyhem.
 in-Jerusalem two cops guard.3PL on.them)
 'In Tel Aviv, one cop guards most bank branches.
 In Jerusalem, two guards do ____ / guard them.'

For pragmatic reasons, inverse scope is favored in both sentences. One might have thought that only a genuine QP object in the second sentence could support that reading (having undergone QR and AE), but in actual fact, an overt pronoun can do so as well. The PP-internal pronoun *them*, whether overt or null, is interpreted as "most bank branches in their city", with *their* picking out two cops, or simply "most bank

branches in the city", with *the city* picking out the locally salient city, Jerusalem. Thus, scope interactions do not provide compelling evidence against an E-type account.³

What is possibly left is to account for those speakers that reliably accept distinct sets as referents of the antecedent and elided *most*-NPs in examples like (15) and (16c), if such exist. In fact, Kurafuji (2019) provides a plausible analysis of these "quantificational" readings in terms of choice functions, building on insights of Constant 2012.

Constant (2012) argues that the class of quantifiers translatable as choice functions is larger than what the classical view has held, and in particular, includes strong quantifiers like *most*. The crucial criterion is not island-(in)sensitivity of scope but whether or not the strong QP can be taken to denote an individual, type $\langle e \rangle$.⁴ This property, in turn, is revealed by its ability to serve as a contrastive topic, be equated with a bona fide individual, and anchor an appositive phrase. In these respects, *most* is no different from other weak quantifiers, and contrasts with downward entailing (DE) quantifiers.

- (20) a. Where do the grads live?
SOME/TEN/MOST/#FEW (of the) grads live in Amherst.
- b. Those people standing over there are some/ten/most/#few
of my best students.
- c. Some/ten/most/#few congressmen, who incidentally are very junior,
admire Kennedy.

The grounding of choice function output in type- $\langle e \rangle$ meshes perfectly with the fundamental view of AE advocated in Landau to appear, as stated in (1). If AE is restricted to individuals, and the output of choice functions is too, then it is expected that those QPs that can denote (plural) individuals will, ipso facto, be eligible to AE. The behavior of *most* is then unproblematic. In particular, on Kurafuji's proposal, the AE site in (15) hosts the phonologically null expression $f(\text{TEACHER}_{1/2\leq})$. $\text{TEACHER}_{1/2\leq}$ is the witness set of the QP *most teachers* in the antecedent clause; it consists of plural individuals whose cardinality exceeds half the number of teachers in the context. By being used in the antecedent clause, this witness set is made salient for being reused as the argument of the choice function in the target clause. Because the choice functions in the two clauses are bound by different existential quantifiers, they may select different (plural) individuals from the witness set, namely, different majorities of teachers. Hence, the "quantificational" reading.

To sum up, *most*-NPs give rise to specific and nonspecific readings. For many speakers, only the former are attested when the argument goes missing, suggesting that the null object is an E-type *pro*. Nonspecific readings, for those speakers who accept them, arise from existential binding of a choice function over plural ("majority") individuals. On either analysis, a GQ-denotation for the AE site is not required.⁵

3 AE of genuine GQs is impossible

Having set aside “pseudo-quantificational” readings of AE sites, we now turn to genuine quantificational readings. These consist of either strong quantifiers or weak quantifiers whose scopal interaction with sentence-internal elements cannot be mimicked by the mechanisms discussed in section 2. Five such environments are discussed in this section: universal quantifiers under negation (section 3.1), inverse scope interactions of universal and existential quantifiers (section 3.2), downward-entailing quantifiers (section 3.3), NPs with numerals under negation (section 3.4) and strong NPI exceptive phrases (section 3.5). What ties together this seemingly heterogeneous set of environments is the presence of an argument that denotes a GQ according to current semantic theories. Precisely such arguments, we will see, resist AE.

3.1 Test case I: $\neg \gg \forall$

In section 2.1 we have seen that E-type pronouns can yield interpretations which are deceptively similar to those obtained from universal QPs. The examples in (6)-(7), however, involve no scope interaction; the universal QP is the single scope-bearing element in the antecedent clause. We also know that definite descriptions – ultimately, the interpretation E-type pronouns receive – take maximal scope by default. Thus, we expect that universal QPs and E-type pronouns will part ways once the former take *narrow* scope, under a different operator. This is the nature of the test discussed in this section.

Ahn & Cho (2011:465) observe that the cooccurrence of clausal negation and a universal QP object produces a scopally ambiguous sentence in Korean (21A). Interestingly, only the inverse, wide scope reading of the object survives under AE (21B). This is readily explained if (21B) contains an E-type *pro*, since it is equivalent to (21C), with an overt object pronoun.

- (21) A: Na-nun motun chamkaca-lul mannaci mos hay-ss-ta.
 I-NOM all participant-ACC meet NEG do-PAST-DEC
 'I didn't meet all the participants.' ($\neg \gg \forall, \forall \gg \neg$)
- B: Na-to ___ mannaci mos hay-ss-ta.
 I-also meet NEG do-PAST-DEC
 '(Lit.) I didn't meet, either.' ($\forall \gg \neg$ only)
- C: Na-to kul-tul-ul mannaci mos hay-ss-ta.
 I-also he-PL-ACC meet NEG do-PAST-DEC
 '(Lit.) I didn't meet them, either.'

We find exactly the same effect in Hebrew.

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

(22) is scopally ambiguous; the surface scope relation $\neg \gg \forall$ is completely natural. The elliptical clauses (23b,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 (23b), in which the stranded negation can take scope over the QP inside the elided clause, and the AE version (23c), in which negation *cannot* scope over the elided argument. I assume that stripping involves PF-deletion of a VP or TP (Wurmbrand 2017, Johnson 2019), in which a genuine QP resides and is interpreted at LF. In contrast, in line with Landau to appear, AE proceeds by *pro*-replacement, which cannot apply to GQs. The object gap in (23c) can only receive an E-type reading, causing the conflict with the subsequent clause.

3.2 Test case II: $\forall >> \exists$ by QR

While the East Asian languages do not license QR of one QP over another, Hebrew does, providing us with an additional test case for the claim that GQs resist AE. One environment where a truly quantificational meaning is called upon is distributive statements: Universal QPs can provide a range for a DP-internal distributor but pronouns cannot. Definite descriptions pattern with pronouns, in contrast to universal QPs.

- (24) a. A different child played with every toy. *✓distributive*
 b. A different child played with the toys. **distributive*
 c. A different child played with them. **distributive*

Thus, whether E-type pronouns ultimately introduce definite descriptions at LF or not, they display the kind of empirical difference from QPs that we can exploit.

Like English, Hebrew allows inverse scope with a distributive reading (25a), presumably derived by QR. Once the object QP is elided (25b), however, the distributive reading disappears; *šone* ‘different’ can only (marginally) be assigned a specific reading, discourse-anaphoric to some previously mentioned customer.

- (25) a. ba-xodeš še-avar, lakoax šone hizmin kol parit.
 in.the-month that-passed.3SG.M customer different ordered every item
 ‘Last month, a different customer ordered every item.’
 b. ? gam ba-xodeš ha-ze, lakoax šone hizmin ____ /otam.
 also in.the-month the-this customer different ordered them
 ‘This month too, a specific different customer ordered every item.’
 [**distributive*]

The absence of inverse scope in the gap version of (25b) reveals the ban on AE of GQ-denoting expressions.⁶ Furthermore, the version with an overt object pronoun is similarly incapable of supporting a distributive reading. This parallelism is fully explained if the grammar can only generate the gap as a null pronoun. A semantically unrestricted operation of AE would wrongly overgenerate (25b) with the interpretation of (25a).

3.3 Test case III: Downward entailing quantifiers

Recall that DE quantifiers cannot occur in positions reserved for type $\langle e \rangle$ expressions (cf. (20)). Constant (2012) traced this property to a semantic constraint on choice functions: They must express *witnessable* determiners. A determiner *Det* is

witnessable iff $Det(P)(Q) \rightarrow \exists x: P(x) \wedge Q(x)$. While DE quantifiers implicate a non-empty witness set, they do not entail it; thus, *Few students passed; in fact, none did* is not contradictory. The GQ *few students*, then, may denote an empty set. If choice functions cannot apply to empty sets, DE quantifiers will have no choice functional translations. Consequently, they will have no <e>-type denotations, explaining (20).

As Kurafuji (2019) observes, this result immediately explains the puzzling fact, first noted in Tomioka 2014:257, that DE quantifiers resist AE in Japanese.

(26) Context: In recent years, the university administration has been trying to have their reorganization plan approved by their faculty. The attempt has been unsuccessful so far.

Kyonen-wa 30 paasento-miman-no kyoozyu-ga sansei-ni toohyoo-sita.
 last.year-TOP 30 percent-less.than-GEN professor-NOM agree-DAT vote-did.
 # Kotosi-mo ___ sansei-ni toohyoo-sita.
 this.year-also agree-DAT vote-did
 ‘Last year, less than 30% of the professors voted yes.’
 Lit. ‘This year too, less than 30% of the professors voted yes.’

AE in Hebrew strongly corroborates this generalization. One can construct minimal pairs of upward (27a) vs. downward (27b) entailing quantifiers to show that only the former are compatible with AE. Note again that stripping is indifferent to the nature of the elided QP, as the target of ellipsis is TP (and the operation applies at PF).

- (27) a. A: ani makir yoter me-xaci me-ha-anašim kan.
 I know more from-half from-the-people here
 ‘I know more than half the people here.’
 B: gam ani (makir) ____.
 also I know
 ‘Me too.’
- b. A: ani makir paxot me-xaci me-ha-anašim kan.
 I know less from-half from-the-people here
 ‘I know less than half the people here.’
 B: gam ani (#makir) ____.
 also I know
 ‘Me too.’

The following pair is entirely parallel.

(28) Context: We try to decide who should drive us back from the party.

a. A: mi šata šaloš birot va-ma'ala?
who drank.3M.SG three beers and-upwards
'Who drank at least three beers?'

B: Ani (šatiti) ____.
I drank.1SG
'I did.'

b. A: mi šata šaloš birot va-mata?
who drank.3M.SG three beers and-downwards
'Who drank at most three beers?'

B: Ani (# šatiti) ____.
I drank.1SG
'I did.'

The exclusion of DE quantifiers from AE furnishes a particularly strong argument in favor of a semantic-type-based theory of AE, of the kind advocated in Kurafuji 2019 and Landau to appear. This exclusion is absolute and depends neither on the syntactic position of the elided argument (subject in (26), object in (27b) and (28b)) nor on the presence of any dependent item (e.g., NPI). Once again, an operation of AE that cannot distinguish DE quantifiers from other quantifiers is at a loss in face of these data.

3.4 Test case IV: $\rightarrow >> \text{Num-NP}$

Indefinite NPs with numerals can readily undergo AE (see (8a)). In section 2.1 I mentioned two methods of deriving their existential import: Existential closure at the VP-level or existential binding of a choice function variable at the sentence level. Notice that these two methods part ways in the context of clausal negation: A sentence-level existential quantifier should scope over Neg whereas a VP-level quantifier should scope below it. In this section we establish two correlated observations. First, AE *only* utilizes the choice-functional method of assigning scope to indefinites with numerals. This implies that when deleted, these indefinite NPs systematically take wide scope. Second, the absence of narrow scope implies not only that VP-level existential closure is unavailable, but also that a GQ-denotation for the NP with the numeral is unavailable. The evidence in this section, then, converges with the evidence from distributive readings in section 2.2, corroborating the conclusion that (barring special circumstances) choice functions take widest scope.

Consider the following examples.

- (29) a. Dani nipeax xamiša balonim.
 Dani blew.3M.SG five balloons
 'Dani blew five balloons.'
- b. Yosi lo ____. Hu nipeax rak šloša.
 Yosi not he blew only three
 'Yosi didn't. He blew only three.'
- c. Yosi lo nipeax ____. # Hu nipeax rak šloša.
 Yosi not blew he blew only three
 # 'Yosi didn't blow any. He blew only three.'

Stripping in (29b) makes available the natural reading whereby the indefinite object scopes under negation; the continuation is thus pragmatically supported. In contrast, AE in (29c) cannot mean "It is not the case that Yosi blew five balloons". It is rather understood either as a blanket statement – Yosi did not blow *any* balloons – in which case the continuation yields a contradiction; or as a statement about five specific balloons, which Yosi didn't blow, in which case the continuation is incoherent. The specific reading corresponds to wide-scope existential quantifier binding a choice function. The "blanket reading" may arise in either of two ways: (i) the missing object is simply *balonim* 'balloons', without the numeral; (ii) there is no syntactic object, and the sentence is understood as a negated activity (like *He didn't eat*), producing the same effect. I will not try to decide between these options here, as my intention is just to highlight the striking contrast between (29b) and (29c).

Several studies that promote an analysis of object gaps in terms of V-stranding VP-ellipsis, alongside AE, have pointed out that whether or not the antecedent and target clause match in polarity affects the recoverability of certain constituents, like VP-adverbs (Funakoshi 2016, Manetta 2018). We may ask, then, whether the facts in (29) are any different if the antecedent clause is negated too. The answer is that they are just the same.

- (30) a. Dani lo nipeax xamiša balonim.
 Dani not blew.3M.SG five balloons
 'Dani didn't blow five balloons.'
- b. Yosi gam lo ____. Hu nipeax rak šloša.
 Yosi also not he blew only three
 'Yosi also didn't. He blew only three.'
- c. Yosi gam lo nipeax ____. # Hu nipeax rak šloša.
 Yosi also not blew he blew only three
 # 'Yosi didn't blow any. He blew only three.'

Thus, regardless of the polarity of the antecedent clause, when an indefinite NP with a numeral undergoes AE, it cannot take scope under negation. Crucially, this is not a general property of ellipsis. When the indefinite NP is part of a bigger elided constituent (i.e., in stripping), it enjoys the same scope possibilities as it does when it is overt. Hence, the restriction we observe reveals some specific feature of AE.

Two potential derivations of the excluded reading should now be considered. Under existential closure at the VP level, the indefinite object is interpreted in-situ, as a variable restricted by the complex modifier *five balloons*. An unselective existential quantifier is adjoined to VP at LF – crucially scoping under negation. Under a QR analysis, the indefinite NP is interpreted as a GQ that adjoins to VP at LF, again scoping under negation.

- (31) a. *Existential closure at VP*
 [Dani not [$\exists x$ [_{VP} ... blew(x) \wedge 5-balloons(x)]]]
- b. *QR to VP*
 [Dani not [[5 balloons]_{x <<e,t>,t>} [_{VP} ... blew x]]]

I do not have a principled explanation for the absence of (31a). Perhaps existential closure is never available, given the other mechanisms of assigning scope to indefinite NPs. Alternatively, it may be unavailable for elided indefinite NPs, if these consistently resort to choice functions. What is of greater interest is the absence of (31b). This simple derivation should have been perfectly grammatical *if* the elided indefinite NP with the numeral could have a GQ denotation. However, its inability to take narrow VP scope in (29c)/(30c) strongly discredits this analysis. This, I submit, is a consequence of the general ban on AE of GQs, a corollary of (1).

In fact, the absence of existential narrow scope in (29c)/(30c) militates against the accounts of AE in Tomioka 2003 and Bošković 2018. These accounts crucially invoke VP-level existential closure to turn a property-type argument (*pro* or null NP) into an individual. While these accounts successfully rule out (31b) like the present account does, they overgenerate the narrow scope reading as in (31a).

What readings, then, do sentences like (29c)/(30c) afford? Other than the “blanket reading” (lacking the numeral interpretation), which we may set aside, two readings are available in principle: A specific one, and a wide scope nonspecific one. The former utilizes a definite *pro*, the latter interprets an elided argument via a choice function. Which of the two readings will be perceived by speakers is largely a matter of the pragmatic context. Consider the following scenario, where the specific reading is prompted. The indefinite NP in A’s utterance, *three questions*, introduces a

discourse referent, picked up by the *pro* object in B’s utterance, as schematized in (32b).

(32) Context: A & B have just finished their math exam and share impressions. There were 8 questions in the exam. Questions 6 to 8 were significantly more difficult, and it seems like nobody could solve them.

a. A: lo patarti šaloš še’elot (et 6 ad 8)
 not solved.1SG three questions (ACC 6 to 8)
 ‘I didn’t solve three questions (namely, 6 to 8).’

B: ani gam lo patarti ____.
 I also not solved.1SG
 ‘I also didn’t solve them.’

b. A: ...not ... [*three questions*]_i ...

B: ... not ... *pro*_i ...

The next scenario, in turn, prompts a nonspecific reading for the indefinite, which, as discussed above, involves existential binding outside the scope of negation. This is achieved via choice functions, as schematized in (33b). Notice that the choice function variables associated with the antecedent and the elided NPs are bound by distinct quantifiers, accounting for the “different set” interpretation.

(33) Context: A & B each had a box with 20 candies. Their boxes flipped open and the candies spilled over the floor, though in different rooms. They picked up all the candies they could find, but eventually each of them only found 17 candies.

a. A: lo macati šaloš sukariyot.
 not found.1SG three candies
 ‘I didn’t find three candies.’

B: ani gam lo macati ____.
 I also not found.1SG
 ‘I also didn’t find three candies.’

b. A: $\exists f_x[\text{CH}(f_x) \wedge \neg \text{FIND}(A, f_x(\text{CANDY}_{N=3}))]$

B: $\exists f_y[\text{CH}(f_y) \wedge \neg \text{FIND}(B, f_y(\text{CANDY}_{N=3}))]$

As in all contexts of ellipsis, scope parallelism is at work in AE too (Takahashi 2008, Maeda 2019). While (33a-A) is ambiguous on its own, when antecedent the unambiguous (33a-B), it must disambiguate in favor of the wide-scope indefinite interpretation. The fact that (33a-B) is unambiguous confirms Matthewson 1999: indefinite NPs with numerals must take widest scope when interpreted via

choice functions. More generally, the range of readings observed when AE targets an indefinite NP with a numeral is fully consistent with the overarching claim of this study, namely, that only type- $\langle e \rangle$ arguments are eligible to AE. Genuine quantificational readings are missing.

3.5 Test case V: $\neg \gg \textit{ela-NP}$ exceptive

The previous section discussed the inability of elided indefinite NPs with numerals to scope under negation. There is, however, a class of indefinite NPs that famously *must* scope under negation, even when elided: Negative Concord Items (NCIs). Curiously, one member of the class of Hebrew NCIs stands out in resisting AE: The exceptive phrase “*ela-NP*”. As we will see below, this phrase stands out in a several other ways, suggesting that its resistance to AE indeed follows from its higher semantic type. Before discussing the properties of *ela*-NPs, however, let me briefly describe the distribution of standard NCIs in Hebrew (for earlier studies, see Tonciulescu 2007, Keren 2015).

NCIs in Hebrew are formed with the negative particles *af* and *šum*, both of which are glossed below as “no”. They may occur as subject, object or adjunct, and require the presence of a local negation. Note that multiple NCIs are allowed in a sentence (34c), but negation is always necessary, regardless of the NCI’s grammatical function. The sentence nonetheless conveys a single semantic negation, confirming the NCI status of these elements.

- (34) a. *af exad / šum davar *(lo) mafxid et Gil.*
 no one no thing not scares.3M.SG ACC Gil
 ‘No one / nothing scares Gil.’
- b. *Gil *(lo) axal af tapuax / šum davar.*
 Gil not ate.3M.SG no apple no thing
 ‘Gil didn’t eat any apple / anything.’
- c. *Gil *(lo) mištaker be-šum eru’a xevrati af pa’am.*
 Gil not get.drunk.3M.SG in-no event social no time
 ‘Gil doesn’t get drunk in any social event at any time.’

That these items are not NPIs is shown by their exclusion from affective contexts that are not overtly negative, such as polar questions and antecedents of conditionals.

- (35) a. **Gil axal šum davar?*
 Gil ate.3M.SG no thing
 Intended: ‘Did Gil eat anything?’

- b. * im af exad magia, titkašer elay.
 if no one arrives.3M.SG call.FUT.2M.SG to.me
 Intended: ‘If anyone arrives, call me.’

Two more general properties should be mentioned. First, Hebrew NCIs are licensed by a local negation, where locality means “clausemate up to an indicative boundary”; see Landau 2004 for evidence that both infinitival and subjunctive complements in Hebrew are transparent to NCI licensing. Second, the licensor need not be the actual morpheme *lo* ‘not’, but it must be morphologically related to it.⁷ Thus, the dedicated negator in negative imperatives is not *lo* but *al* (and the verb must appear in the future tense), which also licenses NCIs. Similarly, the preposition *bli* ‘without’, which is diachronically derived from *be-lo* ‘in-not’, also licenses NCIs. Presumably, both elements, in virtue of being morphological derivatives of *lo*, carry the requisite [uNeg] feature (see Zeijlstra 2004 for the general analysis of negative concord as an agreement phenomenon).

- (36) a. al tedaber im af exad šam.
 not talk.2M.SG with no one there
 ‘Don’t talk to anyone there.’
- b. Rina tipsa al ha-cuk bli (le’hacia lanu) šum ezra.
 Rina climbed on the-cliff without (to.offer to.us) no help
 ‘Rina climbed the cliff without (offering us) any help.’

With this background on Hebrew NCIs in place, let us turn to the exceptive phrase formed with *ela* ‘but’.⁸ Like NCI’s, *ela*-NP requires a local negation. Unlike NCI’s, however, it is excluded from subject position (37a) and cannot be iterated (37c).

- (37) a. *ela kišalon lo mafxid et Gil.
 but failure not scares.3M.SG ACC Gil
 ‘Nothing but failure scares Gil.’
- b. Gil *(lo) axal ela tapuxim.
 Gil not ate.3M.SG but apples
 ‘Gil ate nothing but apples.’
- c. Gil *(lo) mištaker ela im xaverim (*ela be-mesibot).
 Gil not get.drunk.3M.SG but with friends but in-parties
 ‘Gil doesn’t get drunk except with friends (*except in parties).’

Similarly to NCIs, *ela*-NP is licensed in negative imperatives and in the complement of *bli* ‘without’. Also just the same, it is not licensed in non-negative affective contexts.

- (38) a. al tedaber ela im Rina.
not talk.2M.SG but with no
‘Don’t talk to anyone except Rina.’
- b. Rina sarda šavua šalem bli le’exol ela xaruvim.
Rina survived week whole without to.eat but carobs
‘Rina survived a whole week eating nothing but carobs.’
- c. *Gil axal ela tapuxim?
Gil ate.3M.SG but apples
Intended: ‘Did Gil eat anything but apples?’
- d. *im tište ela alkohol, tamut be-karov.
if drink.FUT.2SG.M but alcohol die.FUT.2M.SG in-close
Intended: ‘If you drink nothing but alcohol, you’ll die soon.’

We can summarize these observations by saying that *ela*-NP occurs in a subset of the environments in which NCIs occur. In fact, it seems to have the distribution of a *strong NPI*, which is restricted to anti-additive contexts (Van der Wouden 1997, Zwarts 1998). Indeed, strong NPI analysis for the Japanese exceptive *-sika* phrase, which is strikingly parallel to the Hebrew *ela*-phrase, has recently been proposed in Sauerland and Yatsushiro (to appear). I return to it below.

We finally come to the contrast of interest between standard NCIs and *ela*-NP: Their behavior under AE. Standard NCIs are eligible to AE (see Merchant 2013 for general discussion of NPIs under ellipsis). This is not surprising on the assumption that NCIs are just indefinite NPs, which acquire their negative character via Agree. This character is purely morphological, as the semantic negation is located on a clause-peripheral negative operator ($Op_{[iNeg]}$). For this reason, polarity matching is not required between the antecedent and target clauses (39b)

- (39) a. A: lo axalti šum davar.
not ate.1SG no thing
‘I haven’t eaten anything.’
B: gam ani lo axalti ____.
also I not ate.1SG
‘I haven’t too.’

- b. Rina dibra im mišehu lamrot še-himlicu
 Rina talked.3SG.F with someone despite that-recommended.3PL
 la lo ledaber ____.
 to.her not to.talk
 'Ribna talked to someone although it was recommended to her not to
 (talk to anyone).'

Semantically, NCIs are no different from NPIs: they denote existential DPs. Their additional character as negative *concord* items comes from a morphological [uNeg] feature that must be derivationally valued by some [iNeg] element (Zejlstra 2004). I assume that existential quantification over choice functions is responsible for the existential import of such DPs, just as it is in the case of non-polarity indefinite DPs. Clearly, though, the two types of indefinite DPs are dramatically different: While narrow scope below negation was not available to elided indefinite NPs with numerals (see section 3.4), it is the only option available to NCIs. In fact, the semantic literature on choice functions recognized this split in the behavior of polarity and non-polarity indefinites in St'át'imcets (Matthewson 1999), English (Geurts 2000) and Mandarin Chinese (Lin 2004). Both Matthewson (1999: fn. 30) and Lin (2004:486) suggest that licensing overrides “widest scope”, and propose that CF variables are existentially bound at the *potential* topmost level. For NCIs, this means narrow existential scope, within the c-command domain of the licensing Neg head.

Unlike NCI's, *ela*-NPs produce sharp ungrammaticality under AE. The examples below contrast stripping (where the verb is missing) and AE (where the verb is stranded); only the former is possible.

- (40) a. Gil lo madad ela žaket exad.
 Gil not tried.on.3M.SG but jacket one
 Dan gam lo ____ / * Dan gam lo madad ____ .
 Dan also not Dan also not tried.on.3SG.F
 'Gil tried on only a single jacket. Dan did too.'
- c. avi lo boteax ela be-elohim.
 father.my not trusts.3SG.M but in-god
 gam imi lo ____ / * gam imi lo botaxat ____ .
 also mother.my not / also mother.my not trusts.3SG.F
 'My father trusts no one but god. Neither does my mother.'

The non-elidability of the exceptive *ela*-NP is, I argue, yet another instance of failed ellipsis of a GQ. *ela*-NP is interpreted as *anyone but NP*, suggesting a parallel

structure with null morphemes for *any* and *one*. Note that the grammaticality of the stripping variants militates against any potential appeal to focus or pitch-accent resisting ellipsis (assuming that *ela* is a focus marker), since the *ela*-NP happily deletes in these cases (see Merchant 2018 for relevant discussion on ellipsis-internal focus).

The proposal is semantically grounded. One analysis of exceptive phrases derives them compositionally as set subtraction (41a) (von Fintel 1993, Gajewski 2013); note that the complement of *but* is type-shifted to a set to allow this operation.

- (41) a. $\llbracket \text{but} \rrbracket = \lambda X_{\langle e, t \rangle} . \lambda Y_{\langle e, t \rangle} : X \subseteq Y . Y - X$
 b. $\llbracket \llbracket \text{DP any} \llbracket \text{NP one} \llbracket \text{but John} \rrbracket \rrbracket \rrbracket =$
 $\lambda S_{\langle e, t \rangle} : \{x : x = \text{John}\} \subseteq \text{PERSON} . \exists z [(\text{PERSON} - \{x : x = \text{John}\})(z) \wedge S(z)]$

The DP in (41b) denotes a GQ: the set of all properties of some individual who is a person distinct from John.

Alternatively, the exceptive phrase may be derived as set disjointness coupled with existential force, following the treatment of *ne ... que* exceptives in French in von Fintel and Iatridou 2007. This is the gist of Sauerland & Yatsushiro's (to appear) analysis of the Japanese exceptive *-sika* (42a), which can be adapted to Hebrew *ela* as is. The head noun of the *-sika* phrase denotes the property R. When that noun is null (as it *must* be in Hebrew *ela*-phrases), Sauerland & Yatsushiro suggest, it corresponds to the concept **general-noun**, which, presumably, means 'thing' or 'person', depending on context. This yields the GQ-denotation for the *-sika/ela*-phrase in (42b).

- (42) a. $\llbracket \text{sika/ela} \rrbracket = \lambda X_{\langle e \rangle} . \lambda R_{\langle e, t \rangle} . \lambda S_{\langle e, t \rangle} . \exists y [X \neq y \wedge R(y) \wedge S(y)]$
 b. $\llbracket \llbracket \text{DP } \emptyset_{\exists} \llbracket \text{NP } \emptyset_{\text{one}} \llbracket \text{sika/ela John} \rrbracket \rrbracket \rrbracket = \lambda S_{\langle e, t \rangle} . \exists y [\text{John} \neq y \wedge \text{PERSON}(y) \wedge S(y)]$

Note that the full meaning of sentences with exceptive phrases goes well beyond the content of the lexical entries in (41a) and (42a), involving the contributions of exhaustification operators and presuppositions. These are presently left out as they do not bear on the key issue, which is the semantic type of the exceptive phrase itself.

To make our account complete, we should verify that no alternative derivation can rescue the attempted ellipsis of *ela*-NPs. Indeed, an E-type pronoun cannot felicitously occur in the AE site.

- (43) a. Gil lo axial ela tapuxim.
 Gil not ate.3M.SG but apples
 # Rina gam lo axla et ze / otam.
 Rina also not ate.3SG.F ACC it them
 ‘Gil ate nothing but apples. Rina also didn't eat it/them.’

The second sentence in (43) cannot mean that Rina also ate nothing but apples. If anything, its meaning is nearly opposite, namely "Rina also didn't eat the apples", which is pragmatically bizarre, given the presupposition of "also".

Before concluding this section, I would like to briefly comment on AE of the Japanese exceptive *-sika* phrase and *-dake* 'only' phrase. Just like *ela* phrases in Hebrew, *-sika* phrases display the distribution of strong NPIs (Sauerland & Yatsushiro to appear). Contrary to initial claims by Takita (2011), Ikawa (2013) and Mizuno (2022) argue that NP-*sika* cannot undergo AE (the example below is from Ikawa 2013:(6)).

- (44) *John-wa zibun-no bon-sika kari-na-katta ga,
 John-TOP self-GEN book-*sika* borrow-not-PST though
 Mary-wa ___ kawa-na-katta.
 Mary-TOP buy-not-PST
 (Intended: 'John borrowed no book except his, but Mary bought no book but hers.')

Ikawa explains this effect by invoking a condition that makes elided elements inert for agreement (assuming that NP-*sika* must enter an Agree relation with negation). This, however, runs counter to the evidence discussed above that NCIs freely undergo AE (as well as to familiar VPE examples with agreement penetrating an ellipsis site, e.g., *Were there elephants in the safari? I thought there weren't elephants in the safari anymore*). Mizuno (2022), in turn, derives (44) from a general condition restricting AE to topics. It is unclear to me how this proposal handles nontopical targets of AE like the NCIs discussed above or nonspecific indefinites (see Landau 2018 for pertinent Hebrew data). On the other hand, the present proposal can reduce the impossibility of eliding the Japanese NP-*sika*, just as it does with the Hebrew *ela*-NP, to the ban on applying AE to GQ-denoting arguments.⁹

In a similar vein, we can explain the ban on eliding external *-dake* 'only' phrases in Japanese. Funakoshi (2012:542-3) observes that when *-dake* is internal to the PP (45a), the *-dake* phrase may scope either below or above the modal, but when it is external to the postposition (45b), it must scope above the modal. This is explained in

terms of obligatory movement of the external *-dake* phrase to a FocP projection above VP.

- (45) a. John-wa Mary-*dake*-to asob-e-ru.
 John-TOP Mary-*only*-with play-can-PRES
 ‘John can play only with Mary.’ (only >> can, can >> only)
- b. John-wa Mary-to-*dake* asob-e-ru.
 John-TOP Mary-with-*only* play-can-PRES
 ‘John can play only with Mary.’ (only >> can, *can >> only)

Once elided, the internal *-dake* phrase loses its wide-scope reading (46a). The external *-dake* phrase, which only admits that reading, is simply non-elidable (46b).

- (46) a. John-wa Mary-*dake*-to asob-e-ru. Bill-mo ___ asob-e-ru.
 John-TOP Mary-*only*-with play-can-PRES Bill-also play-can-PRES
 ‘John can play only with Mary. Bill can play, too.’
 (*only >> can, can >> only)
- b. John-wa Mary-to-*dake* asob-e-ru. * Bill-mo ___ asob-e-ru.
 John-TOP Mary-with-*only* play-can-PRES Bill-also play-can-PRES
 (Lit.) ‘John can play only with Mary. Bill can play, too.’

Funakoshi's account assumes that wide-scope *-dake* phrases raise overtly and that such elliptical sentences are derived by V-stranding VP-ellipsis rather than AE. For reasons that should already be clear, we cannot adopt the second assumption. As to the former, we can remain neutral on whether the wide-scope of *-dake* phrases is obtained overtly or covertly. As long as it involves movement, the moved DP must be interpreted as a GQ (taking a derived λ -predicate as its argument). This is sufficient to render it resilient to ellipsis, much like NP-*sika* arguments.

4 A minimal format for arguments against V-stranding VP-ellipsis

The fundamental claim behind the present study is repeated below.

- (47) *Type-restricted AE*
 Elided arguments must be of type <e>.

Establishing this claim has been the shared goal of Landau to appear and the present study.¹⁰ While Landau to appear focuses on (failed) AE of various types of predicative arguments, the present study turned its attention to (failed) AE of GQs. What emerges from these two studies taken together is that *type-restrictions are a hallmark of AE*. This significant feature of this particular ellipsis process is *not* displayed by other ellipsis processes. Consider the main examples of ellipsis by PF-

deletion: NP-ellipsis (following some overt D/Q/Num head), predicate ellipsis (including VPE), sluicing and varieties of stripping. None of these processes has ever been shown to be sensitive to the semantic type of the elided category. All are subject to highly specific licensing conditions, but these conditions refer to *syntactic* category (e.g., C or T) and/or *syntactic* features (e.g., [+wh]); systematically excluded from these conditions is any reference to semantic types.

With this distinction in mind, we can revisit the familiar debate between AE and V-stranding VP-ellipsis as to which analysis provides a more adequate account of object gaps in languages like Japanese, Chinese, Korean, Portuguese, Russian, Hebrew, Hindi etc.¹¹ V-stranding VP-ellipsis is just VP-ellipsis with the verb stranded above VP (in Asp or T). As such, it is expected to depend on the semantic type of a VP-internal argument no more than standard (non-V-stranding) VP-ellipsis does. In fact, it is *architecturally* impossible to formulate any such dependency, for two principled reasons. First, VP-ellipsis (on the most common view) applies at PF, where semantic types are not registered.¹² Second, even if ellipsis of XP depends on XP's semantic type, it is extremely unlikely for it to depend on the semantic type of some *internal* constituent of XP, which in no way affects the semantic type of the entire XP (i.e., *invite him* and *invite everyone* are both type <e,t>).

These considerations allow us to formulate a minimal format for decisive arguments in favor of AE and against V-stranding VP-ellipsis, along the following lines.

- (48) Given a language where objects can go missing by ellipsis (and not just by being implicit or *pro*-dropped):

If an elliptical shift from [Subj V XP ...] to [Subj V ____ ...] is sensitive in any way to the semantic type or features of XP, then it must be AE, and V-stranding VP-ellipsis must not be available.

Notice how minimal this argument is. It does not require that all types of arguments reveal semantic sensitivity under ellipsis; it is enough that some types do. It is also not required that of the types that do, all *tokens* will reveal semantic sensitivity under ellipsis; again, it is enough that some tokens do. For it only takes a single, incontrovertible such case to disconfirm V-stranding VP-ellipsis, an analysis *in principle* incapable of expressing semantic restrictions on elided arguments.

In contrast, if AE involves *pro*-replacement as elaborated in Landau to appear, such semantic restrictions come as no surprise. Whether *type*-restrictions exhaust the range of semantic restrictions observed in AE constructions is an open research

question. However, any semantic restriction that is yet to be discovered will not jeopardize the basic tenets of the AE analysis and, in fact, will naturally fit in with its expectations.

5 Implications and open questions

The present analysis leads us to expect that not only strictly quantificational elements should resist AE, but any scope-taking arguments should, insofar as their semantic type is higher than $\langle e \rangle$. This should be reflected either in failure to take scope at the expected position, or possibly in outright ungrammaticality, as shown by the data in section 3.

One further potential consequence of this view is the resistance of argumental *wh*-phrases in-situ to AE (Sugisaki 2011, Ikawa 2013, Sato 2016, Saito 2017; example (49) is from Saito 2017).

- (49) A: Dare-ga Haiderabaad e itta ka] sitte imasu ka.
 who-NOM Hyderabad to went Q know Q
 ‘Do you know who went to Hyderabad?’
 B: Lie. * Demo ___ Siena e itta ka nara sitte imasu.
 no but Siena to went Q if know
 Intended ‘No. But I know the answer if the question is who went to Siena.’

This ungrammaticality was taken by Saito (2017) to reflect the inability of LF-copying to target an operator-variable chain (either the operator or the variable fails to be copied). On the present account, an alternative suggests itself. If *wh*-words in Japanese take scope via (covert) movement, then they must denote GQs in order to be properly interpreted in their landing site (assuming the standard interpretation of movement as λ -abstraction followed by λ -conversion in Heim and Kratzer 1998), but GQ's cannot undergo AE. Because the question whether in-situ *wh*-phrases do or do not undergo covert movement is highly contested in Japanese syntax, I leave it as an unsettled issue.

Another challenging case involve AE of disjunctive phrases, a topic that received much attention in Japanese syntax due to its interaction with negation and scope parallelism (see Funakoshi 2013, Sakamoto 2015, 2016, Oku 2016 and especially Maeda 2019). Disjunctions are eligible to AE in other languages too, such as Brazilian Portuguese (Cyrino & Lopes 2016), Greek (Merchant 2018) and Hebrew (Landau 2018), from which the following example is taken.

(50) A: cilanti 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 cilanti ____.
 also I photographed.1SG
 'I also photographed a church or a cathedral.'

There is no straightforward $\langle e \rangle$ -type denotation for disjunctive phrases, and current theorizing on their proper interpretation is quite intricate (Fox 2007, Sauerland 2017). A radical solution consistent with the dictum in (47) would be to derive disjoined arguments from underlying larger disjunctions by "coordination reduction". Wide scope disjunction would then correspond to clausal coordination (51a) while narrow scope disjunction (e.g., below negation) would correspond to VP-coordination (51b).

- (51) a. [I photographed a church] or [~~I photographed~~ a cathedral].
 b. I [photographed a church] or [~~photographed~~ a cathedral].

Independent facts suggest that DP-disjunction must be able to conceal propositional disjunction, at least in some contexts. As originally observed by Rooth and Partee (1982), DPs coordinated by disjunction give rise to split scope readings, where the disjunction scopes above some intensional operator while the DPs scope below it, receiving a *de dicto* interpretation (see also Hirsch 2016). Thus, the reading facilitated by "I don't know which" in (52a) is represented in (52b) ($L(m)(w_0)$ = the set of possible worlds in which Mary finds what she is looking for in w_0).

- (52) a. Mary is looking for a maid or a cook, but I don't know which.
 b. $\forall w' \in L(m)(w_0) [\exists x [\text{maid}(x)(w') \wedge \text{finds}(x)(m)(w')]]$
 $\vee \forall w'' \in L(m)(w_0) [\exists y [\text{cook}(y)(w'') \wedge \text{finds}(y)(m)(w'')]]$

Exploring this and other analytic options would require extensive discussion, so I leave it to future research, too.

A topic well deserving further study is the extent to which the generalizations established here for Hebrew apply crosslinguistically. While Japanese and especially Korean display striking parallels to Hebrew, some differences remain. An anonymous reviewer points out that s/he accepts in Japanese the quantificational reading in the counterpart of (16c) and narrow scope of *all* in the counterpart of (21B) and (23c). Nonetheless, s/he confirms that Japanese is like Hebrew in rejecting AE of downward-entailing quantifiers (26) and exceptive phrases (44). As to the quantificational reading of *most*, as noted in section 2.3, we may follow Constant

2012 and Kurafuji 2019 in allowing a CF-translation of this quantifier, at least for some speakers. This would generate genuine (non E-type) quantificational readings under AE.

As to elided *all* scoping under negation (see Fujiwara 2022:14 for the same observation), Japanese differs both from Hebrew and Korean, and more research is needed to pinpoint the grammatical properties underlying the observed difference. One possibility is that negative V-stranding sentences in Japanese can be derived in two ways: Either by standard AE, which is subject to the semantic constraint in (47), or by *polarity ellipsis*, whereby the V-Neg complex raises to Pol, the subject raises yet higher (as a contrastive topic), and the entire TP undergoes ellipsis by *PF-deletion*; the latter operation is exempt from (47), hence the quantificational readings (see Landau forthcoming for elaboration of the consequences of such derivations for further contrasts between ellipsis in Hebrew and in Japanese). Undoubtedly, more crosslinguistic data is needed before this or other analyses can be adopted.

Before concluding, I should mention the single previous study in which the resistance of strong quantifiers to AE has been noted and addressed – Giannakidou & Merchant's (1997) study of indefinite object drop in Greek. G&M analyze the missing arguments in Greek as *NP* ellipsis under a null $D_{[-def]}$. Because, on their assumptions, strong quantifiers reside in D, they lie outside the domain of ellipsis. This account, unfortunately, cannot extend to Hebrew (or Portuguese), where AE is not limited to indefinite objects, clearly affects full DPs, and nonetheless fails to apply to strong quantifiers. Indeed, the underlying intuition of the present account is that the ban on AE of strong quantifiers is ultimately *semantic*, whereas G&M took it to be rooted in the *syntax* of DPs.¹³

6 Conclusion

The central goal of this study has been to demonstrate that the distribution of AE is non-trivially restricted by the semantic type of the elided argument. In particular, we focused on the behavior of quantificational arguments of various sorts under ellipsis. The initial picture was quite bewildering: Some quantifiers resist AE on certain readings and not on others, or in certain syntactic environments and not in others. A useful methodological strategy has been to separate out all the cases where the "quantificational" reading is equivalent (or nearly equivalent) to a reading obtainable with an <e>-type null argument of some sort: E-type *pro* or the individual output of a choice function. Once these cases have been factored out, order emerged: Whenever the elided argument could be assigned an <e>-type denotation, AE could target it, but whenever a GQ-denotation was the only option, AE failed. This empirical pattern

follows from the theory laid out in Landau to appear, where AE proceeds by *pro*-replacement, and *pro* is restricted to <e>-type positions (an instance of universal denotational constraints on variables in natural language; see Landman 2006, Poole 2017).

One significant outcome of this study is the understanding that AE and ellipsis by PF-deletion are even more sharply distinguished than previously thought. Elidability of GQs provides a litmus test to tell them apart (if other tests fail). More generally, deletion at PF is expected to be semantically neutral while ellipsis via *pro*-replacement is expected to be semantically sensitive.

This study further highlights the advantages of using AE to inform the analysis of certain complex phenomena like negative concord and exceptive phrases. These are areas where competing accounts exist side by side, but seldom do they pay attention to interactions with AE. The case studies discussed here illustrate that *specific* assumptions are needed to explain the behavior of different kinds of NPIs under ellipsis, which may then serve to reject accounts that deny those assumptions. In this way, we may envision a richer and tighter interaction between future studies of AE and fundamental topics of interest in syntax and semantics.

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¹ Distributive readings arise when the object contains a pronoun bound by the subject, but these are readily handled on the widest-scope analysis of choice functions; see Matthewson 1999 for details.

² The contrast between overt and null indefinite DPs in distributive contexts (attested both in Japanese and in Hebrew) is consistent with Reinhart's (1997) and Kratzer's (1998) dual systems, where such DPs may be interpreted either as GQs or via choice functions. It is *inconsistent* with Winter's (1997) unitary system, where only the choice function interpretation exists.

³ This explanation, I believe, can be applied to parallel Japanese examples, discussed in Oku 2016:66, where a universally quantified object takes scope over an existential subject. Under AE, this reading presumably involves a "flexible" E-type pronoun. A puzzle that arises at this point is what makes E-type readings more or less accessible in different environments. An AE site is standardly distinguished from a pronoun (overt or null) in allowing a sloppy reading; this test is often reliable but not always, as (18) indicates. The interpretation of E-type (or "paycheck") pronouns involves the construction of some contextually salient function (Jacobson 2000) or null structure (Elbourne 2001, 2008), and the processing difficulty associated with this task appears to vary across grammatical environments and speakers. At present, our best heuristic is to compare the behavior of overt pronouns and gaps *in identical positions*; if and only if the gap allows a sloppy reading and the pronoun does not, it is legitimate to infer that the gap is an AE site.

⁴ The island-sensitivity of *many* for scope purposes is not without exceptions, though; see Constant 2012:303.

⁵ Indeed, the contrasts between *most* and *few* in (20) lead us to expect that DE quantifiers would resist AE. This prediction is confirmed in section 3.3.

⁶ These facts are distinct from the facts in (13)-(14), where the lack of distributivity was not due to any GQ being elided (the universal QP is *not* elided in (13)-(14)), but due to the widest scope property of choice function binders.

⁷ In literary registers, finite contexts lacking person marking (i.e., non-verbal predicates or present tense participles) may express clausal negation with *eyn* instead of *lo* (see Shlonsky 1997:Ch 4). *eyn* also licenses NCIs.

⁸ *ela* has a number of other uses in Hebrew, e.g. as a clausal subordinator conveying contrast or a negative condition (meaning *unless*). For a diachronic description, see Bardenstein and Ariel 2018.

⁹ This is not to say that Hebrew *ela*-NP and Japanese NP-*sika* can be fully assimilated. Interesting differences remain, e.g., w.r.t. distribution: NP-*sika* may be a subject, *ela*-NP may not; NP-*sika* may be fronted outside Neg, *ela*-NP may not. See Miyagawa, Noishioka and Zeijlstra 2016 for further discussion.

¹⁰ (47) implies that elided PP and CP arguments also denote individuals. This view should be fleshed out in terms of the sortal ontology of the domain of individuals, which includes entities (concrete or abstract), places, times, degrees, contents, etc. (for semantic approaches to propositional arguments as individuals with content, see Chierchia 1984, Potts 2002, Kratzer 2006, Moltmann 2013, Liefke and Werning 2018, Moulton 2020).

¹¹ See Xu 2003, Goldberg 2005, Gribanova 2013, Simpson, Choudhury and Menon 2013, Sakamoto 2015, Cyrino and Lopes 2016, Funakoshi 2016, Lee 2016, Oku 2016, Rasekhi 2018, Manetta 2018, 2021, Panitz 2018, Landau 2018, Landau 2020a, b, 2021, forthcoming, Simpson 2021, Lee and Park 2022.

¹² Even if VP-ellipsis is syntactic (as in, e.g., Aelbrecht 2010 and Baltin 2012), it is far from clear that syntactic operations can access the semantic types of the nodes they apply to. Such a possibility runs counter to deep-seated ideas about the autonomy of syntax, as well as to more recent attempts to drastically curb the amount of visible information on syntactic labels (Chomsky 2013, 2015).

¹³ Interestingly, if the reasoning in section 4 is valid, the failure of strong quantifiers to elide in Greek strongly indicates that Merchant's 2018 reanalysis of the phenomenon in terms of V-stranding VP-ellipsis is untenable. This point is indeed anticipated in Giannakidou & Merchant 2017:146.