A Pronoun without Competition: The Source of Principles A and B

Noa Bassel and Maayan Keshev

1. Introduction

Principles A and B were proposed within the framework of Government and Binding (Chomsky 1981, 1986) as rules that restrict the use of pronominal elements of two morphological classes, reflexive anaphors and simple pronouns. Despite numerous revisions over the past decades, the binding principles remained consistent in requiring anaphors to have a local C-Commanding antecedent and pronouns to avoid one. The empirical picture that this predicts is one of complementary distribution between anaphors and pronouns, which is confirmed by a substantial number of reported judgments across different languages. There are also many counterexamples, in which anaphors are allowed in the same positions as pronouns. In such cases, speakers have a degree of free choice between pronominal forms that is not clearly constrained by distance. This has prompted a debate that questioned whether syntactic locality is a crucial factor in the choice between pronouns and anaphors, with some frameworks claiming for discourse interventions (e.g., Kuno 1987; Pollard and Sag 1992; Reinhart and Reuland 1993; Ariel 1988, 2008), and others insisting that anaphors are strictly local (Canac-Marquis 2005; Charnavel 2019). The current paper takes as a point of departure that Principles A and B capture an attested (not necessarily exhaustive) correlation between the choice of pronoun and the distance from the antecedent, and asks whether the cause of this correlation is based in syntax or discourse.

2. The source of Principles A and B

The binding principles were originally phrased as primitive rules that set arbitrary limits for anaphoric relations (Chomsky 1981, 1986), in order to explain contrasts in the distribution and interpretation of DPs. Earlier attempts appeared in Lees and Klima (1963) and Reinhart (1976), which centered this discussion on locality and C-Command, respectively. Principles A and B received a more recent interpretation under Phase Theory, where they follow from the general notion that syntactic derivation occurs in independent semantic and phonetic units, or phases (Chomsky 2001, 2008; Legate 2003; Lee-Schoenfeld 2004; Canac-Marquis 2005; Charnavel and Sportiche 2016). Reflexive anaphors denote coreference within the phase, while simple pronouns are used for coreference between phases.

Analyses that share this perspective, which we refer to collectively as locality-based views, have gained dominance in the study of anaphors, but did not become a consensus. Alternative views have argued for two separate motivations for Principles A and B, which are both independent from syntactic locality. From this viewpoint, Principle A is often described as a speaker's strategy to overcome biases for disjoint reference (Kemmer 1993; Ariel 2008; Haspelmath 2008). The idea is that anaphor resolution is sensitive to the frequency of coreference in similar environments. Speakers anticipate and use heavier pronominal forms to mark coreference in those positions where it is least expected, including subject-object coreference. Principle B, in turn, is argued to follow from the anaphor being more limited in reference and hence logically stronger compared to the pronoun. This leads to a competition between pronominal forms and to a disjointness inference through Gricean reasoning (Huang 2000). Competition views are also found in diachronic studies

* Noa Bassel, University of Massachusetts, Amherst (nbassel@umass.edu). Maayan Keshev, Hebrew University of Jerusalem (maayan.keshev@mail.huji.ac.il). We thank Nadine Abdel-Rahman, Mira Ariel, Elitzur Bar-Asher Siegal, Si Berrebi, Nora Boneh, Luka Crnič, Brian Dillon, Julia Horvath, Kyle Johnson, Ivy Sichel, Tal Siloni, and participants of BUMASA research group for valuable input and discussion. This study was supported by ISF Grant No. 2765/21.

 Proceedings of the 41st West Coast Conference on Formal Linguistics, ed. Nikolas Webster et al., 67-76. Somerville, MA: Cascadilla Proceedings Project.

(e.g., Keenan 1994; König and Siemund 1996; van Gelderen 2000) as well as in certain locality-based views (Levinson 1987; Safir 2004; Rooryck and Vanden Wyngaerd 2011).

Beyond the technical details, the differences between locality-based and discourse-based approaches to anaphors boil down to the question of whether the binding principles capture *constraints* that govern anaphoric licensing, or empirical *consequences* of underlying discourse pressures. Our goal in this paper is to show that the empirical picture is not fully accounted for by expectations and competition, which we take to indicate that locality constraints on anaphors should not be reduced to pragmatic mechanisms.

2.1. Previous evidence for expectation and competition

The argument for discourse-based accounts of Principles A and B draws heavily on the historical development of the English *x-self* anaphor, as described in Penning (1875), Farr (1905), Visser (1966), Mitchell (1979), Keenan (1994), König and Siemund (1996, 2000), and van Gelderen (2000), among others. The resources available for English provide a relatively continuous documentation from before and during the emergence of the *self* anaphor, showing that simple pronouns could previously generate both local coreference and disjoint readings, as illustrated in (1). Rooryck and Vanden Wyngaerd (2011) present similar cases for further grammars and sub-grammars, including Frisian, Haitian Creoles, Child Dutch and English, and first/second personal pronoun paradigms in German, Dutch, and French.

(1) Old English:
hine$_{1/2}$ he$_1$ bewerað mid wæpnum.
he.ACC he.NOM defended with weapons
'He defended him/himself with weapons.' (König and Siemund 2000: 7)

In the case of Old English, the morpheme *self* occurred independently as an adnominal focus intensifier, similar in meaning and distribution to the modern complex intensifier in *the queen HERSELF came to the party*. The following example shows that the combination of simple pronouns and *self* morphemes resolve the potential ambiguity demonstrated in (1) in favor of local coreference.

(2) Þæt he$_1$ sealde **hine**$_1$ **sylfne** for us.
that he.NOM gave him.ACC self.ACC for us
'that he gave <u>himself</u> for us.'

An expectations-based account is particularly appealing for Old English, since the added morpheme *self* is known to convey surprise in other contexts. The standard analysis of intensifiers, which covers both the Modern English complex intensifier and the Old English variant, is that they mark the entity they adjoin to as exceptionally high-ranked among its contextual alternatives (Moravcsik 1972; König and Siemund 1996; König and Gast 2006; Gast 2007). Accordingly, intensifiers often convey some level of anomality in the participation of a notable character in a given event. Contexts of local coreference provide this type of setting, which the local subject ranks high in the discourse due to its very recent mentioning.

In this sense, focus-intensifiers are a straightforward means to overcome statistical biases against coreferential readings. Moreover, Keenan (1994, 2002), showed that *self* adjunction in object pronouns is less common for verbs that describe routine self-directed actions, with similar observations arriving from corpus surveys of Modern English (Ariel 2008), other Germanic languages (Bergeton and Pancheva 2012), and broader typological surveys (Faltz 1977; Kemmer 1993; Haspelmath 2008). The shared insight of these studies is that reflexive morphemes such as *self* occur more with objects of verbs that are statistically likely to take disjoint arguments. In contrast, verbs that are common in coreferential contexts tend to participate in reflexive strategies that are phonetically lighter. The data from Old and Middle English also support a competition analysis of Principle B, showing that a gradual rise in the frequency of *self*-adjoining came at the expense of local coreference in pronouns (Keenan 1994; Peitsara 1997; Lange 2001).

To summarize, discourse-based views rely on cases in which binding effects are mediated by pragmatic mechanisms, and argue that these mechanisms are the underlying cause for contrasts in anaphoric licensing. These conclusions are based predominantly on data from English and related languages. Our goal in the upcoming sections is to show that these effects do not explain restrictions on anaphors and pronouns in the

broader sense. Section 3 presents evidence that restrictions on pronoun coreference exist independently of competition. Section 4 focuses on the tradeoff between different reflexive strategies and shows that the distribution of anaphors does not conform to speakers' expectations.

3. Disjointness without competition

The main prediction of competition analyses is that the disjointness inference that follows from Principle B would depend on the existence of a more specific form for local coreference. To that end, Principle B effects should be (i) absent in the lack of competition; and (ii) postponed during comprehension until the pronoun can be evaluated against competing forms. In what follows, we present findings from historical linguistics (Section 3.1) and psycholinguistic experiments (Section 3.2) which suggest that disjointness effects do not fully depend on the availability of a competing form.

3.1. Historical evidence

Section 2.1 showed that the pronominal system of Old English confirms the relation between formal competition and Principle B effects, in the sense that it lacks both of them. That is, this language had no distinction between simple pronouns and reflexive anaphors, and no restriction on pronouns coreference. Generally speaking, evidence for this pattern have so far arrived mostly from grammars and sub-grammars of Germanic and Romance languages. Our goal in the current subsection is showing that evidence from Semitic languages suggest a different pattern.

The key data point is that Hebrew and Arabic show restrictions on pronoun coreference in corpus data from well before their reflexive anaphors became a convention. Previous stages of these languages resemble Old English in lacking a designated anaphor, and yet did not exhibit the same freedom in the use or pronouns.

Biblical Hebrew (1st millennium BCE) has a number of limited reflexive strategies, the most prominent of which are templates that encode reflexive meanings (NIPʿʿAL, HITPAʿʿEL), and body-part expressions that stand for a whole person, such as *nɛpēɛš* 'soul', *qɛrɛb* 'innards', *lēb* 'heart', and *rōʾš* 'head' (Gesenius 1813). The reflexive templates were probably not fully productive, as only a subset of the transitive verbs in the Bible has this variant (Doron 2003; Bar-Asher Siegal 2020). Moreover, Kemmer (1994) and Faltz (1977) pointed to a general overlap between reflexive verbs and middle constructions, which poses additional contextual restrictions pertaining to voice. Body-part expressions were also restricted, as they retained parts of their lexical meaning, and could not be used to refer to entities that lacked the stated parts or organs. Given these limitations, a competition account predicts that object pronouns would not show disjointness effects, at least in contexts that block other strategies.

However, Bible researchers report to the contrary, that local coreference in object pronouns is highly marginal throughout the Biblical corpus (Gesenius 1813; Sarfatti 1992). The entire corpus of 306,757 words contains only five instance of pronoun coreference (Jeremiah 7.19; Ezekiel 43.2,8,10), three of which are a repetition of the same phrase: *yirʿû hā-rōʿîm ʾôtām* 'The shepherds fed themselves' (Ezekiel 34:8).[1] The exceptionality of local coreference in Biblical pronouns drew attention even in the traditional Bible interpretation (Talmud), as seen in the quote in (3), an excerpt from a paragraph discussing three instances of local coreference (translated from Rabbinic Hebrew by Shraga Silverstein).

(3) "'*yavi oto*' (he brings him) – Now do others bring him? Does he not bring himself?
[…] '*yavi oto*' – he brings himself, and others do not bring him."
(www.sefaria.org/Sifrei_Bamidbar.32.1)

In this quote, the author makes a case to convince the reader that the object pronoun in *yavi oto* '(he) brings him' is coreferential rather than disjoint, using the reflexive anaphor *acm-x* (translated here as 'himself'), which is attested in the author's Hebrew variant. As this text is written by and for scholars with a high proficiency in the language of the Bible, the decision to flag cases where pronouns are used for local coreference speaks to the marginality of such readings, which, we argue, could not have followed exclusively from competition.

[1] Object pronouns in Biblical Hebrew take dependent or independent form (e.g., *-o* vs. *oto* 'him'). The coreferential cases all take the independent form (Gesenius 1813; Sarfatti 1992).

A similar restriction holds in the Classical Arabic varieties of the Qur'an, in which *nafs* 'soul' expressions are frequently used with pronominal suffixes to express local coreference. These expressions match the form of the Modern Standard Arabic anaphor *nafs-x*, yet this convention is dated back to the 9th century (Fischer 1973). In the Qur'an, the reflexive use of *nafs* is still sporadic and restricted to animate contexts (see Kayam, forthcoming for an overview). As with Biblical Hebrew, inanimate pronouns in Qur'anic Arabic should have no competition with respect to local coreference. However, pronoun coreference in the Qur'an is limited to a category of verbs known as *'af'āl al-qalb* 'verbs of the heart', which means it is also unavailable for inanimate entities (Wright 1898; Kayam forthcoming).

Both Hebrew and Arabic have therefore shown restrictions on pronoun coreference before the emergence of the anaphor, and we predict that other Semitic languages would show a similar pattern. Evidence that Semitic anaphors have a shared path of emergence is seen in their recurring morphological makeup, illustrated in Table 1.

Modern Hebrew	**Palestinian Arabic**	**Standard Arabic**	**Amharic**
acm-i	*ḥal-i*	*nafs-i*	*ras-e*
bone-1SG 'my bone'	state-1SG 'my state'	soul-1SG 'my soul'	head-1SG 'my head'

Table 1: The morphological composition of Semitic languages

Faltz (1977) noted that, unlike intensifier-based anaphors, which are headed by pronouns, anaphors with body-part sources tend to be constructed such that the body part is the head of the phrase. In the case of Semitic languages, this tendency is too regular to be a coincidence and is not explained by any morphological or semantic restriction on the body-part phrases. Body-part expressions are not prevented from taking modifier positions, as demonstrated with Hebrew examples in (4).

(4) a. sikat **roš**
pin.of head
'hair pin'

b. ceva **guf**
color.of body
'skin color'

In other words, the fact that Semitic anaphors uniformly emerge as, e.g., *acm-x,* and not as *x-ecem* (in accordance with Germanic/Romance anaphors) is not explained by restrictions on the reflexive morpheme's lexical precursor. Bassel (2023) proposed that this structure emerges as a strategy to avoid Principle B violations. In Hebrew and Arabic, anaphors take on the form of a bare possessive construction known as the construct state, in which the pronominal suffix is not an adjunct but a second head (Ritter 1988; Borer 1988; Heller 2002; Fassi Fehri 2004; Siloni 1997; Ouwayda 2012; Shlonsky 2012). The following examples show that constructs that are extended with two or more arguments allow binding between these arguments (5a), but not by an external DP (5b). This indicates that the Semitic construct is an independent phase.

(5) a. [$_{DP}$ harisat ha-cava$_1$ 'et **acm-o**$_1$].
destruction.of DET-army ACC REFL-3SG.M
'The army$_1$'s destruction of itself$_1$' (Siloni 1997)

b. ha-nasi$_1$ haja axra'i le- [$_{DP}$ harisat ha-cava$_2$ 'et **acm-o**$_{*1/2}$].
DET-president be.PAST responsible for destruction.of DET-army ACC REFL-3SG.M
'The president$_1$ was responsible for the army$_2$'s destruction of itself$_2$/*himself$_1$.' (Bassel 2023)

The prevalence of a strategy in which complex DPs are employed as anaphors is therefore in itself suggestive that Semitic anaphors emerge under locality restrictions, and not the other way around. This information does do not rule out discourse-based effects going in the same direction, but rather suggests that such effects could not have been the underlying cause for the development of anaphors cross-linguistically.

3.2. Experimental evidence

Corpus data can indicate a drop in *frequency* of local coreference in pronouns, and yet it provides no information on the *availability* of such readings in comprehension. Romanian provides an opportunity to

evaluate the effect of competition in native speakers, with a similar pronominal system to that of Old English. In Romanian, the pronouns *el/au* 'her/him' are referentially ambiguous, while their intensified versions *el însuşi* /*ea însaşi* 'her herself/ him himself' are exclusively local, as seen in (6).[2]

(6) Acasă la Mihai$_1$, Andrei$_2$ a vorbit despre [**el**$_{1/2}$ (**însuşi**)] $*_{1/2}$.
'At Mihai's house, Andrei talked about him (himself).' (Ivan et al. 2023: 2)

Ivan et al. (2023) showed that, in a picture matching task, the rate at which Romanian speakers chose locally-bound readings in *el/au* dropped significantly when the intensified versions were included in the stimuli, but remained about half of the readings (52.2%). A similar effect was found in production experiments (Ivan and Dillon 2021), in which Romanian speakers were asked to describe situations involving local coreference. Participants used bare pronouns at a lower, yet non-negligible rate (39.1%), in contexts that were potentially ambiguous between a local and a distant antecedent, both matching in gender, than when only the local antecedent matched the gender of the pronoun (54.5%).

On the one hand, these results show that competition effects in pronouns are attested in both comprehension and in production. On the other, coreferential readings remained highly accessible in both tasks. In other words, the presence of the more specific form in the stimuli did not exhaust the coreferential reading of the simple pronoun.

Pratley et al. (2023) probed into the contribution of competition to disjointness from the opposite direction, by looking into contexts that eliminate the competition. Their stimuli included focus-sensitive operators like *only*, which generate different sets of alternatives in accordance with the choice of pronoun, as seen in (7)-(8).

(7) a. Only KYLE$_1$ voted for him$_1$.
b. {¬Brian$_2$ voted for him$_1$, ¬John$_3$ voted for him$_1$…}

(8) a. Only KYLE$_1$ voted for himself$_1$.
b. {¬Brian$_2$ voted for himself$_2$, ¬John$_3$ voted for himself$_2$…}

Assuming that *only* negates contextual alternatives to the element in focus (Rooth 1992), interpreting the pronoun in (7) as coreferential with *Kyle* generates the meaning 'Kyle voted for himself, and others did not vote for him'. Replacing the pronoun by a complex anaphor would change the set of focus alternatives to that seen in (8b), giving rise to the meaning 'Kyle voted for himself, and others did not vote for themselves'. Since the pronoun and the anaphor give rise to different meanings, they are not in competition.

If Principle B effects are caused by competition, then the coreferential reading of the pronoun in (7) should be acceptable. Yet Pratley and colleagues found that participants often refrained from using a pronoun to refer to the subject even when prompted toward contexts such as (7). In a corresponding comprehension task, Pratley and colleagues found that when participants had to choose between a coreferenced and a bound variable interpretation of the pronoun (7b vs. 8b, respectively), they often rejected both meanings (57%). Still, some speakers accepted a pronoun coreferring with *Kyle*, with a tendency toward the reading in which others did not vote for him (7b), indicating that competition indeed exists for some speakers as an interpretive strategy. On the other hand, the finding that many speakers avoid using simple pronouns for local coreference even when there is no alternative way to convey the intended meaning suggests that Principle B cannot be reduced to competition in contemporary English.

These findings join recent attempts to assess whether the time course of Principle B effects during word-by-word processing reflects a procedure of evaluating competing forms, as required in a competition analysis. In visual world experiments, Burnsky et al. (2022) and Bakay et al. (2023) found that English speakers show a bias against local coreference before object pronouns are even perceived. In the reported experiments, participants' eye movements were monitored as they listened to English nonce-verb sentences while gazing at a display with different alien characters. The critical conditions introduced verbs that occur with direct objects and ones that occur with sentential complements, as seen in the respective examples in (9a-b). Participants were asked to guess who the pronoun refers to out of the available characters.

[2] Romanian has an additional anaphoric form *sine*, which was not part of the stimuli in the cited experiments.

(9) a. Tyler sloppogated **him**.
b. Tyler plimulated that Megan sloppageted **him**.

Both studies found that participants looked away from the character corresponding to the subject (e.g., Tyler) upon hearing a "transitive" verb (9a) more often than when hearing a clause-selecting verb (9b). This suggests that participants inferred subject-object disjointness particularly in environments in which a subsequent pronoun reference would be limited by Principle B. The effect occurred upon encountering the verb and before the pronoun was pronounced. The authors concluded from these findings that Principle B effects have to involve additional factors apart from pronominal competition. Note that these findings cannot be explained by statistical biases, since participants had no previous experience with the fake verbs, and since the stimuli also included sentences with local coreference in the transitive verb frames (expressed with reflexive anaphors).

To conclude this section, preliminary findings from a number of studies suggest that (i) competition in itself does not block local coreference in pronouns, in comprehension or production, and (ii) disjointness inferences can arise without competition, either in contexts where the pronoun generates a distinct reading, or before comprehenders have a chance to hear the pronoun and compare it against competing forms.

4. Anaphors do not follow expectations

The previous section showed that restrictions on pronoun coreference are observed independently of pronoun competition. Our goal in the current section is to show in a similar fashion that restrictions on reflexive anaphors are independent from biases caused by the proportion of coreferential instances in a given environment.

Recall that the main prediction of the expectations-based approach, which we described in some detail in Section 2, is that contexts with a high rate of coreferential readings would correlate with a low rate of reflexive anaphors. Such contexts should exhibit a preference for reflexive strategies that are phonetically lighter, such as pronoun coreference (e.g., Old English), simple anaphors (Germanic and Romance languages) or reflexive verbs (Semitic languages). This prediction clearly contrasts with that of locality-based views, which predict that syntactic factors such as distance, C-Command, and argument structure would be better correlators of the choice of reflexive strategy.

In what follows, we show first that classes of verbs previously classified for high and low expectations for coreference do not pattern consistently with light and heavy reflexive strategies (Section 4.1). More specifically, we demonstrate that cross-linguistic differences in how reflexivity is expressed across predicates do not conform to the expectations scale. This includes verbs that are close translations of each other and should generate similar expectation patterns. We then compare expectations with syntactic structure in the context of locative prepositions, which generally have a low rate of coreferential occurrences, while also being non-local to the subject (Section 4.2). In such cases, expectations predict a preference for complex anaphors due to the low chance of coreference in a locative phrase, while locality predicts a preference for pronouns, to the extent that the PP forms a phase. We report the results of a corpus survey that shows that, in such cases, the choice of pronouns aligns to syntactic rather than statistical factors.

4.1. Inconsistencies across reflexive strategies

Previous works in the expectation-based view have pointed to a cross-linguistic trend at the extreme ends of the expectations scale, which places verbs of body grooming at the end of most likely to be coreferential actions and verbs of harm at the end of mostly disjoint actions. The recurring finding in this respect is that grooming verbs take on lighter reflexive strategies across many languages, while verbs of harm typically require a heavy reflexive anaphor (Kemmer 1993, Keenan 1994, Haspelmath 2008). We argue that this trend contains many discrepancies at both ends of the scale, which suggests that expectations for coreference cannot be the main factor that triggers reflexive anaphors.

Two crucial properties to keep in mind when approaching these phenomena are that (i) some of these strategies are more productive than others, and (ii) as mentioned in Section 3.1, light reflexive strategies

overlap with middle morphology. In such cases, reflexive morphology would not necessarily encode reflexivity but rather mark events that have only one (affected) participant. We identify true reflexive verbs through their compatibility with Agent-oriented elements such *deliberately* modifiers or embedding under *succeeded in* constructions. The contrast is illustrated below for the Hebrew reflexive verb *hitlabeš* 'dressed' (10) versus the middle *hit'alef* 'fainted'(11).

(10) a. hu **hitlabeš** (bexavana).
he dress.HITPA''EL deliberately
'He dressed (deliberately).'

b. hu hicliax **lehitlabeš**.
he succeeded dress.INF
'He succeeded in dressing.'

(11) a. hu **hit'alef** (# bexavana).
he faint.HITPA''EL deliberately
'He fainted (#deliberately).'

b. #hu hicliax **lehit'alaf**.
he succeeded faint.INF
'He succeeded in fainting.'

Applying these diagnostics across languages reveals that the English zero-anaphor strategy covers a closed class of grooming verbs, such as *washed*, *dressed*, *shaved*, and *moisturized*; the Hebrew reflexive template is available for a larger set beyond grooming verbs; and French and Spanish *se* anaphors generate a reflexive meaning across many verbs, in a productive yet not unlimited fashion. For the current discussion, the crucial point is that expectations for coreference do not allow to accurately predict for which verbs these strategies would be available.

In Hebrew, the verb *'ina* 'torment', from the low end of coreference expectation, has a simple reflexive variant *hita'ana* 'tormented himself', while verbs that describe actions that are common self-practices, like *hicig* 'introduced' or *šibeax* 'praised' do not have reflexive variants *(*hitjaceg* is unattested, *hištebe'ax* lacks the reflexive meaning). Moreover, there are pairs of actions that reveal opposite behaviors across languages. For example, in Hebrew, a reflexive variant is attested for the transitive verb *šixne'a* 'convinced', but not for *hifti'a* 'surprised', while in Spanish, it is the other way around: *se sorprendió* 'self-surprise' can be interpreted as reflexive, while *se convenció* has only a middle interpretation. Table 2 presents the available reflexive strategies for each verb in these two languages.

Root	**Strategy**	**Spanish (*se, sí mismo*)**	**Hebrew (HITPA''EL, *acmo*)**
'surprise'	Heavy	*Ella se sorprendió a sí misma* 'She surprised herself.'	*hi hifti'a et acma.* 'She surprised herself.'
	Light	*Ella se sorprendió.* 'She surprised herself.'	**hi hitpat'a.* Intended: 'She surprised herself.'
'convince'	Heavy	*Ella se convenció a sí misma* 'She convinced herself.'	*hi šixne'a et acma* 'She convinced herself.'
	Light	*Ella se convenció.* *'She convinced herself.' 'She became convinced.'	*hi hištaxne'a.* 'She convinced herself.' 'She became convinced.'

Table 2: Reflexive strategies for 'surprise' and 'convince' in Spanish and Hebrew

This small-scale comparison shows that cross-linguistic differences in the reflexive encoding of verbs are not aligned with the scale of expectations. The emerging picture is that some strategies operate across the board, on any transitive verb, while others are more selective based on morphological, semantic, and perhaps statistical factors. The expectation scale shows certain correlations with these paradigms but remains a weak predictor as to which verb will be compatible with what strategy.

4.2. Expectations do not explain prepositional anaphors

A related prediction that follows from the expectations account is that complex anaphors should surface in any position that triggers low expectation for coreference, not just direct object positions. This raises the question of why complex anaphors across languages specifically target object positions. To show that there

are indeed positions of low chance of coreference that do not require complex anaphors, we looked into prepositions of spatial relations.

The object position of such prepositions provides a test case for both expectation-based and locality-based accounts. On the one hand, prepositions select for location DPs rather than individuals, which means they frequently occur with disjoint objects and should therefore generate a bias for local disjointness, that should in turn motivate complex anaphors. One the other, the standard analysis of such PPs is that of a Small Clause, a separate syntactic domain that should favor pronouns over anaphors (Hoekstra 1988; Svenonius 2003; Rooryck and Vanden Wyngaerd 2007; Folli and Ramchand 2005; Gehrke 2008; Bassel 2018). Ariel (2008) previously noted that these positions generally express coreference by pronouns, not anaphors, as seen in (12).

(12) Can you$_1$ reach the pepper **behind you**$_1$? (Ariel 2008: 36)

We conducted a corpus search using the English Web 2020 corpus (enTenTen20, Kilgarriff et al. 2014) in order to assess the level of expectations in these positions. We targeted sentences that include a verb and a direct object followed by a stative place preposition: *around, behind, near, beneath, beside, inside,* or *under*. We evaluated the rate of coreference with the subject out of all occurrences of this sentential frame using a two-step process: First, we evaluated the rate of pronominal elements utilizing automatic lemma tagging. We assume that non-pronominals, which account for 92% of all occurrences in the tested sentential frame, do not express coreference. We then evaluated the rate of co-reference in utterances with pronominal elements (pronouns or reflexives) via manual tagging over a smaller random sample of 100 such utterances. Overall, the rate of coreference was 4% out of all occurrences of the place sentence frames, reflecting a significant statistical bias against coreferential readings in Place PPs.

To evaluate how this rate fares relative to the cases that have motived the expectations account, we measured the rate of direct object reflexives (out of all direct objects, using automatic part of speech tagging); and the rate of the coreferenced occurrences for three reflexive-biased verbs which do not require marking of coreference: *dress*, *scratch*, and *wash* (using manual tagging on a random sample of 100 utterances per verb). While the rate of coreference in spatial PPs is higher than that in direct object positions (0.9%, realized through reflexive anaphors), it is far from the rate of coreference found in tested grooming verbs (63%, realized through zero or reflexive anaphors). The results are listed in Table 3.

Context	**Grooming verbs**	**Transitive Verbs**	**Place prepositions**
% local coreference	63%	0.9%	4%

Table 3: Frequency of disjoint reference in verbs and spatial prepositions in the enTenTen20 corpus

These rates suggest that the natural input that speakers receive discloses a statistical bias against coreference between the verb's subject and the object of place prepositions. If speakers rely on this generalization in anaphor resolution, they should develop a disjointness inference for pronouns occurring in this position. However, our survey reinforces Ariel's observation that pronouns that follow place prepositions are not interpreted as disjoint, and in fact were the more popular choice for coreference in Place PPs (95%). This result follows straightforward from the structural analysis of these PPs, which defines them as independent predications (small clause). Note that we excluded from this search prepositions that denote paths, following the claim in Bassel (2018, 2023) that Path PPs do not form small clauses in English.

Lastly, a similar result was recently obtained in Bryant (forthcoming), who compared speakers' expectations for coreference in Place PPs with the semantic notion of physical contact between the described entities. Bryant measured speakers' expectation for coreference through the rate in which English speakers completed sentences of the form '*Nora had some crumbs on* __' with expressions matching the gender features of the subject (*her, herself*). The results showed an average rate of 8% coreferential completions, which ranged between 0-55% for individual items. These rates were then matched against acceptability rating, in which participants ranked the naturality of using pronouns and reflexives to express coreference in these environments. Bryant found that the semantic component of physical contact predicted the acceptability of anaphors to a greater extent than the level of expectation, as measured in the completion task. We take this to show once again that the choice between anaphor and pronoun is largely determined

by grammatical properties (meaning and structure) rather than the pronoun's discourse functions or the frequency of coreference.

5. Conclusion

We showed that different strands of linguistic research provide evidence that conflict with a view that reduces Principles A, B to expectations and competition. We conclude that the portion of the data that is not explained by discourse-based inferences reflects locality constraints in grammar.

References

Ariel, Mira. 1988. "Referring and Accessibility." *Journal of Linguistics* 24 (1): 65–87.

Ariel, Mira. 2008. *Pragmatics and Grammar*. Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.

Bakay, Ozge, John Burnsky, Maayan Keshev, Maryam Asatryan, Kyle Johnson, and Brian Dillon. 2023. "Predicting Disjoint Reference: Offline and Online Evidence." In *Poster at the Annual (HSP) Conference on Human Sentence Processing (Pittsburg, PA)*.

Bar-Asher Siegal, Elitzur A. 2020. *The NP-Strategy for Expressing Reciprocity: Typology, History, Syntax and Semantics*. Typological Studies in Language. Amsterdam: John Benjamins Publishing House.

Bassel, Noa. 2018. "Anaphors in Space." Unpublished MA Thesis, Tel Aviv University.

Bassel, Noa. 2023. "Complex Anaphors." PhD dissertation, Hebrew University of Jerusalem.

Bergeton, Uffe, and Roumyana Pancheva. 2012. "A New Perspective on the Historical Development of English Intensifiers and Reflexives." *Grammatical Change: Origins, Nature, Outcomes*, 123–38.

Borer, Hagit. 1988. "On the Morphological Parallelism between Compounds and Constructs." *Yearbook of Morphology* 1: 45–65.

Bryant, Shannon. forthcoming. "Close vs. Cloze: The Role(s) of Contact and Expectancy in English Pronoun Preferences." In *Proceedings of NELS 54*.

Burnsky, John, Maayan Keshev, Maryam Asatryan, Kyle Johnson, and Brian Dillon. 2022. "Look Away! An Object Is Coming." In *Poster at the Annual (HSP) Conference on Human Sentence Processing (Santa Cruz, CA)*.

Canac-Marquis, Réjean. 2005. "Phases and Binding of Reflexives and Pronouns in English." In *Proceedings of the 12th International Conference on Head-Driven Phrase Structure Grammar*, 482–502. Stanford, CA: CSLI Publications.

Charnavel, Isabelle. 2019. *Locality and Logophoricity: A Theory of Exempt Anaphora*. New York NY: Oxford University Press.

Charnavel, Isabelle, and Dominique Sportiche. 2016. "Anaphor Binding: What French Inanimate Anaphors Show." *Linguistic Inquiry* 47 (1): 35–87.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT press.

Chomsky, Noam. 2001. "Derivation by Phase." In *Ken Hale, a Life in Language*, 1–51. Cambridge, MA: MIT Press.

Chomsky, Noam. 2008. "On Phases." In *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, 133–66. Current Studies in Linguistics Series. Cambridge, MA: MIT Press.

Doron, Edit. 2003. "Agency and Voice: The Semantics of the Semitic Templates." *Natural Language Semantics* 11 (1): 1–67.

Faltz, Leonard M. 1977. "Reflexivization: A Study in Universal Syntax." PhD Thesis, PhD dissertation, Universiy of California-Berkeley.

Farr, James M. 1905. *Intensives and Reflexives in Anglo-Saxon and Early Middle-English*. JH Furst Company.

Fassi Fehri, Abdelkader. 2004. "Nominal Classes, Reference, and Functional Parameters, with Particular Reference to Arabic." *Linguistic Variation Yearbook* 4 (1): 41–108.

Fischer, Wolfdietrich. 1973. *A Grammar of Classical Arabic*. Translated by Jonathan Rodgers. New Haven: Yale University Press.

Folli, Raffaella, and Gillian Ramchand. 2005. "Prepositions and Results in Italian and English: An Analysis from Event Decomposition." In *Perspectives on Aspect*, 81–105. Dordrecht: Springer.

Gast, Volker. 2007. *The Grammar of Identity: Intensifiers and Reflexives in Germanic Languages*. London: Routledge.

Gehrke, Berit. 2008. *Ps in Motion: On the Semantics and Syntax of P Elements and Motion Events*. Utrecht: LOT.

Gelderen, Elly van. 2000. *A History of English Reflexive Pronouns: Person, Self, and Interpretability*. Vol. 39. Amsterdam/ Philadelphia: John Benjamins Publishing.

Gesenius, Wilhelm. 1813. *Hebrew Grammar*. Edited by Emil Kautzsch. Oxford: Clarendon Press.

Haspelmath, Martin. 2008. "A Frequentist Explanation of Some Universals of Reflexive Marking." *Linguistic Discovery* 6 (1): 40–63.

Heller, Daphna. 2002. "Possession as a Lexical Relation: Evidence from the Hebrew Construct State." In *WCCFL 21 Proceedings*, 127–40. Citeseer.

Hoekstra, Teun. 1988. “Small Clause Results.” *Lingua* 74 (3): 101–39.
Huang, Yan. 2000. *Anaphora: A Cross-Linguistic Approach*. New York NY: Oxford University Press.
Ivan, Rodica, and Brian Dillon. 2021. “Ambiguity Avoidance in Reflexive Dependencies: Evidence from Romanian.” University of Massachusetts, Amherst: PsyArXiv.
Ivan, Rodica, Brian Dillon, and Kyle Johnson. 2023. “(Bound) Pronouns in Competition: Evidence from Romanian Comprehension.” In *Proceedings of West Coast Conference in Formal Linguistics (WCCFL) 39*.
Kayam, Ohad. forthcoming. “Topics in Qur’anic Syntax and Rhyme.” PhD dissertation, University of Oxford.
Keenan, Edward. 1994. “Creating Anaphors: An Historical Study of the English Reflexive Pronouns.” *Ms., UCLA, Los Angeles, Calif*.
Keenan, Edward. 2002. “Explaining the Creation of Reflexive Pronouns in English.” Edited by Donka Minkova and Robert P. Stockwell. *Topics in English Linguistics* 39: 325–54.
Kemmer, Suzanne. 1993. *The Middle Voice*. Vol. 23. Typological Studies in Language. Amsterdam: John Benjamins Publishing Company.
Kilgarriff, Adam, Vít Baisa, Jan Bušta, Miloš Jakubíček, Vojtěch Kovář, Jan Michelfeit, Pavel Rychlý, and Vít Suchomel. 2014. “The Sketch Engine: Ten Years On.” *Lexicography* 1 (1): 7–36.
König, Ekkehard, and Volker Gast. 2006. “Focused Assertion of Identity: A Typology of Intensifiers.” *Linguistic Review* 10 (2): 223–76.
König, Ekkehard, and Peter Siemund. 1996. “On the Development of Reflexive Pronouns in English: A Case Study in Grammaticalization.” In *Anglistentag*, 95–108.
König, Ekkehard, and Peter Siemund. 2000. “The Development of Complex Reflexives and Intensifiers in English.” *Diachronica* 17 (1): 39–84. https://doi.org/10.1075/dia.17.1.04kon.
Kuno, Susumu. 1987. *Functional Syntax: Anaphora, Discourse and Empathy*. Chicago: University of Chicago Press.
Lange, Claudia. 2001. “Reflexivity and Intensification in Middle English.”
Lees, R. B., and E. S. Klima. 1963. “Rules for English Pronominalization.” *Language* 39 (1): 17–28. https://doi.org/10.2307/410759.
Lee-Schoenfeld, Vera. 2004. “Binding by Phase:(Non-) Complementarity in German.” *Journal of Germanic Linguistics* 16 (2): 111–71.
Legate, Julie Anne. 2003. “Some Interface Properties of the Phase.” *Linguistic Inquiry* 34 (3): 506–16.
Levinson, Stephen C. 1987. “Pragmatics and the Grammar of Anaphora: A Partial Pragmatic Reduction of Binding and Control Phenomena1.” *Journal of Linguistics* 23 (2): 379–434.
Mitchell, Bruce. 1979. “Old English ‘Self’: Four Syntactical Notes.” *Neuphilologische Mitteilungen*, 39–45.
Moravcsik, Edith. 1972. “Some Cross-Linguistic Generalizations about Intensifier Constructions.” In *Chicago Linguistic Society*, 8:271–77.
Ouwayda, Sarah. 2012. “Construct State Nominals as Semantic Predicates.” In *Arabic Language and Linguistics*, edited by Reem Bassiouney and E. Graham Katz, 79–98. Washington, DC: Georgetown University Press.
Peitsara, Kirsti. 1997. “The Development of Reflexive Strategies in English.” *Topics in English Linguistics* 24: 277–370.
Penning, Gerhard E. 1875. “A History of the Reflective Pronouns in the English Language.” PhD Thesis, University of Leipzig.
Pollard, Carl, and Ivan A Sag. 1992. “Anaphors in English and the Scope of Binding Theory ∗,” 1–47.
Pratley, Breanna, Jed Sam Guevara, Adina Camelia Bleotu, Kyle Johnson, and Brian Dillon. 2023. “Both Principle B and Competition Are Necessary to Explain Pronominal Disjoint Reference Effects" and the Authors in Order Are Breanna Pratley, Jed Sam Guevara, Adina Camelia Bleotu, Kyle Johnson, and Brian Dillon.” *MS., University of Massachussetts Amherst*.
Reinhart, Tanya. 1976. “The Syntactic Domain of Anaphora.”
Reinhart, Tanya, and Eric Reuland. 1993. “Reflexivity.” *Linguistic Inquiry* 24 (4): 657–720.
Ritter, Elizabeth. 1988. “A Head-Movement Approach to Construct-State Noun Phrases.” *Linguistics* 26 (6): 909–30.
Rooryck, Johan, and Guido Vanden Wyngaerd. 2007. “The Syntax of Spatial Anaphora.” *Nordlyd* 34: 2–2.
Rooryck, Johan, and Guido Vanden Wyngaerd. 2011. *Dissolving Binding Theory*. Oxford University Press.
Rooth, Mats Edward. 1992. “A Theory of Focus Interpretation.” *Natural Language Semantics* 1: 75–116.
Safir, Kenneth J. 2004. *The Syntax of Anaphora*. New York NY: Oxford university press.
Sarfatti, Gad Ben Ami. 1992. “Reflexive Pronouns and Pronouns of Identity in Hebrew/ הכינוי החוזר וכינוי הזהות בעברית.” *לשוננו: כתב-עת לחקר הלשון העברית והתחומים הסמוכים לה*, 51–341.
Shlonsky, Ur. 2012. “On Some Properties of Nominals in Hebrew and Arabic, the Construct State and the Mechanisms of AGREE and MOVE.” *Rivista Di Linguistica* 24 (2): 267–86.
Siloni, Tal. 1997. *Noun Phrases and Nominalizations: The Syntax of DPs*. Studies in Natural Language and Linguistic Theory 31. Dordrecht: Kluwer Academic Publishers.
Svenonius, Peter. 2003. “Limits on P: Filling in Holes vs. Falling in Holes.” *Proceedings of the 19th Scandinavian Conference of Linguistics*, 31 (1).
Visser, Fredericus Theodorus. 1966. *An Historical Syntax of the English Language*. Leiden: Brill.
Wright, William. 1898. *A Grammar of the Arabic Language*. Translated by Carl Paul Caspari and William Robertson Smith. Cosimo, Inc.

Proceedings of the 41st West Coast Conference on Formal Linguistics

edited by Nikolas Webster, Yağmur Kiper, Richard Wang, and Sichen Larry Lyu

Cascadilla Proceedings Project Somerville, MA 2025

ISBN 978-1-57473-483-6 hardback

Ordering information

Orders for the printed edition are handled by Cascadilla Press.
To place an order, go to www.lingref.com or contact:

Cascadilla Press, P.O. Box 440355, Somerville, MA 02144, USA
phone: 1-617-776-2370, fax: 1-617-776-2271, sales@cascadilla.com

Web access and citation information

This entire proceedings can also be viewed on the web at www.lingref.com. Each paper has a unique document # which can be added to citations to facilitate access. The document # should not replace the full citation.

This paper can be cited as:

Bassel, Noa and Maayan Keshev. 2025. A Pronoun without Competition: The Source of Principles A and B. In *Proceedings of the 41st West Coast Conference on Formal Linguistics*, ed. Nikolas Webster et al., 67-76. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3732.