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# Complex Anaphors

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by

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"יִחְשְׁדֵּךְ בַּפֶּשֶׁשׁ מִגִּי לָשַׁחַת וְחַיָּתוֹ מֵעֶבֶר בַּשֵּׁלַח."

He keeps back his soul from the pit, and his life from perishing by the sword.

(Job 33:18)

To my grandmother Shadra Bassel,  
who repeatedly ordered me to “study well”

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## Abstract

The goal of this thesis is to explain three seemingly unrelated traits that converge in items such as the English *x-self* anaphor across languages: Complex morphological structure, a limited syntactic distribution that forms a mirror image of that of simple pronouns, and homophony with adnominal and adverbial intensifiers that draw focus (e.g., *the queen herself*).

These properties have so far been investigated separately, with the most intensive debate targeting the question of distribution. The empirical puzzle in this respect is that, in direct object positions, the acceptability of complex anaphors is fully predictable given the distance from their antecedents and strictly complementary with pronouns. However, in positions that are embedded under prepositions or nouns, predictability and complementarity tend to break.

The challenge of explaining these conflicting patterns was confronted within two broad lines of analysis: *Locality-based views* have been searching for a set of rules that predicts the distribution of complex anaphors across categories, while *discourse-based views* aim to explain the semantic effects that complex anaphors trigger when they are left to the choice of speakers. Another split, which partially parallels the first one, involves the way complex anaphors are conceptualized. The dominant perspectives in this respect are given in (1).

**(1) *What are complex anaphors?***

- (a) *Deficiency analyses*: Complex anaphors are required for local interpretation on the premise of being referentially defective.
- (b) *Marking analyses*: Complex anaphors mark local coreference and/or other semantic traits and discourse cues.

Though there are exceptions, definition (1a) is a general preference in locality-based views, while discourse-semantic views conform to (1b). Between these lines of research, a certain residue of the data has consistently remained unpredictable.

The current work provides arguments for a locality-based approach to complex anaphors that adheres to (1b), where anaphors are regular pronouns that are marked during spellout as referentially identical with C-Commanding DPs in the accessible domain. I propose that this marking takes place through the valuation of a feature [IDENTITY], which is realized as a *self* morpheme. This explains the prevalence of complex anaphors in the world's languages and

their complementarity with simple pronouns. The application of identity in other domains explains a range of related phenomena, including the homophony with intensifiers, which are formed through interaction with focus.

**The proposed analysis predicts a strict complementarity between the pronoun and the anaphor by virtue of the two being two sides of a morphological alternation.** Lack of complementarity between these items is expected to be possible on the surface in one of the following cases: (i) syntactic ambiguity, namely a string maps to more than one possible structure such that [ID] gets different values; or (ii) the surface form of the complex anaphor is used with a different non-anaphoric meaning.

Following these assumptions, I show that instances of free choice between the pronoun and the anaphor are only apparent, and that the real choice is between different syntactic structures. The variation that anaphoric licensing exhibits in preposition and noun phrases will be shown to follow from differences in the syntactic realization of these categories: Prepositions vary between one-place and two-place relations, of which the latter constitute independent spell-out domains. Similarly, nouns may surface as simple or complex arguments, which determines whether they will be spelled out with preceding elements, or independently. This in turn determines in which domain a pronominal element embedded in these phrases will find its antecedent.

Additional complexity arises from the phenomenon known as logophoricity, in which many complex anaphors, including *x-self*, may refer to the local perspective center rather than one of the overt DPs in the context. Such instances obscure the relation between anaphors and locality since they seem to enable coreference with other DPs regardless of their syntactic configuration and distance. Throughout this thesis, I will isolate these cases through a comparison with Hebrew data, where the complex anaphor *acm-x* lacks the logophoric interpretation.

I then show that once logophoricity is controlled for, the distribution of anaphors in DPs and PPs becomes indicative of structural differences, and fully predictable from the value of referential identity with local preceding DPs.

Finally, I show evidence from previous stages of Hebrew and Classical Arabic that locality constraints apply independently of the existence of complex anaphors and should therefore be regarded as part of the architecture of grammar rather than as a property of the anaphors themselves.

## Abbreviations

1	First person
2	Second person
3	Third person
SG	Singular
PL	Plural
ACC	Accusative case
DAT	Dative case
GEN	Genitive case
REFL	Reflexive
PRON	Pronoun
DET	Determiner
NEG	Negation
COP	Copula
IMP	Impersonal subject
IRR	Irrealis
INF	Infinitive

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## 1.

## Introduction

Complex anaphors exhibit at least three types of cross-linguistic regularities. First, they contrast with simple pronouns in object positions, such that the anaphors express local coreference, while the pronouns are locally disjoint (Lees and Klima 1963; Langacker 1966).

(1) *Pronouns and anaphors in object position:*

(a) They<sub>1</sub> saw { \*them<sub>1</sub>/themselves<sub>1</sub> } in the mirror.

(b) Hebrew:

sara<sub>1</sub> ra'ata { \*ota<sub>1</sub> / et acm-a<sub>1</sub> } ba-mar'a.

S. saw her ACC REFL-3SG.F in.DET-mirror

(c) Turkish:

Hasan<sub>1</sub> { \*onu<sub>1</sub>/ kendini<sub>1</sub> } aynada gordu. (Faltz: 1977: 4)

H. him REFL.3SG.ACC mirror.LOC saw

Second, complex anaphors present a typical morphological makeup consisting of a pronominal element and a repeating morpheme that is often derived from one of two sources: body part terms, and emphatic focus particles, known as intensifiers (Faltz 1977; Kemmer 1993). A few examples are given in (2).

(2)	<i>L</i>	<i>Anaphor</i>	<i>Etymology</i>
	Dutch	<i>zichzelf</i>	emphatic
	French	<i>elle-même</i>	emphatic
	Basque	<i>bere-buruak</i>	'head'
	Hebrew	<i>acm-a</i>	'bone'
	Amharic	<i>ras-wa</i>	'head'
	Àcoólí	<i>kööm-ε</i>	'body'

Third, it is also common for the entire anaphoric complex to be used as an intensifier (König and Siemund 2000a; Hole and König 2002), as seen in (3).

(3) *Emphatic use of complex anaphors:*

(a) The queen **herself** came to the party.

(b) Hebrew:

ha-mahapexa ha-mišpatit **acm-a** lo poga'at ba-kalkala.  
 DET-revolution DET-juridical REFL-3SG.F NEG harm at.DET-economy  
 'The juridical revolution itself does not harm the economy.'

(c) Turkish:

doktor(-un) **kendi(-si)** bütün hasta-lar-ı tek tek ara-dı.  
 doctor(-GEN) REFL(-3SG)all patient-PL-ACC one.by.one call.3SG  
 "The doctor herself/ himself called all the patients one by one". (Kayabasi 2023: 3b)

König & Siemund (2013) found that anaphors exhibit formal identity with intensifiers in 56% out of 168 languages from different continents and families. If these findings represent a broader trend, then having the same form used for anaphors and intensifiers could be more common than the alternative in which the two are not related.

This thesis asks what ties together these seemingly unrelated properties (complementarity with pronouns, complex morphology, homophony with intensifiers). At a more conceptual level, I will ask what defines complex anaphors as a construct of grammar and whether there could be one coherent definition from which these different properties follow.

In previous literature, the ways in which complex anaphors are defined and conceptualized vary drastically between frameworks. Studies in formal linguistics starting Lees and Klima (1963) have focused mainly on the complementarity between anaphors and pronouns and defined each element by the distributional restrictions it follows. By the traditional definitions, pronominal elements that occur in the local context of a C-Commanding antecedent are anaphors, while those that occur elsewhere are pronouns (Chomsky 1981). These statements form no expectation with respect to the morphological form of anaphors or their link with intensifiers, which renders the convergence of these properties a coincidence.

Taking a different approach, Faltz (1977: p.4) speaks of anaphors as a reflexive strategy, which he defines as "a grammatical device that indicates that the agent and the patient in a clause are the same referent". This terminology calls to understand complex anaphors as part of a broader class of means to reduce the number of entities in the verb's argument slots, including simple anaphors, clitics, reflexive verbs, zero anaphors, and arguably, middle voice markers and unaccusative morphology. This diversity poses another challenge for distribution-based definitions of anaphors, since the rules that restrict complex anaphors are not fully applicable to other reflexive strategies.



One possible answer for this mismatch is that there is a selection bias in looking only at the anaphors that are bound locally, and that anaphors should not be defined by their distribution, but by their semantic contribution. This in turn leads to the question of what anaphors actually encode, which has previously received a broad range of answers. In the traditional locality-based view (e.g., Reinhart 1983), the meaning assigned to anaphors is equivalent to that of bound pronouns occurring in simple form, as seen in (4).

- (4) Every boy<sub>1</sub> blames {himself<sub>1</sub>/ his<sub>1</sub> parents}.

The accepted wisdom says that *himself* relates to the subject *every boy* in the same way as *his* does, which generates the respective meanings ‘*x* blames *x*’ and ‘*x* blames *x*’s parents’. This equivalence suggests that the *self* morpheme is a syntactic reflex with no semantics.

Later developments in the distribution-based analysis incorporated Faltz’s view that the anaphor is a meaningful construction that marks transitivity alternations (Reinhart and Reuland 1993; Antonenko 2012; Sauerland 2013), while others argued that the pronoun-anaphors opposition serves discourse purposes, creating functional hierarchies between individuals (e.g., Kuno 1987, Haspelmath 2013). Both lines of analysis have emphasized that complex anaphors themselves receive partial coverage by standard definitions of locality, even within the grammar of English.

Empirical evidence to that effect have been raised since at least Ross (1970), with the recurring observation that certain PPs and DPs create contexts where the distribution of anaphors and pronoun is unpredictable and often overlapping. Some well-known examples are given in (5-6).

- (5) *P anaphors – English:*

- (a) John<sub>1</sub> saw a snake next to {him<sub>1</sub>/himself<sub>1</sub>}.  
 (b) Max<sub>1</sub> rolled the carpet over {him<sub>1</sub>/himself<sub>1</sub>}. (Reinhart & Reuland 1993)

- (6) *DP anaphors – English:*

- (a) Lucie saw a picture of {her<sub>1</sub>/herself<sub>1</sub>}. (Reinhart & Reuland 1993)  
 (b) The picture of {him<sub>1</sub>/himself<sub>1</sub>} in Newsweek bothered John (Pollard & Sag 1992)

These environments exhibit cross-linguistic variation with respect to the licensing of pronouns and anaphors that is not found in direct object positions. In Hebrew, the equivalents of (5-6) diverge such that some display the same parallel licensing of pronouns alongside

anaphors (7a,8a) while others give rise to the complementary distribution typical of direct object positions (7b,8b).

(7) *P anaphors – Hebrew:*

- (a) sara<sub>1</sub> gilgela et ha-štixim { sviv-a<sub>1</sub>/ sviv acm-a<sub>1</sub> }.  
 S. rolled ACC DET-carpets around-3SG.F around REFL-3SG.F  
 ‘Sara rolled the carpets over her/herself.’
- (b) sara<sub>1</sub> ra’ata naxaš { lejad-a<sub>1</sub>/ \*lejad acm-a<sub>1</sub> }.  
 S. saw snake next.to-3SG.F next.to REFL-3SG.F  
 ‘Sara saw a snake next to her/\*herself.’

(8) *DP anaphors – Hebrew:*

- (a) Sara ra’ata tmuna { šel-a<sub>1</sub>/ šel acm-a<sub>1</sub> } be-wajnet.  
 S. saw picture of-3SG.F of REFL-3SG.F in-Ynet  
 ‘Sara saw a picture of her/herself on Ynet.’
- (b) ha-tmuna { šel-a<sub>1</sub>/ ??šel acm-a<sub>1</sub> } be-wajnet hitrida et sara.  
 DET-picture of-3SG.F of REFL-3SG.F in-Ynet bothered ACC Sara  
 ‘Her picture/ ??the picture of herself on Ynet bothered Sara.’

The same environments trigger variability in simple anaphors as well, as demonstrated below by the German PP *neben sich*, which alternates with the non-reflexive *neben ihm* in (9a), but not in (9b).

- (9) (a) Hans<sub>1</sub> sah eine Schlange neben { sich<sub>1</sub>/\* ihm<sub>1</sub> }.  
 H. saw a snake near REFL him  
 ‘Hans saw a snake next to himself/\*him.’ (Faltz 1985: 3.2)
- (b) Welches Boot ließ er<sub>1</sub> neben sich<sub>1</sub>/ ihm<sub>1</sub>] untergehen?  
 which boat let he next.to REFL/ him under.go  
 ‘Which boat did he let sink next to him?’ (Lee-Schoenfeld 2004: 53)

An attempt to explain even this limited dataset goes through questions that have been at the center of extensive debates across various branches of linguistics, including:

- (i) What causes the rigid alternation between pronouns and anaphors, and under what conditions is it relaxed into free variation?
- (ii) Is the phenomenon controlled by syntactic or discourse-based parameters?

- (iii) What is the source of variation between direct object positions and positions embedded under prepositions and nouns; between English and Hebrew anaphors; and between the (a) and (b) sentences in (7-9)?
- (iv) Are different reflexive strategies related or distinct, and why do focus-intensifiers take the same morphological form as complex anaphors?

This thesis aims to answer these questions based on the naive assumptions that (i) the distribution of complex anaphors is connected with their morphological composition, and (ii) the core meaning of anaphors should explain the use of the same morphemes as intensifiers.

Following the combined insights of distribution-based views and theories of reflexive marking, I will defend an analysis in which anaphors are not bound by their antecedents but rather marked by a feature that presupposes identity with C-Commanding DPs. This feature undergoes valuation that either confirms its presupposition, in which case it is realized as a *self* morpheme, or deletes the feature such that the simple form is maintained. This phonetic process imposes locality, in the sense that it cannot be satisfied by LF movement to higher phases, which effectively restricts the identity relation to the DPs that are accessible during spellout.

From this perspective, the convergence of complex morphology, complementarity with pronouns and homophony with intensifiers is less surprising, if not trivial. The complex morphology observed in many anaphors is a transparent reflection of an additional feature on a regular pronoun. Complementarity between pronouns and anaphors is expected since they are differentiated by the value of this feature. Finally, defining *self* morphemes as expressions of identity explains their capacity to acquire related meanings in other semantic domains. In particular, the meaning of intensifiers follows from the interaction of identity with focus alternatives (Moravcsik 1972; König and Gast 2002; Gast 2007), which explains why many anaphors are recruited as intensifiers.

This leaves open the question of distribution, since the identity feature analysis requires that the licensing of pronouns and anaphors would be completely predictable from their referential value, and complementary across the board. Clearly, a pronominal element will never be coreferential with and disjoint from the DPs in its spellout domain at the same time.

The observation that pronouns and anaphors follow this logic in VPs, but not in PPs and in DPs, seems to undermine this analysis. The proposed analysis allows for two possible ways to accommodate this discrepancy: (i) assume that there are additional, post-syntactic effects that obscure syntactic triggers of anaphor licensing in the relevant environments, or (ii) conclude

that the underlying structure of prepositional and nominal constituents is more diverse and less well-understood than that of direct objects. In what follows, I will show that both lines of argumentation are correct: the existence of post-syntactic effects on anaphors is part of the reason that the structure of PPs and DPs has long remained too vague to form stable predictions on the distribution of complex anaphors.

**Chapter 2** outlines the main theoretical approaches to complex anaphors, roughly divided into distribution-based approaches that posit narrow constraints on anaphoric dependencies, and discourse-based approaches that emphasize the relevance of broad contextual factors. I present the empirical base that has remained challenging to all accounts, namely anaphors embedded in PPs or DPs, and show that it is easier to reduce discourse effects on anaphors in these contexts to locality rather than the other way around.

This chapter will also lay out the foundations for the current proposal, including various definitions of syntactic locality, the nature of the identity feature, and the methods employed to distinguish between syntactic and discourse-based triggers for anaphoric licensing. I will introduce the idea that pronouns are locally disjoint because they are elsewhere elements of anaphors, and show that there are languages in which the restriction on pronouns predates the complex anaphor. This will require a system that entails pronouns disjointness independently of the existence of anaphors but also allows to overrule it in languages that employ simple pronouns for both coreferential and disjoint meanings.

**Chapter 3** proceeds to the details of the present analysis. I propose a principle according to which DPs that get spelled out together are transferred to the semantic interface with unique indices, which leads to an assumption of disjointness.

**Error! Reference source not found.** Base-generated DPs are sent to the interface with unique indices.

(83) Conditions A+B: Unique indices are understood as disjoint unless stated otherwise.

These principles do not ban local coreference, but rather suggest a default assumption that any two DP positions that could be referentially independent indeed are. These assumptions remain local due to the general properties of derivation by phase (Chomsky 2001, 2008). Complex anaphors overcome the assumption of disjointness by introducing the opposite assumption through the feature in (84).

(84) Identity feature:

$$[[ID]] = \lambda x[\lambda y.x \text{ is } y].x$$

I will then show that this analysis generates accurate predictions for the meaning of anaphors, their distribution, and the diversity of related phenomena across languages. Most importantly, the present analysis predicts that any case of free choice between pronoun and anaphor would reflect a choice between parses that lead to different identity values. This suggests that the variation seen in anaphoric licensing in PPs and DPs does not reflect a relaxation of locality in grammar constraints but rather the availability of different structural options in these categories.

The following chapters will show that there is much evidence for syntactic ambiguity in PPs and DPs, some of which has been overlooked in the relevant literature. **Chapter 4** shows that PPs alternate both in their size and their merging position, and that these properties determine which pronominal element will be used to express coreference across the preposition.

Meaning		Structure	Anaphor	Pronoun
Functional prepositions		$[_{vP} DP_1 \dots [_{PP} P DP_{2=1} ]]$	✓	*
Spatial prepositions	Path	$[_{vP} DP_1 \dots [_{Path} P DP_{2=1} ]]$	✓	*
	Place/ Derived goal	$[_{vP} DP_1 \dots [_{pP} p DP_2 [_{Place} P DP_{3=1} ]]]]$	*	✓
	VP adjunct	$[_{vP} DP_1 \dots [_{PP} P DP_{2=1} ]]$	✓	*
	DP adjunct	$[_{vP} DP_1 \dots [_{DP} D NP [_{PP} P DP_{3=1} ]]]]$	*	✓

**Table 14:** Structural typology of PPs

**Chapter 5** Takes the same approach toward DP anaphors and shows, following Charnavel (2019) and Charnavel and Bryant (2023), that DPs that lack an overt subject provide three different types of antecedents for a DP anaphor: covert PRO subjects, covert logophoric pronouns, or external antecedents. The availability of covert antecedents that are optional in their nature, and which may or may not corefer with overt DPs in the sentence, leads to configurations in which both a pronoun and an anaphor are acceptable. This creates an illusion of free choice between them, when in fact the choice is between covert antecedents, which in turn trigger micro-semantic effects related with agentivity and perspective.

**Chapter 6** shows how the current analysis explains the emergence of complex anaphors from emphatic particles and body terms, based on the case studies of English and Hebrew, respectively. I begin by showing that historical data from English show restrictions on pronoun coreference to emerge after the complex anaphor (Condition A predates Condition B) and proceed to show that Hebrew pronouns were restricted before the anaphor emerged (Condition B predates Condition

A). I will then show that the standard thinking of how anaphors enter the grammar (e.g., Haspelmath 2013) is compatible with the process in English, while the present analysis can accommodate both patterns and explain the emergence of anaphors in a broader sense.

**Chapter 7** concludes the thesis and outlines directions for further research.

## Terminological guidelines

I will use the label *complex anaphors* throughout the thesis to refer to anaphors that exhibit a complex morphological structure, as illustrated in (1-3) above. Unless stated otherwise, *anaphor* will be used as a shortened equivalent term to complex anaphor. *Simple pronoun* or *pronoun* will denote the neutral, non-reflexive counterpart. *Simple anaphor* will relate to anaphors that are described in the literature as mono-morphemic.

The terms *pronominal elements* will refer to the superset of pronouns and anaphors, and, accordingly, *pronominal dependencies* will refer to any sort of coreference relation established via the use of a pronominal element of either type. Likewise, *pronominal licensing* or *anaphoric licensing* will refer to the acceptability of pronouns and anaphors in stated syntactic environments.

The term *reflexive strategies* will be used in accordance with Faltz (1977) and Déchainé and Wiltšchko (2017) for morphological constructions whose semantic contribution is turning an event with two thematic roles assigned to distinct participants into an event with one participant taking both roles (see also Kemmer 1993, Haspelmath 2008). This definition will include simple and complex reflexive and verbal morphemes typical of reflexive actions, will marginally include middle voice morphology and will exclude passive constructions and nominalizations. *Reflexive morpheme* will refer to the non-pronominal component of complex anaphors, following classical grammarian traditions. *Identity morpheme* will refer to the reflexive morpheme in a feature analysis, under the assumption that it realizes the feature of referential identity. Coreference with DPs in the matrix, such as the subject and the direct object, will be referred to as subject coreference and object coreference, respectively. Finally, the term *focus-intensifiers* will denote adnominal and adverbial modifiers that evoke focus-alternatives of the entity they refer to.

Glossed examples will exclude information of tense and aspect inflectional morphemes for simplicity, to the exception of pronominal suffixes with a DP status.



## 2.

### Locality constraints on anaphoric dependencies

Complex anaphors (mostly known as reflexive anaphors) are listed in many grammars as a somewhat mysterious category of the pronominal paradigm. The complex anaphor includes an additional morpheme on top of specifications such as person, gender, number, and animacy, and yet this morpheme is not linked with any semantic property of the noun. Moreover, its distinctive semantic feature of being anaphoric with respect to a preceding DP is also shared by simple pronouns. The only obvious difference between them is that the complex anaphor is more restricted with respect to the range of entities it may select from.

The fact that the complex anaphor reduces the referential options rather than expanding them raises the question of why so many linguistic systems contain two distinct forms, instead of relying on simple pronouns for all anaphoric dependencies. In this sense, the correlation between form and meaning in complex anaphors has to this point remained obscured.

On the other hand, complex anaphors display a sharp contrast with simple pronouns in their syntactic distribution, and this became a primary manner of explanation for them in formal linguistics. By mapping the syntactic environments in which complex anaphors are used, we could conclude that expressing coreference in these environments is the grammatical function of complex anaphors.

It turns out, however, that the distribution of complex anaphors is not easy to capture. Based on contrasts in the possible interpretation that anaphors and pronouns may receive in a direct object position, it seems intuitive to relate the choice of pronominal element to the span of the intended anaphoric dependency. However, syntactic theory has yet to formulate a rule or a set of rules that predict anaphoric licensing accurately across environments.

This chapter discusses previous such attempts, starting with Lees and Klima's (1983) locality-based system, which sets the stage for the rest of the discussion (Section 2.1). I then present the Binding Theory's view of pronouns and anaphors following Chomsky (1981, 1986), and summarize the main points of criticism against it, mostly on the empirical side (Section 2.2).



From this point, the chapter proceeds to examine some of the more well-known responses to this critique, which I divide into four broad lines of analysis:

- (i) Maintaining locality constraints along the lines of Binding Theory, while exempting environments that present a conflict (Section 2.3).
- (ii) Maintaining locality constraints and deriving the variation in anaphoric licensing from independent grammatical mechanisms, such as Spellout and Agree (Section 2.4.)
- (iii) Maintaining locality constraints and including the perspective from which a sentence is uttered as a possible source for local coreference (Section 2.5).
- (iv) Abstracting away from the notion of syntactic locality and deriving the variation from discourse conditions (Section 2.6).

Section 2.7 will conclude the main takeaways toward the current proposal, presented in the following chapter, which calls to maintain locality constraints and derive anaphoric variation from the underlying structure of the embedding constituents.

## 2.1 Anaphors in Transformational Grammar

Lees and Klima (1963) set out to explain how speakers of Modern English learn the difference in meaning between sentences like the ones in (10). The core of their proposal is the rule in (11), which states that a complex anaphor substitutes for a noun that corefers with the subject.

- (10) (a) The boys<sub>1</sub> looked at themselves<sub>1</sub>.
- (b) The boys<sub>1</sub> looked at them<sub>2</sub>.

- (11) *Reflexivization rule* (Lees and Klima 1963: p.19):

A nominal which repeats the subject is replaced by an anaphor.

According to (11), the occurrence of a complex anaphor in object position indicates that the suggested operation took place and assumes an input of two identical nouns. By the same token, the absence of a complex anaphor in (10b) is telling of the subject and object denoting distinct groups of individuals. A pronominalization rule operates after reflexivization and substitutes the remaining instances of coreference with simple pronouns, resulting in the observed contrast.

This analysis led Lees and Klima to ask why, in (12-13) below, the contrast between the simple pronouns and the anaphors does not generate a contrast in reference.

(12) *Unpredictable anaphor licensing in PPs* (Lees and Klima 1963:12-13, 34, 44):

- (a) The men<sub>1</sub> cast a smokescreen around themselves<sub>1</sub>.
- (b) The men<sub>1</sub> found a smokescreen around them<sub>1</sub>.

- (13) (a) John<sub>1</sub> smeared the oil on himself<sub>1</sub>.  
 (b) John<sub>1</sub> ignored the oil on him<sub>1</sub>.

To explain these apparent counterexamples to (11), Lees and Klima argued that the expression of clause-mate coreference via pronouns indicates that (12b) and (13b) are a fusion of two sentences, such that the embedding prepositions *around* and *on* mark reduced relative configurations equivalent to the ones in (14).

- (14) (a) The men found a smokescreen [<sub>CP</sub>(that was) around them].  
 (b) John ignored the oil [<sub>CP</sub>(that was) on him].

A similar reasoning makes the acceptability of both the pronoun and the complex anaphor in (15) an indication that the sentence has two possible derivational histories: The reference to *John* via a pronoun follows from a fusion of the two clauses in (16), while sentence (17) provides input for the reflexivization rule.

(15) John<sub>1</sub> has many books about {him<sub>1</sub>/himself<sub>1</sub>}.

- (16) (a) John has many books.  
 (b) The books are about John.

(17) John has written many books about John.

A similar underlying complexity was taken to explain possessive constructions like *Mary's father* in (18), which Lees and Klima derive from a fusion of the sentences in (19). This step became redundant with the introduction of C-Command (20) by Reinhart (1976), which explains that embedded nouns are not visible antecedents for rules that govern coreference in language.

(18) Mary<sub>1</sub>'s father supports {her<sub>1</sub>/\*herself<sub>1</sub>}. (Lees and Klima 1963: 73)

- (19) (a) Mary has a father.  
 (b) The father supports Mary.

(20) *Constituent-Command* (Reinhart 1976: 36):

Node A C-Commands node B if neither A nor B dominates the other and the first branching node which dominates A dominates B.

The relevance of the C-Command relation to syntax was discovered in coreferential readings of full DPs, and turned out to be useful for the understanding of the regularities in pronouns and anaphors (Chomsky 1981; Reinhart 1983). In this context, the relatively stable judgments that speakers provide for the sentences above served as evidence that the knowledge of language includes the underlying structure of sentences and abstract notions such as C-Command. Still, while the connection between constituent structure and the pronoun-anaphor alternation follows directly from some of the data that Lees and Klima discussed, it is not in itself explanatory. That is, this system does not predict which prepositional phrases would be equivalent to reduced relative clauses or explain the source of syntactic complexity in certain nouns.

Moreover, the fact that the choice between a simple pronoun and a complex anaphor is predictable in verb phrases, but not in prepositional and nominal contexts, undermines the argument that their distribution is governed by arbitrary syntactic constraints. If anaphoric dependencies are restricted due to the architecture of grammar, these restrictions should hold in any given environment, regardless of the syntactic category of the immediate context.

There are two possible ways to understand this selectivity within a locality-based view of anaphors. The first is that a locality-based grammar does not rule out external effects on anaphoric licensing, which may come into play in particular environments, and generate different anaphoric elements than those that follow from syntactic triggers. The second option is that the additional structure that PPs and DPs contribute is not fully understood, which makes it harder to form predictions based on syntactic locality.

As stated, the main claim of this thesis is that both lines of analysis are needed to understand the full distribution of anaphoric elements. I argue that post-syntactic effects on anaphors made their empirical distribution ineffective as diagnostics for the structural subtleties of these environments, making it harder to form predictions moving forward. The following sections will demonstrate that this has been a recurring problem for theories of anaphor licensing, including Binding Theory.

My goal is to utilize the accumulated information on syntactic and pragmatic triggers to anaphors in constructing controlled environments where the distribution of anaphors is predictable. These contexts will eventually reveal that the locality-based nature of anaphoric relations is consistent across syntactic categories.

## 2.2 The limits of Binding Theory

Government and Binding framework (Chomsky 1981) proposed a set of locality constraints similar to Lees and Klima's, in the sense that they restricted anaphors and pronouns to local and non-local coreference, respectively. However, what made Binding Theory revolutionary for the understanding of anaphoric relations is the ways in which coreference and locality were defined.

The set of coreferential relations it aimed to explain was reduced, compared to previous views, from any type of anaphoric reference to instances in which the anaphoric elements are C-Commanded by their antecedents. This means that two nouns that corefer such that neither one C-Commands the other should remain a matter of discourse. Crucially, this framework defined anaphors as only capable of coreference under C-Command.

In terms of locality, Binding Theory replaced top-down definitions such as "clause" or "simple sentence" with domains that are defined from the head up and are limited by the semantic and syntactic operations the head is involved in (theta assignment, case). The differences are summarized in Table 1.

	<b>Transformational grammar</b> (Lees and Klima 1963)	<b>Government and Binding</b> (Reinhart 1976, Chomsky 1981)
<b>Coreference</b>	Any type of coreference	Coreference under C-Command
<b>Locality</b>	Top-down definitions (simplex sentence, clause)	Bottom-up definitions (theta domain, case)

**Table 1:** Locality and coreference between frameworks.

Combining these factors allows for a more flexible definition of locality, while rightfully excluding discourse participants in non-C-Commanding positions as possible antecedents to complex anaphors (e.g., *Mary* in *Mary's father*). The basic rules of the Binding Theory are given in (21).

(21) *The Binding Theory* (adapted from Chomsky 1981):

- (a) Condition A: A complex anaphor is bound in its domain.

- (b) Condition B: A pronoun is free in its domain.
- (c) Condition C: A full NP is free in the sentence.

Since the 1980s and onward, the definitions that aimed to capture the local domain of interpretation (Government Category, Complete Functional Complex, and later Phase) have broadly converged to the minimal phrase containing the anaphoric element and a syntactic subject.

Binding Theory was successful in explaining many data points, primarily in English. Furthermore, several of its assumptions have since received independent motivation, including the implicit subject PRO in non-finite clauses (see Landau 2013 for an overview), and differences between syntactic binding and discourse coreference in terms of processing costs (Nicol and Swinney 1989; Grodzinsky et al. 1993, among many others). However, there are also counterexamples that the Binding Theory failed or did not even attempt to explain. The following points summarize the main gaps in this respect.

(22) *Gaps in the Binding Theory*

- (a) Lack of attention to the larger domains of interpretation exhibited by simple anaphors like French *se*, German *sich* or Icelandic *sig*;
- (b) Failure to explain environments in which both pronouns and anaphors are acceptable;
- (c) No account for cases in which regular pronouns are used for local coreference, such as in Old English or Frisian, with possessive NPs in many languages, and in subsystems like first and second person pronouns in German and French;
- (d) No explanation for the sensitivity of complex anaphors to discourse conditions;
- (e) Constructed to explain pronominal dependencies independently of otherwise needed mechanisms of grammar.

The rest of the literature review will be organized according to the type of responses previous accounts provide to the critical points in (22) in the attempts to capture the behavior of complex anaphors. Section 2.3 presents responses to points (21a, b) that revise the binding conditions such that they do not apply to P anaphors, N anaphors, and simple anaphors (Hestvik 1991; T. Reinhart and Reuland 1993; Pollard and Sag 1992; Büring 2005).

Section 2.4 includes a number of attempts to expand the Binding Theory's empirical coverage while also responding to point (21e) and deriving locality restrictions on anaphoric dependencies from independently motivated grammatical mechanisms. These include the Chain Condition (Fox 1993), the Phase impenetrability condition (Lee-Schoenfeld 2004; Canac-

Marquis 2005; Quicoli 2008; Antonenko 2012; Despić 2015; Charnavel and Sportiche 2016), and Agree (Rooryck and Vanden Wyngaerd 2007).

The third direction, Section 2.5, responds mainly to points (21b,d), by maintaining some version of the binding theory and including the perspective from which a sentence is uttered as a possible modulator of local coreference patterns (Ross 1970; Cantrall 1974; Svenonius 2006; Rooryck and Vanden Wyngaerd 2007; Charnavel and Sportiche 2016; Charnavel 2019, 2020).

Finally, Section 2.6 presents analyses that use counterexamples to the Binding Theory to downplay the role of syntactic locality in the distribution of complex anaphors. These views define complex anaphors by their discourse effects, including empathy (Kuno 1987), accessibility (Ariel 1988; Kemmer 2005), speaker expectation (Kemmer 1993; Haspelmath 2008; Ariel 2008), and discourse prominence (Baker 1995).

The upcoming sections will show that each type of view captures a different aspect of anaphor licensing, and that they do not exclude one another but rather contribute to a more complete understanding of the restrictions on complex anaphors. This suggests that the answer to the question of what complex anaphors are could be that they are simply a wild card used to mark prominence across different modules of grammar. A reason to avoid this conclusion is that it predicts that all complex anaphors should display a chaotic pattern of occurrence like that observed in PPs and DPs. However, the very fact that the particular syntactic environment of an anaphor consistently affects its licensing speaks against this idea. I will show throughout this thesis that controlling for the discourse properties of anaphors in these contexts reveals consistent alternations that map to differences in the syntax.

### **2.3 Excluding P and N anaphors from Condition A**

This section is devoted to frameworks that have become known as “predicate-based”, i.e., views that define locality constraints over predicates rather than anaphoric expressions. Led by Reinhart and Reuland (1993)’s Reflexivity theory, this view has an advantage in explaining variation in anaphoric licensing since it has more information to rely on: not only the properties of the anaphoric terms, but those of the selecting predicates as well. Capturing patterns that are typical for P and N predicates is straightforward in this setting.

Charnavel and Sportiche (2016) noted that predicate-based approaches both over- and under-generates due to their categorical statements, as exemplified in the data below. In my view, this is but an outcome of the mode of analysis in predicate-based views, which

exempts certain anaphoric elements from Condition A. Regardless of these issues, I will argue that the most crucial contribution of Reflexivity over other locality-based views is conceptual and lies in the positive definition of anaphors as markers of coreference rather than as deficient nominal elements.

### 2.3.1 Different binding domains

Attempts to contain counterexamples to the Binding Theory by excluding them from its domain of application generally rely on the idea that there are contexts in which pronouns and anaphors have different domains of interpretation.

Focusing on spatial anaphors, Hestvik (1991) and Buring (2005) argued that the binding of pronouns is their minimal thematic domain, while that of complex anaphors is defined by the nearest subject. The partial overlap between the two domains predicts the existence of domains in which both forms are acceptable. In particular, such discrepancies are expected for heads that project a thematic object but not a subject. To illustrate, the parallel licensing of a pronoun and an anaphor in (23) follows by this analysis from the two binding domains in (24): the pronoun is free in the PP's theta domain (24a), while the anaphor is bound within the IP (24b).

(23) John<sub>1</sub> found a snake next to {him<sub>1</sub>/himself<sub>1</sub>}.

(24) (a) *Pronoun binding domain:*

John<sub>1</sub> found a snake [ next to him<sub>1</sub>.]

(b) *Reflexive binding domain:*

[ John<sub>1</sub> found a snake next to himself<sub>1</sub>.]

Reinhart and Reuland (1991, 1993) and Pollard and Sag (1992) extended this argument to subject-less DPs, proposing that complex anaphors are only visible to Condition A when they have a co-argument. Otherwise, they are not syntactically constrained and may select an antecedent from the discourse according to a separate set of licensing conditions.

Reinhart and Reuland's framework also covers one type of simple anaphors, illustrated mainly with Dutch *zich* and French *se*. They argued that, while simple and complex anaphors are both referentially dependent, complex anaphors mark their selecting predicates as reflexive in the sense of having two coreferential arguments. Some predicates may also be specified as reflexive in the lexicon, in an idiosyncratic fashion. The formal system is given below.

(25) *Reflexivity theory* (Reinhart & Reuland 1993 p.671, 696):

(a) *Definitions:*

A predicate is reflexive iff two of its arguments are coindexed.

A predicate is reflexive-marked iff it is lexically reflexive or one has a SELF anaphor argument.

(b) *Conditions:*

Condition A: An anaphor-marked predicate is reflexive.

Condition B: An anaphor predicate is reflexive-marked.

Chain condition: A maximal A-chain contains exactly one link that is both referentially independent and Case-marked.

In other words, a predicate that takes a complex anaphor must have a coreferential argument (Condition A), and a predicate that has two coreferential arguments must project one of them as a complex anaphor (Condition B). Simple anaphors do not reflexive-mark their predicates, hence their antecedent may be the argument of another predicate. For example, in (26), *zich* is an internal argument of the preposition *achter*, but co-refers with the external argument of the verb *legt* 'put'.

(26) Max<sub>1</sub> legt het boek achter zich<sub>1</sub>.

Max puts the book behind REFL

'Max puts the book behind him.'

In the English equivalent of (26), a complex anaphor would have been acceptable for a different reason: the preposition *behind* would have constituted a subject-less predicate, which conceals anaphors from Condition A. That is, the analysis predicts that DPs and PPs that take one thematic argument would tolerate an anaphor or a pronoun with the same reference, since the pronoun would respect Condition B (no complex anaphor → no coreference), while an anaphor would be exempt from Condition A (no co-argument → no locality restrictions). This is illustrated in (27).

(27) (a) Max<sub>1</sub> rolled the carpet over {him<sub>1</sub>/himself<sub>1</sub>}.

(b) Lucie<sub>1</sub> saw a picture of {her<sub>1</sub>/herself<sub>1</sub>}.

Similarly, Pollard and Sag (1992) argue that complex anaphors that are the sole arguments of a predicate are exempt from locality restrictions. Their proposal is given in less detail but devotes a substantial discussion to the discursive nature of exempt anaphors, arguing that they



must refer to the source from which the sentence is uttered. The effect is demonstrated in (28), where the same text may contain a non-local *himself* if delivered from John's perspective (28a), but not if Mary's perspective is adopted (28b).

(28) *Discourse effects on anaphor licensing (Pollard & Sag 1992 p.274):*

(a) John<sub>1</sub> was going to get even with Mary.

That picture of himself<sub>1</sub> in the paper would really annoy her.

(b) \*Mary was quite taken aback by the publicity John<sub>1</sub> was receiving.

That picture of himself<sub>1</sub> in the paper really annoyed her.

To list the achievements of the predicate-based view, it expanded the empirical coverage of Binding Theory without abandoning the general framework it provides, while also predicting where (though not why) certain discourse effects will emerge. The following subsection will highlight some theoretical and empirical costs, with the main takeaway being that anaphoric dependencies in DPs and PPs are more informative when they are understood with respect to locality constraints rather than as exempt from them.

### 2.3.2 Challenges to predicate-based views

Both Reflexivity theory and Pollard and Sag's approach predict that the two modes of licensing for complex anaphors – local binding and discourse – would be in complementary distribution. Local binding applies to anaphors in argument positions, while discourse (complex) anaphors are embedded in subject-less constituents.

This divide solved persisting empirical problems for the Binding Theory, but compromised some of its original claims, at least with respect to Condition A. Clearly, there is no conflict in assuming a second use pattern for complex anaphors that is pragmatic in nature. Yet if take a restriction against a long-distance interpretation of complex anaphors is taken to be part grammar, it should apply across the board. A more straightforward account of syntactic and discursive anaphors would assume that both types follow constraints that are valid in any environment. An analysis along these lines was made by Charnavel and Sportiche (2016), which I present in Section 2.4.3, and a similar one will be proposed here.

On the empirical side, predicate-based accounts face a challenge of over-generation. The frameworks presented in this subsection all predict that DPs and PPs would categorically exhibit non-complementarity of anaphors, as long as they have no external argument. However, there are at least two types of environments, illustrated below, where P and N

embedded anaphors are complementary: prepositions that denote a trajectory rather than a fixed location (29), and picture NPs that are complements of creation verbs (30).

(29) *Complementary P anaphors (adapted from attested web examples):*

- (a) John<sub>1</sub> aimed the gun at { \*him<sub>1</sub>/himself<sub>1</sub> }.
- (b) Kobe Bryant<sub>1</sub> likes to pass the ball to { \*him<sub>1</sub>/himself<sub>1</sub> } off the backboard.
- (c) Try to copy the folder<sub>1</sub> into { \*it<sub>1</sub>/itself<sub>1</sub> }.
- (d) Can Superman<sub>1</sub> see through { \*him<sub>1</sub>/himself<sub>1</sub> }?

(30) *Complementary N anaphors:*

- (a) John wrote a book about { \*him<sub>1</sub>/himself<sub>1</sub> }.
- (b) Lucie took a picture of { \*her<sub>1</sub>/herself<sub>1</sub> }.

As formulated, predicate-based accounts (Hestvik 1991, Pollard and Sag 1992, Reinhart and Reuland 1993) predict non-complementarity in these cases, contrary to the reported judgments. That is since they define prepositional and nominal predicates as independent binding domains that should enable pronoun coreference.

A third problem concerns the status of simple anaphors, and more precisely, the diversity they show in their pronominal status. According to Reflexivity theory, simple anaphors are characterized as dependent pronouns that do not mark their predicates as reflexive. This definition is too broad considering recorded differences across simple anaphors in various properties.

First, it was noted that simple anaphors vary in their binding domains. Certain simple anaphors may be interpreted only across infinitival clauses (e.g., Russian *sebjä*, Rappaport 1986), while others may cross tensed clause (Faroese *sær*, Fischer, Kiss, and Alexiadou 2015). Second, some simple anaphors were noted to have an independent prosodic and semantic status that allows taking narrow focus, coordinating with other DPs and standing as fragment answers, while others fail in all these contexts. These contrasts were observed between closely-related cognates such as German *sich* and Dutch *zich* (Ruigendijk et al. 2004; Ruigendijk and Schumacher 2020), Latin *se* and Spanish *se* (Maddox 2021), and even between instances of German *sich* (Ruigendijk and Schumacher 2020), and French *se* (Siloni forthcoming).

To conclude, predicate-based frameworks were revolutionary in being able to balance the complementarity of pronouns and anaphors in direct object positions and their parallel licensing when embedded under PPs and DPs. However, they did not reach full empirical

coverage, and had to abandon the claim that locality constraints are a core aspect of linguistic dependencies.

The following section presents views that prioritized the latter issue and derived locality constraints from basic mechanisms of the computational system, as formulated within the Minimalist Program. I will show that these views achieved greater theoretical coherence but were less empirically predictive.

## 2.4 Locality in minimalism

This section examines previous responses to the main theoretical claim against Binding Theory, namely, that since it only regulates coreference between nouns it is detached from general mechanisms of grammar (e.g., Rooryck and Vanden Wyngaerd 2011). The objective of this line of analysis was to derive locality constraints as a consequence of independently motivated grammatical processes, with the hope of improving empirical coverage.

The following subsections present some of the frameworks that reduced the Binding Theory to the fundamentals of the architecture of grammar under the minimalist program.

### 2.4.1 Movement and reflexive marking

Reuland (2001, 2005) was one of the first to point out that, under the assumptions of minimalism and generative semantics (Chomsky 1995; Heim 1998), Conditions A and B do not hold as syntactic rules but rather as descriptive generalizations observed at the interface with semantics. In the case of anaphors, the main challenge remained explaining why they are restricted by distance, when semantic dependencies such as variable binding – illustrated below in (31) – only require C-Command.

(31) Every linguist<sub>1</sub> should resist when faceless forces threaten **his**<sub>1</sub> field.

(Reuland 2005: 4)

To explain why a semantic operation like operator binding expresses sensitivity to distance, Reuland follows a line of work that relates anaphor binding with movement (Lebaux 1983, Pica 1987, Reinhart and Reuland 1991, Fox 1993, Grohmann 2003), and suggest that the *self* morpheme is a predicate of predicates (type  $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$ ) that has to move due to a type mismatch with the pronoun (type  $e$ ). The target of movement is the predicate, which *self* marks as having two identical arguments. A sentence like (32a) should then have the LF in (32b).

- (32) (a) John<sub>1</sub> invited himself<sub>1</sub> to the party.  
 (b) LF: John<sub>1</sub> self<sub>2</sub>-invited t<sub>2</sub> him<sub>1</sub> to the party.

Based the guidelines in Reinhart and Reuland (1991, 1993), Reuland limits this process to the minimal theta domain that contains the anaphor and a predicate that has the capacity to undergo reflexivization (i.e., it has two argument slots). That is, anaphors that occur in P and N phrases remain exempt. In such contexts, the *self* morpheme is not interpretable in the reflexive sense but rather marks the pronoun as a logophoric pronoun that refers to the source of perspective.

To complete the analysis, Reuland suggests that simple anaphors should also move because they lack some of their  $\phi$ -features, which is resolved by Agree when they merge with a fully specified antecedent. If both the simple and the complex anaphor involve covert movement, each for its own reasons (deficiency and marking, respectively), their sensitivity to distance follows without further assumptions.

This still says nothing about the referential possibilities of pronouns, and there is in fact a controversy in agree-based approaches as to whether these should be limited at all. Reuland's framework maintains the Chain Condition as an independent principle of grammar, which states that any local chain of coindexed elements should have only one element that is referentially independent, and case marked. This is respected if the lower element is a *zich*, or if it is a pronoun adjoined by a *self* morpheme, which now has two separate grammatical functions, given below in (33).

(33) *Complex anaphors in Reuland (2001, 2005, 2011):*

- (a) *Semantic function:* marking predicates as containing co-bound arguments  
 (b) *Syntactic function:* preventing pronouns from violating the Chain Condition.

The *self* morpheme is therefore assigned two positions, both independently motivated: in surface position, *self* enables the coreferential reading of the pronoun, while in its LF position it enforces this reading by specifying that the verb describes a reflexive action. This leads to obligatory movement at LF, which in turn evokes locality constraints, and explains much of the cross-linguistic properties of complex anaphors, including their morphological structure.

A number of issues remain unexplained, the first being how this analysis extends to ECM verbs, which take complex anaphors as objects, but cannot be understood as reflexive. To illustrate, in an example like (34), the *self* morpheme fulfils its syntactic function, but it is not clear how it can combine with the overall semantics of the sentence without crashing at LF.

(34) John proved himself to be guilty.

If I understand correctly, Reuland suggests that *prove* is reflexive in the configurational sense, i.e., it assigns accusative case to an object that is coreferential with its subject. Supposedly, *self* can associate to this abstract notion of reflexivity alongside the more canonical reflexivity. This explanation works, but it raises the question of whether the more abstract notion is not the meaning of *self* in the general case.

Moreover, if the *self* morpheme selects predicates, one may ask why its canonical position is on the pronoun (as seen in 35a), and not on the verb (35b). The Chain Condition is easily avoided in (34b) by omitting the pronoun altogether, giving rise to the same meaning in a simplified fashion.

- (35) (a) He tested himself for malaria.  
(b) He self-tested for malaria.

In my understanding, if *self* were of type  $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$ , we would have expected structures like (34b) to be at least as common as the ones in (34a), but the facts are that *self* anaphors have a much broader distribution than direct modification of the verb by *self*. I will show further in Section 3.2.1 that the meaning of  $V\ x\text{-}self$  and *self*-V are not equivalent.

Finally, the notion of exemption remains too strong, as already noted in Section 2.3.2. First, it is not the case that all P and N anaphors are exempt from locality constraints, and second, the statement that *self* morphemes shift their meaning from reflexivity to logophoricity when local coreference is not available does not explain how these functions are related.

The crucial aspects of this analysis, which will help shaping the current one, are the compositional definition of the complex anaphor, and the capacity to explain the division of labor between simple pronouns, complex anaphors, and simple anaphors. According to Reuland, the complex anaphor consists of a regular, fully specified pronoun, and an additional morpheme that imposes a coreferential reading. In contrast, the simple anaphor, at least in Dutch, is deficient, and needs to share part of its meaning with the antecedent to get interpreted. This predicts that complex anaphors would be better in preserving the argument structure properties of transitive verbs and keeping a distinction between the role of performing an action and that of receiving its consequences.

This prediction is confirmed in a typological survey by Kemmer (1993), who looked into various reflexive strategies in an attempt to describe the semantics of the middle voice. Kemmer observes a tendency in which “heavy” and “light” reflexive strategies across languages represent

different level of participant distinguishability. Simple anaphors may fall in each of these categories, but the generalization remains that complex morphology is positively linked with a higher level of specification in describing transitive actions. Similar observations are made by Bar-Asher Siegal (2020) for simple and complex reciprocal anaphors.

To sum up, the joint insight of Kemmer (1993) and Reinhart and Reuland (1993) (and consequent work by Reuland) sketches out the typology shown in Table 2.

	<b>Simple anaphor</b> Dutch <i>zich</i>	<b>Simple pronoun</b> English <i>him</i>	<b>Complex anaphor</b> English <i>himself</i>
Distinct participants	×	✓	✓
Reflexive actions	✓	×	✓

**Table 2:** Semantic properties of anaphoric elements

This table captures a small subset of the anaphoric elements in the world’s languages. Nonetheless, it shows a trend that explains why languages preserve multiple pronoun options. Each of these elements is uniquely positioned to express a particular class of actions: the pronoun describes actions with two distinct participants, the complex anaphor describes actions with two distinct roles assigned to the same participant, and *zich*-type anaphor describe actions that merge two roles together. I will argue that, to the extent that we maintain a locality-based system to explain the existence of complex anaphors, this type of information should be its starting point.

The following subsections turn to questions concerning the design of a possible locality-based analysis. Section 2.4.2 raises the question of whether the ban on simple pronouns in reflexive actions is specified in the grammar or a result of pragmatic pressures. I will present previous evidence that Condition B effects follow from competition with other anaphoric elements, and then explain why competition cannot be the only cause for the observed patterns. Section 2.4.3 will look into the domain of interpretation for anaphors under phase theory and conclude with the understanding that it is impossible to explain their diverse patterns of licensing without taking the role of perspective into account.

### 2.4.2 Are pronouns restricted?

I stated in the previous subsection that there is no consensus that pronouns are limited by syntax. In this debate, influential works such as Safir (2004) and Rooryck and Vanden Wyngaerd (2011) have argued that pronouns have no up-front limitation on reference, and that

Condition B effects follow from pragmatic mechanisms of anaphor resolution rather than the architecture of grammar.

This argument goes back to Reinhart (1983), Grodzinsky and Reinhart (1993), and Levinson (1987), and is echoed in many post Government and Binding analyses of pronouns, including views that rely on discourse conditions rather than locality (Section 2.6). The idea is that simple pronouns are in themselves unrestricted in reference, and are only understood as locally disjoint because the complex anaphor is specified for this reading and hence logically stronger. Speakers are motivated to use the more restricted form to reduce ambiguity, which charges the simple pronoun with an inference of local disjointness through Gricean reasoning (Huang 2000). The same intuition is captured by the morphological Elsewhere principle, which states that “the application of a more specific rule blocks that of a later more general one” (Anderson 1992: 132, quoted in Rooryck and Vanden Wyngaerd 2011: 45). The effect of competition on pronoun meaning was further demonstrated for resumptive pronouns (Sichel 2014).

In other words, once we have an explanation for the behavior of anaphors, competition generates the effects of Condition B without further assumptions based on the logic that whatever anaphors are, pronouns are not. The problem this raises, however, is that a competition account predicts that Condition B effects will depend on the existence of a designated strategy for local coreference. Rooryck and Vanden Wyngaerd present evidence in this direction from various grammars and sub-grammars that lack a specialized anaphor for local coreference, and show no restriction on pronouns (Old English; Child Dutch and English; first- and second-person pronouns in German, Dutch and French; Frisian; Haitian Creoles). An illustration of a coreferential use of a simple pronoun is given in (36).

(36) *Local coreference in Old English pronouns (König and Siemund 2000: 32a):*

Ða behydde Adam **hine** & his wif eac swa dyde.  
and hide A. him.ACC and his wife also same did  
“and Adam hid himself and his wife did the same”

The case of English is particularly relevant, since restrictions on pronoun reference have emerged in the same chronological period in which the complex anaphor became a convention (Keenan 1994; Peitsara 1997; Lange 2001). Yet there is also evidence that this prediction is too strong, namely that Condition B effects are not exclusive to grammars or to contexts that include a competing alternative to the pronoun. Specifically, Hebrew and Arabic demonstrate a different cline, in which Condition B effects predate the emergence of the complex anaphor.

These languages had limited reflexive strategies in their previous stages of Biblical Hebrew (1<sup>st</sup> millennium BCE) and Qur’anic Arabic (7<sup>th</sup> century CE). The main strategy of both languages was a morphological strategy of reflexive verb templates, which is restricted to the Middle voice. An additional strategy featured body-part terms such as ‘head’, ‘soul’, ‘eye’, and ‘heart’ with pronominal suffixes. Such expressions could generate coreferential readings in object positions (e.g., ‘he rescued his soul’), but also retained their lexical meaning, which limited their use to specific contexts and to subjects that have these body parts. The combination of these strategies leaves out many contexts in which coreferential pronouns have no competing alternative. Despite these facts, Biblical Hebrew and Qur’anic Arabic were highly restrictive in pronoun coreference, and those contexts in which pronouns are interpreted locally do not coincide with those that lack competition (Gesenius 1813; Wright 1898; Sarfatti 1992; Bassel 2023).

Further evidence that Condition B effects do not easily reduce to competition comes from recent psycholinguistic studies, which reveal speaker bias against pronoun coreference in contexts where the anaphor does not generate the same meaning (Pratley et al. 2023). Others showed that this bias shows in object positions before listeners have a chance to process the pronoun and evaluate competing forms (Burnsky et al. 2022; Bakay et al. 2023; see Bassel and Keshev forthcoming for an overview).

I will go into more detail into the historical emergence of complex anaphor in Section 6. At this point, it suffices to state that the current analysis will need to explain Condition B effects regardless of competition.

### **2.4.3 Locality in Phase Theory**

The goal of this subsection is to introduce the notion of a local domain in minimalist syntax and see whether it allows greater empirical coverage than past definitions.

According to Phase Theory (Chomsky 2001, 2008; Legate 2003) the import of syntax to sound and meaning occurs in cycles that correspond to discrete units, known as phases. Each phase head triggers the delivery of its C-Command domain all at once to the interface with phonetic form (PF) and semantics (LF), in a step known as spell-out. The categories that form phase heads are those that project full intonational and semantic units: *v*, C, and D.

The phase should constitute an independent unit at both interfaces, which means that each phase should be realized as a full intonational phrase and check all the grammatical functions



that are related with the head. That is, obligatory movement, agree, thematic assignment and the EPP should all be completed within the phase. The logic behind this proposal is that a phase arriving at the interface with missing links will crash at LF.

After spellout takes place, word order becomes fixed by linearization, and the linguistic material can no longer be accessed for syntactic computation, a constraint known as the Phase Impenetrability Condition or PIC, given in (37). This excludes the left edge position, which remains accessible and enables long-distance operations between phases.

(37) *Phase Impenetrability Condition (Chomsky 2000, p.108):*

In phase  $\alpha$  with head H, the domain of H is not accessible to operations outside  $\alpha$ , but only H and its edge.

Since Lee-Schoenfeld (2004), many authors relied on the Phase Impenetrability Condition to drive locality constraints on anaphors, including Canac-Marquis (2005), Johnson (2007), Quicoli (2008), Antonenko (2012), Despić (2015), Charnavel and Sportiche (2016), among others. The general understanding across these works is that anaphors are specified for coreference within their accessible domain, which includes the phase they occur in and the edge of the neighboring phase. Phase-based definitions of the binding conditions are given in (38).

(38) *Locality by phase:*

(a) Condition A: An anaphor must be bound in its accessible phases.

Condition B: A pronoun must be free in its accessible phases.

(Canac-Marquis 2005: 9)

(b) Condition A: a plain anaphor must be interpreted within the spell-out domain containing it.

(Charnavel & Sportiche 2016: p.30)

Deriving Condition A from the PIC spares the need to define a special domain of interpretation specifically for anaphors. Yet this does not explain why such elements should exist, what makes them more limited in reference, and what prevents pronouns from local interpretation within the phase. In other words, Conditions A and B remain descriptive rather than explanatory.

To see whether the definition of phases allows greater empirical power, recall the dataset that remained unexplained since Lees and Klima (1963), repeated below from (13).

(39) (a) John<sub>1</sub> ignored the oil on {him<sub>1</sub>/himself<sub>1</sub>}. (Repeated from 13)

(b) John<sub>1</sub> smeared the oil on {\*him<sub>1</sub>/himself<sub>1</sub>}.

- (40) (a) Lucie saw a picture of {her<sub>1</sub>/herself<sub>1</sub>}.  
 (b) Lucie took a picture of {\*her<sub>1</sub>/herself<sub>1</sub>}.

If the phase limits the interpretation of complex anaphors, then the data set in (39-40) indicates that P and D have a diverse status as phase heads. If we can state independently what makes PPs and DPs independent phases, we would achieve a predictive locality-based account of complex anaphors that enables optionality. This would be my goal in Chapters 4 and 5.

Assuming that the same local domain limits pronouns and anaphors leaves open the question of contexts that allow free choice. In other words, whether a head D or P is a phase or not, it should be consistent in the anaphoric dependencies it enables, contrary to the situation in (39a) and (40a). However, this is only true for sentences that have one possible parse. If a DP or a PP can combine into different phases without affecting the linear order, it would lead to an appearance of free choice in pronominal elements.

Canac-Marquis (2005) proposed a solution in this direction for PPs, under the assumption that non-selected PPs have relative flexibility in merging sites. The logic here is that a PP that gets a theta role from the verb must be spelled out as part of the *vP* phase, but an adjunct can be spelled out in a higher phase.

To illustrate with (39a), the PP *on x* is not selected by the verb *ignore* and can merge either within the *vP* or above it (Canac-Marquis proposes *AgrP*). This in turn determines which pronominal element will be used for subject coreference. When the PP is spelled-out in the higher phase (CP), it finds the subject in the same phase, which triggers a complex anaphor. A pronoun is used otherwise.

I argue that this analysis has sufficient expressive power to account for the variation in anaphoric licensing, and that it only fails in doing so since it does not take all the possible antecedents into consideration. In particular, it does not take into account the effect of point of view, which was pointed out since at least Ross (1970). The examples in (41) demonstrate cases where it seems that the antecedent of the anaphor is the speaker, whether it is represented in the sentence or not.

- (41) *Point of view effects on anaphoric licensing* (Ross 1970: pp. 231-232)
- (a) As for {me/myself}, I will not be invited.  
 (b) As for {her/\*herself}, she will not be invited.  
 (c) Glinda<sub>1</sub> said that, as for {her<sub>1</sub>/herself<sub>1</sub>}, she will not be invited.

- (d) Harry<sub>1</sub> told Glinda<sub>2</sub> that, as for {her<sub>2</sub>/\*herself<sub>2</sub>/him<sub>1</sub>/himself<sub>1</sub>}, {she/he} will not be invited.

The contrast between (40a) and (40b) shows that the speaker can be referred to by an anaphor in a way that a third-person entity cannot be. A similar contrast is observed between (41c) and (41d), where a third person is stated as the source of the information, and can subsequently license a long-distance anaphor. This shows that any locality-based account for the distribution of anaphors in English must take the source of information into account.

## 2.5 Local perspectives

A number of the frameworks presented so far recognized that discourse conditions intervene in anaphoric licensing, yet remained largely agnostic with respect to when and how they are involved. Binding Theory focused only on the syntactic properties of anaphors, Reinhart and Reuland syntactically characterized the environments in which discourse qualities may become relevant, Pollard and Sag demonstrated that being the source of information is one of these conditions, and Phase-based approaches generally ignored this aspect. The role of discourse has therefore remained a separate dimension in the licensing of anaphoric dependencies.

The goal of the current section is to present some of the works that linked the discourse qualities of complex anaphors to their syntactic distribution and extended the coverage of locality constraints such that they would also take the source of the utterance into consideration. This line of analysis is influenced by studies of West African languages that employ distinctive morphological marking for pronouns that refer to the speaker in the context of reported speech (Hagège 1974; Clements 1975; Comrie 1981; Culy 1997; Nikitina 2012; Bassi et al. to appear, among many others).

Following insights from this literature, various authors began treating reference to the source of speech or thought on a par with coreference between overt DPs (see Maling 1984; Charnavel and Sportiche 2017 for Icelandic; Kuno 1987; Sells 1987; Zribi-Hertz 1993; Reuland 2001; König and Gast 2002 for English; Charnavel and Sportiche 2016 for French; Kuroda 1973; Oshima 2004 for Japanese; Huang and Liu 2001 for Mandarin; Major and Ozkan 2018 for Turkish; Angelopoulos and Sportiche 2023 for Greek)

This allowed for anaphors licensed by the source of information to be understood in terms of locality constraints, with the source functioning as a local implicit antecedent. As a result, any limitations that exist independently on information sources – such as being animate and capable of delivering information – joined the set of restrictions on anaphors in the relevant contexts.

### 2.5.1 Speech act binders and deictic centers

An early attempt at the idea that the source of information can serve as antecedent for anaphors alongside overt DPs was made by Ross (1970), who suggested that declarative sentences contain a covert speech act phrase ‘*I’m telling you ...*’ above the overt content.

Ross used this proposal to explain the observation that non-local anaphors such as those in (42) are limited in their reference to actual or reported discourse participants. This is obviously not the case for anaphors with overt antecedents, which can refer to entities that are external to the conversation.

(42) *Person effects on anaphoric licensing: Speaker* (Ross 1970: 28-30):

- (a) As for {me/myself}, I will not be invited.
- (b) As for {her/\*herself}, she will not be invited.
- (c) Glinda<sub>1</sub> said that, as for {her<sub>1</sub>/herself<sub>1</sub>}, she will not be invited.

(43) *Person effects on anaphoric licensing: Addressee* (Ross 1970: 22-23):

- (a) Physicists like {you/yourself} are a godsend.
- (b) Physicists like {him/\*himself} are a godsend.
- (c) I told Albert<sub>1</sub> that physicists like {him<sub>1</sub>/himself<sub>1</sub>} are a godsend.

Cantrall (1974) suggested a functional implementation of the same idea, where the world knowledge of the speaker is represented by a grammatical primitive “Viewpoint” at the left periphery of the clause. Cantrall argues that non-complementarity in cases like (44) (for those who accept it) arises from the existence of multiple viewpoint reference options, and that controlling for it resorts in complementarity, as seen in (45).

(44) They<sub>1</sub> placed their guns in front of {them<sub>1</sub>/themselves<sub>1</sub>}.

(Lees and Klima 1963: 163)

(45) (a) They<sub>1</sub> placed their guns, as they looked at it, in front of {\*them<sub>1</sub>/themselves<sub>1</sub>}.

- (b) They<sub>1</sub> placed their guns, as I looked at it, in front of {them<sub>1</sub>/\*themselves<sub>1</sub>}.

(Cantrall 1974: 16a)

Another grammatical representation of deictic perspective was suggested by Svenonius (2006) and Rooryck and Vanden Wyngaerd (2007, 2011), who posed Axial Part as part of the functional hierarchy of the PP. AxPart encodes the different regions around an entity (in English: *front, back, top, bottom*). In this analysis, a covert AxPart projection is responsible for binding effects in spatial prepositions, as it may refer to the entity in the spatial relation or to the speaker/observer, as shown in in (46).

(46) *Alternations in AxPart binding (Rooryck and Vanden Wyngaerd 2007: 54):*

Mary<sub>1</sub> kept her childhood dolls close to {her<sub>1</sub>/herself<sub>1</sub>}.

(47) (a) *Subject-centered interpretation:*

[<sub>IP</sub> Mary<sub>1</sub> kept her dolls [<sub>Place</sub> close [<sub>AxPart</sub> Ø<sub>1</sub> [<sub>K</sub> to [<sub>D</sub> herself<sub>1</sub>

(b) *Observer-centered interpretation:*

[<sub>Evid</sub> Speaker<sub>1</sub> [<sub>IP</sub> Mary<sub>2</sub> kept her childhood dolls [<sub>Place</sub> close [<sub>AxPart</sub> Ø<sub>1</sub> [<sub>K</sub> to [<sub>D</sub> her<sub>2</sub>

This analysis both over- and under-generates with respect to P anaphors in a similar way to predicate-based approaches, in that it is designed to apply to Spatial PPs categorically. If non-complementarity is triggered by a projection in the prepositional spine, it is expected to arise in all PPs of spatial relations. However, many of the authors here (e.g., Hestvik 1991, Reinhart and Reuland 1992) rightfully point out that not all Spatial PPs permit free variation of pronouns and anaphors. Examples are given in (48).

(48) *Complementarity in P anaphors (Lees and Klima 1963: 12, 34, Wechsler 1997: 39):*

(a) John<sub>1</sub> smeared oil on {\*him<sub>1</sub>/himself<sub>1</sub>}.

(b) The men cast a smokescreen around {\*them<sub>1</sub>/themselves<sub>1</sub>}

(c) Bubba<sub>1</sub> tossed the beer can to {\*him<sub>1</sub>/himself<sub>1</sub>}.

(d) Corporal Crump<sub>1</sub> pinned the medal onto {\*him<sub>1</sub>/himself<sub>1</sub>}

If the anaphors in (49) are bound by an AxPart, what blocks it from referring to the speaker/observer and licensing a pronoun? In other words, if the pronominal choice in Spatial PPs were determined by AxParts, we would have to conclude that these sentences cannot express the perspective of an external entity. This is not a desired result since all of these scenes can be embedded in attitude contexts and be described from someone else's point of view. Examples are given in (49).

(49) (a) Marry thinks that John<sub>1</sub> smeared oil on {\*him<sub>1</sub>/himself<sub>1</sub>}.

(b) John saw the men cast a smokescreen around {\*them<sub>1</sub>/themselves<sub>1</sub>}

- (c) Kiki was surprised that Bubba<sub>1</sub> tossed the beer can to { \*him<sub>1</sub>/himself<sub>1</sub> }.
- (d) We photographed Corporal Crump<sub>1</sub> pinning the medal onto { \*him<sub>1</sub>/himself<sub>1</sub> }

The fact that a shift of perspective does not affect the acceptability of anaphors in these environments suggest that they are obligatorily bound by their overt antecedent, which in turn explains the pronouns' restricted interpretation. However, English speaking consultants accepted a logophoric licensing in these environments as well.

- (50) (a) Marry<sub>1</sub> thinks that John smeared oil on herself<sub>1</sub>.  
 (b) John<sub>1</sub> saw the men cast a smokescreen around himself<sub>1</sub>.  
 (c) Kiki<sub>1</sub> was surprised that Bubba tossed the beer can to herself<sub>1</sub>.  
 (d) We<sub>1</sub> photographed Corporal Crump pinning the medal onto ourselves<sub>1</sub>.

The acceptability of logophoric anaphors in (50) alongside the obligatory use of an anaphor that expresses local coreference in (49) is problematic for exemption theories, as they predict that local and non-local anaphors would appear in complementary sentence positions. Examples (49) and (50) suggest that the same sentence positions may license both local and logophoric instances of *x-self*.

This is theoretically plausible: If anaphoric dependencies are locally restricted, this restriction should hold in any environment, including PPs and DPs. By the same token, if the source of information is a potential licensor of complex anaphors, there is no a priori reason for this possibility to be limited to anaphors embedded within PPs and DPs. It turns out that expanding the empirical coverage of locality-based accounts requires not to exclude certain environments but rather to implement a more general mechanism that links binding with perspective.

### 2.5.2 Logophoric pronouns

Charnavel and Sportiche (2016) and Charnavel (2019, 2020) proposed that all long-distance anaphoric dependencies may be reduced to local ones due to the presence of covert logophoric pronouns at the phase level.

Logophoric pronouns are realized in attitude contexts, which may be triggered by predicates of thought and speech but are not limited to them. Any sentence may potentially reflect an attitude, and the only restriction is that there can be only one source of perspective per domain. The logophoric pronoun gets its reference from the discourse, and, in turn, locally-binds complex anaphors in its C-Command domain.

These definitions entail the following restrictions on logophoric binding: first, inanimate objects cannot license anaphors via logophoric binding, since they cannot be established in the discourse as point-of-view holders and are therefore invisible to logophoric pronouns. Charnavel and Sportiche demonstrate this with examples such as (51), in which an anaphor is acceptable when it refers to *Marie*, but not when it refers to *La Terre* ‘The Earth’, despite the similar syntactic conditions in which it occurs.

(51) *Animacy alternation in French (Charnavel and Sportiche 2016: 29 and fn 28):*

- (a) Marie<sub>1</sub> s’inquiète souvent du fait que ses enfants dépendent d’elle<sub>1</sub>-même.  
‘Mary is often worried that her children depend on herself.’
- (b) La Terre<sub>1</sub> est dégradée par les êtres humains même si leur  
avenir ne dépend que d’elle<sub>1</sub>-(\*même).  
‘The earth is degraded by human beings even if their future depends on it(\*self).’

Second, there can only be one logophoric antecedent per spell-out domain, since it should be impossible to adopt the perspective of two different entities at the same time. The examples in (52) demonstrate that it is indeed impossible to use two different logophorically-bound anaphors referring to two different entities (*Christel* and *Agnès*) in the same phase, although each is acceptable on its own (Charnavel analyzes *son propre* ‘her own’ as a local anaphor, on a par with *elle-même* ‘herself’).

(52) *No logophoric binding of multiple, disjoint entities in the same phase (Charnavel 2019: 56):*

- (a) Christel<sub>1</sub> pense qu’Agnès<sub>2</sub> a dit que l’avenir de son<sub>1</sub> fils dépend à la fois d’elle<sub>1</sub>-même et de son<sub>2</sub> (\*propre) fils.  
‘Christel<sub>1</sub> thinks that Agnès<sub>1</sub> said that her<sub>1</sub> son’s future depends both on herself<sub>1</sub> and her<sub>1</sub> (\*own) son.’
- (b) Christel<sub>1</sub> pense qu’Agnès<sub>2</sub> a dit que l’avenir de son<sub>1</sub> fils dépend à la fois d’elle<sub>1</sub>-(\*même) et de son<sub>2</sub> propre fils.  
‘Christel<sub>1</sub> thinks that Agnès<sub>1</sub> said that her<sub>1</sub> son’s future depends both on her<sub>1</sub>(\*self) and her<sub>1</sub> (\*own) son.’

In (53), Charnavel further demonstrates that using different logophorically-bound anaphors in separate phases is grammatical, as predicted.

(53) *One logophoric binder per phase (Charnavel 2019: 32)*

Joseph pense que [ les affreuses photos de moi-même ] sont [de magnifiques portraits de lui-même].

‘Joseph thinks that the horrible pictures of myself are magnificent portraits of himself.’

This framework therefore derives logophoric licensing from the grammatical properties of the logophoric pronoun and from its ability to maintain coreference with the antecedent. It does not ask what the syntactic category of the minimal constituent that the anaphor appears in is, but rather if the antecedent is animate, if it is the local source of perspective, and if there is no competing source that may clash with it.

A similar approach is taken with respect to the ban on logophoric licensing in direct object positions. Recall that a primary motivation for predicate-based approaches was to explain why long-distance anaphors surface in embedded contexts, which led to the exclusion of these contexts from locality constraints. Charnavel and Sportiche approach this question from the opposite direction, asking what excludes logophoric licensing from targeting direct object anaphors.

Charnavel (2019) argues that anaphors licensed by logophoric centers are not fit for direct object positions for prosodic reasons. The argument goes as follows: direct object positions are prosodically weak positions that license clitic pronouns in Romance languages. In English, this is reflected in the licensing of phonetically reduced pronominal elements such as ‘*im* and ‘*imself*’, as in (54).

(54) *Direct object anaphors are prosodically weak (adapted from Ahn 2014):*

Sara<sub>1</sub> worried that John<sub>2</sub> accidentally burnt {‘*er*<sub>1</sub>/‘*imself*<sub>2</sub>}.

Ahn (2014) analyzed production data of sentences like (55) and showed that the natural pronunciation of English anaphors is deaccented. This is expected following Schwarzschild’s (1999) Givenness theory: since anaphors take local antecedents, their meaning is always given in the context, hence the default deaccenting.

(55) *Complex anaphors are prosodically weak (Ahn 2014: 30):*

Q: Why were there some screams during the competition?

A1: Several people injured their PARTNERS.

A2: Several people INJURED themselves.



According to Charnavel (2019), deaccenting does not occur when anaphors are licensed by logophoric centers, which is evident in their resistance to phonetic reduction, as seen in (56).

(56) *Logophoric x-self cannot be prosodically weak:*

Max boasted that the queen invited Lucie and {\*‘imself/himself} for tea.

This is also expected from Schwarzschild (1999), assuming that the antecedents of logophors are implicit and hence not given in the local context. Logophoric licensing of anaphors is not entirely blocked in direct object positions but rather not accessible due to the prosodic conditions. Changing the prosodic contour through narrow focus on this position would remove this ban. This is compatible with previous observations: Reinhart and Reuland’s (1993) noted that logophors occur in argument positions (though not direct objects) when they are under focus. Experimental work by Sloggett and Dillon (2017) showed further that long-distance direct-object anaphors improve under logophoricity in orthographic stimuli, which could be explained by focus assignment (another possible analysis of focused anaphors is presented in Section 2.6.3).

Charnavel’s framework can therefore derive all the restrictions that are unique to long-distance anaphors from properties of their antecedents, while maintaining locality constraints, on a par with local anaphors. It also exposes a fundamental challenge in predicting the distribution of complex anaphors: If a logophoric pronoun can be realized in each phase, we cannot rely on patterns of anaphoric licensing as diagnostics for syntactic structure.

This, however, does not mean that anaphors are not sensitive to syntactic effects beyond those induced by the logophoric center. To the contrary, this framework provides the tools to isolate occurrences of the complex anaphors that are not bound by logophoric pronouns and determine whether their distribution is indicative of locality-based constraints.

A final and crucial property of logophoric licensing to be discussed here is their limited cross-linguistically distribution compared to the general phenomenon of complex anaphors. I will show that Hebrew anaphors block a logophoric interpretation altogether, and that this accounts for many of the differences setting Hebrew and English anaphors apart.

### 2.5.3 Hebrew anaphors are non-logophoric

The Modern Hebrew anaphor *acm-x* is similar to the English *x-self* in its distributive properties, i.e., it requires a local antecedent, banned from subject position and exhibits general complementarity with the simple pronoun. However, there is a set of cases in which *acm-*

departs from its English counterpart, which overlaps with the set of environments previously explained by logophoric binding.

The following examples suggest that the discrepancies between the Hebrew and English anaphors are caused by a lack of logophoric reading for the former. First, *acm-x* can never be used to refer to the speaker or the addressee if these were not explicitly mentioned.

(57) *Hebrew anaphors – no reference to covert discourse participants*  
(compare with 42-43):

- (a) be-noge'a {el-aj/ \***le-acm-i**}, ani lo uzman.  
in-regard to-1SG to-REFL-1SG I NEG invited.IRR  
'As for me/\*myself, I will not be invited'
- (b) fizika'im { kamo-xa/ \***kmo acm-exa**} hem matat el.  
physicists like-2SG.M like REFL-2SG.M COP gift.of god  
'Physicists like you/\*yourself are a godsend.'

Second, *acm-x* cannot be used to convey the mindset of the entity it refers to. In the following examples, only the pronoun is grammatical, regardless of the chosen perspective.

(58) *No long-distance coreference with the perspective center* (compare with 45, 52a):

- (a) hem henixu et ha-ekdaxim {lejad-am/ \***lejad acm-am**}.  
they placed ACC DET-guns next.to-3PL.M next.to REFL-3PL.M  
'They placed the guns next to them/\*themselves.'
- (b) miri xošešet še-ha-jeladim šel-a tlujim { ba/ \***be-acm-a**}.  
M. worries that-DET-children of-3SG.F depend on.3SG.F on-REFL-3SG.F  
'Miri worried that her children depend on her/\*herself.'

This gap between Hebrew and English anaphors could follow from their different diachronic development (cf. Chapter 6), or from a lack of covert logophoric antecedents in Hebrew. In this thesis, I will not aim to provide a conclusive answer to the source of this difference, but rather exploit this property of Hebrew in order to tease apart local anaphoric dependencies and logophoric licensing.

This property will be useful for the next and final section of this chapter, where I present a cluster of views that aim to account for the distribution of complex anaphors as a discourse phenomenon.

## 2.6 Independent discourse conditions

The past five sections presented various locality-based treatments of anaphors, which defined them either as deficient (“anaphor cannot form long distance dependencies”), or as extra-specified (“anaphors mark local dependencies”). In this mindset, any discourse or semantic effect on anaphor licensing that cannot be reduced to syntactic locality remained a side issue. The closing section of this chapter is focused on approaches that look at this phenomenon from the opposite direction and define anaphors as a tool thorough which speakers communicate subtle information beyond the basic operation of reference to real world entities.

The basic idea is that if the grammar provides more than one pronominal element, it enables the creation of a hierarchy between referents, such that the more complex form iconically indicates a more prominent entity. Parameters that were argued to be encoded this way include speaker’s empathy (Kuno 1987), accessibility in working memory (Ariel 1988, Kemmer 2005), expectations (Kemmer 1993, Haspelmath 2008, Ariel 2008), and discourse prominence (Baker 1995).

In the upcoming section, I will show that these factors indeed have observable effects on anaphoric licensing, and yet that it is easier to reduce them to locality constraints than the other way around.

### 2.6.1 Empathy and physical contact

Empathy Theory (Kuno 1972, 1987, 2004) rejects the idea that anaphors are restricted to a local interpretation, and proposes instead that the distance from the antecedent is one of many interacting parameters. Kuno presents many different measures and conditions that are meant to have an accumulative effect on anaphoric licensing. The two most relevant ones for the current purposes are quoted below.

(59) *Complex anaphors in Empathy Theory (Kuno 1987: pp. 68, 164)*

- (a) *Semantic Constraint on Reflexives:* Reflexive pronouns are used in English if and only if they are the direct recipients or targets of the actions represented by the sentences.
- (b) *Awareness Condition for Picture Noun Reflexives:* Use of a picture noun reflexive is obligatory if the referent of the reflexive perceives the referent of the picture noun as one that involves them. Use of a picture noue non-reflexive pronoun is obligatory otherwise.

Kuno gives particular attention to spatial PPs, and states that spatial expressions are more likely to employ anaphors when they refer to a situation of direct physical contact between referents. Representative examples are given in (60-62).

(60) *Physical contact effects in English (Kuno 1987:1.1-1.2, Rooryck and Vanden Wyngaerd 2007: 11):*

- |          |  |                        |
|----------|--|------------------------|
| (a)      | John <sub>1</sub> put the blanket under him <sub>1</sub> .                 | = general spatial area |
| (b)      | John <sub>1</sub> put the blanket under himself <sub>1</sub> .             | = physical contact     |
| (61) (a) | John <sub>1</sub> hid the book behind him <sub>1</sub> .                   | = general spatial area |
| (b)      | John <sub>1</sub> hid the book behind himself <sub>1</sub> .               | = physical contact     |
| (62) (a) | Mary <sub>1</sub> kept her childhood dolls close to her <sub>1</sub> .     | = in her proximity     |
| (b)      | Mary <sub>1</sub> kept her childhood dolls close to herself <sub>1</sub> . | = close to her body    |

This interpretive effect tends to be salient for English speakers, and was recently demonstrated experimentally by Bryant (2022). Yet, it does not fully account for those contrasts that were left unexplained by principles of syntactic locality and point of view shifts. To illustrate this, note that sentences (12-13), repeated again as (63-64), show no correlation between physical contact and pronoun selection.

- |          |  |                       |
|----------|--|-----------------------|
| (63) (a) | The men <sub>1</sub> cast a smokescreen around themselves <sub>1</sub> . | (Repeated from 12-13) |
| (b)      | The men <sub>1</sub> found a smokescreen around them <sub>1</sub> .      |                       |
| (64) (a) | John <sub>1</sub> smeared the oil on himself <sub>1</sub> .              |                       |
| (b)      | John <sub>1</sub> ignored the oil on him <sub>1</sub> .                  |                       |

Both options indicate direct contact in (64), and no contact in (63). This is not necessarily problematic for Kuno's system, since it states upfront that there are many other factors that interact to determine the choice of pronominal element in a given context. However, this line of argument would have to ignore the fact that the reported judgement of parallel licensing in (65-66) and similar cases is rather stable across speakers and languages, despite the lack of supporting context, and with matched properties for the antecedents. The following sentences show that the same pattern of anaphoric licensing emerges in the Hebrew equivalents.

- (65) (a) ha-xajalim<sub>1</sub> jacru masax ašan sviv **acm-am**<sub>1</sub>.  
 DET-soldiers created screen.of smoke around REFL-3PL.M  
 'The soldiers created a smokescreen around themselves.'

- (b) ha-xajalim<sub>1</sub> gilu masax ašan sviv-**am**<sub>1</sub>.  
 DET-soldiers discovered screen.of smoke around-3PL.M  
 ‘The soldiers discovered a smokescreen around them.’

- (66) (a) joni<sub>1</sub> marax et ha-neft al **acm-o**<sub>1</sub>.  
 J. smeared ACC DET-oil on REFL-3SG.M  
 ‘Yoni<sub>1</sub> smeared the oil on /himself<sub>1</sub>.’

- (b) joni<sub>1</sub> hit’alem me-ha-neft al-**av**<sub>1</sub>.  
 J. ignored from-DET-oil on-3SG.M  
 ‘Yoni<sub>1</sub> ignored the oil on him<sub>1</sub>.’

I take this to indicate that binding effects in Spatial PPs cannot be reduced to physical contact. On the other hand, we have seen that it is possible to reduce physical contact effects to locality constraints. If we follow the joint insights of Rooryck and Vanden Wyngaerd (2007) and Charnavel and Sportiche (2016), we could assume that the physical contact meaning is triggered by identity between the anaphor and the local center of perspective.

An effective way to test this hypothesis is to examine similar contexts in Hebrew. Section 2.5.3 has shown that Hebrew anaphors systematically fail when the only available antecedent would be a covert representation of the source. If this is the manner of licensing of the anaphors in (60-62), we should not be able to construct them in Hebrew using complex anaphors. However, if complex anaphors are licensed in this environment by virtue of a physical contact interpretation, as Kuno suggests, they should be licensed in Hebrew under the same conditions. The sentences in (67) confirm that the Hebrew equivalents are only acceptable with pronouns, whether the intended meaning involves physical contact or not.

(67) *No effect of physical contact (compare with 60-62):*

- (a) joni<sub>1</sub> hestir et ha-sefer { me’axorav<sub>1</sub>/ \***me’axorey acm-o**<sub>1</sub> }.  
 J. hid ACC the.book behind.him behind REFL-3SG.M  
 ‘Yoni hid the book behind him/\*himself.’
- (b) joni<sub>1</sub> sam et ha-smixa { mitaxtav<sub>1</sub>/ \***mitaxat le-acm-o**<sub>1</sub> }.  
 J. put ACC the.blanket under.him under to-REFL-3SG.M  
 ‘Yoni put the blanket under him/\*himself.’
- (c) miri<sub>1</sub> šamra et ha-ca’acu’im šel-a karov { ele’a<sub>1</sub>/ \***le-acm-a**<sub>1</sub> }.  
 M. kept ACC the.toys of-3SG.F close to.her to-REFL-3SG.F

‘Miri kept her toys close to her/\*herself.’

In addition, it can easily be shown that Picture DP examples do not always adhere to the awareness condition in (59b). For example, in (68), an anaphor is acceptable despite the explicit lack of awareness by the antecedent of her representation in the picture.

(68) Lucie mistakes the pictures of herself as old photos of her mother.

Note that (68) can be translated to Hebrew along with an anaphor, as seen in (69). This suggests that it does not require a logophoric pronoun but rather depends on a more conservative structural antecedent. The options provided in the literature include a covert DP subject within the DP along the lines of infinitive clauses (Chomsky 1986; Landau 2001), and binding by the external subject when the DP lacks a subject of its own (Charnavel and Bryant 2023).

(69) lusi bilbela et ha-tmuna šel acm-a im tmua ješana šel ima šel-a.  
 L. confused ACC DET-picture of REFL-3SG.F with picture old of mother of-3SG.F  
 ‘Luci confused the picture of herself with old pictures of her mother.’

The facts discussed in this section show that, while the effects pointed out in Kuno adequately describe a subset of the data, analyzing them as a consequence of locality constraints rather than turning to an alternative explanation is both simpler and corroborated by the Hebrew data.

## 2.6.2 Accessibility and expectations

Another highly influential implementation of the idea that the choice between an anaphor and a pronoun could reflect discourse-pragmatic factors is demonstrated in Accessibility Theory (Ariel 1988, 1991, 2001). Ariel suggests that anaphors and pronouns express different degrees of ease in the retrieval of the referent from the speaker’s memory, which depends on factors like the recency of its previous mention, its general proximity to the speaker, the time period in which it first entered the speaker’s long-term memory, etc.

In this system, a complex anaphor marks entities that are more highly accessible, either due to short distance from their antecedent or to some kind of discourse prominence. Kemmer (2005) showed in greater detail how various factors related to accessibility derive both local and non-local occurrences of English *self*-anaphors.

This analysis was shown to have predictive power over corpus data, and yet it faces a similar challenge to Kuno’s empathy measures. Both systems cannot explain contrasts that

emerge out of context, where previous mentions, familiarity levels and other properties are completely balanced. The contexts in which accessibility always makes the right prediction are ones of local coreference.

Taking a different approach, typological studies of anaphors, including Faltz (1977), Kemmer (1993), Comrie (1999), and Haspelmath (2008) have highlighted the role of speakers' expectations for local coreference in the licensing of anaphors, noting that anaphors are more common with predicates that are typically other-directed (e.g., *hit*, *talk with*) than with self-directed predicates (e.g., *wash*, *shave*). In the latter case, speakers across languages tend to avoid complex anaphors and prefer lighter strategies, such as middles, reflexive verbs, or simple anaphors.

Ariel (2008) reaffirms these intuitions in a survey of the Helsinki English texts corpus, examining first the frequency at which English predicates occur with coreferential and disjoint objects, and second, the extent to which these predicates take anaphors as objects. For example, the verb *hit* had one case of subject-object coreference out of 110 occurrences, while *dress* had only 4 cases of disjointness in 60 occurrences. This is perfectly compatible with the fact that *hit* requires an anaphor for coreference, while *dress* mostly appears as an intransitive verb. Ariel argues that language speakers pick up on such trends and develop an inference of disjointness for verbs that are typically other-directed, as suggested before on theoretical grounds (Levinson 1987).

However, it should be noted that not all predicates show this correlation. Spatial prepositions, which I discuss in detail in Chapter 4, also tend to embed disjoint objects, similarly to transitive verbs. Since such prepositions assign a thematic role of location, they canonically select nouns referring to places rather than individuals. It is therefore safe to assume that they do not refer back to the subject in the majority of their occurrences and should trivially give rise to a disjointness inference.

Bassel and Keshev (forthcoming) compared the rate of disjointness in Spatial PPs, transitive verbs and three introverted verbs (*dress*, *scratch*, *wash*) in English TenTen2020 web corpus, and found that Spatial PPs are largely disjoint, similarly to transitive verbs and contrary to introverted ones, as seen below.

(70) *Frequency of disjoint reference in verbs and spatial prepositions:*

Context	Introverted V	Transitive V	Place P
% disjoint ref.	47%	99.1%	96%

An expectation-based system should therefore predict that an anaphor will be preferred to a coreferential pronoun in spatial PPs, yet Ariel reports a sweeping preference for coreferential pronouns as objects of spatial prepositions, providing the examples in (71).

(71) *Corpus examples of spatial coreference (Ariel 2008: 36-37, my emphases):*

- (a) He<sub>1</sub> felt something **near** him<sub>1</sub>.
- (b) Can you<sub>1</sub> reach the pepper **behind** you<sub>1</sub>.
- (c) You<sub>1</sub> were a little **behind** yourself<sub>1</sub>.

I emphasized the prepositions and their arguments to show that these examples seem to align with locality constraints rather than statistical biases. In (71a-b), the underlined arguments of the preposition (or spatial adverb) are disjoint, and the pronoun expresses coreference with the higher subject. However, in (71c), the preposition is the main predicate of the clause such that the subject is its argument. Since the two coreferential nouns are co-arguments, both Binding Theory and predicate-based approaches predict that the second argument in linear order would surface as an anaphor.

A further prediction of this line of analysis engages with the cross-linguistic robustness of complex anaphors. Having to overcome disjointness inferences motivates the use of a morphologically marked pronoun, which explains the occurrence of complex anaphors across languages. Similar trends to that found by Ariel are reported in comprehensive diachronic studies of the *x-self* anaphor (Keenan 1994; König and Siemund 2000b; Bergeton and Pancheva 2012), which show that early uses of the pronoun-*self* compound target verbs that most often take disjoint arguments (e.g., verbs of harm).

I discuss the diachronic development of anaphors in further detail in Chapter 6, where I argue that expectations and statistical learning form contributing, yet insufficient conditions for the emergence of complex anaphors across languages. The main claim there will be that targeting verbs with a low chance for subject-object coreference is characteristic of anaphors that are derived from focus particles, and that body-part anaphors show different trends.

### 2.6.3 Discourse prominence

Up to this point, none of the reviewed analyses referred to the focus-intensifying use of complex anaphors, which seems correct given their different distributive and interpretive properties. However, since these forms are homophones, there could be cases where focused instance of long-distance anaphors would be compatible with an intensifier analysis. This is



the direction taken by Baker (1995), who argued that there are conditions where focus intensifiers may omit their head noun and become superficially indistinguishable from anaphors.

The licensing conditions of such demi-anaphors should then converge with those of intensifiers: Discourse prominence, narrow focus, and contrastive meaning appealing to contextual alternatives, as in the following example repeated from (3).

- (72) The queen **herself** came to the party.  
 = Alternative entities to the queen also came.

Baker's line of evidence focuses on examples from British literature, including cases in which long-distance *self*-anaphors are shown to refer to entities that are disjoint from the center of perspective. A relevant example is given in (73), which quotes Jane Austen's 'Pride and Prejudice'.

- (73) *Non-logophoric licensing of long-distance x-self (Baker 1995: 9b):*

Sir William Lucas<sub>1</sub>, and his daughter Maria, a good humored girl, but **as empty-headed as himself**<sub>1</sub>, had nothing to say that could be worth hearing, and were listened to with about as much delight as the rattle of the chaise.

The evaluative phrase "empty-headed" rules out the antecedent *Sir William Lucas* as the perspective center for the anaphor *himself*. What licenses it, according to Baker, is the mention of an alternative entity, his daughter, which is established as less prominent in the discourse.

The link between unbound anaphors and focus was previously noted by Reinhart and Reuland (1993), who showed that focused uses of *x-self* are free from the predicate-based system and may occur in argument positions, as shown in (74).

- (74) *Focus licensing of x-self (Reinhart and Reuland 1993: 27a-c)*

- (a) This letter was addressed **only to myself**.
- (b) Why should the state always take precedence **over myself**?
- (c) Bismarck's impulsiveness has, as so often, rebounded **against himself**.

These three examples evoke a contrastive meaning, either via an overt focus particle (74a), a comparative statement (74b), or the broader context (74c). Reinhart and Reuland argue that such use of unbound anaphors under focus is possible since focus raising allows the anaphor to escape its binding domain, i.e., the environment which their analysis considers as visible to Condition A.

- (75) LF: **himself**<sub>1</sub> [Bismarck's impulsiveness has, as so often, rebounded against e<sub>1</sub>]  
(Reinhart and Reuland 1993: 27d)

Reflexivity theory does not directly engage with the discourse conditions that make the anaphors in (74) acceptable. Baker proposes they the following two conditions control the discourse factors that affect anaphoric licensing, which align with rules proposed independently for focus-intensifiers in, e.g., König and Siemund (2000b).

- (76) *Contractiveness Condition* (Baker 1995: 21)

Intensives are appropriate only in contexts in which emphasis or contrast is desired.

- (77) *Condition of Relative Discourse Prominence* (Baker 1995: 22)

Intensives can only be used to mark a character who is relatively more prominent in the discourse.

The proposal that focus-intensifiers may appear headless and thus be formally identical to complex anaphors explains any case of non-complementarity as only allowing for pronouns in argument position. What seems to be a complex anaphor is in fact an adjunct on a pronoun argument, which itself deletes due to phonetic resemblance to the intensifier. A sentence like (78a) below would therefore get the structure in (78b), with the empty category representing a null element referring to John.

- (78) (a) John<sub>1</sub> saw a snake next to himself<sub>1</sub>.  
(b) John<sub>1</sub> saw a snake next to [ $\emptyset$ <sub>1</sub> himself].

My main argument against reducing all long-distance anaphors to intensifiers comes from their different prosodic properties. Intensifiers evoke focus alternatives as part of their meaning and are therefore predicted to become unacceptable when focus targets a neighboring element. The following examples show that this is the case with a classic focus-intensifier (79a), but not a long-distance anaphor (79b).

- (79) *Lack of focus: Intensifiers vs. long-distance anaphors*

- (a) The QUEEN (\*herself) came to the party.  
(b) Max boasted that the queen invited Lucie AND himself for tea.

Furthermore, if long-distance anaphors were intensifiers, there was no explanation for their degrading in inanimate contexts, as focus-intensifiers are natural with inanimate antecedents. However, Chapter 5 will present clear evidence from Hebrew that headless

intensifiers exist, hence it cannot be ruled out that some long-distance cases in English are licensed in this way, too.

## 2.7 Conclusion

This chapter discussed various accounts for variable anaphoric licensing, particularly in PPs and DPs, since these are syntactic constituents in which the anaphor/pronoun complementarity often collapses. I argued that the idea of locality constraints on coreferential relations remains motivated across frameworks due to the local nature of various other grammatical operations, and yet that their empirical coverage has so far remained partial.

I pointed out that these empirical gaps are due to a multitude of sources for structural variation, a recap of which is given in (80).

(80) *Sources of variation in anaphoric licensing:*

- (a) Thematic status: Selected constituents are spelled out with their selecting predicate; non-selected constituents may merge as part of a separate phase (Hestvik 1993, Reinhart and Reuland 1993, Canac-Marquiz 2005).
- (b) Covert subject: Constituents that could otherwise host pronouns may introduce a PRO subject binding a local anaphor (Chomsky 1986, Landau 2010)
- (c) Logophoric pronouns: Constituents that occur in attitude contexts may contain a covert pronoun referring to the center of perspective, which serves as a local antecedent (Ross 1970, Charnavel and Sportiche 2016, Charnavel 2019)
- (d) Headless intensifiers: Focus intensifiers with null heads are indistinguishable from complex anaphors. (Baker 1995)

In the following chapter, I will combine the insights presented throughout this survey into a new perspective on complex anaphors, which will allow reducing the contrasts observed across environments to one of the configurations listed in (80).

### 3.

## Identity features

The goal set for this thesis is to explain the grammatical phenomenon of complex anaphors. The analysis should ideally account for the recurring properties that these anaphors exhibit across languages:

- (i) Complex morphological structure
- (ii) Locality restrictions on interpretation and alternation with simple pronouns
- (iii) Homophony with focus-intensifiers

The proposal, in short, is that the base-generated DPs are assigned unique indices during spellout, which make all DPs in the same spell-out domain disjoint by default. Obtaining co-valuation between any two arguments in this setting requires stating that they are identical. In pronouns, this is done through an identity feature, which is realized overtly as a *self* morpheme. Intensifiers are instances in which the same morpheme applies to the contextual alternatives of a DP through interaction with focus, which generates the meaning that x is not its alternatives.

In the upcoming chapter, Section 3.1 presents the details of the proposal. Section 3.2 provides evidence for the compositionality of complex anaphors. Section 3.3 explains non-complementarity with pronouns. Section 3.4 summarizes the main points and proposes an outlook for the subsequent chapters.

### 3.1 Proposal

I propose that the seemingly unrelated properties of complex anaphors – complex structure, locality effects, and synonymy with intensifiers – follow from the content of the non-pronominal residue (e.g., *self*, *acm*): a pronominal feature that marks identical reference between DPs at the phase level. The definition of complex anaphors is given in (81).

(81) Complex anaphors are pronouns with a feature [ID] that presupposes referential identity.

Pronouns in themselves consist of a set of features, including definiteness,  $\phi$  features, animacy, or case. Without committing to how these meanings are integrated together, I will assume that the complex anaphor is a simple pronoun plus one feature that denotes identity.

Why is this feature required? This question arises since anaphoric reference is one of the hallmarks of pronouns in the broad sense, and it does not need marking. I take the reason to follow from the procedure of spellout, which sends the DPs in its domain to the interfaces all at once. Considering the data presented throughout this thesis, I conclude that DPs that are spelled-out together are assigned unique indices during the transfer from the syntax to the semantics. This excludes DPs that are the product of movement, which arrive at the point of spellout with the same index. The rule is stated in **Error! Reference source not found.**

(82) Base-generated DPs are sent to the interface with unique indices

This rule does not prevent DPs with different indices from having the same value, but simply suggests that, unless stated otherwise, phase-mate DPs are read as disjoint. I assume the indexing mechanism in Heim and Kratzer (1998), Heim (1998), in which every DP moves and leaves behind a trace bound by a lambda operator. Each spellout will see a new assignment of unique indices, which would bear no relation to those of the previous spellout. I will therefore propose that, within the spellout domain, DPs are either declared as co-valued, or are understood as disjoint, and that there are no such restrictions on co-valuation between spellout domains.

(83) Conditions A+B: Unique indices are understood as disjoint unless stated otherwise.

This leaves two possible types of strategies for a speaker that wishes to describe a reflexive action: reducing the lower DP (deletion strategy) or stating that two DPs are identical (marking strategy). Reuland's (2011) and Rooryck and Vanden Wyngaerd's (2011)  $\phi$ -deficient anaphors exemplify the first type. Deficient anaphors will not receive a unique index during spellout, and would then be valued by their antecedent at LF, leading to co-valuation. Other deletion strategies omit the object DP altogether and assign two thematic roles to the subject. This includes, for example, the reflexive verb template HITPA'EL in Hebrew and zero-anaphor constructions in English, which target verbs such as *wash* or *dress* (Siloni 2003). As stated in Section 2.4, these strategies allow describing reflexive actions at the cost of changing the transitivity of the verb and leading to additional semantic effects and contextual restrictions.

In this sense, complex anaphors have a unique capacity to obtain local coreference by stating that the two arguments are coreferential without otherwise affecting the meaning of the sentence. The core idea of this analysis, that the *self* morpheme is a marker of identity, has a long tradition since Reinhart and Reuland (1993), and is most often described as a feature of verbs (Reuland and Winter 2009; Reuland 2011; Antonenko 2012; Sauerland 2013; McKillen 2016; Charnavel and Sportiche 2022). The drawback of this line of analysis, as just stated, is that it does not explain why complex anaphors preserve the voice properties of the verb while direct marking of the verb for reflexivity does not.

I propose to overcome this by specifically defining the *self* morpheme in complex anaphors as a feature of pronouns, not verbs. Proposals along this line were recently made by Bruening (2021) and Bassi (2021), which differ mainly in the way they describe the mechanism of marking. Bruening adopts the view of features as presupposition triggers, following Sauerland (2013), whereby *self* morphemes presuppose local coreference in the pronouns they occur with. In Bassi's framework, the same morpheme is a syntactic feature with no semantic content, which obtains the value [+REFL] if the pronoun has an antecedent in the local context.

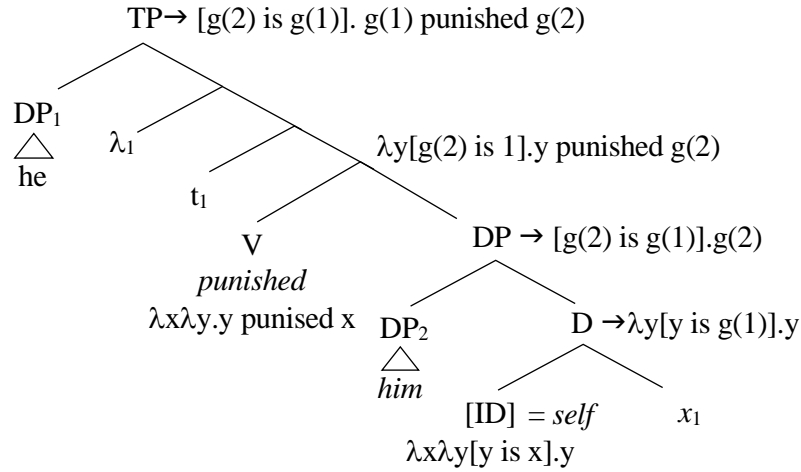
For the current purposes, I will adopt the presuppositional approach since it explains how the feature imposes co-valuation on the pronoun. I will assume that the complex anaphor enters the derivation as a pronoun with an unvalued identity feature, which is part of the head D (following Bassi 2021). By spellout, the pronoun is assigned a unique index, and the identity feature introduces a variable that receives an index from a C-Commanding DP through operator binding. The identity feature then triggers a presupposition that the two arguments are identical.

(84) *Identity feature:*

$$\llbracket \text{ID} \rrbracket = \lambda x[\lambda y.x \text{ is } y].x$$

I take the morpheme *self* to realize the value [+ID]. I use a metalinguistic identity statement so as not to be confused with a mathematical notion of equality. I will show in Section 3.2 that co-valuation is not understood as equality, but rather conforms to a broader notion of identity, in which the anaphor has to select an entity from the same set of referents as the higher DP. The following diagram illustrates the operation of [ID] in a simple sentence, ignoring tense information.

(85) He punished himself.



The DP *John* and the pronoun *him* are each assigned unique indices. The variable in [ID] is bound by the operator that binds the trace of *John*. [ID] then triggers a presupposition that *himself* is the John. This procedure excludes long distance antecedents since the identity feature has to be valued as late as spellout so that it can realize phonetically as a *self* morpheme. In comparison, bound pronouns do not require marking at PF, and can be bound by DPs beyond their spellout domain.

If *John* were in a non-C-Commanding position, as in (86), its operator could not have bound the variable, and it would be excluded as an antecedent. The anaphor *himself* would then be understood as co-valued with John's dog. John will also get a unique index, but it would bear no relation to the index on *him* since they fall in different spellout domains. This means that the pronoun would be able to refer to John withing marking.

(86) [John<sub>2</sub>'s dog]<sub>1</sub> punished {him<sub>2</sub>/himself<sub>1</sub>}.

If the context changes such that the presupposition is no longer valid, [ID] will delete along with the variable, as suggested by one of the meanings available for (87). This observation was made before by Sauerland (2013), McKillen (2016), Bruening (2021), and Bassi (2021), who noted that pronominal features can alternate in ellipsis sentences. In this case, the identity feature deletes and leaves behind a simple pronoun.

(87) John's dog punished himself before John did.

Meaning A: John's dog punished himself before John punished himself.

Meaning B: John's dog punished himself before John punished **him**.

### 3.2 Explaining the meaning of anaphors

Complex anaphors have been described as semantically corresponding to bound variables (Reinhart 1983, Heim and Kratzer 1998), reflexive verbs (Reinhart and Reuland 1993 and many others), or traces of movement (Grohmann 2003), for good reasons. All these phenomena are capable of generating the meaning of co-variation, i.e., when a variable is not assigned a specific reference in the world but rather varies with the denotation of some QP, as seen in (88). Reducing complex anaphors to either of these phenomena gives a straightforward account of these facts.

- (88) (a) Every girl<sub>1</sub> disappoints her<sub>1</sub> mother.  
 (b) Every girl self-tested for Malaria.  
 (b) Every girl<sub>1</sub> seemed t<sub>1</sub> tired.  
 (b) Every girl<sub>1</sub> disappointed herself<sub>1</sub>.

The current section will focus on readings that are nonetheless attested for the complex anaphor and not for the other constructions in order to see what we lose in the conflation of complex anaphors to any of the other categories. More specifically, I will show that complex anaphors can convey additional forms of identity over bound variables. These including strict identity in VP ellipsis and the type of identity that emerges in “wax museum”, known in the literature as a Proxy Reading (Jackendoff 1992; Reuland and Winter 2009; Sportiche 2014) or Different Guise Reading (Ruigendijk et al. 2004).

	Co-variation	Strict identity	Proxy reading
Reflexive verbs	✓	*	*
Bound pronouns	✓	*	✓
Traces	✓	*	*
Complex anaphors	✓	✓	✓

**Table 3:** Different types of identity

#### 3.2.1 More than reflexive verbs

Section 2.4.1 illustrated that *self* anaphors can generate a similar meaning to direct *self* marking on the verb, as in *testing x-self* and *self-testing*. Yet it is not the case that all *self*-V constructions



match the corresponding V *x-self* phrases in meaning. For example, *self-identify* allows only a subset of the meanings related with *identify x-self*. This requires explanation if we assume that the two constructions are matched at LF.

The answer I proposed here is keeping a distinction between pronominal and verbal identity morphemes. My current goal is to show that this makes accurate predictions with respect to other meaning difference between *self* anaphors and *self* verbs. This relates to the observations made by Kemmer (1993) for the level of “participant distinguishability”, which she correlates with complex reflexive strategies. Since reflexive verbs require one less morpheme compared with complex anaphors (the pronominal affix), they are less complex and should have a lower capacity to describe reflexive actions with two distinct roles. A clear demonstration of this difference is seen in the ability of complex anaphors to refer to proxies of their antecedents (statues, pictures, etc.), which does not extend to reflexive verbs.

To illustrate, in the context of Madame Tussauds wax museum, it is possible to understand a sentence like (89) as describing an action in which the artist Ringo caused harm to the statue that represents him.

(89) Ringo harmed himself.

This meaning does not exist for the *self*-marked version of the verb harm, seen in (90). This sentence can only mean that the individual referred to as Ringo (person or statue) harmed the same individual.

(90) Ringo self-harmed.

This shows, again, that *self-V* accounts for a subset of the meanings delivered by V *x-self*, and moreover, that the complex anaphor is an independent argument in a way that is not open for an implicit object of a reflexive verb. The following sentences demonstrate the same contrast with the Hebrew complex anaphor *acm-x* (91a) and the reflexive HITPA’EL template (91b).

(91) (a) ringo hilbiš et acm-o.

R. dressed ACC REFL-3SG.M

‘Ringo dressed himself.’ [✓Ringo dressed Ringo, ✓Ringo dressed statue]

(b) ringo hitlabeš.

R. dressed.REFL

‘Ringo dressed.’ [✓Ringo dressed Ringo, \*Ringo dressed statue]

I conclude from these contrasts that, if *self* was a feature of verbs, which would mean that forming a reflexive verb was a step in the interpretation of the complex anaphor, it would not have left an argument slot open for the pronoun, and proxy readings would not have existed for anaphors.

A final point I wish to raise with respect to *self*-modified verbs is that, in English, it seems that at least some of them are derived from nominalizations, as evident in the case of the de-nominalized verb *self-destruct* which is attested alongside *self-destroy*. In Hebrew, marking events by *acm*- morphemes is only possible for nouns, not verbs, as illustrated for the root š.r.t ‘to serve’ in (92). The only way to understand (92b) is as if *acmo* is a direct object of the verb *šeret* that occurs without the accusative case marker *et*.

(92) *Event modification of Hebrew acm-*

- |              |            |
|--------------|------------|
| (a) šerut    | acm-i      |
| service.SG.M | REFL-1SG.M |
| (b)*šeret    | acm-o      |
| served.3SG.M | REFL-3SG.M |

The fact that *self*- and *acm*- can or must combine with nouns, is expected if the identity feature is originally a nominal element and not a verbal one. I will therefore assume that, in complex anaphors, the identity feature marks a relation between DPs that does not involve the verb.

### 3.2.2 More than bound variables

We have established that complex anaphors are different enough from reflexive verbs to justify the return to an argument-based system and a search for a mechanism that allows interpreting the identity feature on the pronoun. The mechanism I proposed is one in which the feature introduces a variable that gets bound by the operator that assigns an index to higher DPs. This makes the meaning of a complex anaphor one step away from a bound variable, which raises the question whether this complication is really needed.

It can be shown that bound variables can also deliver a wax museum reading. In a sentence like (93), the pronoun *her* can refer to the respective statues of the singers.

(93) *Context: The workers of Madame Tussauds are rearranging the display in one of the halls of the museum and need to consider requests from the artists whose statues should be installed there.*

Every singer<sub>1</sub> thinks she<sub>1</sub> should be in the front.

Could we then go back to assuming that the anaphor is itself a bound variable? I will argue that the answer is no if we wish to also preserve the strict readings of anaphors. Consider first the following VP ellipsis sentences, which include simple pronouns.

(94) John likes his dog. Bill does, too.

(a) John<sub>1</sub> [<sub>VP</sub> likes **his**<sub>1</sub> dog] and Bill<sub>2</sub> does [<sub>VP</sub> like **his**<sub>1</sub> dog], too. (strict identity)

(b) John<sub>1</sub> [<sub>VP</sub> likes **his**<sub>1</sub> dog] and Bill<sub>2</sub> does [<sub>VP</sub> like **his**<sub>2</sub> dog], too. (sloppy identity)

(95) Every kid likes his dog. John does, too.

(a)\* Every kid<sub>1</sub> [<sub>VP</sub> likes **his**<sub>1</sub> dog] and John<sub>2</sub> does [<sub>VP</sub> like **his**<sub>1</sub> dog], too. (strict)

(b) Every kid<sub>1</sub> [<sub>VP</sub> likes **his**<sub>1</sub> dog] and John<sub>2</sub> does [<sub>VP</sub> like **his**<sub>2</sub> dog], too. (sloppy)

In (94), the pronoun *his* can be either coreferential with or bound locally by *John*, and this is reflected by the available meanings in the ellipsis site. The silent pronoun can either replicate their original reference in the elided constituent (strict identity) or establishing a local antecedent by replicating the relation in the original constituent to the elided one (sloppy identity). This gives (94) two possible interpretations: one in which Bill likes John's dog (94a), and one in which Bill likes his own dog (94b) (cf. Fiengo and May 1994; Doron 1999; Johnson 2001, and Merchant 2005 for VP-ellipsis; and Landau 2018 for NP-ellipsis). However, in (95), the pronoun can only be bound by the quantified DP, and a corresponding bound reading is the only one available in the elided VP, i.e., the sentence does not have the meaning the John likes the kids' respective dogs.

We have already seen that the complex anaphors are more permissive in this sense and do allow strict readings. It could be claimed that this is due to a logophoric use the allows the elided anaphor to be bound between clauses. Yet this type of reading would have disappeared under inanimate antecedents, and this does not seem to be the case. This is illustrated in (96), which has a reading in which the thermostat shut down the engine.

(96) The engine shut itself down before the thermostat did.

I understand this to mean that the strict reading of anaphors raises when the element that gives it a bound variable denotation disappears, which would not have been possible if the anaphor were itself a bound variable. A similar argument can be raised against the analysis of complex anaphors as traces of local movement that get spelled out to respect anti-locality constraints (Grohmann 2003).

As stated, traces are also assumed to get interpreted through operator binding, and there is no way to delete this and leave behind the meaning of a regular pronoun. That is, the strict readings of (87) and (96) are predicted to be impossible in a trace analysis. To illustrate, in (97), the trace in the elided VP cannot refer to anyone by Bill, and this also rules out proxy readings. The trace in (98) has to refer to the same Ringo that the subject refers to.

(97) John<sub>1</sub> seemed t<sub>1</sub> tired. Bill did, too.

(98) Ringo<sub>1</sub> seemed t<sub>1</sub> tired.

Note that traces are mirror image of reflexive verbs with respect to the independence of arguments: Reflexive verbs have only one syntactic argument that receives thematic assignment typical of two arguments; A-chains consist of two syntactic positions that are one and the same semantically (i.e., they cannot relate to more than one reference and thematic role). In any case, only one argument is represented, unlike in the case of anaphors and pronouns.

I conclude that the range of meanings in complex anaphors requires the two-step procedure proposed above, in which a regular pronoun gets an independent index while a feature states that it is identical to a C-Commanding DP in the spellout domain. What allows for the strict reading is that the identity feature can be deleted when the anaphor is copied into an environment where its presupposition fails. The proxy reading seems to be a more general characteristic of identity in language, since it is attested in bound pronouns.

### **3.3 Explaining the distribution of anaphors**

This section will touch on the core issue that engaged most of the works cited in Chapter 2: the distribution of complex anaphors. The general goal is to explain the complementarity between anaphors and pronouns, but also the cases in which it is absent.

#### **3.3.1 Non-complementarity is structural ambiguity**

Since I have defined the pronoun and the anaphor as input and output of a morphological alternation, they are predicted to be strictly complementary. A pronominal element cannot logically be both identical in reference and disjoint from local DPs in a given phase. I therefore argue that any non-complementary occurrence of pronouns and anaphors suggests that the structure is ambiguous in one of the following ways.

- (i) Structural ambiguity: The linear order maps to two or more syntactic configurations.
- (ii) The surface form of the complex anaphor is employed as a lexical item or a proper name.

The description in (i) stands for any case where the surface order allows for different syntactic configurations, such that a subset of them contain a local antecedent in the same phase of the derivation as the anaphor. Consequently, the pronominal element may be interpreted as having either a local antecedent or not, in accordance with the selected parse. The types of ambiguities that pronominal licensing is sensitive to are given in (99).

(99) *Structural ambiguity in anaphoric licensing:*

- (a) Perspective shifts: Logophoric pronouns are realized optionally at the phase level.  
Example: attitude contexts (Sections 2.4.3, 2.5 and 5.1.2).  
Structure I:  $DP_1 \dots [pro_{log1} \dots himself_I]$ .  
Structure II:  $DP_1 \dots [\dots him_I]$
- (b) Covert subjects: Constituents that project implicit subjects (pro or PRO) with different referential options. Example: PRO in DP (Section 5.1.2).  
Structure I:  $DP_1 \dots [DP PRO_1 \dots himself_I]$ .  
Structure II:  $DP_1 \dots [DP PRO_2 \dots him_I]$
- (c) Thematic ambiguity: Constituents that may be interpreted as arguments or adjuncts and consequently get spelled out in different phases. Example: DP possessive complements (Section 5.2).  
Structure I:  $[TP [DP DP_1 \dots [PP of himself_I]]]$ .  
Structure II:  $[TP [DP DP_1 \dots ] [PP of him_I]]$ .
- (d) Lexical ambiguity: Heads that are lexically ambiguous map to different underlying structures that vary in complexity. Example: Spatial PPs (Section 4.2.2).  
Structure I:  $[DP_1 \dots [PP P_{Path} himself_I]]$ .  
Structure II:  $DP_1 \dots [PP PRO P_{Place} him_I]$ .
- (e) Headless intensifiers: Elements that share surface structure with the complex anaphor and occur as optional adjuncts. Example: Hebrew DPs (Section 5.2)  
Structure I:  $[DP \dots of\text{-}\cancel{him}\text{-}himself_I]$ .  
Structure II:  $[DP \dots of\text{-}him_I]$ .

This is a non-exhaustive list of configurations that cause systematic ambiguity and lead to states of affairs where pronouns and anaphors seem to be licensed in the same positions.

Alongside cases of lexical uses of the complex anaphor surface structure like the ones demonstrated in (107), cases of underlying structural ambiguity explain the phenomenon of non-complementary anaphors under locality constraints without making exceptions.

Chapters 4 and 5 will go into the different test cases and present independent arguments for the existence of multiple structural options, mainly in terms of the semantic effects which the different structures raise. The evidence is mainly based on novel data from Hebrew, and on recent findings by Charnavel and Bryant (2023).

### 3.3.2 Condition B effects and their absence

In Section 2.4, I presented the competition analysis of Condition B effects, which takes pronoun disjointness to follow from the existence of a more specified pronominal form such as the complex anaphor. I showed that this account holds for English, but that Hebrew and Arabic showed restrictions on pronouns before the complex anaphor became a convention. The reflexive strategies that were available at these stages were either partial or carried additional meanings (middle voice, body parts), and therefore did not present an equivalent alternative to the pronoun. My goal in the current section is showing that the present analysis can account for both the pattern of emergence that is affected by competition and the one that is not.

My proposal is that pronoun coreference is allowed in languages that include a covert identity morpheme. Covert morphemes play a crucial role in studies of semantic change, particularly in ones that adopt the assumptions of Distributed Morphology (Diertani 2011; Dali and Mathieu 2021). For the current purposes, a covert identity morpheme explains why certain pronominal systems allow local coreference in pronouns (Old English, Romanian) while others do not (Biblical Hebrew, Qur’anic Arabic). This generates three possible types of grammars, listed in Table 4.

	Local coreference	Disjoint reference
<b>Grammar A</b>		
Overt ID morpheme	Complex anaphor	Simple pronoun
<b>Grammar B</b>		
Covert ID morpheme		Simple pronoun
<b>Grammar C</b>		
No ID morpheme	N/A	Simple pronoun

**Table 4:** Encoding pronominal coreference and disjointness

Grammars of Type A express disjoint reference with simple pronouns and local coreference with complex anaphors, like the modern systems of English and Hebrew. Grammars of Type B mark coreference covertly and therefore express both disjoint reference and coreference via simple pronouns. Grammars of Type C have no overt or covert identity morpheme and in fact no straightforward way to express local coreference in pronouns.

In this analysis, the pronominal system of Old English lacks complex anaphors only superficially. A complex anaphor exists, but it is phonetically identical to the simple pronoun. At a certain point, some speakers began interpreting the *self* morpheme as the identity feature, which meant the language had two competing ways to express it: the overt version or the traditional covert version of the feature, which eventually disappeared. This historical comparison suggests that competition between forms played a role in the emergence of the English complex anaphor, while locality constraints motivate complex anaphors in the broader sense.

### 3.4 The variation prediction

I argued in the previous section that the identity feature can be realized covertly, and that this explains the contrasts between Hebrew and English in terms of pronoun coreference. This makes the complex anaphor and the coreferential Old English pronoun matched elements with one difference: the complex anaphor is a fully realized pronoun and identity morpheme, while the Old English pronoun lacks the phonetic representation of the identity morpheme.

	<b>Pronoun</b>	<b>Identity morpheme</b>
Complex anaphor	[+PF +LF]	[+PF +LF]
Old English pronoun	[+PF +LF]	[−PF +LF]

**Table 5:** Simple and complex intensifiers

The question this raises is whether the pronoun could also be realized covertly, and whether either component could also surface as a dummy element with no semantic content. Taking all the possible combinations into account generates 16 logically possible combinations of pronouns and identity, listed in Figure 1.

<b>Pronoun</b>		<b>Identity morpheme</b>	
[+PF +LF]	[+PF −LF]	[+PF +LF]	[+PF −LF]
[−PF +LF]	[−PF −LF]	[−PF +LF]	[−PF −LF]

**Figure 1:** Reduction options in complex anaphors by component

This highlights one more prediction of the compositional analysis of the complex anaphors, that the possible combinations will represent real elements in language. We have already met a few such elements. For example, reflexive verbs include a morpheme that denotes identity, without a pronominal element, and simple anaphors of the Dutch *zich* type seem to correspond to the same representation.

Moreover, one of the starting points of this thesis was that intensifiers are observed both as sub-components of complex anaphors (e.g., French *même*, Old English *self*), and as homophones taking the full surface form of the complex anaphor (French *x-même*, Modern English *x-self*). The fact that focus-intensifiers give rise to the same meaning in their simple and complex form indicates that the pronominal element in the complex variant is semantically vacuous.

The semantic equivalence of these expressions is demonstrated below for French *la porte même* and *la porte elle-même*, which both mean ‘the door itself.’

(100) *Simple and complex intensifier in French:*

- (a) Ne pas confondre imposte et oculus. Ce dernier est une ouverture vitrée aux formes variées, pratiquée dans **la porte même**.

‘Do not confuse impose and oculus. The latter is a glass opening featured in the door itself’ ([www.m-habitat.fr/portes/elements-d-une-porte/l-imposte-d-une-porte-2786\\_A](http://www.m-habitat.fr/portes/elements-d-une-porte/l-imposte-d-une-porte-2786_A))

- (b) la certification A2P prend en compte **la porte elle-même** mais aussi la serrure.

‘A2P certification takes into account the door itself but also the lock.’

([www.futura-sciences.com/maison/questions-reponses/bricolage-porte-blindee-choisir-4254](http://www.futura-sciences.com/maison/questions-reponses/bricolage-porte-blindee-choisir-4254))

The pronominal element in *la porte elle-même* ‘the door 3SG.F-self’ does not introduce an entity but rather functions as  $\phi$ -agreement with the modified DP. I will consider this instance of the pronoun as [–LF], in the sense that *elle* is not a DP that can take an index. This points to the following representation of complex and simple intensifiers: The pronominal element is represented phonetically but not semantically in the complex intensifier, and is completely absent in the simple variant, while the identity morpheme is represented phonetically and semantically in both forms, as seen in Table 6.

	<b>Pronoun</b>	<b>Identity morpheme</b>
Simple intensifier	[–PF –LF]	[+PF +LF]
Complex intensifier	[+PF –LF]	[+PF +LF]

**Table 6:** Simple and complex intensifiers



A mirror image of this form/meaning discrepancy is seen in simple anaphors, which can be similar in their phonetic expression and yet differ in terms of their pronominal status. To illustrate, simple anaphors such as German *sich* and Latin *sē* are prosodically independent, and can take narrow focus, be topicalized, surface as fragment answers, and allow coordination with other syntactic arguments. Others, including Dutch *zich* and Spanish *se*, are impossible in these contexts unless joined with the intensive morphemes *zelf* and *mismo*, respectively (Ruigendijk and Schumacher 2020, Maddox 2021).

This does not necessarily mean that these elements are not pronouns, as there are clitic pronouns across languages that do get a pronominal interpretation and introduce new variables. However, the same anaphors that take on weak prosodic positions also block proxy readings and must refer to the exact same entity as their antecedents (Ruigendijk et al. 2004), which means that they are not represented by two independent semantic and syntactic arguments.

The following examples show that German *sich* allows for a proxy reading with or without the combination with the *selbst* morpheme, and illustrate the difference between German *sich* and Dutch *zich* in this respect.

(101) *Proxy readings in simple anaphors:*

(a) German:

Ringo hat **sich (selbst)** ausgezogen.

R. has SE REFL undressed

‘Ringo undressed himself.’

[✓Ringo undressed statue]

(b) Dutch (Ruigendijk et al. 2004: 8):

Plotseling begon Ringo **zich** uit te kleden.

suddenly began R. SE- out INF dress.

‘All of a sudden, Ringo started undressing himself.’

[\*Ringo undressed statue]

(c) Plotseling begon Ringo **zich-\*(zelf)** uit te kleden.

suddenly began R. SE- REFL out INF dress.

‘All of a sudden, Ringo started undressing himself.’

[✓Ringo undressed statue]

This demonstrates a semantic correspondence between the simple *sich* and the complex *zichzelf*, which is not reflected by their mono-morphemic surface form.

Furthermore, simple anaphors are used across languages as verbal morphemes that create reflexive verbs (Kemmer 1993). I take this to mean (a) that simple anaphors are not only unvalued but have a semantic core of reflexivity that motivates their integration in various

reflexive strategies, and (b) that *zich*-type anaphors represent the identity morpheme, while *sich* anaphors are semantically complex, as seen in Table 7.

	<b>Pronoun</b>	<b>Identity morpheme</b>
English <i>himself</i>	[+PF +LF]	[+PF +LF]
Dutch <i>zich</i>	[−PF −LF]	[+PF +LF]
German <i>sich</i>	[−PF +LF]	[+PF +LF]

**Table 7:** Phonetic and semantic representation in complex and simple anaphors

I conclude that at least some simple anaphors are identity morphemes that lack a pronominal component, while others carry a covert pronominal component. The full list of combination is given in Table 8.

<b>Component</b>	<b>Pronoun</b>		<b>[ID]</b>	
	PF	LF	PF	LF
1. Complex anaphor	+	+	+	+
2. German <i>sich</i> Latin <i>sē</i>	−	+	+	+
3. Complex intensifier	+	−	+	+
4. Dutch <i>zich</i> Spanish <i>se</i> Simple intensifiers	−	−	+	+
5. Old English pronoun	+	+	−	+
6. Irish English <i>x-self</i>	+	+	+	−
7. Pleonastic pronoun	+	−	−	+
8. Simple pronoun	+	+	−	−
9. N/A	−	+	+	−
10. Zero anaphor	−	−	−	+
11. Elided anaphor	−	+	−	+
12. Fake reflexives	+	−	+	−
13. Expletive pronoun	+	−	−	−
14. <i>pro</i>	−	+	−	−
15. Lexical (“the self”)	−	−	+	−
16. ∅	−	−	−	−

**Table 8:** Typology of pronouns and identity

Irish English *x-self* (Table 8, Line 6) refers to a construction that is phonetically equivalent to the complex anaphor/intensifier ([+PF] for both components) but semantically

functions as a pronoun ([+LF] only for the pronoun component). A representative example is given in (102).

(102) *Irish English* (Filppula 1999: 78; quoted in Lange 2006):

... he'd be the devil, if **himself** wouldn't make him laugh.

The term Pleonastic Pronouns (Line 7) are a type of pronouns used in Old English, which van Gelderen (2000) describes as dummy pronouns that occur in verbs of movement and body posture, do not introduce a new entity and can only co-refer with the verb's subject. The term Zero Anaphors (Line 10) are constructions in which the direct object is omitted, which English enables with verbs such *dress*, and *shave*. It is not entirely clear that these verbs indeed have an object in the syntax, but to the extent that they do, this object would be a covert identity morpheme without a pronoun. I based here on data from Section 3.2.1, which showed that *dress* verbs do not allow proxy readings (unless they occur with a complex anaphor).

In Bergeton (2004) and Bergeton and Pancheva's (2012), this element is the regular anaphor in contemporary English, which they take to combine with a focus intensifier, as in the example in 0.

(103) He<sub>1</sub> punished Ø<sub>1</sub>-himself.

Fake reflexives (Line 12) are dummy arguments occurring with intransitive verbs, as in *he cried himself to sleep* (Levin and Rappaport Hovav 1995). Expletive pronouns have the phonetic representation of a pronoun with no semantic content (Line 13), and their inversion, covert pronouns (Line 14), have the semantic representation of regular (disjoint) pronouns with no phonetic form. Finally, Line 15 represents lexical uses of identity morphemes, that refer to a person individual mindset. Representative examples are given in the following subsection, which elaborates on the use of the identity morpheme beyond the pronominal context.

This is obviously a partial survey, but it is sufficient to demonstrate that complex anaphors are compositional elements, and explain much of the variation in reflexivity-related phenomena as presented by Faltz (1977).

### 3.5 Identity in other domains

The previous subsection showed that the components of complex anaphors – pronoun and identity morpheme – can be represented separately in both the phonetic and the semantic

levels. The current subsection discusses the interpretation of the identity feature when it is applied to other domains, namely events and focus alternatives.

We have already encountered an example in which an overt component of a complex anaphor, the English *self* morpheme, is used in verbs and event nominals as a prefix (e.g., *self-harm*). Similarly, Hebrew *acm-x* modifies event nouns as a post-nominal adjective, as seen in (104).

(104) *Hebrew nominalizations modified by acm-*

- (a) *šerut*                      *acm-i*  
       service.SG.M    REFL-3SG.M  
       ‘self-service’
- (b) *halka’a*                *acm-it*  
       flagellation.SG.F    REFL-3SG.F  
       ‘self-flagellation’
- (c) *raxamim* *acm-ijim*  
       pity.PL.M    REFL-3PL.M  
       ‘self-pity’

The occurrences of *acm* in these constructions appear to include pronominal suffixes, similarly to the complex anaphor. However, these suffixes have no pronominal status, in the sense that they do not introduce an additional variable into the expressions. The suffixes inflect like adjectives and agree with the head noun rather than the entity that participates in the event. Attempting to match the feature with the arguments of the head noun leads to ungrammaticality:

- (105) \**šerut*                      *acm-enu*  
       service-SG.M    REFL-3PL  
       intended: ‘our self-service’

These facts combined provide clear evidence that the *acm* morpheme is shifted from a feature of entities to a modifier of events. Its core meaning is still the same in the sense that it denotes identity between individuals at some conceptual level. The difference in terms of meaning is that, as an adjective, *acm-* may develop additional meanings and create idioms along with the head. For example, *šerut acmi* ‘self-service’ is generally used in commercial contexts and does not typically relate to other forms of service. *halka’a acmit* ‘self-flagellation’ in current Hebrew describes a specific mental process when one accuses themselves repeatedly

for an action. The main differences between the two types of occurrences of *acmi* (the argument and the modifier) are listed in Table 9.

	<i>acmi</i> arguments	<i>acmi</i> modifiers
<b>Syntactic category</b>	D	A
<b>Domain</b>	Pronouns	Event nouns
<b>Semantic content</b>	Functional	Lexical (including idiomatic meanings)

**Table 9:** Hebrew *acmi* arguments and modifiers

This type of borrowing of the identity morpheme into different semantic and syntactic domains is yet another source for variation in phenomena that have been labeled as reflexivity-related, including the common homophony with focus intensifiers. This connection has been made before within historical linguistics, in a line of work going back to Penning (1875). Only there, it is assumed to take place in the opposite direction, i.e., the focus intensifier is seen as the diachronic source of the complex anaphor.

Such processes have been documented in Germanic and Romance languages. However, I will show that in Semitic languages such as Hebrew, in which the identity morpheme has an immediate lexical source (body part, in this case ‘bone’), the focus-intensive meaning was not attested prior to the emergence of the complex anaphor. Next, I will discuss the application of the identity morpheme on focus alternatives in a synchronic grammar, leaving the historical details to be discussed in Chapter 6.

The essence of this analysis, which has been developed by Moravcsik (1972), Eckardt (2001), Hole (2006) König and Gast (2006) and Gast (2007), is that anaphors and intensifiers differ in the content that the identity morpheme takes as input: DPs within a local environment, vs. focus alternatives, respectively. Since Rooth (1992), the standard semantic analysis of focus accent pertains to the set of contextual alternatives for the element in focus (König 2002; Katzir 2007; Fox and Katzir 2011; Crnič 2011; Chierchia, Fox, and Spector 2012; Greenberg 2018). Applying the meaning of identity to this set can derive the set of meanings connected with intensifiers, shown below.

(106) *Different meanings of focus-intensifiers:*

- (a) The queen **herself** came to the party.  
= **even** the queen came to the party
- (b) The queen came to the party **herself**.  
= The queen came to the party **alone**.

- (c) The queen **herself** must sign these papers.  
= **Only** the queen can sign these papers.
- (d) The queen was late **herself**.  
= The queen was **also** late.

Recall that focus-intensifiers, like focus particles, do not affect the truth conditions of the utterance, but rather add context beyond the question of whether the queen arrived or not. In each of the cases above, the intensifier contributes a meaning that could be triggered by a focus particle (*even, only, also*), or the lexeme *alone*.

Each of these meanings follows from affirming or negating contextual alternatives of the queen in the described context: In (106a), *herself* adds the information that other guests arrived; in (106b), it states that the queen's entourage did not contribute to her arrival; in (106c), it states that other entities in the queen's surrounding are not eligible signers; and, in (106d), *herself* adds the information that other guests arrived late. See Gast (2007) for further information on the analysis of Germanic intensifiers as identity morphemes.

Applying the core meaning of the identity feature onto focus alternatives therefore derives the exact set of meanings triggered by focus intensifiers. This signifies that using a complex anaphor as an intensifier minimally requires reducing its pronominal element, changing its syntactic category into an adjective and placing it under focus. Consequently, the complex anaphor can be readily utilized as a focus intensifier, which in turn predicts that many different grammars will contain focus intensifiers as a parallel use of the complex anaphors.

One more pattern that follows naturally from the identity feature analysis is the use of *self* morphemes as modifiers with the meaning *same*, which is attested in Arabic *nafs*, French *même*, German *selben*, and Basque *bere*. The semantic core assigned here to the identity feature naturally extends to the semantic analysis of *same* (e.g., Matushansky 2010; Charnavel 2015; Hardt and Mikkelsen 2015; see Sun 2022 for a recent overview).

A notable characteristic of the empirical picture described here is that it includes a grammatical function – marking identical reference within the active phase – which is employed to deliver richer meanings of identity as intensifiers. This is expressed to a larger extent in a range of lexical meanings that complex reflexives (and their parts) are related with across languages. These lexemes are frequently associated with meanings that involve the human body, personal identity and individual mind set, which opens a new range of licensing positions that are free from locality constraints. examples from English and Hebrew are given below.

(107) *Lexical uses of self and acm-x:*

- (a) **The Self** in Jungian psychology is a dynamic concept which has undergone numerous modifications since it was first conceptualised as one of the Jungian archetypes. [https://en.wikipedia.org/wiki/Self\\_in\\_Jungian\\_psychology](https://en.wikipedia.org/wiki/Self_in_Jungian_psychology)

- (a) **acm-i**      xazak u-megubaš      ma'anik    la-adam      txuša šel briut    nafšit.  
REFL-1SG    strong-and-consolidated provides to.DET-person sense of health mental  
'A strong and consolidated self provides a person with a sense of mental health.'

<https://www.betipulnet.co.il>

To conclude, the identity feature analysis of complex anaphors explains the expansion of the same form to various other domains, including reflexive verbs, focus-intensifiers and lexical uses linked with personal sense of identity.

### 3.6 Conclusion

This chapter proposed that the morphological structure of complex anaphors and their syntactic restrictions follow from the requirement to mark identity at the phase level. This meaning of the anaphor includes a free variable (the pronominal element), a bound variable, and a feature that presupposes identity between them. The identity feature explains how complex anaphors can get a bound variable interpretation, but also resort back to free variable when the feature is deleted (e.g., in VP ellipsis). The feature is realized phonetically as a *self* morpheme, which means it cannot get valued after spellout and is hence restricted to local antecedents.

This analysis predicts strict complementarity between the pronoun and the anaphor, since they constitute two ends of a morphological alternation. Non-complementarity is only possible in contexts that contain more than one structural option. This includes instances of optional logophoric centers and other forms of covert underlying structure. The discourse qualities of anaphors follow from these distinctions.

The following chapters will show how this analysis explains the most challenging environments for locality-based theories, starting with PP anaphors (Chapter 4), and moving on to Picture DPs (Chapter 5). I will show that it is possible to construct a predictive locality-based system of anaphoric dependencies in both domains if one assumes strict locality while also controlling for discourse effects. The final Chapter will examine stages of English and

Hebrew that lacked complex anaphors and present evidence for the existence of locality constraints prior to their emergence.



## 4.

## Anaphors in PPs

Chapter 2 showed that PPs present one of the most persisting challenges to locality-based theories of anaphoric licensing, given many examples in which the complementarity between pronouns and anaphors breaks under prepositions.

(108) *Non-complementarity in P anaphors:*

- (a) Max<sub>1</sub> saw a ghost behind {him<sub>1</sub>/ himself<sub>1</sub>}. (Reinhart and Reuland 1993: 59)
- (b) John<sub>1</sub> has gum on {him<sub>1</sub>/ himself<sub>1</sub>}. (Kuno 1987)

Such cases served as counterevidence to the claim that complex anaphors are defined by their distribution, and motivated an alternative framing in which anaphors encode fine-grained characteristics of the conversational context in which they surface (Cornish 1986; Kuno 1987; Wechsler 1997; Lederer 2013). These views openly claim that the distribution of prepositional anaphors is to an extent unpredictable since it is impossible to control every aspect in the intended meaning and speakers' mindset.

A similar attitude is found in previous locality-based views such as Hestvik (1993), who aims to account only for the subset of Spatial PPs that exhibit free choice between pronouns and anaphors. Part of the difficulty was that dominant theories of P syntax such as Jackendoff (1973), Hoekstra (1988), Svenonius (2003), Folli and Ramchand (2005), and Gehrke (2008), assigned Spatial PPs a unified structure to explain their joint semantic traits. This left limited options to predict any sort of variation in anaphoric licensing in PPs, which in turn motivated giving more attention to the discourse-semantic aspects of the choice between pronoun and anaphor.

My goal in this chapter is to demonstrate that there is no free choice in prepositional anaphors, only between different syntactic structures. I will adopt the assumptions outlined in the previous chapter, namely that pronouns and anaphors constitute a morphological alternation determined by the value of referential identity at the phase level. In my analysis, I will incorporate insights from both discourse- and syntax-based approaches to prepositional anaphors, and argue that their occurrence depends on the realization of one of the following three conditions: (i) the PP is a phase and contains a local antecedent for the anaphor; (ii) the

PP is not a phase and there is a C-Commanding antecedent elsewhere in the sentence; (iii) the PP is in an attitude context which triggers a logophoric pronoun as an antecedent, along the lines of Charnavel and Sportiche (2016). Pronouns appear when none of these antecedents are present, and any meaning difference that follows from the choice between pronoun and anaphor should correlate with the structural difference that underlies it.

This chapter is organized such that Section 4.1 summarizes how the particular question of prepositional anaphors was previously confronted; Section 4.2 presents the current analysis, which divides PPs into simple and complex structures based on their semantic properties and derives anaphoric licensing accordingly, and Section 4.3 concludes the main findings.

## **4.1 Previous accounts of P anaphors and P syntax**

This section will present the main ideas in the research of prepositional anaphors from two opposing perspectives. Section 4.1.1. will present studies into the conversational properties of PPs, while Section 4.1.2 will focus on syntax and semantics, before concluding, in Section 4.1.3., that both lines of analysis have had limited empirical success so far.

### **4.1.1 Discourse-semantic parameters**

The frameworks outlined here and in the following subsection generally agree that anaphoric dependencies are sensitive to discourse conditions on the one hand and to syntactic locality on the other. However, unlike successors of the Binding Theory – which merely state that certain anaphors require privileged discourse conditions – the frameworks that I refer to as discourse-based aim for a detailed account of these conditions.

Previous proposals point to various triggers for the occurrences of complex anaphors, including physical contact (Kuno 1987; Rooryck and Vanden Wyngaerd 2007; Lederer 2013, Bryant 2022), directness (Kuno 1987), and directionality (Wechsler 1997). Other properties were attributed to complex anaphors in the broader sense and should also apply to PPs, including speaker empathy (Kuno 1987), accessibility in memory (Ariel 1988), and the nature of extrovert actions (Kemmer 1993, Haspelmath 2008).

Consider first the effect of physical contact, recognized by Kuno (1987), which was presented in Section 2.6.1. Kuno showed that descriptions of spatial relations are consistently understood as more immediate when one of their arguments is a complex anaphor, which are

reserved to situations where the two entities make surface contact. Representative examples are given in (109-111).

(109) *Physical contact effects in English* (Kuno 1987:1.1-1.2, Rooryck and Vanden Wyngaerd 2007: 11):

- (a) John<sub>1</sub> put the blanket under him<sub>1</sub>. = general spatial area
- (b) John<sub>1</sub> put the blanket under himself<sub>1</sub>. = physical contact
- (110) (a) John<sub>1</sub> hid the book behind him<sub>1</sub>. = general spatial area
- (b) John<sub>1</sub> hid the book behind himself<sub>1</sub>. = physical contact
- (111) (a) Mary<sub>1</sub> kept her childhood dolls close to her<sub>1</sub>. = in her proximity
- (b) Mary<sub>1</sub> kept er childhood dolls close to herself<sub>1</sub>. = close to her body

These effects are well-documented in English, and were recently backed up with experimental evidence (Bryant 2022). Svenonius (2006) and Rooryck and Vanden Wyngaerd (2011) explained this effect via Axial Parts, which induce binding effects on the one hand and the meaning of physical contact on the other.

(112) *Alternations in AxPart binding* (Rooryck and Vanden Wyngaerd 2007: 54):

- (a) [<sub>IP</sub> Mary<sub>1</sub> kept her dolls [<sub>Place</sub> close [<sub>AxPart</sub> Ø<sub>1</sub> [<sub>K</sub> to [<sub>D</sub> herself<sub>1</sub>]]]]]
- (b) [<sub>Evid</sub> Speaker<sub>2</sub> [<sub>IP</sub> Mary<sub>1</sub> kept her dolls [<sub>Place</sub> close [<sub>AxPart</sub> Ø<sub>2</sub> [<sub>K</sub> to [<sub>D</sub> her<sub>1</sub>]]]]]]]

Crucially, regardless of the source of the physical contact effect, positing it as an inherent property of spatial prepositions raises an empirical issue: If expressing physical contact through the choice of pronominal element is a property of Spatial PPs, it should be observed categorically for these prepositions.

In reality, Spatial PPs do not display any categorical properties other than their spatial meaning, and this includes the correlation between physical contact and anaphoric licensing. Of the examples quoted in Chapter 2, many fail to exhibit alignment between the choice of pronominal element and the degree of physical contact. For instance, recall that in the examples below, Lees and Klima (1963) report a preference for an anaphor in (113a) and a pronoun in (113b), even though both contexts must involve physical contact.

- (113) (a) John<sub>1</sub> smeared the oil on himself<sub>1</sub>. (Repeated from 13)
- (b) John<sub>1</sub> ignored the oil on him<sub>1</sub>.

Even more challenging are contexts like (114), which block the pronoun although the situation may involve physical contact.

(114) Kobe Bryant<sub>1</sub> likes to pass the ball to { \*him<sub>1</sub>/himself<sub>1</sub> } off the backboard.

Such cases may be explained through the notion of directionality following Wechsler (1997) and Lederer (2013). These works build on the terms Location and Direction, which roughly parallel Place and Path, and argue through the minimal pairs (115-116) that anaphors are favored with prepositions that denote motion between areas. This is demonstrated below with *behind* and *beside* that take a pronoun for coreference, vs. *to* and *onto* that require an anaphor.

(115) (a) Bubba<sub>1</sub> tossed the beer can **behind** {him<sub>1</sub>/\*himself<sub>1</sub>}. (Wechsler 1997: 38-39)

(b) Bubba<sub>1</sub> tossed the beer can **to** { \*him<sub>1</sub>/himself<sub>1</sub> }.

(116) (a) Corporal Crump<sub>1</sub> pinned the medal **beside** {him<sub>1</sub>/\*himself<sub>1</sub>} (on the wall).

(b) Corporal Crump<sub>1</sub> pinned the medal **onto** { \*him<sub>1</sub>/himself<sub>1</sub> }.

There is something of a contradiction in assuming that complex anaphors encode physical contact on the one hand and directionality on the other. Contexts of fixed locations are more compatible with physical contact than those of dynamic location, which might not reach the intended entity. It is not clear what these theories predict for contexts that involve physical contact and no directionality, or the other way around, and these are just two of many more properties that complex anaphors were claimed to encode. In other words, the range of different effects and parameters leads to a chaotic system, which is explanatory to an extent, but not predictive.

Moreover, the generalization that prepositions of location and direction should take pronouns and anaphors, respectively, is too strong. For instance, in (117) below the choice of *ahead of* expresses a fixed location. Yet this is not what determines the choice between the pronoun and the anaphor, but the existence of local antecedent (in 117b).

(117) (a) John<sub>1</sub> was ahead of him<sub>2</sub>.

(b) John<sub>1</sub> was ahead of himself<sub>1</sub>.

To conclude, the discourse-semantic view performs well in demonstrating the range of meanings that follow from spatial constructions and the anaphoric dependencies that span across them. However, it does not converge into a predictive analysis but rather keeps broadening the range of properties that anaphors may encode.

### 4.1.2 The syntax of PPs

Locality-based views provide a single manner of explanation for anaphoric licensing: complex anaphors are in the same local domain as their antecedents, while any case of pronoun coreference indicates the existence of two separate domains. The initial challenge in applying locality constraints to P anaphors was that when Lees and Klima first formed these principles, PPs were assigned a minimal structure containing a P head and a nominal complement, with no underlying syntactic complexity (e.g., Fillmore 1966).

(118) *Simple PP*:

[<sub>PP</sub> P [<sub>NP</sub> ]]

As stated in Section 2.1, Lees and Klima's proposal assigned a complex derivational history to those phrases that enable pronoun coreference (for example, in 112b), without referring to other characteristics of the PP that may require or follow from the complex structure.

A complex analysis of PPs was put forward for independent reasons by Jackendoff (1973). Jackendoff differentiated prepositions that describe spatial relations from all other (non-spatial) prepositions, based on the observation that the former deliver a semantic contribution to the contexts they occur in. Non-spatial prepositions show a more functional character, i.e., they are predetermined with respect to their selecting predicates and have no semantic effect on them, as shown in (119).

(119) *Functional prepositions* (Merchant 2019: 12):

- (a) She prides herself {**on**/\*in/\*of} her thoroughness.
- (b) Her pride {\*on/ **in**/\*of} her thoroughness is understandable.
- (c) She is proud {\*on/\*in/ **of**} her thoroughness.

In these examples, the preposition that introduces the Theme of the predicate *pride* alternates according to the predicate's syntactic category (verb, noun, or adjective). The fact that these three different prepositions convey the same relation to the predicate speaks to their lack of semantic contribution. In contrast, a relatively broad range of spatial prepositions is available in (120). This is also the case for prepositions of time expressions, which I will not cover here.

(120) *Spatial prepositions*:

She ran {to/ toward/ next to/ around} the store.

Jackendoff (1973) proposed that this meaning follows from multiple P projections, including Place, a fixed spatial relation that delineates an area in space, and Path, a dynamic relation that describes motion between areas. Prepositions that realize each of these relations are listed in (121-122), respectively. A complex PP that combines the two layers transparently is given in (123).

(121) *Fixed spatial relations (Places):*

in, on, next to, in front of, behind, above, below, against

(122) *Dynamic spatial relations (Paths):*

to, toward, into, over, from, around

(123) *Complex PP:*

[<sub>PATH</sub> *from* [<sub>PLACE</sub> *behind* [<sub>DP</sub> *the fence*]]]

The PP in (123) is constructed such that *behind the fence* introduces a fixed relation, while *from* adds a differentiation into two locations ('behind the fence' and 'not behind the fence') that forms a trajectory. Functional prepositions lack these projections and therefore contribute no meaning.

Jackendoff proposed accordingly that the semantics of motion in space is based on the structure in (123), regardless of the overt expression of the prepositions involved. This means that a PP such as *from the house* should include a covert representation of the place component that generates a default meaning akin to *at*, as seen in (124).

(124) [<sub>PATH</sub> *from* [<sub>PLACE</sub> (*at*) [<sub>DP</sub> *the house*]]]

From the perspective of anaphoric licensing, this model introduces a semantically motivated structural difference between PPs: Functional prepositions are simple constituents conforming to the structure in (118), Spatial PPs have a complex structure which may extend up to the structure in (123). This is compatible with the contrast that Reinhart and Reuland (1993) pointed out between these categories in anaphoric licensing, according to which functional prepositions require an anaphor for coreference, while Spatial PPs also enable a pronoun for coreference.

(125) *Functional vs. Spatial prepositions (Reinhart and Reuland 58-59):*

(a) Lucie<sub>1</sub> explained Max to { \*her<sub>1</sub> /herself<sub>1</sub> }.

(b) Max<sub>1</sub> saw a ghost next to { him<sub>1</sub> /himself<sub>1</sub> }.

In a locality-based account, the availability of a pronoun in (125b) indicates that the PP *next to him* is spelled out in a different domain than the subject *Max*. This would mean that the complexity of the Spatial PP makes it an independent phase, in contrast with the functional PP in (125a). The latter is part of the *vP* phase, where the subject *Lucie* is generated as well. The fact that an anaphor is also available in (125b) is licensed via a logophoric pronoun, following Charnavel and Sportiche (2016).

However, it is not clear what the implications of the extended PP are for the contrasts observed among spatial prepositions themselves. To answer this, we should first ask what other structural options the extended PP allows for such prepositions. It seems straightforward to assume that place prepositions such as *behind* and *next to* would only contain the subset of the structure up to the Place projection. However, if Place projections are realized covertly in cases like (124), the possibility to add Path projections covertly could also exist. That is, *behind* and *next to* should be able to contain covert path layers.

This prediction is confirmed by structures known as Derived Goals, where place prepositions are used to denote change of location (Rothstein 2006; Gehrke 2008, among others). For instance, a Place PP such as *in the lake* in (126) can be interpreted as the location of the entire event (127a), but it can also be understood as the end state in the context of dynamic location (127b). In Jackendoff's framework, the two readings should correspond to the respective structures in (127a-b), with a silent realization of a path projection interpreted as 'to' in the second reading. A similar ambiguity is demonstrated below for Norwegian *i* 'in' using modifiers that force the different readings of *i grøfta* 'in the ditch' (129).

(126) *Ambiguity in Place PPs:*

Sharon jumped **in the lake**.

(Gehrke 2008: 5)

(127) (a) Sharon jumped while in the lake.

(b) Sharon jumped and (as a result) ended up in the lake.

(128) (a) [PLACE *in* [DP *the lake*]]

(b) [PATH (*to*) [PLACE *in* [DP *the lake*]]]

(129) (a) Jens har syklet **i grøfta** (i en time).

Jens has biked in ditch.the in an hour

'Jens has been biking in the ditch (for an hour).'

(b) Jens har syklet **i grøfta** (på et øyeblikk).

Jens has biked in ditch.the on a moment

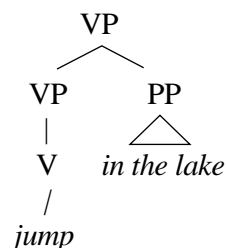
‘Jens has biked into the ditch (in a moment).’

(Tungseth 2008: 10-11)

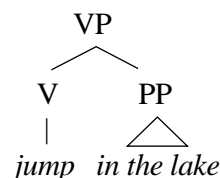
Gehrke uses Derived-Goal constructions to make the point that the meaning of change of location arrives not from a component of the lexical preposition but from the structural configuration. Gehrke proposes that path meanings are accepted when the PP merges as an argument of the verb, and that this holds regardless of whether the overt preposition names a place or a path. The fixed location reading is generated when the PP merges as an adjunct over the verb. Simplified representations of the different structures are given in (130).

(130) *Structural variation in motion constructions* (Gehrke 2008):

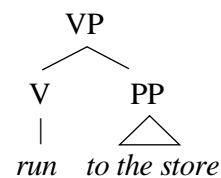
(a) Place:



(b) Derived Goal:



(c) Path:



We therefore have two levels of independently motivated syntactic distinction in the PP domain, involving the PP's internal syntax (simple PP vs. a combination of place and path projections), and their external one (argument vs. adjunct). The question now is how these distinctions should translate into locality constraints on anaphoric dependencies in PPs. Following the of the current proposal, this boils down to the parameters of whether the Path or Place projections are phase heads, the size of the spell-out domain, and the value of other DPs in it.

Note that the merging site of the PP does not strictly determine the spellout domain it would fall in. Canac Marquiz (2005) showed that adjunct PPs can be spelled out along with different constituents. Boneh and Nash (2011, 2017) make a similar point for dative and applicative PPs, and arguments can generally form spell-out domains of their own (e.g., in the case of CP complements). The crucial factor is therefore whether the complex PP is a phase.

We have already encountered cases of binding over a path preposition, which seems to indicate that the Path projection is not a phase head. Otherwise, a pronoun would be acceptable



in the same position. Following Jackendoff, this also means that Place is not a phase, since paths contain places.

(131) Kobe Bryant<sub>i</sub> likes to pass the ball to { \*him<sub>i</sub>/himself<sub>i</sub> } off the backboard.

(Repeated from 29)

However, Place prepositions were shown to generally allow coreferential readings of pronouns. This leads to a paradox, by which the lower Place projection is a phase, but not the Path projection containing it.

(132) The men found a smokescreen around them.

(Repeated from 12)

Luckily, this question does not have to be resolved at these levels, since Place and Path are not the only meaning components in Spatial PPs. Previous works proposed to extend the PP further to include layers for measure phrases (Koopman 2000), spatial coordinates around the entity known as Axial Parts (Svenonius 2006; Rooryck and Vanden Wyngaerd 2007; Vanden Wyngaerd 2019; Matushansky and Zwarts 2019), decomposition of Path into Source and Goal (Pantcheva 2011), and, crucially, a little *p* projection that introduces an internal subject (Svenonius 2003), which leads to the abstract construction in (133).

(133) *Extended PPs*:

[<sub>pP</sub> *Subject* [<sub>PathP</sub> [<sub>PlaceP</sub> [<sub>DP</sub> *Object* ]]]]

This idea goes back to Hoekstra (1988), who proposed that Spatial PPs are Small Clauses that denote a result state. For example, in (134) below, the act of shaving leads the result of the hair being off, and the act of washing leads to the soap being out of the eyes.

(134) *Small-clause results* (Hoekstra 1988: 35a-b):

(a) He shaved [his hair off].

(b) He washed [the soap out of his eyes].

The result component, marked above in square brackets, is a two place-predication containing a local subject and an object (see also Folli and Ramchand 2005; Gehrke 2008; Mateu and Acedo-Matellán 2012). According to phase theory, this constituent is independent at the interfaces and will therefore be spelled out independently.

This raises questions regarding the relation that the preposition's subject bears with the verb. In Hoekstra's analysis the verb takes the Small Clause as its object and has no direct relation with the arguments *hair* or *soap*. I will postpone this discussion to Section 4.2.4. For

now, note that the discussed locality-based theories have reached a similar structure for paths and derived goals at both levels of resolution, i.e., they are similar in both their internal and external syntax. This is consistent with the general understanding in syntactic theory, that structure determines meaning. This was expressed, among others, by Baker (1988) in his Uniformity of Theta Assignment Hypothesis (UTAH). Given this premise, the fact that both paths and derived goals express change of location should indicate that they correspond to the same syntactic component.

The problem is that anaphoric dependencies are not expressed in the same manner across path and derived goal constituents. If change of location invariably followed from the structure in (133), we would have expected such PPs to consistently form independent phases, which express coreference via pronouns. This conclusion had already been countered by numerous examples throughout this thesis, in which P anaphors corefer with an external subject.

(135) John smeared the oil on himself. (Repeated from 13)

An alternative to the Small Clause approach allows this type of coreference by analyzing Spatial PPs on a par with secondary predicates (Williams 1980; Rothstein 2006). In this analysis, also proposed for reasons other than anaphoric licensing, the PP merges with the verb and forms a complex predicate that takes up to three arguments. This entails opposite predictions to the Small Clause analysis; more specifically, the prediction is that every instance of coreference between any two DPs in the super-predicate should trigger a complex anaphor. A comparison of the competing analyses with respect to (135) is given in (136).

(136) John smeared the oil on himself.

- (a) Small Clause: [<sub>VP</sub> John smeared [<sub>PP</sub> the oil on himself]]
- (b) Complex predicate: [<sub>VP</sub> John [ smear-on<sub>I</sub>] the oil t<sub>1</sub> himself]

The crucial contrast is that in (136a), the PP is an independent phase, while in (136b) it is integrated into the verb and must be spelled out with it. In the latter case, an anaphor is predicted to be required to express coreference with John. Several English speakers I consulted with confirm this, namely, a pronoun would have a disjoint meaning in this position, as in (137).

(137) \*John<sub>1</sub> smeared the oil on him<sub>1</sub>.

The Small Clause analysis leads to the wrong prediction here: If *John* and the pronominal element are not in the same phase, a pronoun should have been selected over the anaphor. The

mirror image of this issue emerges in the complex predicate view, which also makes categorical claims (at least for Spatial PPs that denote the result of an action). The sentence in (138) shows that a change of preposition makes the pronoun acceptable.

(138) John<sub>1</sub> smeared the oil **next to** him<sub>1</sub>.

(a) Small Clause: [<sub>VP</sub> John smeared [<sub>PP</sub> the oil next to him]]

(b) Complex predicate: [<sub>VP</sub> John [ smear-next to<sub>1</sub>] the oil t<sub>1</sub> him]

Now the Small Clause analysis makes the correct predictions, since the pronoun refers to a DP beyond its immediate phase, while the complex predicate analysis takes *John* and *him* to be in the same phase, which means a pronoun should not have been acceptable.

The fact that each line of analysis can only predict a subset of the data did not receive much attention, likely because variability in P anaphors has been attributed to logophoric licensing. However, logophoric licensing is also not able to explain why a pronoun cannot be coreferential with *John* in (137), and thus does not explain the observed facts either.

#### 4.1.3 Intermediate conclusion

This section showed that discursive and syntactic approaches to P anaphors had different objectives: mapping the semantic effects of complex anaphors, and predicting their distribution, respectively. So far, I have shown that the semantic properties are valid but cannot be used to form predictions regarding the distribution of anaphors, since they form a chaotic system of multiple interacting factors. At the same time, locality-based analyses failed to reach full predictability because they attributed much of the variation to discourse-semantic effects instead of trying to derive it via structural constraints.

I propose an alternative approach to this question. I assume that the alternation between pronouns and anaphors is always syntactically motivated and show that the syntactic contrasts underlie the bulk of semantic effects reported in the literature. This requires relating the surface distribution of P anaphors with an independently available structural option. The options that were presented so far within theories of P syntax and of anaphor licensing are listed in (139).

(139) *Structural options for Spatial PPs*

(a) Simple PP: The PP has no subject of its own, complex anaphors may be bound by external arguments, pronouns cannot.

DP<sub>1</sub> ... V ... DP<sub>2</sub> ... [<sub>PP</sub> P [{REFL<sub>1/2</sub>/PRON\*<sub>1/2</sub>}]]

- (b) Independent phase: The PP has a P internal subject and therefore constitutes a Small Clause configuration (Hoekstra 1988; Svenonius 2003). In this case, a complex anaphor would be required to refer to the internal subject. Coreference with DPs from outside the PP would be expressed by pronouns.

$$DP_1 \dots V \dots [_{PP} DP_2 \dots P [\{REFL_2/PRON_1\}]]$$

- (c) Logophoric pronouns: The PP is (or is embedded in) an attitude context. A covert logophoric center is an (optional) local antecedent (Charnavel and Sportiche 2016; Charnavel 2019).

$$DP_1 \dots V \dots DP_2 [_{PP} (pro_{log1}) \dots P [\{REFL_1/PRON_{1/2}\}]]$$

This set of options is sufficient to form a syntactic typology of PPs that would generate all the attested patterns of anaphoric licensing in PPs: When the PP has its own subject (as in 139b), it should be spelled out as an independent phase, whereas if a P internal subject is absent (139a), the PP would be spelled out with the next phase (*vP*); the choice between a pronoun and an anaphor should then follow from the existence or absence of an antecedent in the active phase; finally, when there is more than one structural option for a given sentence, both a pronoun and an anaphor could be licensed (139c).

I showed that the immediate obstacle for this line of analysis is that dominant theories of PP syntax assign Spatial PPs the same level of syntactic complexity, particularly in contexts that describe dynamic locations (paths and derived goals). In a locality-based analysis such as the one proposed here, the unified analysis of both path PPs and derived goals as Small Clauses predicts that they would express coreference exclusively through pronouns. Logophoric licensing of complex anaphors in the same position should also be available, in grammars that permit it, under the discourse conditions detailed in Section 2.5.

In this setting, the fact that some PPs block coreferential readings of pronouns requires explanation. In the previous section, I presented two existing proposals to resolve this conflict: (i) Reducing the syntactic component in anaphoric licensing in PPs (Reinhart and Reuland 1992), or in general (Kuno 1987), and linking the choice between pronoun and anaphor to discourse conditions; (ii) Assuming that variation in anaphoric licensing correlates with structural variation (Lees and Klima 1963, Canac Marquiz 2003, Charnavel and Sportiche 2016).

As seen in the overview in Chapter 2, the latter direction has yet to be fully advanced with respect to PPs. Previous works have considered various fragments of it, such as multiple

spell-out options (Canac Marquis 2003, Gehrke 2008), or the effect of  $\text{pro}_{\log}$  as an antecedent (Charnavel 2019). However, reaching a predictive system of anaphoric licensing in PPs requires consideration of all the structural options at once, which is what I aim to do in the following section.

## 4.2 Proposal: The spellout domain of P

In the previous section I reviewed syntactic theories such as Jackendoff (1973) and Hoekstra (1988) that make a distinction within the domain of prepositions, suggesting that functional prepositions present a flat syntax, while Spatial PPs form extended constituents, as seen in Table 10. By the principles of phase theory, this means that functional prepositions should be spelled out with the verbs that select them, while spatial prepositions should trigger independent spell-out domain. Accordingly, functional prepositions should block coreferential pronouns, while spatial prepositions should allow them.

Meaning	Structure	Prediction for pronoun coreference
Functional prepositions	$[_vP \text{ DP}_1 \dots [_{PP} P [_{DP} \text{ DP}_2 ]]]$	*
Spatial prepositions	$[_vP \text{ DP}_1 \dots [_{pP} \text{ DP}_2 [_{\text{Path}} [_{\text{Place}} \text{ DP}_3 ]]]]$	✓

**Table 10:** Structural typology of PPs (Jackendoff 1973, Hoekstra 1988, Svenonius 2003)

The main claim of this section is that this typology should be broadened to reflect the fact that PPs of spatial relations are not consistent in their structure, and that this is evident both in the anaphoric elements they license and their semantic properties. Section 4.2.1 will show that, all else being equal, Path prepositions block coreferential pronouns, while Place prepositions allow them. I will conclude that only Place prepositions are compatible with a Small Clause analysis, which extends to Place Ps occurring with perception verbs.

Accordingly, Section 4.2.2 will show that configurations that seem to allow free choice between the pronoun and the anaphor are in fact ambiguous between a path and a place reading of the preposition. Section 4.2.3 will provide semantic evidence that the Small Clause constituent is exclusive to Place phrases, and Section 4.2.4 will show that the availability of (non-logophoric) complex anaphors in PPs is a diagnostics for a Path reading of the preposition.

### 4.2.1 Path and Place

In terms of anaphoric licensing, the Jackendoff-Hoekstra analysis predicts that subject coreference would be expressed using an anaphor in functional prepositions, and a pronoun in spatial prepositions. In the latter case, an anaphor should only be licensed if the antecedent is itself an argument of P, or a logophoric center.

The following examples show that this prediction is confirmed for a subset of the spatial domain, namely place prepositions that denote a result state. However, when the same configuration takes a path preposition, the anaphor remains acceptable, but the pronoun can only be understood as disjoint.

(140) (a) *Anaphor licensing in place PPs:*

Kobe Bryant<sub>1</sub> throws the ball {next to/behind/in front of} {him<sub>1</sub>/himself<sub>1</sub>}.

(b) *Anaphor licensing in path PPs:*

Kobe Bryant<sub>1</sub> throws the ball {to/toward} {\*him<sub>1</sub>/himself<sub>1</sub>}.

I take this contrast to indicate that the Place prepositions in these configurations have smaller domains compared with the paths. The Place phrases in (139a) constitutes its own spell-out domain, which means it may contain pronouns that are coreferential with the subject while respecting Condition B. The Path phrases (139b) would then be spelled out with the *v*P and hence its pronoun would find itself in the same local domain as the subject, and coreference would be ruled out. This would mean that the anaphors occurring in (139a-b) exhibit different modes of interpretation: The one in (139b) corefers with a local antecedent directly, while in (139a) coreference is mediated through a logophoric pronoun, as illustrated in (141).

(141) (a) *Interpretation of place anaphors:*

Subject<sub>1</sub> ... V ... [pro<sub>log1</sub> next to ... REFL<sub>1</sub>]  
└────────────────────────────────┘

(b) *Interpretation of path anaphors:*

[ Subject<sub>1</sub> ... V ... toward ... REFL<sub>1</sub> ]  
└────────────────────────────────┘

If the anaphors in (140) indeed vary between a logophoric interpretation and a local interpretation, as demonstrated in (141), this should be reflected in the Hebrew equivalents of these sentences. I have shown in Section 2.5.3 that the Hebrew anaphor cannot get a logophoric interpretation and is therefore unacceptable in contexts where this is the only available mode of licensing. Hebrew anaphors are therefore expected to be licensed in such contexts only when

the preceding preposition denotes a path, which is confirmed in (142). The data from both English and Hebrew therefore points to the generalization in (143).

(142) *Place and path arguments in Hebrew:*

- (a) braj<sub>ent</sub><sub>1</sub> zorek et ha-kadur { lejad/ lifne/ meaxore -{<sub>01</sub>/ \*acm-<sub>01</sub>} }.  
 B. throws ACC DET-ball next.to in.front.of behind him REFL-3SG.M  
 ‘Bryant throws the ball next to/in front of/behind him/\*himself.’
- (b) braj<sub>ent</sub><sub>1</sub> zorek et ha-kadur { el/le’ever{\* -<sub>01</sub>/ acm-<sub>01</sub>} }.  
 B. throws ACC DET-ball to/toward him REFL-3SG.M  
 ‘Bryant throws the ball to/toward \*him/himself.’

(143) *The path/place spellout generalization:*

In contexts of change of location, place prepositions define independent spell-out domains, while path prepositions are spelled out with *vP*.

Based on this generalization, I propose a structural distinction for place and path prepositions. Namely, I suggest that Path PPs be assigned a simple structure on a par with functional prepositions, while place prepositions maintain the extended structure along with the little *p* head and the prepositional subject. This proposal is consistent with the distribution of path and place prepositions, since (i) Path PPs have to be licensed, on a par with functional prepositions; (ii) Place PPs may also behave as Small Clauses with perception verbs, where they display the same pattern of anaphor licensing as in Derived Goal constructions:

(144) John<sub>1</sub> saw [a snake **next to** {him<sub>1</sub>/himself<sub>1</sub>}].

Accordingly, the Typology in Table 10 should be revised such that *p* selects a Place projection and forms a Small Clause, while Path projections are selected directly by the verb, as shown in Table 11.

Meaning		Structure	Pronoun coreference
Functional preposition		[ <sub>vP</sub> DP <sub>1</sub> ... [ <sub>PP</sub> P [ <sub>DP</sub> DP <sub>2</sub> ]]	*
Spatial prepositions	Path	[ <sub>vP</sub> DP <sub>1</sub> ... [ <sub>Path</sub> P [ <sub>DP</sub> DP <sub>2</sub> ]]	*
	Place/ Derived goal	[ <sub>vP</sub> DP <sub>1</sub> ... [ <sub>pP</sub> DP <sub>2</sub> [ <sub>Place</sub> DP <sub>3</sub> ]]	✓

**Table 11:** Structural typology of PPs – second attempt.

This allows for a simple and unified analysis of many contrasts documented in the literature. Recall Wechsler's (1997) examples, repeated below, which were previously attributed to the semantic notion of directionality (Wechsler 1997, Lederer 2013). In both (145) and (146), place prepositions occur with a pronoun, while path prepositions require an anaphor for coreference. Previous accounts of this contrast were forced to postulate that PPs describing a direction would favor anaphors over pronouns. They had very limited coverage (only spatial contexts) and did not explain in what sense PPs like *behind him* and *beside him* in the context of (144a) and (145a) do not describe a direction.

- (145) (a) Bubba<sub>1</sub> tossed the beer can **behind** him<sub>1</sub>. (Wechsler 1997: 38-39)  
 (b) Bubba<sub>1</sub> tossed the beer can **to** himself<sub>1</sub>.
- (146) (a) Corporal Crump<sub>1</sub> pinned the medal **beside** him<sub>1</sub> (on the wall).  
 (b) Corporal Crump<sub>1</sub> pinned the medal **onto** himself<sub>1</sub>.

Let us now see how this generalization fares with Lees and Klima's contrasts, repeated below as (146-147). Recall that these minimal pairs keep the same prepositions, and that the pronoun and the anaphor alternate according to the choice of verb. Consequently, I argue that the prepositions *around* and *on* are ambiguous between path and place meanings, and map them accordingly to different structures.

- (147) (a) The men<sub>1</sub> **cast** a smokescreen around themselves<sub>1</sub>. (Repeated from 11)  
 (b) The men<sub>1</sub> **found** a smokescreen around them<sub>1</sub>.
- (148) (a) John<sub>1</sub> **smeared** the oil on himself<sub>1</sub>. (Repeated from 13)  
 (b) John<sub>1</sub> **ignored** the oil on him<sub>1</sub>.

The verbs *cast* and *smear* both describe actions that cannot take place at a single point in space. In this, they contrast with *find* and *ignore*, that may select for stative situations. This is consistent with the path-place generalization if we assign the PPs in the (a) sentences a simple syntax, and the ones in the (b) sentences a Small Clause structure. Accordingly, the spell-out domain of the pronominal element would be the *vP* in the (a) cases, and the *pP* in the (b) ones. The different constituent structure is illustrated below in (148-149) (spell-out domains marked in bold typeface).

- (149) (a) [***vP*** The men<sub>1</sub> cast [***DP*** a smokescreen] [***Path*** around [***DP*** themselves<sub>1</sub>]]].  
 (b) [***vP*** The men<sub>1</sub> found [***pP*** [***DP*** a smokescreen] [***Place*** around [***DP*** them<sub>1</sub>]]]].



- (150) (a) [<sub>VP</sub> John<sub>1</sub> smeared [<sub>DP</sub> the oil] [<sub>Path</sub> on [<sub>DP</sub> himself<sub>1</sub>]]].  
 (b) [<sub>VP</sub> John<sub>1</sub> ignored [<sub>PP</sub> [<sub>DP</sub> the oil] [<sub>Place</sub> on [<sub>DP</sub> him<sub>1</sub>]]].

This allows parallel licensing of pronouns and anaphors that is not induced by logophoricity. If certain prepositions are ambiguous between path and place meanings at the lexical level, they would give rise to different structures and create the appearance of free choice between the pronoun and the anaphor. This is a different ambiguity than the one investigated by Gehrke (2008), which followed from the scope of the prepositions (modification of an entire event vs. an end state) without affecting its meaning. Here, I propose that prepositions may also be ambiguous at the level of the prepositional head, which may encode either a path or a place.

The following example from Hebrew demonstrates that both types of ambiguity are independent and may be entertained within the same sentence. Consequently, the phrase *mitaxat la-sapa* ‘under the sofa’ can be understood as a fixed location (151a), a Derived Goal (151b), or a path (151c).

(151) *Three-way ambiguity in Spatial PPs:*

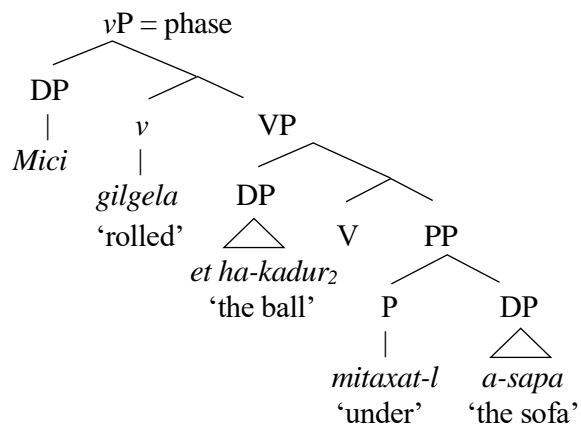
mici gilgela et ha-kadur **mitaxat la-sapa**.

M. rolled ACC DET-ball under to.DET-sofa  
 ‘Mitzi rolled the ball under the couch.’

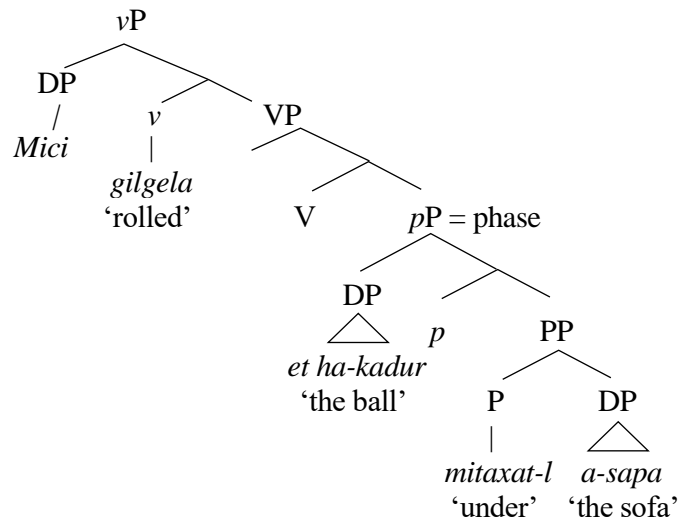
- (a) The ball rolled under the sofa to the other side. (Path)  
 (b) The ball rolled and ended up under the sofa. (Derived goal)  
 (c) The entire event occurred under the sofa. (Fixed place)

I propose that these meanings map to three structural options, and that these are responsible for most of the variation in P anaphoric licensing. The rest is explained by logophoric licensing or lexical uses of the complex anaphor, which are language specific. I argue that when the latter are eliminated, the choice between anaphor and pronoun should follow exhaustively from the presence or absence of a preceding DP with the same reference within the phase, which varies with respect to the particular structure: Path connects a DP as a direct argument of the verb, Derived Goal forms a Small Clause constituent, and the fixed location reading is achieved when a place preposition merges as an adjunct. I leave the question of whether the adjunct PP contains *p* open at this point and postpone its investigation to Section 4.2.5. The structure of Path, Derived Goal, and (fixed) Place are given in (152), (153), and (154), respectively,

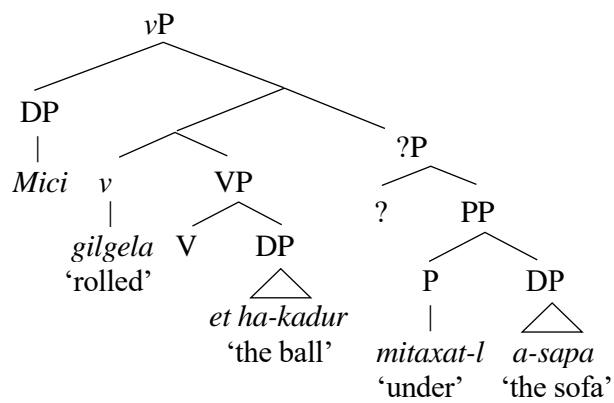
(152) *Path*:



(153) *Derived Goal (to be revised in 183)*:



(154) *Fixed location (to be revised in 193)*:



Locality constraints predict that, given these structures, functional PPs and Paths would require an anaphor to refer to any preceding DP in the sentence, on a par with direct objects, while Derived Goal constructions containing a Place preposition would express subject coreference via pronouns. A complex anaphor should also be licensed in English animate Derived Goals if it corefers with the logophoric center. The rest of the judgments should converge for both languages. These predictions are confirmed in Table 12, which presents judgments collected from Hebrew and English speakers for the four constructions discussed so

<b>P</b>	<b>[ + animate]</b>	<b>[ – animate]</b>
	(1) <i>sara<sub>1</sub> ra'ata {et miriam<sub>2</sub>/ota<sub>2</sub>/et acma<sub>1</sub>}.</i>	(3) <i>ha-radar ziha<sub>1</sub> {matos/oto<sub>2</sub>/et acmo<sub>1</sub>}.</i>
–	(2) <i>Sara<sub>1</sub> saw {Miriam<sub>2</sub>/her<sub>2</sub>/herself<sub>1</sub>}.</i>	(4) <i>The radar<sub>1</sub> detected {a plane/it<sub>2</sub>/itself<sub>1</sub>}.</i>
Funct.	(5) <i>sara<sub>1</sub> šalxa {le-miriam<sub>2</sub>/la<sub>2</sub>/le-acma<sub>1</sub>} mixtav.</i>	(7) <i>ha-radar<sub>1</sub> šalax {la-migdal/lo<sub>2</sub>/le-acmo<sub>1</sub>} otot.</i>
	(6) <i>Sara<sub>1</sub> sent a letter to {Miriam<sub>2</sub>/her<sub>2</sub>/herself<sub>1</sub>}.</i>	(8) <i>The radar<sub>1</sub> sent signals to {the tower<sub>2</sub>/it<sub>2</sub>/itself<sub>1</sub>}.</i>
Path	(9) <i>sara<sub>1</sub> zoreket et ha-kadur le-kivun {miriam<sub>2</sub>/-a<sub>2</sub>/acma<sub>1</sub>}.</i>	(11) <i>ha-mamtera<sub>1</sub> hetiza majim lekivun {miriam<sub>2</sub>/-a<sub>2</sub>/acma<sub>1</sub>}.</i>
	(10) <i>Sara<sub>1</sub> throws the ball toward {Miriam<sub>2</sub>/her<sub>2</sub>/herself<sub>1</sub>}.</i>	(12) <i>The sprinkler<sub>1</sub> sprayed water toward {Miriam<sub>2</sub>/it<sub>2</sub>/itself<sub>1</sub>}.</i>
Place	(13) <i>sara<sub>1</sub> zoreket et hakadur lejad {miriam<sub>2</sub>/-a<sub>1/2</sub>/*acma<sub>1</sub>}.</i>	(15) <i>ha-mexona<sub>1</sub> memakemet et ha-sxora lejad {miriam<sub>2</sub>/-a<sub>1/2</sub>/*acma<sub>1</sub>}.</i>
	(14) <i>Sara<sub>1</sub> throws the ball next to {Miriam<sub>2</sub>/her<sub>1/2</sub>/herself<sub>1</sub>}.</i>	(16) <i>The machine places the products next to {Miriam<sub>2</sub>/it<sub>1/2</sub>/*itself<sub>1</sub>}.</i>

**Table 12:** Pronominal licensing according in direct object and PP positions. The first and second lines of each sell are close equivalents in Hebrew and English (respectively)

far (direct object, functional P, Path, Derived Goal), three complement types (full DP, pronoun, complex anaphor), and two antecedent types (animate and inanimate antecedents).

The following sections provide two types of semantic correlates to the proposed syntactic distinction: Section 4.2.2 will show that the non-complementarity between pronouns and anaphors that is observed in inanimates and Hebrew PPs is indicative of a Path-Place ambiguity at the preposition level, and Section 4.2.3 will show that only Place prepositions encode a result state.

#### 4.2.2 Non-complementarity is ambiguity

The goal of the current section is examining whether instances of free choice between pronouns and anaphors in PPs follow from ambiguity between path and place meaning at the level of the preposition. Following the case made in Section 2.5, I examined this question using Hebrew prepositions, to exclude the possibility of logophoric licensing of the anaphor.

I examined anaphoric dependencies crossing nine common Hebrew prepositions, selected for their ability to support contexts of subject coreference as in (142). An abstract representation of the structure is given in (155).

(155) *Tested environment:*

DP<sub>1</sub> ... V ... DP<sub>2</sub> ... P ... PRON<sub>1</sub>/REFL<sub>1</sub>.

The prepositions were classified as place if they were acceptable in stative contexts, and as path otherwise. The final sample included two path prepositions (*el* ‘to’, and *le-kivun* ‘toward’) and seven place prepositions (*me’al* ‘above, over’, *mitaxat* ‘under’, (*mi*)*sviv* ‘around’, *lifne* ‘in front of’, *me’axore* ‘behind’, *leyad* ‘next to’, *mul* ‘in front of’). I found that three prepositions allowed a choice between a pronoun and an anaphor in the tested position: *misviv* ‘around’, *me’al* ‘above’, and *mitaxat* ‘under’. The overall judgements are summarized in Table 13.

(156) *Non-complementarity in Hebrew P anaphors:*

(a) sara<sub>1</sub> gilgela et ha-štixim { misviv-a<sub>1</sub>/ misvaiv le-acm-a<sub>1</sub> }.

S. rolled ACC DET-carpets around-3SG.F around to-REFL-3SG.F  
‘Sara rolled the carpets around her/herself.’

(b) brajent<sub>1</sub> zorek et ha-kadur { me’al-av<sub>1</sub>/ me’al acm-o<sub>1</sub> }.

B. throws ACC DET-balls over-3SG.M over REFL-3SG.M  
‘Bryant throws the ball over him/himself.’

(c) ha-texnaj<sub>1</sub> mašax et ha-kvalim { mitaxat-av<sub>1</sub>/ mitaxat le-acm-o<sub>1</sub> }.

B. pulled ACC DET-cords under-3SG.M under to-REFL-3SG.M  
‘The technician pulled the cords under him/himself.’

	Meaning	Anaphor	Pronoun
(a) <i>el</i> ‘to’	Path	✓	*
(b) <i>le-kivun</i> , <i>le’ever</i> ‘toward’	Path	✓	*
(c) <i>me’al</i> ‘above, over’	Place	✓	✓
(d) <i>mitaxat</i> ( <i>le-</i> ) ‘under’	Place	✓	✓
(e) ( <i>mi</i> ) <i>sviv</i> ‘around’	Place	✓	✓
(f) <i>lifne</i> ‘in front of’	Place	*	✓
(g) <i>me’axore</i> ‘behind’	Place	*	✓
(h) <i>leyad</i> ‘next to’	Place	*	✓
(i) <i>mul</i> ‘in front of’	Place	*	✓

**Table 13:** Licensing of coreferential pronouns and anaphors in Hebrew spatial prepositions

I argue that these instances of non-complementarity also follow from the ambiguity of the preposition. To do so, I will first provide evidence that they cannot be logophoric; I will then show that these prepositions give rise to two distinct meanings fitting the definitions of place and path; Lastly, I will demonstrate that the path reading of the prepositions correlates with the anaphor, and the place reading with the pronoun.




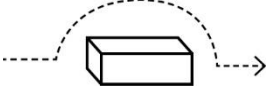

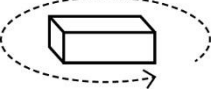
The question of whether the anaphors in (156c-e) are logophoric may seem redundant, as it was already established that the Hebrew anaphor does not receive this interpretation (see also Bassel 2018a, 2018b). However, we are still required to rule out marginal or emerging occurrences of Hebrew logophoricity in these contexts, which can be done following Charnavel and Sportiche (2016) by constructing similar configurations with inanimate antecedents.

The sentence in (157) shows that an inanimate antecedent such as *mamtera* ‘sprinkler’ triggers the same judgements per preposition as were given when the antecedent was animate. I take this to indicate that the non-complementarity that is observed in the prepositions *me’al* ‘above’, *mitaxat* ‘under’ and (*mi*)*sviv* ‘around’ is not caused by logophoric licensing.

(157) *No effect for inanimacy:*

ha-mamtera    hetiza    ma’jim{me’al/ mitaxat/ sviv    \*lejad/ \* mul}    acm-a<sub>1</sub>.  
 DET-sprinkler sprayed water    above    under    around next.to in.front.of REFL-3SG.F  
 ‘The sprinkler sprayed water above/toward/ around/\*next to/\*in front of itself.’

Can these prepositions express two different spatial settings that correspond to path and place? The following figure shows that the answer is yes. Each of these prepositions can convey a function from an object to a general location in its surroundings, or a path that goes through this area.

	<i>me'al</i> 'above, over'	<i>mitaxat</i> 'under'	<i>(mi)sviv</i> 'around'
Place			
Path			

**Figure 2:** Graphic illustrations of the path and place readings of *me'al* 'above', *mitaxat* 'under' and *(mi)sviv* 'around'

I therefore argue that the fact that these prepositions may express subject coreference with either anaphors or pronouns follows from their ability to encode both path and place meanings. This predicts that the ambiguity would disappear in contexts that only support one of the readings and this is indeed confirmed for *sviv* in (158).

(158) (a) *sviv* 'around' – Path reading:

[kadur ha-arec]<sub>1</sub> mistovev { \*sviv-o<sub>1</sub>/ sviv acm-o<sub>1</sub> }.  
 ball.of DET-earth turns around-3SG.M around REFL-3SG.M  
 'The earth spins around \*it/itself.'

(b) *sviv* 'around' – Place reading:

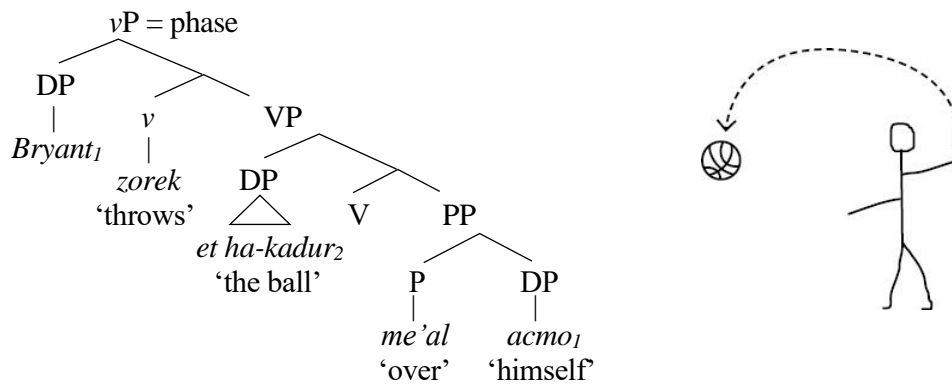
le-kadur ha-arec<sub>1</sub> yeš kim'at xamešet alafim lavjanim  
 to-ball.of DET-earth exist almost five thousands satellites  
 {sviv-o<sub>1</sub>/ \*sviv acm-o<sub>1</sub> }.  
 around-3SG.M around REFL-3SG.M  
 'The earth has nearly 5,000 satellites around it/\*itself.'

Another way to strengthen one of the meanings at the expense of the other is through the stacking of additional PPs which are unambiguous. When a potentially ambiguous preposition such as *me'al* is supplemented by an unambiguous path PP such as *la-cad ha-šeni* 'to the other side', as exemplified below in (159a), the most accessible meaning is one where two paths simultaneously describe the ball's motion. Similarly, adding an unambiguous Place PP such as *ba-avir* (159b) invites a Place reading of *me'al*. In terms of anaphoric licensing, Hebrew speakers show a strong preference for the anaphor in the former case and a pronoun in the latter. I take this to mean that *me'al* maps to different syntactic structures, as seen in (160).

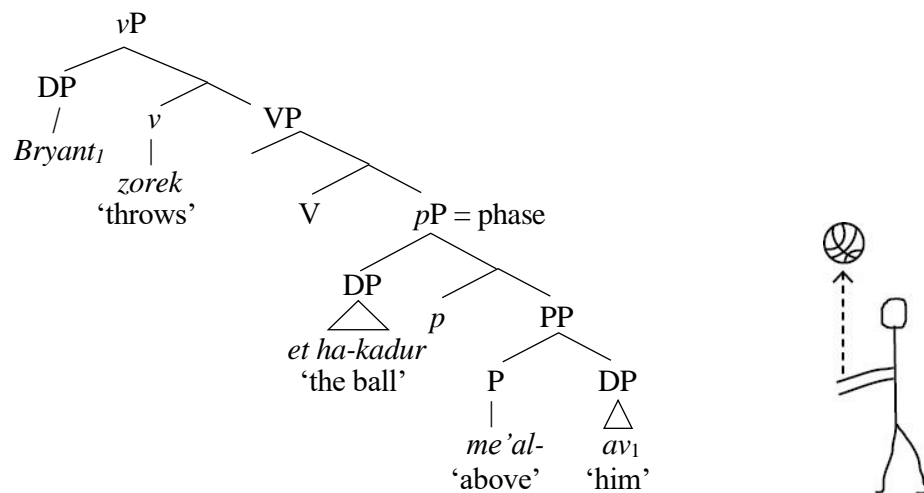
(159) *Disambiguation by stacking:*

- (a) braj<sub>ent</sub><sub>1</sub> zorek et ha-kadur{??me'al-av<sub>1</sub>/ me'al acm-o<sub>1</sub>}  
 B. throws ACC DET-ball above-3SG.M above REFL-3SG.M  
 la-cad ha-šeni šel ha-migraš.  
 to.DET-side DET-second of DET-court  
 'Bryant throws the ball above ??him/himself to the other side of the court.' (Path)
- (b) braj<sub>ent</sub><sub>1</sub> zorek et ha-kadur ba-avir { me'al-av<sub>1</sub>/ ??me'al acm-o<sub>1</sub>}.  
 B. throws ACC DET-ball in.DET-air above-3SG.M above REFL-3SG.M  
 'Bryant throws the ball in the air above him/??himself.' (Place / Derived Goal)

(160) *Path:*



(161) *Derived Goal:*



The following subsection presents semantic evidence for this distinction, namely that a result state is encoded by the PP in (161), but not in (160).

### 4.2.3 Evidence from result meanings

The goal of the current subsection is to show that the proposed division between paths and Derived Goals in terms of syntactic structure is independently supported to account for semantic differences, namely the distribution of result meanings in Spatial PPs.

Hoekstra (1988) argued for Small Clauses in PPs as in other categories based on evidence that the head imposes a subject-predicate relation on a noun preceding it. The semantic import of this relation is the result state, which is basically a two-place predication with no tense features. If this small-clause analysis only holds for place prepositions (particularly in the context of Derived Goal), then result meanings should accordingly be limited to this type of prepositions.

The traditional literature on Spatial PPs associates the path preposition *to* with a meaning of arrival, which is essentially a result meaning (Jackendoff 1973, 1987, Piñón 1993, Smith 1997). However, I argue that this meaning component is not in the semantics of the preposition itself.

Previous literature has already presented evidence to that effect. In a corpus analysis comparing natural occurrences of *into x* and *in x* in directional contexts, Nikitina (2008) found that *in* “emphasizes” the goal of motion, while *into* describes the path of motion. That is, while *in*, as a place preposition, describes the endpoint of the motion event, adding *to* shifts its meaning such that it describes the trajectory. Similarly, Rappaport Hovav (2008) demonstrated that entailment of arrival in *to* phrases varies according to the verb’s event structure, and more specifically, to the property of homomorphism between sub-events defined in Krifka (1999). This notion speaks to the correspondence between an action that causes motion and the distance taken by the moving entity, which is simultaneous in verbs like *walk* or *push*, but separate in *throw*, *send*, or *launch*. Rapaport Hovav showed that with verbs of the latter type, arrival can be cancelled without causing a contradiction, despite the presence of Path prepositions. Representative examples are given in (162).

(162) *No result entailment in Paths (non-homomorphic verbs, Rappaport Hovav 2008 p.29):*

- (a) I threw the ball **to Mary** (but aimed badly and she didn’t catch it).
- (b) We launched the rocket to the moon (but it blew up before it got there).

Bruening (2018) showed further that depictive predicates that join path constructions can access the path, but not the result state. Consequently, when adjectives like *wet* are applied to verbs taking Path PPs, they can be cancelled for the stage of arrival (163a). This is impossible for similar Derived-Goal constructions headed by the place preposition *in* (163b).



(163) *Modification of result state in Path and Place Ps (adapted from Bruening 2018: 13):*

- (a) Albert walked to the flat wet but got there dry.
- (b) Albert walked in the flat wet # but got there dry.

Further support arrives from recent experimental work by Martin et al. (2021), who show that arrival entailments are generally cancellable for English *to*, German *zu* and French *à*. For example, in the context in (164), combining a sentence containing a *to*-phrase with descriptions of delaying events had a significant effect on the level of confidence participants expressed regarding an entailment of arrival.

(164) *No result entailment with to (Martin et al. 2021: 12):*

Nina is a heavy smoker. At three o'clock in the morning she walked/went to the convenience store on the next street, but on the way she ran into good friends at the bus stop.

Q: How safely can you conclude that Nina reached the convenience store?

Finally, in Bassel (2018a) I presented minimal pairs that demonstrate a systematic contrast in result entailments between matched Path and Derived-Goal constructions, seen below in (165-169). In all these examples, the path preposition *to* allows adding a negative statement that rejects a scenario of arrival without reaching a contradiction, which is impossible with the place prepositions *in*, *next to*, and *over*.

(165) *Result entailment in Paths and Derived Goals:*

- (a) She kicked the ball **to** his face (but he dodged it).
- (b) She kicked the ball **in** his face (#but he dodged it).

(166) (a) I threw the book **to** Mary (but aimed badly and it didn't get there).

- (b) I threw the book **next to** Mary (#but aimed badly and it didn't get there).

(167) (a) North Korea launched a rocket to Okinawa (but it blew up before it got there).

- (b) North Korea launched a rocket over Okinawa (#but it blew up before it got there).

(168) (a) zarakti et ha-sefer **la**-xacer ha-axorit aval hu lo hegi'a le-šam.  
threw.1SG ACC DET-book to.DET-yard DET-backbut it NEG arrive to-there  
'I threw the book to the backyard but it didn't get there.'

- (b) zarakti et ha-sefer **ba**-xacer ha-axorit # aval hu lo hegi'a le-šam.  
threw.1SG ACC DET-book in.DET-yard DET-back but it NEG arrive to-there  
'I threw the book in the back yard # but it didn't get there.'

- (169) (a) sara yarta **la**-matara ve-hex<sup>ti</sup>'a.  
 S. shot to.DET-target and-missed  
 'Sara shot toward the target and missed.'
- (b) sara yarta **ba**-matara # ve-hex<sup>ti</sup>'a.  
 S. shot in.DET-target and-missed  
 'Sara shot the target #and missed.'

The distribution of result meanings across motion events therefore indicates that place prepositions encode a two-place relation between the location and the figure argument, while path prepositions merely imply it. This supports a Small Clause analysis headed by *p* for Derived Goal constructions based on Place prepositions and explains the fact that they license pronouns under the phase-based analysis adopted here.

#### 4.2.4 Anaphors as Path diagnostics: The case of Hebrew *al* 'on, at'

The goal of this section is showing that the licensing of complex anaphors in PPs could be used as a diagnostic for the presence of path readings through the case of the preposition *al* 'on, at'. Intuitively, *al* is a place preposition describing a location on the surface of an object, which has an additional meaning akin to that of the English path preposition *at* (i.e., in the direction of). Given the meaning components presented in Section 4.1.2, this meaning may be generated in two different ways: (i) lexical ambiguity, *al* has an additional meaning at the P level; or (ii) syntactic ambiguity, *al* may integrate as an endpoint and generate the 'at' meaning through a Derived-Goal configuration.

In an example like (170) those two meanings are indistinguishable, i.e., the truth conditions would be the same whether the PP describes the tomatoes' path of motion toward the stage, or their final location on the stage. A Derived-Goal meaning should be obtained either way, based on *al*'s basic place meaning, which means there is no reason to assume an additional path reading on semantic grounds.

(170) *The preposition al 'on, at':*

- sara zarka agvaniot al ha-bama.  
 S. threw tomatoes on DET-stage  
 'Sara threw tomatoes on/at the stage.'

However, if the object of *al* was an anaphoric element, its form should be different in each reading: the Path reading should require an anaphor for coreference, while the place reading should license a pronoun. The two attested examples in (171) show that both a pronoun and an anaphor may be licensed as the object of *al*. According to the analysis proposed here, this is indicative of the availability of both Place and Path readings, which generate a similar overall meaning in this context.

(171) *Anaphoric interchangeability with al (web examples):*

- (a) hu<sub>1</sub> zarak **al acm-o<sub>1</sub>** xulca randomalit.  
 he threw on REFL-3SG.M shirt random  
 ‘He threw on himself a random shirt.’
- (b) pro<sub>1</sub> notelet jadajim, **sama al-e’a<sub>1</sub>** maše’u kalil ve-jocet.  
 (3SG.F) washes hands puts on-3SG.F something light and-exits  
 ‘(she) washes her hands, puts something light on her and leaves the house.’

If the licensing of a complex anaphor marks the existence of a path reading, following the findings of Section 4.2.2, there should be a reading where *al* does not encode information regarding a result state. In this case, *al* should be able to accommodate a rejection of the arrival of the entity at the surface location. Sentence (172) shows that an arrival meaning can indeed be canceled with *al*, without causing a contradiction.

(172) *no result entailment with al:*

- sara zarka agvaniot al ha-saxkanim (aval hen lo pag’u ba-hem).  
 S. threw tomatoes on DET-actors but they NEG hit in-3PL.M  
 ‘Sara threw tomatoes at the actors (but they didn’t hit them).’

This shows that a P anaphor that occurs when logophoric licensing is not available (e.g., in Hebrew) is indicative of a path reading at the level of P.

### 4.3 Different places

The previous section established the claim that Path and Place prepositions map to different structures in the context of motion verbs. I argued that Place prepositions join with a little p head and project a Small Clause, while Path prepositions are licensed directly by the verb. The

goal of the current section is to show that Place prepositions themselves have more than one structural option.

I begin by asking whether a Small Clause PP comes at the expense of a direct object in the VP, and conclude that perception verbs differ in this respect from Derived Goals. The closing section will then show that adjunct PPs are not Small Clauses, and that their spellout domain can be detected from their scope.

#### 4.3.1 Severing the internal argument from its verb?

We have seen that Place PPs occur as Small Clauses in two types of contexts – Derived Goals and perception verbs – but have yet to ask how the small-clause subject is represented. I have so far adopted Hoekstra (1988)’s proposal that the prepositions’ subject replaces the direct object DP. In this section, I show that this analysis derives Place PPs that occur with perception verbs, while Derived Goal constructions seem to represent both the direct object and the preposition’s subject positions and should therefore receive a control analysis.

- (173) (a) Bryant<sub>i</sub> throws the ball above him<sub>i</sub>.  
 (b) Bryant<sub>i</sub> sees the ball above him<sub>i</sub>.

Applying Hoekstra’s analysis for Spatial PPs leads to structure in (174). The DP *the ball* is represented as the argument/subject of the PP *above*, and not as the Theme of the verbs *throw* or *see*. The accepted meaning would be such that the verbs’ argument is a state rather than an object/individual, setting *throw* on a par with Exceptional Case Marking (ECM) verbs.

- (174) *Place prepositions as small-clause resultatives (Hoekstra):*

Bryant<sub>i</sub> throws/sees [<sub>PP</sub> the ball above him<sub>i</sub>].

I argue that an ECM analysis works for perception verbs, while Derived Goals are more compatible with a control analysis. The primary evidence arrives from the option of replacing the argument in question with an expletive pronoun, which indicates a non-thematic position. The following examples show that this is possible for classical ECM verbs (175-176) and perception verbs (177), but not for Derived Goal constructions (178).

- (175) *Expletive subjects in ECM complements (Rothstein 2016: 18):*

- (a) Mary considers John wrong.  
 (b) Mary considers it obvious that John is wrong.

(176) (a) I made the dress fit.

(b) I made it so that the dress fit.

(177) *Expletive subject in perception verb complements:*

(a) I saw rain.

(b) I saw it rain.

(178) *No expletives in derived goal constructions:*

(a) I dropped the keys on the table.

(b) \*I dropped it so that the keys were on the table.

The contrast between perception verbs and Derived Goals is revealed further in the licensing of the Hebrew propositional anaphor *ze*. Setting aside previous discussion of the syntactic status of *ze* (e.g., Borer 1984; Hazout 1994), it can be shown that Hebrew perception verbs can shift between a direct object (179a) and a *ze* argument describing a state of affairs (179b). Attempting to do the same with Derived Goal constructions fails, as *ze* can only be understood as a referential pronoun (180).

(179) *The interpretation of ze in perception verbs:*

(a) sara { ra'ata/šam'a } et ha-xatul šel-a nofel me-ha-ec.

S. saw heard ACC DET-cat of-3SG.Fs fall from-DET-tree  
'Sara saw/heard her cat falling off the tree.'

(b) sara { ra'ata/ šam'a } et **ze** (še-ha-xatul nafal me-ha-ec).

S. saw heard ACC ze that-DET-cat fall from-DET-tree  
'Sara saw/heard it (the cat falling off the tree).'

(180) *Only referential ze in derived-goal constructions:*

(b) sara { zarka/henixa } et ha-tik šel-a lejad ha-delet.

S. threw placed ACC DET-bag of-3SG.F next.to DET-door  
'Sara threw/placed her bag next to the door.'

(b) sara { zarka/henixa } et **ze** (\*še-ha-tik lejad ha-delet).

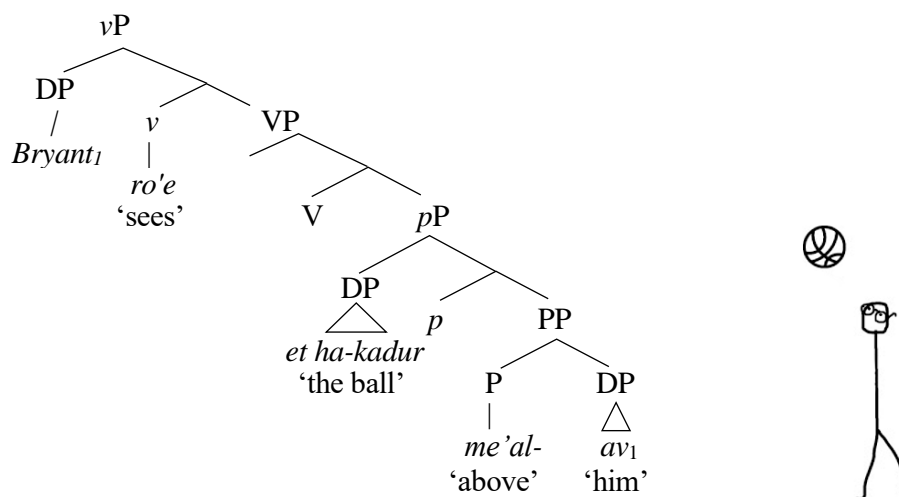
S. threw placed ACC ze that-DET-bag next.to DET-door  
'Sara threw/placed it (\*that the bag is next to the door).'

This shows that motion verbs cannot exchange their direct object for a state, which casts certain doubt on their ability to do so within a Derived Goal construction. I will therefore

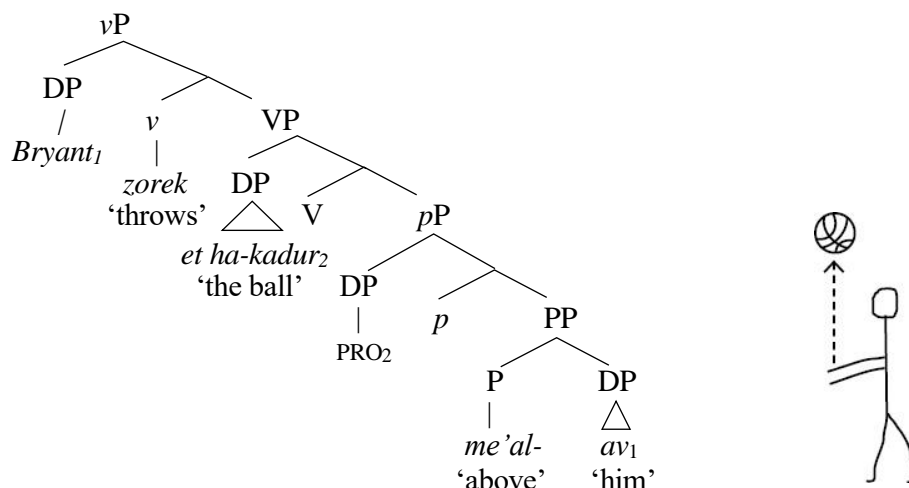
assume that the verbs in Derived Goal constructions take both a direct object and a PP, and that the Figure argument is represented in two positions (object of V + subject of P).

I avoid a movement analysis since the target position is thematic, but see Postal (1974), Lasnik & Saito (1991) and Runner (2006) for arguments in favor of raising to object, and Mateu & Acedo-Matellán (2012), Bryant (forthcoming), for a raising analysis of Spatial PPs. For the current purposes of distinguishing Derived Goal construction from perception verbs, I propose an object control analysis for Derived Goals, where PRO takes the role of the subject of *p*. The two types of Small Clauses are illustrated in (181-182).

(181) *Perceived location:*



(182) *Derived Goal:*



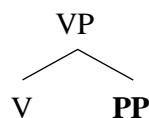
### 4.3.2 Spatial PPs as adjuncts

After concluding that spatial PPs divide into Paths (direct arguments) and Places (Small Clauses), I now turn to the ask what the structure of adjunct PPs is. Since adjunct PPs are formed by Place prepositions, we could have assumed that they include little *p* and give rise to the same Small Clause structure. However, from a semantic perspective, adjuncts are modifiers and should not require a local subject. At this point, we can consider data from anaphoric licensing in order to determine between these options: if the first assumption is correct, then adjunct PPs would allow coreferential pronouns. If the second one is, we would need to ask in which spellout domain these adjuncts fall.

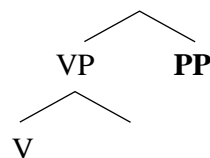
There are two main challenges in accessing the adjunct reading: it is difficult to distinguish it from other readings of place prepositions, and even more difficult to construct contexts that require coreference with other DPs.

The first challenge follows from the fact that both adjunct and argument PPs occur as satellites of V, and therefore present no contrast in their surface order, as seen in (183).

(183) (a) *Argument PP:*



(b) *Adjunct PP:*



Much of the previous literature (e.g., Hestvik 1991, Reinhart and Reaulnd 1993) classified PPs as adjuncts based on optionality. Some of the PPs that received this classification are presented in (184).

(184) *PPs formerly treated as adjuncts:*

(a) Max<sub>1</sub> saw a ghost [**PP** next to {him<sub>1</sub>/himself<sub>1</sub>}]. (Reinhart and Reuland 1993: 59a)

(b) John<sub>1</sub> found a dollar bill [**PP** in front of him<sub>1</sub>] (Hestvik 1991: 14a)

Pronouns are acceptable in these examples, which could suggest that adjuncts PPs are independent at the interface. However, adopting the methodology in Gehrke (2008), it can be shown that these sentences are ambiguous between two readings: an adjunct reading, in which the location modifies the entire event, and a Small Clause reading, where the location is limited to the perceived state.

(185) Max saw a ghost next to the window.

- (a) Adjunct reading: The event took place next to the window.
- (b) Small Clause reading: The ghost was next to the window.

(186) John found a snake behind the fence.

- (a) Adjunct reading: Both John and snake are behind the fence.
- (b) Small Clause reading: The snake is behind the fence.

An examination of adjunct PPs should therefore focus on verbs that do not take Small Clause constituents, such as *read* in (187).

(187) Sara read a book behind the fence.

- (a) Adjunct reading: Sara read while being behind the fence.
- (b) Small clause unavailable: \*Only the book was behind the fence.

A meaning where Sara reads a book which is across the fence from her is not accessible in (187), even if the context requires it (e.g., in a scenario where Sara uses binoculars to read over the fence). The following examples show that *read* contrasts with *see* in not admitting a coreferential reading of a pronoun in the PP. English and Hebrew are alike in this respect.

(188) *Pronominal licensing in place PPs – objects of perception vs. true adjuncts:*

- (a) Sara saw a book next to {her<sub>1</sub>/herself<sub>1</sub>}.
- (b) \*Sara<sub>1</sub> read a book next to {her<sub>1</sub>/herself<sub>1</sub>}.

(189) (a) sara<sub>1</sub> ra'ata sefer { lejad-a<sub>1</sub>/ \*lejad acm-a<sub>1</sub> }.

S. saw book next.to-3SG.F next.to REFL-3SG.F  
'Sara saw a book next to her.'

(b) \*sara<sub>1</sub> kar'a sefer { lejad-a<sub>1</sub>/ lejad acm-a<sub>1</sub> }.

S. read book next.to-3SG.F next.to REFL-3SG.M  
'\*Sara read a book next to her.'

These examples demonstrate the second challenge in examining adjunct anaphors, namely, finding contexts that enable coreference. In the (b) examples above, both an anaphor and a pronoun are out due to the contradiction that follows from an entity being located with respect to itself. However, (190) shows that when the PPs are used metaphorically, anaphors are required for coreference. I take this to indicate that the Place adjunct falls in the *vP*'s spellout domain.



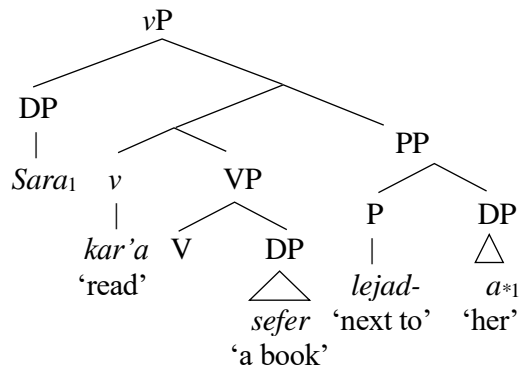
(190) (a) Stand behind yourself: An embodied experiential to fortify inner support and resilience  
(‘The Embodied Podcast’, episode 104)

(b) efo      še-ani   omedet   lejad   acm-i...  
where   that-I   stand   next.to   REFL-1SG  
‘Where I’m standing next to myself’

(*livroax mi-xalom* ‘escaping a dream’ by Motti Pearlman)

I therefore suggest that adjunct PPs lack little *p*, and are spelled out with the *vP*. The structure for a sentence like (190b) will be as in (191).

(191) *Adjunct*:



This is still not the final option for Place prepositions. In the following example, the verb *clean* does not license a Small Clause, there is a PP that describes the location of the window and allows a pronoun with a coreferential reading.

(192) Sara<sub>1</sub> cleaned a window next to her<sub>1</sub>.

Examples like (192) show that adjuncts that modify DPs are not part of the *vP*’s spellout domain, and this principle can be extended to PPs beyond the category of Spatial PPs. The following examples show that temporal PPs and applicatives follow the same pattern.

(193) *Temporal PPs*:

(a) The film<sub>1</sub> was played before it<sub>\*1</sub>. (VP adjunct)  
(b) The speech<sub>1</sub> repeated [the one before it<sub>1</sub>]. (DP adjunct)

(194) *Applicative PPs*:

(a) She<sub>1</sub> came with her<sub>\*1</sub>. (VP adjunct)  
(b) She<sub>1</sub> suggested [a meeting with her<sub>1</sub>]. (DP adjunct)

This concludes the current mapping of the structural options of PPs. Table 14 lists all the options discussed here, and the prediction for the acceptability of a pronoun coreferenced with the subject (DP1).

Meaning		Structure	Pronoun coreference
Functional prepositions		$[_{vP} DP_1 \dots [_{PP} P DP_2 ]]$	*
Spatial prepositions	Path	$[_{vP} DP_1 \dots [_{Path} P DP_2 ]]$	*
	Place/ Derived goal	$[_{vP} DP_1 \dots [_{pP} p DP_2 [_{Place} P DP_3 ]]]$	✓
	VP adjunct	$[_{vP} DP_1 \dots [_{PP} P DP_2 ]]$	*
	DP adjunct	$[_{vP} DP_1 \dots [_{DP} D NP [_{PP} P DP_3 ]]]$	✓

**Table 14:** Structural typology of PPs – final.

#### 4.4 Conclusion

The starting point of this chapter was a prevalent claim in the literature on P anaphors, stating that their distribution cannot be fully accounted for due to the interaction of many discourse factors. I showed that considering all the known information about logophoric licensing of complex anaphors and different meaning components of the PP generates a predictable system. Local coreference was shown to be obtained in the following ways.

(195) *Anaphoric licensing in PPs:*

- (a) P arguments are spelled out with the  $vP$  and require an anaphor for coreference with C-Commanding DPs in the  $vP$  phase.
- (b) P adjuncts are spelled out with the verbs they modify.
- (c) PPs that combine with little  $p$  are spelled out independently and license simple pronouns for conference with external DPs.
- (d) Attitude contexts enable logophoric licensing of anaphors.

These principles were constructed based mainly on spatial PPs, but end up referring to abstract structural notion that should apply in a similar way to PPs of other categories.

## 5.

### Anaphors in DPs

The previous chapter presented the main arguments in the debate around non-complementarity of pronouns and anaphors in the PP domain. I showed that treating P anaphors as any other environment and controlling for both discursive and syntactic parameters lead to convergence of the data toward a predictable system, where (i) the distribution of anaphors is strictly determined by the value of referential identity within the phase, and (ii) anaphors and pronouns are in complementarity for every given structure.

Many of the questions raised with respect to PPs extend to anaphors embedded in DPs, which also appear to license anaphors and pronouns in the same positions. This too has long been understood as a challenge to locality-based systems, as it suggests that the use of anaphors is not constrained by syntactic distance but rather left open to the speaker's choice.

(196) *Non-complementarity in DP anaphors:*

- (a) Lucie saw a picture of {her<sub>1</sub>/herself<sub>1</sub>}.
- (b) Max hates jokes about {him<sub>1</sub>/himself<sub>1</sub>}

The conclusion of this chapter will be similar to that of Chapter 4: the relative freedom in the choice of anaphoric elements in DPs is not indicative of the relaxation of locality constraints, but rather of diverse structural options with independent semantic evidence. Section 5.1 will outline the different views on DP anaphors and evidence for their independence. Section 5.2 presents data from Hebrew DPs, and shows that it supports Charnavel and Bryant's analysis while also confirming Baker's (1995) claims for headless intensifiers presenting as long-distance anaphors. Section 5.3 concludes the chapter.

#### 5.1 Locality and logophoricity

As shown for PPs in the previous chapter, the parallel licensing of pronouns and anaphors is not a characteristic of DPs as a whole. It is known to be a characteristic of a particular sub-domain known as representational nouns or Picture DPs. This term relates to nouns describing objects that have informational content (*picture*, *book*, etc.), yet, the phenomenon described

here is relevant to argument-taking nouns in the broader sense, including event and result nominalizations.

As with PPs, the data goes back to Lees and Klima (1963), who illustrated the uniqueness of representational nouns compared to nouns that denote physical objects with no additional content (e.g., *room*, *chair*). The sentences below illustrate that Picture DPs may embed either an anaphor or a pronoun with a meaning of subject coreference (197a), while physical nouns consistently express coreference via pronouns (197b).

(197) *Anaphoric licensing in DPs* (Lees and Klima 1963: 86, 88-90)

- (a) We showed him<sub>1</sub> [<sub>DP</sub> a picture of {his<sub>1</sub>/himself<sub>1</sub>}].
- (b) We showed him<sub>1</sub> [<sub>DP</sub> a room of {his<sub>1</sub>/\*himself<sub>1</sub>}].

Previous explanations for the non-complementarity in Picture DPs have developed in two parallel lines, known as PRO in DP and logophoric licensing. The PRO analysis goes back to Chomsky (1981) and assumes a covert subject in Spec, DP on a par with non-tensed clauses, but optional.

(198) *PRO in infinitive clauses and nouns* (adapted from Chomsky 1981: pp.64):

- (a) I<sub>1</sub> want [<sub>IP</sub> PRO<sub>1</sub> to go to a movie].
- (b) I<sub>1</sub>'d prefer [<sub>DP</sub> (PRO<sub>1</sub>) going to a movie].

PRO is in the same minimal phrase as the DP anaphor, and therefore functions as a local antecedent and determines whether coreference with the entity it refers to would be expressed via a pronoun or a reflexive, as seen in (199).

(199) They<sub>1</sub> heard [<sub>DP</sub> (PRO<sub>1</sub>) stories about {them<sub>1</sub>/themselves<sub>1</sub>}].

Reinhart and Reuland's (1993) Reflexivity theory offered an alternative explanation, suggesting DPs with no overt possessors are opaque to Condition A, which enables logophoric licensing of the anaphor alongside a pronoun. The two lines of analysis were combined in Charnavel (2019, 2020) and Charnavel and Bryant (2023), who argued that both manners of anaphoric licensing are attested.

The upcoming sections will discuss the main evidence proposed in support of covert subjects in DPs and logophoric licensing of DP anaphors (Section 5.1.1). I will then present a combined approach (Section 5.1.2) and claim that Hebrew anaphors provide evidence supporting it by showing that they are acceptable in contexts that fit the PRO in DP analysis, but not the logophoric ones (Section 5.2).



Predicate-based views of anaphors (Reinhart and Reuland 1993, Pollard and Sag 1992) focused on the DP subject from a different angle, stating that in its absence, DPs are excluded from the range of Condition A, on a par with (seemingly) subject-less PPs. Under this approach, there are no covert possessors, anaphors are bound by the overt possessor when it is present and are constrained by discourse requirements when it is absent.

This relates to a claim in Kuno (1987), that anaphors in Picture DPs are meant to communicate the awareness of an entity to their representation. Pollard and Sag demonstrated the sensitivity of DP anaphors to perspective with examples like (204).

(204) *Perspective effects on DP anaphors* (Pollard & Sag 1992 p.274):

- (a) **John**<sub>1</sub> was going to get even with Mary.  
That picture of {him<sub>1</sub>/himself<sub>1</sub>} in the paper would really annoy her.
- (b) **Mary**<sub>2</sub> was quite taken aback by the publicity John<sub>1</sub> was receiving.  
That picture of {him<sub>1</sub>/\***himself**<sub>1</sub>} in the paper really annoyed her.

These effects do not level with the presence of a PRO subject unless PRO itself is affected by the shifts in perspective.

Meanwhile, Runner et al. (2003, 2006) took the logophoric account a step further and using eye-tracking experiments showed that the center of perspective may be established independently of overt possessors. In these experiments, participants were faced with three dolls, each with a set of pictures, and received instructions such as (205). Although they most often selected the doll referred to by the local binding reading (here, Harry), eye movements showed that they also considered the doll correlated with the distanced antecedent (Ken).

(205) Have Ken<sub>1</sub> touch [Harry<sub>2</sub>'s picture of himself<sub>1/2</sub>]. (Runner et al. 2006: p.194)

The authors took this to undermine previous views of the structural status of DP internal subjects, and their role in the regulation of coreference in their C-Command domain. They concluded that all DP anaphors are licensed in the discourse and are not affected by constraints following from syntactic locality.

Nevertheless, there is independent evidence for the existence of a covert DP subject. Sichel (2009) showed that Hebrew exhibits evidence for the realization of an implicit subject in nouns, revealing a behavior pattern similar to that of an impersonal subject. In the sentences below, (205a) contains two verbs inflected for third person plural that are understood as containing covert impersonal subjects, *ta'anu* '(they) claimed', *potxim* '(they) open'.

The sentence generates a clear implication that the subjects of the two verbs are disjoint, i.e., the individuals that made the claim are not identical to the ones that open the gate. Sentence (26b) shows that the same effect is obtained when the first verb is replaced with the noun *te'ana* 'claim', which indicates that its implicit Agent is in a C-Commanding position over the subject of *potxim* 'opening'.

(206) (a) IMP<sub>1</sub> ta'anu še-IMP<sub>\*1</sub> potxim et ha-ša'ar be-arba.

claimed.3PL.M that open.M.PL ACC DET-gate at-four

'It was claimed that they're opening the gate at four.'

(b) [IMP<sub>1</sub> ha-te'ana še-IMP<sub>\*1</sub> potxim et ha-ša'ar be-arba] icbena otanu.

DET-claim that open.M.PL ACC DET-gate at-four annoyed us

'The claim that they're opening the gate at four annoyed us.' (Sichel 2009: 7)

Landau (2013) raised a few additional arguments, including overt gender and number agreement that appears to lack an overt trigger. An example is given in (207), where the DP-embedded arguments *šutafot* 'partners' and *jerivot* 'rivals' are specified for a female gender feature that does not agree with any noun in the clause. According to Landau, the only available source for this feature agreement is a covert PRO projected by the noun *avoda* 'work'.

(207) ha-našim<sub>1</sub> ta'anu se-josi to'e. [PRO<sub>1</sub> ha-avoda **ke-šutafot**

DET-women claimed that-Yosi wrong. DET-work as-partner.FM.PL

**ve-lo ke-jerivot]** rak kidma et ha-projekt.

and-not as-rival.FM.PL only advanced ACC DET-project

'The women claimed that Yosi was wrong. Working as partners rather than adversaries only advanced the project.' (Landau 2013: 405)

Similarly, in (208), the anaphor *one another* corefers with the split antecedent John + Mary, a long standing argument in favor of covert arguments (Landau 2010, 2013). PRO may pick multiple references from the previous context, which in turn provides the joint reference to the anaphor. The following examples in (209) show that this is also possible in classical PRO environments such as untensed clauses (209a), but not in direct object positions, that have no reason to have a covert argument (209b).

(208) John<sub>1</sub> reminded Mary<sub>2</sub> how fruitful [PRO<sub>1+2</sub> cooperation with **one another**<sub>1+2</sub>] had been. (Landau 2013: 408)

- (209) (a) John<sub>1</sub> offered Mary<sub>2</sub> [PRO<sub>1+2</sub> to help one another<sub>1+2</sub>]  
 (b) John<sub>1</sub> showed Mary<sub>2</sub> one another<sub>1+2</sub>.

Finally, a vast body of literature examines the interaction of various types of nominals with Voice and the realization of the external argument, which also leads to the conclusion that the role of nominal arguments in anaphor licensing cannot be dismissed or reduced to discourse cues (Alexiadou, Anagnostopoulou, and Schäfer 2008; Alexiadou et al. 2013; Ahdout 2021, among many others).

Both lines of analysis have therefore presented convincing evidence for the existence of binding effects in DPs that may be traced back to a covert subject on the one hand and to the center of perspective on the other. This could imply that the two converge, i.e., that the subject of DP is a logophoric pronoun, whether it is identified as PRO or pro.

However, we have already encountered data that is not supported by this type of convergence, namely the parallel licensing of anaphors and pronouns in Hebrew DPs. Given the ban on the Hebrew anaphor *acm-x* in other logophoric contexts, if anaphoric licensing in DPs was merely logophoric, we would have expected Hebrew DPs to occur exclusively with pronouns, contrary to what is attested.

It could still be argued that Hebrew DPs enjoy privileged discourse conditions that other constituents, like PPs and VPs lack, and that this enables a logophoric reading of *acm-x* only in DP contexts. This would maintain the idea that DP anaphors are exempt from locality constraints and allow speakers a selection of pronominal elements to choose from in accordance with the discourse requirement.

In what follows, I will present findings by Charnavel and Bryant (2023) which indicate that PRO in DP and logophoric licensing are two independent mechanisms that constrain pronominal dependencies over DPs. I will then proceed to show that Hebrew anaphors are licensed in all contexts discussed by Charnavel and Bryant, except for those claimed to be licensed logophorically. Lastly, I will present a set of Hebrew DP anaphors which is unaccounted for by either manner of licensing, and propose that they demonstrate a case of focus-intensifiers with null heads, along the lines presented in Section 2.6.3.



### 5.1.2 Empty antecedents: Evidence for the independence of PRO and $pro_{log}$

As shown in the previous subsection, the theory of DP anaphors has generally advanced in two parallel lines of analysis, both taking DP-embedded anaphors to invariably adhere to one manner of licensing only. Thus, positioning oneself in this debate has required deciding whether DP anaphors are bound by local subjects (PRO or *pro*) or take a long-distance interpretation which targets the center of perspective in the clause.

Charnavel (2019) and Charnavel and Bryant (2023) resolved this conflict by looking into independent evidence for the existence of each mechanism, based on typical restrictions that follow from the properties of the antecedent: PRO in DP, logophoric center, or an antecedent external to the DP.

PRO is assigned a thematic role from the noun's theta grid, as any other realized argument. That is, if the DP has an *of* or *about* phrase that realizes the theme role, PRO will be assigned the remaining role of Agent, i.e., the creator of the picture entity (Grimshaw 1990; Davies and Dubinsky 2003). Logophoric licensing always requires that the anaphor refer to the source of perspective, whether induced via logophoric binding or by a pure discourse mechanism. Licensing by an external antecedent requires that the DP have no subject (and thus will not form an independent phase) but poses no semantic or discursive restrictions. Combining the expected restriction patterns leads to the typology in (210).

#### (210) *Restrictions of DP anaphors*

Antecedent	Semantic restriction on anaphor
PRO	Refers to Agent
$pro_{log}$	Refers to perspective center
External antecedent	No restriction

This allows simple pronouns in two cases: either the DP's subject (overt possessor or PRO) refers to someone else, or there is no C-Commanding antecedent either in the DP or in the nearest phase ( $\nu$ P). The two options are demonstrated in (211).

- (211) (a) They<sub>1</sub> heard [<sub>DP</sub>(their<sub>2</sub>/PRO<sub>2</sub>) stories about them<sub>1</sub>]. (Chomsky 1986: 166)  
 (b) They<sub>1</sub> heard [<sub>DP</sub> stories about them<sub>2</sub>].

Using example like (212), Chomsky notes that when the same DP is the object of a creation verb, the pronoun is not acceptable. He provides a technical solution to this, stating that PRO is obligatory with such verbs. However, this becomes redundant when we consider

that PRO must be licensed thematically, and since the Theme role is already realized by the *about* phrase, PRO is left with the Agent role, which is also the verb's subject.

(212) They<sub>1</sub> told [(PRO<sub>1/\*2</sub>) stories about {\*them<sub>1</sub>/each other<sub>1</sub>}]. (Chomsky 1986: 167)

In a judgment survey, Bryant and Charnavel (2021) and Charnavel and Bryant (2023) demonstrated the effect of PRO being interpreted as an Agent. They show that the acceptability of a DP anaphor in cases like (213) is sensitive to the identity of the Agent. This supports the presence of PRO in DP and suggests that Goal arguments require their corresponding external arguments to be syntactically realized. Otherwise, the anaphor could also be bound by the external subject and need not be an Agent.

(213) (a) Context: letter written by Ellis

Ellis<sub>1</sub> enjoyed [DP PRO<sub>1</sub> the letter to himself<sub>1</sub>].

(b) Context: letter written by Ellis's sister

\*Ellis<sub>1</sub> enjoyed [DP PRO<sub>2</sub> the letter to himself<sub>1</sub>].

(Bryant and Charnavel 2021: 22)

The following example shows that the same restriction does not hold for DP anaphors that are licensed by the center of perspective. In (214), a DP anaphor is embedded in an attitude context introduced by the verb *believe*, and there is no implication that Tom is the photographer of the picture he appears in.

(214) Tom<sub>1</sub> believes that [**pro**<sub>log1</sub> there is [DP a picture of himself<sub>1</sub>] hanging in the post office].

Attitude contexts therefore enable the use of anaphors that are not sensitive to the thematic role of the antecedent. Instead, these anaphors follow the same restrictions that constrain logophoric licensing of anaphors elsewhere. The most straightforward restriction is failure to maintain the anaphoric dependency when the antecedent is inanimate. In (215), a comparable sentence with an inanimate subject blocks the complex anaphor, despite bearing the same distance from the overt antecedent, indicating that this restriction indeed applies to (214). A similar contrast is shown in (216).

(215) The virus<sub>1</sub> was designed such that [DP different copies of it<sub>1</sub>(\*self)] would be distributed to the entire contact list once the user tries to open the file.

(216) *An animacy effect in DP anaphors (Charnavel and Bryant 2023: 55, 35b):*

(a) Hannah<sub>1</sub> found [DP pro<sub>log1/2</sub> Peter's picture of {her<sub>1</sub>/herself<sub>1</sub>}].

(b) The castle<sub>1</sub> collapsed on [DP prolog\*<sub>1</sub> Mary's replica of {it<sub>1</sub>/\*itself<sub>1</sub> }].

This property is unique to DP anaphors that are licensed logophorically, and is not shared by those that are licensed by PRO. This is evident in the fact that the contexts in (213) can be constructed with an inanimate antecedent without affecting the pattern of anaphoric licensing.

(217) The server crashed from an overload of [DP emails to {\*it/itself}].

English speakers I consulted with reported that in (217), the anaphor is acceptable as long as the server is understood to be the source of the emails. In this case, a pronoun cannot co-refer with the subject DP.

Finally, anaphors that lack these restrictions indicate the possibility of binding by the external argument. In (218), the radar need not be animate, nor the creator of the reflection. Note that this context requires a complex anaphor to express coreference with the subject, which I believe reflects the difficulty in establishing an Agent for the noun *reflection*.

(218) The radar<sub>1</sub> detected [DP a reflection of {\*it<sub>1</sub>/itself<sub>1</sub> }].

A strictly-logophoric account cannot explain these differences, as it predicts that all DP anaphors would follow the same restrictions, namely those that are set in the discourse. In Charnavel and Bryant's analysis, the variation is predictable and follows from the availability of different local antecedents.

To conclude, the combination of two covert optional subjects in DPs derives inherent variation, where every argument-projecting DP maps into one of three possible structures. In turn, Anaphoric licensing across these constructions is determined by the available subject. The structural options are stated in (219).

(219) (a) *Non-phasal DP*:

DP<sub>1</sub> ... [DP ... \*pron<sub>1</sub>/refl<sub>1</sub>]

(b) *PRO in DP*:

DP<sub>1</sub> ... [DP PRO<sub>1</sub>... \*pron<sub>1</sub>/refl<sub>1</sub>]

DP<sub>1</sub> ... [DP PRO<sub>arb</sub>... pron<sub>1</sub>/\*refl<sub>1</sub>]

(c) *Attitude context*:

DP<sub>1</sub> ... [DP prolog<sub>1</sub>... \*pron<sub>1</sub>/refl<sub>1</sub>]

DP<sub>1</sub> ... [DP prolog<sub>2</sub>... pron<sub>1</sub>/\*refl<sub>1</sub>]

Importantly, while these DPs license both pronouns and anaphors, only one pronominal form is licensed in any given structure. The following sentences show examples for each type of licensing condition, in animate (220) and inanimate contexts (221).

- (220) (a) **Hannah**<sub>1</sub> found [<sub>DP</sub> (**PRO**<sub>2</sub>) a picture of her<sub>1</sub>/herself<sub>1</sub>].  
 (b) Ellis<sub>1</sub> enjoyed [<sub>DP</sub> **PRO**<sub>1</sub> the letter to himself<sub>1</sub>].  
 (c) Tom<sub>1</sub> believes that [<sub>DP</sub> (**pro**<sub>log1</sub>) there is a picture of {him<sub>1</sub>/himself<sub>1</sub>} hanging in the post office].
- (221) (a) **The radar**<sub>1</sub> detected [<sub>DP</sub> a reflection of {\*it<sub>1</sub>/itself<sub>1</sub>}].  
 (b) **The server**<sub>1</sub> crashed from [<sub>DP</sub> an overload of emails to {\*it<sub>1</sub>/itself<sub>1</sub>}].  
 (c) **The virus**<sub>1</sub> was designed such that [<sub>DP</sub> different copies of it<sub>1</sub> (\*self)] would be distributed to the entire contact list once the user tries to open the file.

## 5.2 Locality and focus-intensification in Hebrew DPs

Section 2.5 established that the anaphor *acm-x* cannot be interpreted logophorically, since it constantly fails in contexts where the only available antecedent is an implicit center of perspective. If the analysis presented in the previous section is correct, then *acm-x* is expected to be acceptable only in a subset of the contexts in which *x-self* is accepted, namely the ones with external antecedents or PRO.

This is confirmed in the Hebrew equivalents of (221), presented below in (222): *acmo* is natural with an external antecedent (222a) and with a PRO antecedent that is interpreted as the Agent (222b), but degraded when the antecedent is a distant attitude holder (222c).

- (222) (a) **ha-radar**<sub>1</sub> ziha      hištakfut šel acm-o<sub>1</sub>.  
 DET-radar identified reflection of REFL-3SG.M  
 ‘The radar identified a reflection of itself.’
- (b) **ha-šarat**<sub>1</sub> karas merov majlim le-acm-o<sub>1</sub>.  
 DET-server crashed from emails to- REFL-3SG.M  
 ‘The server crashed from emails to itself.’
- (c) **tom**<sub>1</sub> xošev še-ješ tmunot šel-(??acm)-o<sub>1</sub> ba-misrad.  
 T. thinks that-exist pictures of REFL 3SG.M in.DET-office  
 ‘Tom thinks there are pictures of him(??self) in the office.’

As evident from the following examples, the restrictions that follow from binding by a PRO argument apply here as well. In (223a), Sara is available as an external binder for *acma*, and the creator of the picture remains obscure. When there is no external binder, as in (223b), using an anaphor would mean that Sara is both the Agent and the Theme of the mentioned pictures. Moreover, (223c) shows that the anaphor is impossible when the referred entity is unlikely to have been the Agent, and the external antecedent is in an inaccessible position in another phase.

- (223) (a) sara<sub>1</sub> ra'ata [tmuna{ šel-a<sub>1</sub>/ **šel acm-a<sub>1</sub>**}] ba-iton.  
 S. saw picture of-3SG.F of REFL-3SG.F in.the paper  
 'Sara saw a picture of her/herself in the paper.'
- (b) [ha-tmunot{ šel-a/ **šel acm-a**}] nimkeru yaxasit tov ba-ta'aruxa.  
 DET-pictures of-3SG.F of REFL-3SG.M sold relatively well at.DET-exhibition  
 'The pictures of her/herself sold rather well at the exhibition.'
- (c) sara ka'asa še-ha-iton pirsem [tmunot šel-a/ **\*šel acm-a**]  
 S. raged that-DET-paper published pictures of-3SG.F of REFL-3SG.M  
 bli išur.  
 without approval  
 'Sara raged that the paper published pictures of her/\*herself without her approval.'

This data is consistent with the combined approach, in the sense that the Hebrew anaphors are acceptable only in the contexts that the PRO in DP hypothesis accounts for and not in those explained by the logophoric approach. However, Keshev, Bassel and Meltzer-Asscher (2018) showed that there are contexts in which Hebrew speakers accept DP anaphors, despite their antecedent being in a separate clause. A case in point is seen in (224).

- (224) [**ha-saxkanit ha-rašit**]<sub>1</sub> darša me-ha-itona'im lefarsem  
 DET-actress DET-leading demanded of-DET-journalists publish.INF  
 [tmunot { šel-a/ **šel acm-a<sub>1</sub>**].  
 pictures of-3SG.F of REFL-3SG.F  
 'The leading actress demanded of the journalists to publish pictures of herself.'
- (Keshev, Bassel, and Meltzer-Asscher 2018)

This example suggests that the ban on logophoric licensing for Hebrew anaphors has been lifted. However, I argue that an analysis of *acma* as a headless intensifier, along the lines of Baker (1995), better accounts for its acceptability in the above example.

Baker's analysis, introduced in Section 2.6.3, defined long-distance anaphors in English as intensifiers with an omitted head noun, and was ruled out based on the logophoric properties of those anaphors, and lack of focus requirements. Nonetheless, I argue that long distance *šel acm-x* is a good fit for this analysis.

The minimal pair in (225) shows that *šel acm-x* naturally draws stress and becomes unacceptable when focus targets another element in their phrase. The following example in (226) shows that other instances of DP anaphors remain acceptable in similar prosodic conditions (which are in fact the default for this sentence).

- (225) (a) [ ha-saxkanit ha-rašit]<sub>1</sub> darša me-ha-itona'im lefarsem  
 DET-actress DET-leading demanded of-DET-journalists publish.INF  
 [tmunot { šel-A / šel ACMA<sub>1</sub>}.  
 picturesof of-3SG.F of herself  
 'The leading actress demanded of the journalists to publish picture of HER/HERSELF.'

- (b) [ ha-saxkanit ha-rašit]<sub>1</sub> darša me-ha-itona'im lefarsem  
 DET-actress DET-leading demanded of-DET-journalists publish.INF  
 [TMUNOT { šel-a/ \*šel **acm-a**<sub>1</sub>}.  
 picturesof of-3SG.F of REFL-3SG.F  
 'The leading actress demanded of the journalists to publish PICTURES of her/\* herself.'

- (226) sara<sub>1</sub> ra'ata [TMUNA{ šel-a<sub>1</sub>/ **šel acm-a**<sub>1</sub>}] ba-iton.

- S. saw picture of-3SG.F of REFL-3SG.F in.the paper  
 'Sara saw a PICTURE of her/herself in the paper.'

Second, contrastive meaning makes *šel acm-x* 'of x-self' phrases acceptable where they were otherwise blocked. The sentence in (227) presents the same context as (222c) but this time with the addition of the focus particle *rak* 'only', which introduces a comparison with alternative entities whose pictures might have been in the office. Hebrew speakers who were consulted accept *acm-x* in this context as fully natural.

- (227) tom xašav še-ješ **rak** tmunot šel- (ACM)-O ba-misrad.  
 T. thought that-exist only pictures of REFL 3SG.M in.DET-office  
 'Tom thought there are only pictures of him(self) in the office.' (compare with 223c)

Relatedly, employing *acm-x* in (224) implies that it is unexpected for a person to require the publishing of their own pictures. When the agentive verb *darša* ‘demanded’ is replaced by a neutral perception verb such as *ra’ata* ‘saw’, *acm-x* becomes unacceptable (228).

- (228) [ha-saxkanit ha-rašit]<sub>1</sub> **ra’ata** še-ha-itona’im pirsemu  
 DET-actress DET-leading saw that-DET-journalists publish  
 [tmunot {šel-a/ ??šel acm-a<sub>1</sub>}.  
 pictures of-3SG.F of REFL-3SG.F  
 ‘The leading actress saw that the journalists published pictures of her/\*herself.’

Finally, in naturally occurring examples, *šel acm-x* freely occurs in DPs that do not project arguments, where it has the meaning of a possessor phrase.

- (229) (a) ani crixat et ha-kafe šel acm-i.  
 I need ACC DET-coffee of REFL-1SG  
 ‘I need my own coffee.’  
 (b) kol exad jazmin et ha-pica šel acm-o.  
 every one order.IRR ACC DET-pizza of REFL-3SG.M  
 ‘Everyone should order their own pizza.’

These examples indicate that intensifiers may present as anaphors, as Baker (1995) proposed, and that this option should be considered and examined through diagnostics of focus placement in any investigation of complex anaphors. Table 15 summarizes the restrictions on DP *acm-x* in Hebrew and English according to the licensing condition.

Antecedent				intensifier
External		PRO in DP	pro <sub>log</sub>	
English	No restriction	Agentive meaning	Perspective center	?
Hebrew			N/A	Contrastive focus

**Table 15:** Restriction on reflexive licensing in DPs by antecedent type in English and Hebrew

### 5.3 Conclusion

In this chapter, I argued that the licensing of DP anaphors is predictable from the value of referential identity with a preceding DP within the phase. I showed that D acts as a phase head only when it projects a subject, in which case anaphors are used to express coreference with the

local subject (over possessor or PRO), otherwise a pronoun is used. Anaphors may also refer to a local logophoric pronoun, in grammars that enable a logophoric interpretation of the anaphor.

(230) *Anaphoric licensing in DPs:*

- (a) External licensing: The DP lacks a local subject and is spelled out with the  $\nu$ P. Coreference with C-Commanding DPs in this  $\nu$ P trigger complex anaphors.
- (b) PRO in DP: The DP is an independent spellout domain with a local subject PRO. Complex anaphors express coreference with PRO, pronouns express coreference with external DPs.
- (c) Attitude contexts enable a logophoric licensing of anaphors.

Finally, I presented preliminary evidence that headless intensifiers are indeed available at least in some cases, and that they are eliminated in the absence of focus, contrary to logophorically-licensed anaphors.



## 6.

### The source of locality constraints

The previous three chapters outlined an account that ties together the main cross-linguistic traits of complex anaphors, i.e., their morphological structure, complementarity with pronouns, and homophony with focus intensifiers. I derived these facts based on a locality constraint, which states that DPs within the spellout domain are understood as disjoint unless stated otherwise. Complex anaphors are a transparent realization of a pronoun with a morpheme that conveys identity with another DP, and this meaning can be extended to focus alternatives and give rise to the focus intensifier.

The focus of this final chapter will be the capacity of the current proposal to explain the historical emergence of Conditions A and B across languages. In this respect, data from English has provided evidence against a locality-based account, showing that the Old English pronoun was not restricted from local coreference, and that the use of *self* morphemes originally surfaced with particular predicates and not any local context. In particular, the predicates that were target by these early anaphors were ones that are less likely to denote a reflexive action, such as verbs of physical violence. (Keenan 1994; Bergeton and Pancheva 2012). Moreover, historical data from Germanic shows that the morpheme *self* is documented in its focus-intensive use before the anaphoric use, which could mean that the original purpose of complex anaphors is to encode surprise rather than identity.

My main argument in response to this framing is that the data from English represents a special case in which competition and expectations play an important role. I will present some of the stronger historical evidence for the pragmatic account of the Binding Theory (Section 6.1), before moving on to show that these motivations do not extend to Semitic languages such as Hebrew and Arabic (Section 6.2). The concluding Section will argue that both patterns are predicted in a locality-based system (Section 6.3).

#### 6.1 Conditions A and B in the history of English

Historical studies of *x-self* (Penning 1875; Farr 1905; Visser 1966; Mitchell 1979; Keenan 1994; König and Siemund 1996; van Gelderen 1996; Peitsara 1997, and many others) played

a crucial role in the development of competition accounts to anaphors due to the following combination of properties. First, the Old English pronoun was ambiguous between disjoint and coreferential reading, both illustrated in (231).

- (231) (a) *Nalæs hi<sub>1</sub> hine<sub>1</sub> læssan lacum teodan.*  
 no-less they.NOM him.ACC less gifts.DAT.PL prepared  
 ‘They made him no fewer gifts.’ (van Gelderen 2000: 40)
- (b) *hine<sub>1</sub> he<sub>1</sub> beweraþ mid wæpnum.*  
 he.ACC he.NOM defended with weapons  
 ‘He defended himself with weapons.’ (König and Siemund 1996: 6)

Second, the reflexive morpheme *self* originates from a focus-intensifier with a similar meaning to that of the modern complex intensifier, as seen in (232).

(232) *self adjunction on nouns in Old English (van Gelderen 2000: 80-81):*

- (a) *ond se cyning sylfa* (b) *swa he self gecwæð*  
 and the king self as he self says  
 ‘And the king himself’ ‘as he himself says.’

Focused *self* has a transparent function in overcoming a bias of local disjointness, as it is capable of activating and ruling out alternative entities. In the following examples, *self* strengthens the coreferential reading of the pronouns over the disjoint reading.

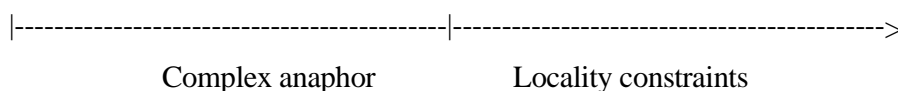
(233) *Old English self in local coreference:*

- (a) *Judas hine selfne aheng.*  
 Judas him.ACC self.ACC hang  
 ‘Judas hung himself.’ (Visser 1966 p.423)
- (b) *Mæg ic be me sylfum soðgied wrecan.*  
 can I about me self truth utter  
 ‘I can tell a true story about myself.’ (van Gelderen 2000: 88)

The question I am concerned with for the current purposes is what causes the disjointness bias that invites the use of *self* morphemes. We have seen that typological studies such as Kemmer (1993) and Haspelmath (2013) highlight the role of expectations for coreference given the choice of verb (Section 2.6.2.). Keenan (1994, 2002) affirms this intuition for Old English, stating predicates that denote acts of violence (‘kill’, ‘hang’, ‘destroy’, ‘castrate’, ‘renounce’, ‘slay’,

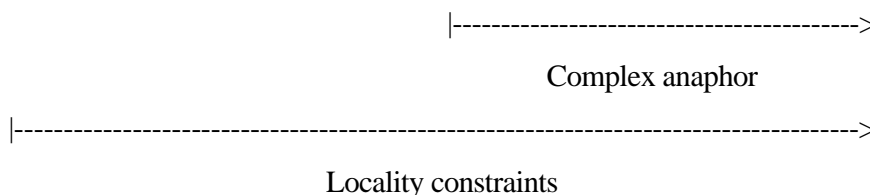
‘oppress’, and ‘torture’) *always* take *self*-adjoin pronouns for local coreference. Verbs of grooming (wash, bathe, dress) vary between bare pronouns and self-adjoined ones, and there are also verbs of individual states (‘rest’, ‘rejoice’), which take only bare pronouns. Bergeton and Pancheva (2012) discuss a similar distribution of *self* morphemes in modern Germanic languages, indicating the continuous role of expectations in anaphor licensing.

Given how common the link between intensifiers and reflexives is across languages, several typological models assume that the process documented in English is a general and perhaps universal cline of semantic change (Kemmer 1993; Heine 1999; König and Siemund 2000b). According to this process, locality constraints do not apply across the board, but rather have an onset that follows the emergence of the complex anaphor chronologically, as illustrated in the following diagram.



## 6.2 Hebrew and Arabic: A reverse process

My goal in this section is to provide evidence that the emergence of the complex anaphor in Hebrew and Arabic is affected by locality constraints rather causing them. The first step will be to establish again, in some more detail, that Hebrew and Arabic exhibit Condition B effects before the emergence of the complex anaphor. The chronological relation I argue for is as follows:



The upcoming subsection will be devoted to showing that the relative absence of coreferential instances in pronouns is not explained by competition with other reflexive strategies. I will then show that these languages reflect locality effects in the form of the identity morpheme (Section 6.2.2) and in the predicates that select complex anaphors (Section 2.6.3).

### 6.2.1 Condition B effects without competition

Biblical Hebrew lacks a designated anaphor for local coreference, and its main reflexive strategy, according to Gesenius (1813), is the verbal templates NIP<sup>ʔ</sup>AL, HITPA<sup>ʔ</sup>EL. However, these templates were not fully productive, i.e., there are many transitive verbs that lack a reflexive variant in one of these templates (Doron 2003).

To illustrate, the verbs *bōneh* ‘builds’, *môšî* ‘brings’, *mašhîṭ* ‘corrupts’, and *makkeh* ‘hits’ do not have reflexive counterparts, which means coreferential pronouns in their object positions would have no verbal alternative. Moreover, NIP<sup>ʔ</sup>AL and HITPA<sup>ʔ</sup>EL verbs differ in voice from their transitive counterparts, which means that even when such alternatives are available, they are not entirely equivalent.

A secondary strategy, also mentioned in Gesenius’s grammar, is the use of body part names such as *neṗeš* ‘soul’, *qereḇ* ‘innards’, *lēḇ* ‘heart’, and *rō’š*, with pronominal suffixes, to describe reflexive actions, as demonstrated in (234).

- (234) wə-lō    təṭamm’ū    ’et **napš-ōt-ēxəm**    bə-kol    haš-šereṣ  
 and-NEG defile.2PL.M    ACC soul-PL-GEN.2PL.M in-all    the-insect  
 hā-rōmēś    ‘al    hā-’āreṣ.  
 COMP-swarm.3PL.M on    the-ground  
 ‘Do not make {your souls/yourselves} unclean by any creature  
 that moves along the ground.’ (Leviticus 11.44)

The phrase ‘soul’+ pronominal suffix developed into a complex anaphor in many dialects of Arabic and Aramaic. Yet, at this stage of Hebrew, it retains its lexical meanings (spirit, life), which limits the use of this strategy to contexts of spiritual or life-threatening actions.

Given these gaps, there should be a decent amount of contexts in which simple pronouns would have no available alternative, which means they should be able to express local coreference. Such instances are extremely rare, and there are in fact only five such instances mentioned by Gesenius (Jeremiah 7.19; Ezekiel 43.2,8,10), three of which are repetitions of the same phrase, seen below in (235). Three additional instance are mentioned in Sarfatti (1992) (Numbers 6.13, Leviticus 22.19, Deuteronomy 34.6).

(235) *Local coreference in Biblical Hebrew pronouns:*

- yir’û    hā-rō’îm    ’ōṭām, wə-’et    šō’n-î    lō’    rā’û.  
 herd    DET-shepherds    them    and-ACC sheep.MASS-1SG    NEG herd

‘The shepherds fed themselves, and fed not my sheep’ (Ezekiel 34:8)

This marginal number of coreferential occurrences reflects a frequency of 0.025 instances per 1000 words. To compare, in Old English pronouns, Peitsara (1997) reports rates of coreferential use that range between 0.67 and 1.31 per 1000 words during the relevant period.

In the Arabic of the Qur’an, the ‘soul’ lexeme can express coreference in contexts that do not engage with its lexical meaning, yet it retains a contextual restriction to animate subjects. The Qur’an allows coreferential readings of pronouns in only for a category of verbs known as *‘af’āl al-qalb* ‘verbs of the heart’ (Wright 1898; Kayam 2024). I conclude that both Hebrew and Arabic show restrictions on pronoun coreference which cannot be reduced to competition.

### 6.2.2 Body-part expressions are spellout domains

Apart from the contrast in pronoun restrictions, Hebrew and Arabic differ from English in the form of the identity morpheme. The English anaphor contains an older focus intensifier, which has a transparent role in strengthening the local reading of the pronoun at the expense of the disjoint reading. Since it interacts with focus, the intensifier can activate and rule out alternatives to the local antecedent. It is therefore unclear why Hebrew and Arabic, among other Semitic languages, form complex anaphors from body-part expressions, which do not have this function.

	Modern Hebrew	Palestinian Arabic	Standard Arabic	Amharic (Leslau 1995)
1 SG	<i>acm-i</i> ‘my bone’	<i>ḥal-i</i> ‘my state’	<i>nafs-i</i> ‘my soul’	<i>ras-e</i> ‘my head’
2 SG.F/M	<i>acm-ex/exa</i>	<i>ḥal-ek/ak</i>	<i>nafs-uki/uka</i>	<i>ras-əš/əh</i>
3 SG.F/M	<i>acm-a/o</i>	<i>ḥal-ha/a</i>	<i>nafs-uha/uhu</i>	<i>ras-wa/u</i>
1 PL	<i>acm-enu</i>	<i>ḥa:l-na</i>	<i>nafs-una</i>	<i>ras-aččən</i>
2 PL.F/M	<i>acm-exen/exem</i>	<i>ḥal-ku</i>	<i>‘anfs-ukunna/ukum</i>	<i>ras-aččə<sup>w</sup>h</i>
3 PL.F/M	<i>acm-an/am</i>	<i>ḥal-hen</i>	<i>nafs-uhunna/uhum</i>	<i>ras-aččäw</i>

**Table 16:** Semitic Body part anaphors

Body-part expressions have to lose their lexical meaning in order to be used as anaphors. However, there should still be a reason why these morphemes were chosen for the purpose of local coreference in the first place. This is particularly curious given the prevalence of body-part

anaphors across languages. According to König and Siemund (2013), in 62 languages for which they could track the lexical sources of the reflexive morpheme, 47 were traced to this semantic field. This includes meanings such as ‘body’ (30 languages), ‘head’ (12 languages), ‘soul’ (two languages), ‘bone’ (Modern Hebrew), ‘heart’ (Dongolese Nubian), and skin (Ngiti).

The question I am raising here is twofold: Did these body-part morphemes have an intensive meaning that explains their role in anaphors? If not, how does their meaning contribute to local coreference?

Answering the first question positively would be consistent with what we have learned from English, and with the fact that many of these body-part anaphors have a focus-intensifier homophone. The various body-part terms could have then acquired the intensifying meaning before proceeding to evolve into complex anaphors. This progression is indeed assumed by Faltz (1977), as well as the typological models quoted above, though without explicit historical evidence. I argue against this hypothesized chronology based on evidence in Bassel (2023, forthcoming), based on the distribution of intensive uses for ‘soul’ expressions in Biblical Hebrew and Qur’anic Arabic.

I collected all the occurrences of the lexeme *neṣeš* ‘soul’ in the Biblical corpus and classified them according to their meaning in contexts and type of reference. I was unable to find contexts in which *neṣeš* had an intensive meaning. The results are summarized in Table 17.

Meaning		Instances	Freq.	Example
soul	disjoint	355	1.16	<i>rabbīm ōmrīm lə-naṣšī</i> ‘many say of my soul’
	coreferential	55	0.17	<i>‘innīnū naṣšēnū</i> ‘(we) tortured our souls’
life	disjoint	181	0.59	<i>qah-nā ʿet naṣšī</i> ‘take my life’
	coreferential	42	0.14	<i>mallū naṣšəkem</i> ‘save your lives’
throat	disjoint	2	0.01	<i>kī ḥā ʾū mayīm ʿad nāṣeš</i> ‘for water came unto the throat’
person	disjoint	120	0.39	<i>ʾim neṣeš ʾaḥaṭ teḥēṭā</i> <i>bi-šgāgāh</i> ‘if a person sins through error’
total		754		

**Table 17:** Meanings and reference type of *neṣeš* in the Bible (frequency per 1000 words)

A similar search of the cognate *nafs* in the Qur'an retrieved a number of instances that make reference to alternative entities. I classified these uses as intensive, although they did not occur in the familiar adnominal or adverbial format of the focus intensifier. Meanwhile, I found the use of *nafs* as a coreference strategy in the Qur'an to be rather advance, with more coreferential instances than disjoint ones, and 59 instance that do not reflect any of the lexical meanings of *nafs*. This indicates that the anaphoric use of the 'soul' lexeme is a more based convention compared to the intensive use at this stage of the language.

Meaning		Instances	Freq.	Example
soul	disjoint	47	0.6	<i>bimā lā tahwā anfusukumu</i> 'what your souls do not desire'
	coreferential	89	1.14	<i>zalamtum anfusakum</i> 'you have wronged your souls'
person		56	0.72	<i>wa-iḍ qataltum nafsan</i> 'when you kill a person'
life	disjoint	17	0.2	<i>n-nafsa bin-nafsi wal- 'ayna bil- 'ayni</i> 'a life for a life and an eye for an eye'
	coreferential	0	0	---
reflexive		59	0.76	<i>wa-lā tukh'rijūna anfusakum min diyārikum</i> 'and shall not drive one another from your dwellings'
breath		2	0.02	<i>subhī idā tanaffas</i> 'by the breath of morning'
intensive		9	0.12	<i>an 'āmuhum</i> <i>wa-anfusuhum</i> 'their cattle and themselves'
total		279		

**Table 18:** Meanings and reference type of *nafs* in the Qur'an (frequency per 1000 words)

I take this to mean that, at least for Hebrew and Arabic, the anaphoric use of *nafs* preceded the focused one.

This brings us to the question of how body part expressions impose local coreference if they have no intensive function. The answer is that they do not. The following example from Biblical Hebrew demonstrates that a 'soul' expression is not biased toward a local antecedent (here, *Saul*), and can easily pick the long-distance one (*David*).

- (236) *wa-yar'* *dāwid<sub>1</sub>* *kī-yāšā'* *šā'ûl<sub>2</sub>* *lēbaqēš* 'et- **naṣ̄š-ō<sub>1</sub>**.  
 and-fear.3SG.M D. COMP-leave.3SG.M S. seek.INF ACC soul-GEN.3SG.M

‘David<sub>1</sub> feared that Saul<sub>2</sub> came out to seek his<sub>1</sub> life.’ (1 Samuel 23, 15)

The choice of body-part lexemes is therefore not explained by their immediate lexical content or their capacity to create inferences of coreference.

I argue that the motivation for body-part anaphors does not arrive from their body-part meaning but their syntactic structure, which forms an independent spellout domain. Semitic body-part anaphors emerge in a possessive construction known as the construct state, in which the body part is the head noun (Ritter 1991; Fehri 2004). Siloni (1997) shows that construct states allow binding within the DP, as seen below in (237), but this is not possible for an external antecedent (238).

(237) harisat        ha-cava<sub>1</sub>    'et 'acmo<sub>1</sub>  
                       destruction   DET-army   ACC itself  
                       'the army's destruction of itself' (Siloni 1997: 30)

(238) ha-nasi<sub>1</sub>        haja axra'i        le-[<sub>DP</sub> harisat        ha-cava<sub>2</sub>    'et 'acm-o\*<sub>1/2</sub>].  
                       DET-president was responsible for    destruction.of DET-army   ACC REFL-3SG.M  
                       'The president<sub>1</sub> was responsible for the army's destruction of itself<sub>1</sub>/\*himself<sub>1</sub>.'

This makes construct-state nouns the smallest constituent that forms an independent spellout domain. I argue that this is the reason that body-part expressions are employed as anaphors many Semitic languages: they allow pronouns to be free within their spellout domain.

### 6.2.3 Target predicates

The previous subsections showed that locality constraints on Hebrew and Arabic pronouns predict the emergence of body-part anaphors. The goal of the current subsection is to show that these differences are also reflected in the choice of predicates that are first to select the anaphoric strategy in these languages. More specifically, I wish to demonstrate that the distribution of body-part expressions in Biblical Hebrew does not align with low expectations for local coreference as a property of predicates.

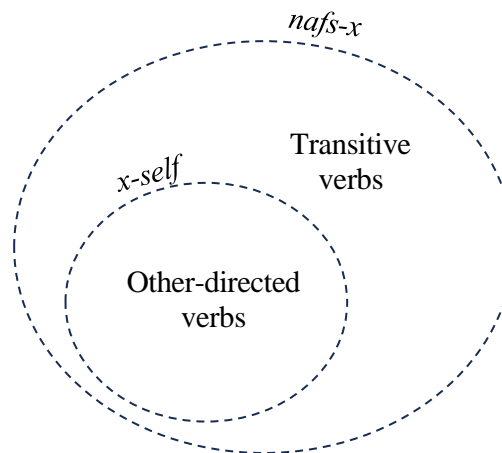
Recall the claim that, in Old English, the distribution of pronoun-self combinations across predicates is negatively correlated with the statistical likelihood of these predicates to describe reflexive events. The following table compares the predicates that require *self* expressions in Old English with the ones that take ‘soul’ expressions in Biblical Hebrew (an exhaustive list).



Old English (Keenan 1994)		Biblical Hebrew (Bassel and Keshev, forthcoming)	
‘kill’	‘slay’	<i>innīṭem</i> ‘afflict’	<i>yaššilū</i> ‘rescue’
‘hang’	‘oppress’	<i>šsārāh</i> ‘forbid’	<i>yaḥśōk</i> ‘spare’
‘destroy’	‘torture’	<i>təṭamm’ū</i> ‘defile’	
‘castrate’	‘renounce’	<i>šmor</i> ‘protect’	

**Table 18:** Predicates that take ‘self’ or ‘soul’ expressions in English and Hebrew (respectively)

Unlike the list of English predicates, the Hebrew predicates are not exclusively other-directed, and include predicates that carry no bias against reflexive actions, such as ‘rescue’ and ‘protect’. Yet these verbs are not random, but rather share the more abstract property of being prototypically transitive verbs with two distinct argument slots, a category to which the English predicates belong as well. In other words, both types of anaphors emerge in the context of transitive verbs, while English anaphors target verbs of low expectation for coreference more specifically, as seen in Figure 3.



**Figure 3:** Target predicates for the emergence of complex anaphors

This distribution follows straightforwardly if the English anaphor is motivated by the pragmatic pressures created by potentially ambiguous environments, while the Hebrew anaphor emerges to overcome locality constraints.

### 6.3 Locality and expectations

To sum up, I showed that anaphors in Hebrew and Arabic have a different pattern of emergence from that of English anaphors, and that this process seems to be governed by locality

constraints from its outset. Yet, I have so far ignored the most interesting fact about these processes, which is that despite the different starting points, the three languages converge into roughly the same system, which employs anaphors for local coreference and pronouns elsewhere.

Germanic *self* morphemes and Semitic body-part expressions have different reasons to occur in contexts of local coreference, and yet in both cases, the morpheme that occurs next to a pronoun gets interpreted as an identity feature. I take this to be indicative of two of the main conclusions of this thesis, namely that (i) there is a robust principle that local coreference should be marked, and (ii) identity is a basic feature in pronouns, similarly to number and person features. If my proposal that Old English has a covert identity morpheme is correct, then both types of processes are locally constrained in the broad sense, but the switch from covert to overt identity morpheme in English is pragmatically motivated.

I wish to conclude with a suggestion on how to incorporate expectations into a locality-based system. My goal here is to propose a unified analysis based on an interaction between speaker expectation and locality in both types of anaphors, as summarized in (239).

(239) *Proposal: Expectations affect argument structure*

Speaker expectations regarding real world actions affect the number of syntactic arguments in the corresponding verb.

In this proposal, expectations and locality are not alternative explanations for the emergence of anaphors, but rather two stages in a causal chain, which can be reconstructed backwards as follows:

- (i) Locality constraints require marking of coreference within the spellout domain.
- (ii) Coreference marking is required in predicates that have two syntactic arguments.
- (iii) Expectations regarding the nature of an action affect the number of arguments in the verb that describes it.

According to this procedure, expectations play an indirect role in anaphoric licensing in that they determine whether a verb would take one argument, two arguments, or alternate between both options. This idea goes back to Kemmer (1993), who uses the term ‘prototypical two-participant events’ to describe contexts that tend to require a complex anaphor. The word ‘prototypical’ leaves this terminology somewhat open ended, but it allows to tie together

speaker expectations and locality: The verbs that only take two arguments are naturally the ones that describe actions in which coreference is least expected.

This proposal assumes a necessary link between expectations and locality, which goes through an intermediate stage of lexicalization, or more specifically, the assignment of argument structure to the verb that denotes a specific class of actions. The indirect nature of this correspondence explains the cross-linguistic idiosyncratic differences found with respect to verb types and reflexive strategies. For example, the Modern Hebrew counterpart of the verb *torture* does have a simple reflexive variant based on a middle verbal template, *hita'ana*, which denotes self-torment. In both Hebrew and Dutch, at least for some speakers, the neutral verb for ‘to praise’ requires the complex anaphor for coreference.

(240) Modern Hebrew:

- |   |  |
|---|--|
| <p>(a) hu<sub>1</sub> mešebe'ax et acm-o<sub>1</sub>.<br/> he praises ACC REFL-3SG.M<br/> ‘He<sub>1</sub> praises himself<sub>1</sub>.’</p> | <p>(b)* hu mištabe'ax.<br/> he praises.REFL<br/> intended: He praises himself.</p> |
|---|--|

(241) Modern Dutch:

- Hij<sub>1</sub> prijst zich<sub>1</sub> \*(zelf).  
he praises REFL REFL  
‘He<sub>1</sub> praised himself<sub>1</sub>.’

If the available reflexive strategy was determined directly by expectations, these verbs should have also been possible with the lighter reflexive strategy, and there should have been fewer differences between verbs that are close translations of each other.

## 6.4 Conclusion

This chapter showed that pragmatic motivations such as competition and expectations explain certain aspects in the phenomenon of complex anaphors, particularly for English *x-self* and related anaphors. However, I showed these mechanisms are not sufficient to explain the cross-linguistic expression of complex anaphors, which includes the pattern observed in Semitic languages.

The crucial difference in this respect is the state of pronoun restrictions in the grammar of English and Hebrew at historical stages that excluded the anaphor. I showed through data from Bassel (2023) that pronouns in both Biblical Hebrew and Classical Arabic are

overwhelmingly understood as locally disjoint. This follows directly from the identity feature analysis and is unexpected if Condition B effects were the outcome of competition between pronouns and anaphors. What appears to be lack of restrictions on pronoun coreference in Old English can be explained by the same analysis, if we take the identity feature to be realized covertly in the grammar of this English variety.

I showed that the difference in the state of pronoun coreference predicts differences in the development of the complex anaphor, including the source lexeme, target predicates, and the role of the focus-intensifier. In English, focus-intensifiers are recruited to resolve the ambiguity in object pronouns, while in Hebrew, Arabic, and probably other Semitic languages, these elements developed after the complex anaphor emerged.

Finally, I argued that the fact that these two seemingly different processes reach similar target elements such as modern *self* and ‘soul’ anaphors is consistent with the idea that marking referential identity during spellout is a general interface requirement.

# 7.

## Conclusion

The main questions that this thesis responded to are ‘What are complex anaphors?’ and ‘Which mechanisms explain their properties and distribution in human language?’. The answer I arrived at, repeated below in (82-83), is based on the combined insights of locality-based views on anaphoric dependencies (starting Lees and Klima 1963), the reflexive marking approach (Reinhart and Reuland 1993, Reuland 2011), Phase Theory (Chomsky 2001; Lee-Schoenfeld 2004), and the feature analysis of the reflexive morpheme (Antonenko 2012, Breuning 2021).

**Error! Reference source not found.** Base-generated DPs are sent to the interface with unique indices

(83) Conditions A+B: Unique indices are understood as disjoint unless stated otherwise.

I defined anaphors as regular pronouns (free variables) with a feature [ID] that gets valued during spellout. The valuation process inserts a second variable that receives the value of a higher DP through operator binding. The feature presupposes that the free variable and the bound variable get the same value in any assignment function. If the presupposition is confirmed, the feature is realized as a *self* morpheme in PF.

### Explaining restrictions on distribution and complementarity with pronouns

The data presented throughout the thesis led me to conclude that complex anaphors are restricted exclusively by the operation of the identity feature. This feature is limited to spellout because it has both phonetic and semantic consequences. As a result, only DPs within the active spellout domain are available as antecedents. Bound pronouns differ from complex anaphors in this respect: since they do not require phonetic marking, they can be interpreted at LF and access the entire sentence.

The complementarity with pronouns follows directly from the definition of Condition A. If local co-valuation has to be stated, and simple pronouns carry no statement of identity, then simple pronouns will be understood as locally disjoint. This ensures strict complementarity between the pronoun and the anaphor, which is expected to break only in cases where multiple

parses are available. I argued that this is how anaphors become charged with various semantic and pragmatic effects: the choice of pronoun is linked with a choice of a particular structure, and this affects the meaning of the sentence. Chapters 4, 5 showed how these guidelines derive the complex distribution of pronominal elements in PPs and DPs, respectively.

I argued that languages that do not restrict pronoun coreference are ones in which the identity feature can be represented by a covert morpheme. This explains why this option is not open for any language that lacks an overt expression for this feature.

### **Explaining the cross-linguistic spread and homophony with intensifiers**

The notion of an identity feature in pronouns explains the prevalence of complex anaphors in the world's languages, alongside the various other uses of the same morpheme. Focus intensifiers illustrate a case in which the identity morpheme is not attached to a pronoun (it is a dummy element) and applies instead to focus alternatives. Section 3.4 showed that each of the components of the complex anaphor can be realized as a covert morpheme or surface as a dummy element, which generates 16 possible combinations of pronouns and identity, many of which are attested. Further uses of the identity morpheme convey meanings such as 'same', 'alone', and various expressions of personal identity. From this I infer that the complex anaphor is a common source through which the concept of identity becomes lexicalized.

### **Implications for the syntax of PPs**

Chapter 4 showed that the distribution of anaphors in PPs is not chaotic, as previously claimed, but rather predictable from the parameters repeated in (195).

(195) *Anaphoric licensing in PPs:*

- (a) P arguments are spelled out with the  $\nu$ P and require an anaphor for coreference with C-Commanding DPs in the  $\nu$ P phase.
- (b) P adjuncts are spelled-out with the verbs they modify.
- (c) PPs that combine with little *p* are spelled out independently and license simple pronouns for conference with external DPs.
- (d) Attitude contexts enable logophoric licensing of anaphors.

The proposed typology was constructed based on English and Hebrew is therefore not exhaustive, and should be extended with further cross-linguistic research.

### **Implications for the syntax of DPs**

Chapter 5 presented data that confirms the recent analysis by Charnavel and Bryant (2023), according to which DP anaphors have three manners of licensing.

(230) Anaphoric licensing in DPs:

- (a) External licensing: The DP lacks a local subject and is spelled out with the *v*P. Coreference with C-Commanding DPs in this *v*P triggers complex anaphors.
- (b) PRO in DP: The DP is an independent spellout domain with a local subject PRO. Complex anaphors express coreference with PRO, pronouns express coreference with external DPs.
- (c) Attitude contexts enable a logophoric licensing of anaphors.

I showed that anaphors that lack a logophoric interpretation (English inanimate anaphors and Hebrew anaphors) can occur in contexts (229a-b) but not (229c).

The data from Hebrew provided evidence for the existence of headless intensifiers as proposed by Baker (1995). I showed that these instances may be identified by their prosodic licensing, as they are unacceptable when focus falls on another element in the phrase. This method can be used to re-evaluate whether head-less intensifiers surface in other contexts apart from Hebrew DPs.

### **Implications for historical accounts of complex anaphors**

Chapter 6 showed that complex anaphors in Germanic and Semitic languages have different diachronic trajectories, which are in some senses opposite to each other. English developed Condition B effects after the emergence of complex anaphors, while Hebrew and Arabic anaphors emerged with the background of a locally constrained system. I showed that both processes are explained by locality constraints and proposed that the observed differences follow from the existence of a covert identity morpheme in the grammar of Old English.

I Argued that this difference has underlined further cross-linguistic contrasts, including the enhanced sensitivity of English anaphors to pragmatic pressures. In particular, I proposed that grammars that realize the identity feature covertly are likely to develop anaphors from intensifiers, while grammars with no realization of this feature recruit structures of inalienable possession such as body parts. Further research is required to see how this prediction holds in a larger and more diverse sample.

**Overall conclusion**

This thesis examined the interaction between different effects on the distribution of complex anaphors and concluded that syntactic structure determines both the surface expression of complex anaphors and the discourse-semantic effects that follow from them.



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## תקציר

מטרת עבודת הדוקטור היא להסביר את התכנסותן של מספר תכונות הנדמות כשרירותיות בכינויי גוף חוזרים מהטיפוס של 'עצמו' העברי ו-'himself' האנגלי: מבנה מורפולוגי מורכב, תפוצה תחבירית מוגבלת, וזהות פונטית לכינויי הדגשה המופיעים כמאייכים של שמות עצם ופעלים (לדוגמא, 'המלכה עצמה').

תכונות אלה נחקרו עד כה בנפרד, כאשר הדיון המקיף ביותר התייחס לשאלת התפוצה. החידה האמפירית במובן זה נוגעת להבחנה כי בעמדות מושא ישיר הקבילות של כינויי הגוף המורכבים הינה צפויה בהינתן המרחק משם העצם איתו הם חולקים הוראה (reference), ומנוגדת לקבילות של כינוי גוף פשוט באותה עמדה. אותן התכונות – פרדיקטיביות ותפוצה משלימה ביחס לכינוי הפשוט – אינן מתקיימות עבור כינויים מורכבים המשועבדים תחת מילת יחס (למשל 'next to ...') או שם עצם מורחב ('picture of ...'). בעמדות אלה, לפחות באנגלית, דוברים עשויים לקבל את שני סוגי הכינויים באותה עמדה. כלומר, על פניו, ישנן עמדות בהן הבחירה בין הכינוי הפשוט והמורכב אינה מוגבלת באופן שיטתי על ידי חוקי הדקדוק, אלא היא אקראית ולפרקים נתונה לבחירת הדוברים.

האתגר בהסברת דפוסים מנוגדים אלה נידון בעבר במסגרת שני סוגים מובחנים של גישות מחקריות: גישות מבוססות מבנה ביקשו לנסח סט חוקים שיצפה את תפוצת הכינויים המורכבים הצפויים ויוצאי הדופן כאחד, מתוך תפיסה כי חוקים אלה יבטאו אילוצים מבניים במערכת הדקדוקית. מנגד, גישות מבוססות שיח ומשמעות חתרו להסביר את האפקטים הסמנטיים שנקשרו בכינוי המורכב באותן עמדות שבהן השימוש בו נתון לבחירה, והציעו כי אפקטים אלו מהווים תשתית כללית לאבחנה הנפוצה בין כינויים פשוטים ומורכבים בשפה אנושית.

פיצול נוסף, שחופף בחלקו לזה שתואר, נוגע בעצם ההגדרה שניתנה לכינויים מורכבים במסגרות המחקריות השונות. שתי נקודות מבט נפוצות בהקשר זה מוצגות ב-(1).

### (1) מהם כינויי גוף מורכבים?

א. הגדרת חוסר: כינוי הגוף המורכב נדרש לזהות ביחס לשמות עצם קרובים מאחר והוא חסר הוראה עצמאית.

ב. הגדרת סימון: כינויי גוף מורכבים משמים כסמנים עבור מקרים של הוראה זהה ו/או תכונות סמנטיות או דיסקרסיביות אחרות.

אף שישנם יוצאות מהכלל, ניתן לומר בהכללה כי הגדרה (א') לרוב מועדפת על ידי גישות מבוססות מבנה, וכי גישות שיח ומשמעות נוטות להעדיף את הגדרה (ב'). בפן האמפירי, חלק מהמידע מכינויים חוזרים, בפרט בסביבות המשועבדות שצויינו לעיל, נותר בלתי צפוי בכלל הגישות.

### המחקר הנוכחי מספק עדויות התומכות בגישה מבוססת מבנה שמאמצת את הגדרה (ב'), ומתארת את

הכינויים המורכבים כסמני זהות ביחס להוראה של שם עצם קודם בתוך הסביבה התחבירית הקרובה. הצעתה היא כי סימון זה מתבצע באמצעות תכונת [+/- IDENTITY] המצטרפת לעמדות שמות העצם במשפט (טכנית, לעמדה מקטגוריה D) ומציינת עבור כל כינוי גוף האם הוראתו זהה או נבדלת משמות עצם קודמים בסביבתו

המיידית. המורפמה החוזרת בכינויים המורכבים – 'עצמ', 'self', ואחרות – היא מימושה הפונטי של התכונות [+IDENTITY], בעוד הערך של העדר זהות הינו ברירה מחדל עבור זוגות שמות עצם בעלי מעמד עצמאי (כלומר, שאינם תוצאה של תנועה תחבירית מעמדה אחת לאחרת).

קיומה של תכונת הזהות בשמות עצם המשולבים במבנה תחבירי מסביר את תפוצתם הרחבה של כינויים מורכבים בשפות העולם, את המבנה המורפולוגי שלהם, ואת העמדות המנוגדות שתופסים כינויים אלה ביחס לכינויים הפשוטים: כינוי הגוף מתממש ככינוי מורכב כאשר הוראתו זהה לשם עצם קודם, ונותר בצורתו הפשוטה כאשר ההוראה שונה מכל שם עצם קודם בסביבה הקרובה. היות שהמורפמה המצטרפת לכינוי הגוף מבטאת זהות בין כינויים, מערכות דקדוק רבות מאפשרות להשתמש בה בסביבות שמעבר לכינוי המורכב, מה שיוצר תופעות נלוות המבטאות זהות בהקשרים שונים. בין תופעות אלה נמנים הכינויים המדגשים, הנוצרים כתוצאה משילוב בין מורפמת הזהות ובין המשמעות הנגזרת מדפוס ההטעמה של הכינוי המדגיש.

**הצעה זו קובעת למעשה כי כינויי הגוף המורכב והפשוט אינם ערכים לקסיקליים נפרדים אלא שלבים שונים באלטרנציה מורפולוגית, שאינם צפויים לחלוק לעולם את אותה העמדה.** תופעות שבהן ניתן לבחור בין הכינוי הפשוט והמורכב יתאפשרו רק כאשר ההוראה של כינוי הגוף עשויה להיות באותו הזמן זהה ושונה מהוראתו של שם עצם קודם, כלומר בהקשרים הכוללים דו-משמעות תחבירית. מן ההצעה נגזר כי בחירת הדובר היא למעשה בחירה בין מבנים תחביריים שונים, ולא בין הכינויים עצמם. לכך יש להוסיף מקרים שבהם נעשה שימוש במורפמת הזהות מחוץ להקשר הכינוי המורכב, שעשויים ליצור מראית עין של תפוצה מקבילה בין שני סוגי הכינויים.

בחינה של תפוצת הכינויים המורכבים בסביבות המשועבדות תחת שמות עצם וצירופי יחס מראה כי אכן ניתן למפות כל מקרה של חפיפה בין הכינוי המורכב והפשוט למבנים נבדלים, שבהם תכונת הזהות מקבלת ערכים שונים. תוצאה זו מעידה כי תופעת הכינויים המורכבים מוסברת במלואה על ידי גישה מבוססת מבנה, ובפרט על ידי תכונת בינארית המתממשת כאשר שני שמות עצם המתייחסים לאותה דמות חולקים סביבה תחבירית מיידית.

פרידיקציה נוספת של ההצעה היא כי אילוצים מבניים תלויי-זהות יתקיימו גם בהעדרו של הכינוי המורכב. בפרק המסיים של העבודה, אציג עדויות היסטוריות המאשרות את קיומם של אילוצים אלה בדקדוקים שאינם כוללים כינויים מורכבים, בהתבסס על המחקר הפילולוגי של העברית המקראית והערבית הקלאסית של הקוראן. עבודה זו בוצעה מתוך השוואה למחקרים היסטוריים שנערכו על התפתחות הכינוי המורכב באנגלית, שם העידו כי המגבלות על זהות כינויי גוף הן תוצר מאוחר של התפתחות מערכת הכינויים של השפה, שניתן לייחס אותו ללחצים פרגמטיים ותנאי השיח. העברית המקראית והערבית הקלאסית מתקופת הקוראן אינן כוללות את הכינוי המורכב כקונבנציה דקדוקית, ואף על פי כן ניתן לזהות בהן מגבלות על כינוי הגוף הפשוט, שלהוציא יוצאי דופן מובחנים, לעולם יתפרש כבעל הוראה שונה מזו של שמות עצם קודמים בסביבתו המיידית.

מגבלה זו מעידה כי קיומה של התכונת המחייבת סימון הוראה זהה אינו תלוי בקיומו של כינוי מורכב, וכי בהעדרו עשוי הדקדוק לחסום באופן מוחלט זהות בין שמות עצם בסביבתם המיידית, עד להתפתחותו של אותו כינוי מורכב המסמן אותה. בהתאם לכך, אטען כי דקדוקים שבהם כינויי הגוף נראים בלתי מוגבלים ביחס לתכונת הזהות, כפי שתועד באנגלית עתיקה, הם כאלה שמסמנים את תכונת הזהות באופן סמוי. המשמעות הכללית הנגזרת היא כי מגבלות על זהות בין שמות עצם אינן תכונה של כינויי גוף כאלה או אחרים, אלא מאפיין כללי של הדקדוק האנושי.



האוניברסיטה העברית בירושלים  
THE HEBREW UNIVERSITY OF JERUSALEM  
الجامعة العبرية في اورشليم القدس

## כינויים מורכבים

חיבור לשם קבלת תואר דוקטור לפילוסופיה

מאת

נעה באסל

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הוגש לסנאט האוניברסיטה העברית בירושלים

יוני 2024

עבודה זו נעשתה בהדרכתה של פרופ' נורה בונה