# Syntax and Semantics of Old Iranian Relative Clauses: Theoretical and Formal Implications




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# Abstract

This thesis presents a theoretically grounded study of non-postnominal relative clauses in the Old Iranian languages, with a focus on Old Avestan and comparative evidence from Old Persian and Young Avestan. Building on a detailed formal classification of these structures, it identifies and analyzes headless and head-internal free relatives as well as correlative constructions, showing that these are robust, recurrent patterns rather than mere stylistic or metrical variants of postnominal relatives. The study integrates philological insights with cross-linguistic typology, situating Old Avestan data within broader patterns of relativization across the world's languages. In doing so, it not only clarifies the syntactic and semantic behaviour of these constructions but also advances methodological tools for theoretically informed analysis of ancient languages, where interpretive and textual challenges limit direct access to native-speaker judgments.

The thesis further discusses two theoretically rich lines of inquiry motivated by the Old Avestan data. The first is a novel analysis of free relatives at the syntax–semantics interface, prompted by typological anomalies in Old Iranian and informed by cross-linguistic patterns. It argues, in particular, that the typology of free relatives should be extended to include non-interrogative-based free relatives. The second is a description and semantic analysis of "generalizing relative clauses" in Old Avestan, which are formed by adding two different types of generalizing expressions to relative clauses. This thesis suggests that these generalizing expressions are based upon Negative Polarity Items and Free Choice Items in the language, and takes initial steps toward explaining their semantic contri-

bution to the relative clause. A comparative survey of Old Persian and Young Avestan provides the first systematic description of non-postnominal relative clauses in these two sister languages, showing that this construction is less productive and less varied outside Old Avestan. The conclusion outlines two diachronic puzzles, the free relatives puzzle and the relative–interrogative puzzle, for which the present study lays a foundation.

An appendix implements the proposed analysis of free relatives in Lexical Functional Grammar, demonstrating the advantages of non-transformational approaches for capturing these data.

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# Dedication

To my *maman* and *baba*, whose love and sacrifices are beyond compare and beyond words;

and to all the beautiful souls who gave their light to Women, Life, Freedom.

*Cowards die many times before their deaths,*

*The valiant never taste of death but once.*

# Declaration

I, Setayesh Dashti, hereby declare that this thesis is entirely my own work. I further confirm that this thesis is not substantially the same as any work previously submitted for a degree or other qualification. The length of this thesis does not exceed the prescribed limit of 80,000 words set by the Faculty of Asian and Middle Eastern Studies.

*Setayesh Dashti*

*August 2025*

# Acknowledgements

This thesis has borne witness to upheaval, both in the world and in my own academic career – it has seen war and protest, academic identity crises, and my own changing passions in linguistics. I could never have reached the end without the people mentioned here, and many more besides. I wish I could name everyone I'm grateful to, but that would turn into another thesis the size of this one.

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During my DPhil, one of my favourite forms of procrastination was reading the acknowledgements of linguistics theses. In one of them (by an author I did not know) I

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I spent part of my third year in the Department of Linguistics at UMass Amherst work-

ing with Rajesh Bhatt. Rajesh's brilliance is matched only by his kindness, and I hope that one day I can be even a hundredth of the great linguist and mentor that he is. I also had the privilege of discussing my work with Veneeta Dayal; when I was reading her papers for my master's thesis, I could never have imagined that she would one day play such a significant role in my academic journey through her encouragement and support. My collaboration with Ash Asudeh, though on a topic different from my doctoral research, was in itself a masterclass on how to think about language, formalism, and research. I may never be as sharp as he is, but I hope I can one day be as deeply authentic and true to my values as a researcher. Mamnoonam, Ash!

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I have presented parts of this work at the 27th International Lexical-Functional Grammar Conference, the 2023 Linguistic Association of Great Britain Annual Meeting, the 34th Annual UCLA Indo-European Conference, and the 2025 Annual Meeting of the Linguistic Society of America, as well as by invitation at the Indo-European & Historical Linguistics Workshop at Harvard, the Oberseminar English Linguistics at the University of Göttingen, and the University of Arizona. The feedback I received in these venues greatly contributed to improving this research.

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# List of Abbreviations

Apart from abbreviations cited from other sources, the following abbreviations are used.

### Glosses

| | |
|---|---|
| ABL. | ablative |
| ACC. | accusative |
| ACT. | active |
| ADV. | adverb |
| AOR. | aorist |
| CONJ. | conjunction |
| COP. | copula |
| DAT. | dative |
| DISJ | disjunction |
| DEM. | demonstrative |
| (1/2/3)DU. | ($1^{st}$/$2^{nd}$/$3^{rd}$ person) dual |
| EZ. | ezafe |
| FEM. | feminine |
| FUT. | future |
| GEN. | genitive |
| INF. | infinitive |
| INST. | instrumental |
| IMPER. | imperative |
| INJ. | injunctive |
| INTERR. | interrogative |
| LOC. | locative |
| MASC. | masculine |
| NOM. | nominative |
| NPI. | Negative Polarity Item |
| NEG. | negation |
| NEUT. | neuter |
| OBJ. | object |
| OPT. | optative |
| PASS | passive |
| PERF. | perfect |
| (1/2/3)PL. | ($1^{st}$/$2^{nd}$/$3^{rd}$ person) plural |
| PRES. | present |
| PREV. | preverb |
| PRTCL. | particle |
| PST. | past |
| PTCP. | participle |
| REL. | relative pronoun |
| SBJV. | subjunctive |
| (1/2/3)SG. | ($1^{st}$/$2^{nd}$/$3^{rd}$ person) singular |
| VOC. | vocative |

### Syntactic phrases

| | |
|---|---|
| AdjP | Adjective phrase |
| Det | Determiner |
| CP | Complementizer phrase |
| DP | Determiner phrase |
| FocP | Focus phrase |
| IP | Inflectional phrase |
| NP | Noun phrase |
| RC | Relative clause |
| TP | Tense phrase |
| SPEC | Specifier |
| VP | Verb phrase |

### Other abbreviations

| | |
|---|---|
| ALT | Alternatives |
| EFR | *-ever* free relative |
| EHRC | Externally-headed relative clause |
| EXH | Exhaustification |
| IHRC | Internally-headed relative clause |
| LF | Logical Form |
| PIE | Proto–Indo-European |
| SFR | Super-free relative clause |

# Preface

There is a deep and longstanding relationship between the fields of historical and theoretical linguistics. Much of the scholarship at this intersection is deeply rooted in diachrony and tends to pursue one of two goals: either theoretically informed explanations of language change or diachronically informed theories of language and its components. Crucially, however, any study of diachrony presupposes a reliable account of what has actually changed. We cannot meaningfully engage with language change from a theoretical perspective if we adopt a purely descriptive, atheoretical stance toward historical data.

On the other hand, philologists have often treated ancient languages primarily as tools for accessing what lies beyond the text: its cultural, religious, or literary context. A structuralist view of language has often dominated philological work, reducing the grammar of ancient languages to atheoretical observations and categorizations. What has often been overlooked by both philologists and theoretical linguists is that ancient languages represent instances of the same intricate and structured system as modern natural languages. This oversight weakens both disciplines: the philologist risks misunderstanding the language, and thus the text and its tradition, while the linguist misses an important empirical domain for understanding the cognitive and structural richness of language.

This thesis attempts to bridge the gap between theoretical linguistics and philological analysis by offering a theoretically grounded account of a class of relative clause structures that have been largely overlooked: non-postnominal relative clauses in Old Iranian

languages. The study aims to be of interest to philologists, historical linguists, and theoretical linguists alike. It offers a detailed account of the form and interpretation of these constructions, proposes a novel cross-linguistic type of free relative clause, and explores implications for the analysis of free relatives at the syntax-semantics interface. In doing so, it contributes to ongoing discussions about the diachrony of relativization and the *ezafe* construction in Iranian languages, and lays the groundwork for further investigations of related diachronic issues.

# Chapter 1

# Introduction

Old Avestan has one of the most complicated of ancient Indo-European corpora to comprehend. The liturgical nature of the texts, combined with issues of oral transmission, scribal errors, and an abundance of hapax legomena, raises many challenges for understanding the syntax and semantics of the language. This thesis aims to shed light on one of the lesser-studied aspects of this language (and other Old Iranian languages): non-postnominal relative clauses. This thesis also attempts to approach the research question from a theoretical and typological standpoint. In this chapter, I will discuss the methodological foundation of this thesis in §1.1, and then outline my proposed methodology for the classification of linguistic structures in ancient languages in §1.2. After giving an overview of Old Avestan (the main object language of this thesis) in §1.3, I give a classification of non-postnominal relativization patterns in Old Avestan in §1.4. Finally, I introduce the structure and content of this thesis in §1.5.

## 1.1 On theoretical examinations of ancient languages

Theoretical linguistics has often focused on modern languages for a simple reason: to understand language as a cognitive capacity, we must rely on indirect evidence – namely,

linguistic output produced by speakers. Testing hypotheses about grammatical structure requires access to a broad range of such output. Crucially, in the Chomskyan tradition, the most valued evidence takes the form of introspective and unreflective judgments by native speakers on whether sentences are acceptable.[1] Even in studies of living languages, generative linguists have traditionally favoured native-speaker intuitions over corpus or experimental data, since the latter are seen as reflecting performance factors rather than the idealized competence that grammar aims to model. In light of the classic competence–performance distinction (with its roots in Chomsky's critique of behaviourism), corpus data and experimental results are viewed with caution: they tend to be messy, filtered through memory limitations, attentional lapses, processing constraints, and other performance effects, and therefore may not directly reveal the underlying grammatical knowledge of speakers. What the theoretical linguist seeks, by contrast, are speakers' judgments about the acceptability and interpretation of linguistic expressions, which can be used as evidence about the grammatical system underlying them. Such judgments are themselves a form of linguistic behaviour and may also be affected by performance factors; their methodological value lies not in providing direct access to competence, but in allowing researchers to construct and systematically compare forms that may be rare or absent in spontaneous production.

Moreover, testing linguistic hypotheses often requires controlling for specific factors and probing limits of grammar. This means researchers frequently need to examine unusual yet grammatical sentences (for example, configurations involving crossover effects – e.g. *?the vet wondered which pet*$_1$ *their*$_1$ *owner fed* —$_1$ *the most*) in order to diagnose theoretical constraints. Such sentences are rarely produced spontaneously in everyday communication, but native speakers can generate them on request and judge their ac-

[1] It is true that actual linguistic behaviour is shaped by processing constraints, discourse, register, sociolinguistic and diachronic variation, among other factors, and contemporary generative work increasingly draws on multiple types of evidence. The methodological advantage of elicited judgments for present purposes is therefore narrower: they allow researchers to probe grammatical contrasts and constructions that may be rare or absent in naturally occurring corpora.

ceptability. By prompting speakers, linguists can obtain judgments on grammatical configurations that may be rare or unattested in naturally occurring data. This is particularly important when the available corpus is small. Literary and poetic corpora may of course contain highly marked constructions of their own, owing to factors such as metre, information structure, or poetic licence; nevertheless, they cannot systematically supply the controlled contrasts that elicitation makes possible. Purely corpus-driven approaches are therefore limited not because corpora necessarily lack marked constructions, but because the occurrence and distribution of such constructions are contingent on what happens to be attested. Furthermore, negative data (instances where a speaker finds a construction ungrammatical) are equally vital in theoretical argumentation. A clear judgment that a string $X$ is not acceptable in the language can reveal which underlying structures and mental representations are disallowed by the Universal Grammar or the mental faculty of language in general. In fact, identifying the limits of grammaticality through speakers' rejections of certain sentences has been a key tool for theorists in refining syntactic and semantic theories. Not having access to native speakers' intuitions deprives the theorist of this crucial source of evidence. For a linguist working with a language that has no living speakers (an ancient or dead language), the inability to elicit spontaneous judgments or negative evidence poses a serious methodological challenge.

Finally, even without many of the Chomskyan concerns about the cognitive aspect of language and with a purely formal view towards theoretical linguistics, ancient languages are at an obvious disadvantage: since Chomsky 1957, the job of a formal linguist has been to formulate a finite set of rules to explain a potentially infinite number of grammatical sentences. From the perspective of formal linguistics, ancient languages are at an obvious methodological disadvantage, as a grammar aims to characterize not merely the sentences that happen to be attested, but the productive system underlying them. This is not in itself a problem unique to ancient languages: linguistic evidence is necessarily finite even for living languages. The crucial difference is that, for a living language, the evidential

base can in principle be expanded. Researchers can construct new examples, manipulate particular grammatical factors, and ask speakers to judge predictions that distinguish competing analyses. For an ancient language, by contrast, the surviving corpus constitutes a closed dataset. When two grammatical analyses are equally compatible with the attested material, there is no possibility of eliciting the additional judgment that might decide between them.

Nevertheless, the surviving data represent a grammatical system that formed part of a historically attested natural language. Although the available corpus may be limited, fragmentary, or heavily skewed by genre, register, or textual tradition, it still reflects the grammatical system of a historically attested language. Depending on the corpus, the data may be highly biased: dialectal variation is often flattened or erased in transmission, and surviving texts may reflect only a single sociolect, literary style, or register. Nevertheless, that register is not wholly artificial; it belongs to a once colloquial natural language (for instance, you cannot compose a poem in English using constructions that are ungrammatical). While we may not be able to reconstruct the full generative grammar that underlies the spoken language as a whole, we are not without tools. We can still formalize the patterns observable in the surviving data and interpret them within the broader framework of our typological and theoretical knowledge of natural language. In this way, the ancient language corpus, however limited, contributes to our understanding of what is possible in human grammar and offers evidence that can refine or challenge linguistic theory – for instance, Hittite correlative data (well before correlatives were formally identified in Srivastav 1991) served as the empirical trigger for Bach and Cooper's 1978 short paper on relative clauses, a piece that would later become widely cited in works on compositional semantics and syntax-semantics interface.[2]

With theoretical linguistics having advanced through many discoveries about natural language, and with a growing interest among philologists in theoretically informed anal-

[2]I thank Diego Krivochen for this remark.

ysis, it is important to develop methodologies for examining ancient languages from a theoretical perspective. Diachronic theoretical syntax, and more recently semantics, is a particularly productive outcome of the interaction between theoretical and historical linguistics (see e.g. Lightfoot 1979, Roberts and Roussou 2003, Eckardt 2006, van Gelderen 2011, Yang 2016). The growth of this field is largely due to the fact that a central aim of Chomskyan syntax has been to explain how children acquire language, a process also closely tied to language change. One by-product of this inquiry is theoretical syntactic reconstruction, a subfield that has also been deeply informed by theoretical models (see Roberts 2007, Walkden 2014).[3]

But what about theoretically-oriented synchronic analyses of ancient languages, which are often a necessary foundation for theoretical diachronic research? A central challenge, of course, is the lack of access to native speaker judgments. Still, despite the methodological constraints that ancient languages impose, there is a growing body of work that approaches them within explicit theoretical frameworks. For Indo-Iranian languages in particular, works such as Hale 1987a, Lowe 2015, Lowe 2017, and Mocci 2025 offer substantive synchronic analyses. Several shorter studies on Old Iranian with similar theoretical commitments are cited throughout this thesis.[4] However, there is still a methodological vacuum for such enquiries: few studies offer explicit discussion of how to systematically carry out theoretically oriented analyses in the absence of native speaker data, or how to separate robust formal generalizations from interpretive noise. In this thesis, my aim is to take the first steps towards filling this gap by proposing a concrete methodological framework for synchronic theoretical analysis of ancient languages, starting with the process of classification of the structures within the corpus – a task shared between grammarians and linguists.

[3]Construction Grammar also has a longstanding tradition of syntactic reconstruction; see Gildea et al. 2020 for an overview.

[4]One work that is worth mentioning is Jamison 1993, which specifically addresses the methodological challenges of describing the syntax of an ancient language. While this work is not a theoretically-oriented discussion, it provides important methodological insights.

## 1.2 Robust classification

Classification is the bridge from raw linguistic data to structured linguistic knowledge. In any scientific enterprise, classification, taxonomy, and categorization are not trivial matters of naming; they are indispensable tools for abstraction, comparison, and theory construction. Starting from Aristotle, philosophers of science have often emphasized that scientific understanding begins with the ability to sort phenomena into stable, projectable kinds that support inference and explanation (Boyd 1991, Hacking 1991, also see Dahlberg 1976 for a history of the philosophy of classification). While classification might, at first glance, seem like a minor practice concerning only terminology, it is in fact the foundation of all analytical investigation. It reduces complexity, highlights regularities, and enables us to see individual datapoints in light of broader patterns. If done the right way, classification is not merely an abstraction over data; it is the first step toward situating language within a larger picture. In the case of linguistic data, this larger picture could be a theoretical or typological one. Without principled classification, we cannot contextualize a language, detect structural patterns, or formulate meaningful generalizations. In the study of ancient languages, where data are often sparse, ambiguous, and open to competing interpretations, this task becomes even more critical.

In this thesis, my goal is not only to produce a theoretically consistent classification of relative clause structures in Old Avestan, but also to contribute a replicable methodology for similar work across ancient languages more broadly. To do so, I suggest that classification in such cases must rest on two core commitments: independence from interpretation and typological groundedness. Empirical testability is assumed throughout: these two commitments are intended as additional methodological safeguards rather than substitutes for falsifiability. In the study of ancient languages, however, the finite and closed nature of the available data often limits the extent to which competing analyses can be directly tested. The two commitments therefore provide further constraints on classifica-

tion where decisive falsification is not possible.

1. **Independence from interpretation**: One of the main difficulties in working with ancient languages is that the texts are often hard to interpret. This may be caused by the subject matter or cultural context, the unclear semantics of *hapax legomena*, or textual corruption introduced through scribal errors. In analyzing the structure of these texts, our working hypotheses should not rely on semantics. Semantic judgments are often nuanced and context-sensitive; for instance, native speakers' intuitions about definiteness and specificity can shift depending on discourse context or prosody. Given that our access to ancient texts is fragmentary and mediated by uncertain interpretation, we cannot rely on semantics to guide our structural analysis.

   Interpretive difficulties can also serve as a valuable test of the robustness of our formal classifications. In the sections 1.4.1 and 1.4.2 of this chapter, we will see that many Old Avestan examples have been interpreted in significantly different ways by scholars. This provides a test for our formal classification to see if it can withstand these interpretive divergences. Indeed, not all ambiguities can be resolved by a purely formal classification: for instance, structural ambiguities remain unresolved. However, as long as a majority of instances can be consistently captured within a formal framework that remains stable across interpretive variation, that framework can be considered robust.

   This is not to say that semantic inquiry is impossible in the study of ancient languages. Once our structural hypotheses are in place and independently tested, we can begin to explore potential semantic patterns in the data. Yet even then, caution is required: we must avoid relying uncritically on translations, ignoring the formal and syntactic structure of the text, or favouring interpretations that conveniently support our analysis. More positively, semantic analysis should favour interpreta-

tions that are supported by the discourse context, compatible with the morphosyntactic structure of the string, and independently plausible in light of cross-linguistic semantic and typological evidence. Where several interpretations remain possible, the analysis should preserve that ambiguity rather than force a unique reading. Semantic investigation must proceed with the same methodological rigour as formal analysis: grounded in textual evidence and constrained by the limits of the data.

2. **Typological Groundedness:** Structural descriptions of an ancient language should be contextualized within a broader cross-linguistic typological landscape. With the growing body of data from linguistic fieldwork and typological research, it is increasingly unlikely – unless we are dealing with a language isolate without any attested relatives – that the language under study deviates radically from its genetic family or from the known range of natural language variation. More importantly, in the absence of extensive or fully interpretable data, typological anchoring provides linguists with a set of comparative tools and expectations that can guide the analysis.

   The goal of typological contextualization is to identify constructions in other, preferably related, languages that match the formal properties observed in the data (or, as in §1.4.5, there may be multiple candidates).[5] We will see in §2.1 that the data under investigation sometimes align with all but one of the properties of a known typological construction. This does not automatically disqualify it from belonging to that category; on the contrary, such mismatches may indicate areas where the

[5] It is also a good scientific practice to adopt the terminology that is standard among linguists. For instance, the term *correlative* has often been used in the Indo-European philological literature to describe two sets of relativization configurations:

(i) a. [DEM$_i$... [REL$_i$ ...]]
    b. [REL$_i$... [DEM$_i$ ...]]

We will establish in the rest of this chapter that (ia) is an externally-headed postnominal relative clause, while (ib) is a correlative construction. Both of these constructions can be found in Indo-European languages. In these cases, adopting the correlative name only for (ib) makes the philological data accessible to theoretical linguists too, and also straightforwardly connects the pattern in the object language to broader typological patterns.

typological model itself needs refinement. Once a plausible typological category has been identified, we can then test whether additional properties associated with that category are also attested in our data. For instance, in Chapter 2, I assess the typological predictions entailed by the classification of Old Avestan non-postnominal relativizations developed in this chapter. To the extent that the available evidence permits, those predictions are borne out, which increases our confidence in the proposed classification.

These principles offer a structured approach to identifying and analyzing grammatical constructions in ancient corpora. This methodology can be summarized in the algorithm in (1):

**Algorithm 1** Classification procedure for data in low-resource languages

▷ *Schema induction*
1: Hypothesize a formal schema on the basis of observable morphosyntactic patterns.
2: Identify corpus strings compatible with the schema.
3: **if** interpretive ambiguity frequently prevents application of the schema **then**
4: Revise the schema and return to Step 2.
5: **end if**
6: **if** the schema fails to capture the majority of relevant examples **then**
7: Revise the schema in light of their distribution and return to Step 2.
8: **end if**
▷ *Typological classification*
9: Identify the established cross-linguistic construction or constructions that most closely resemble the schema.
10: Where applicable, draw on qualitative typology and quantitative implicational universals.
▷ *Prediction and evaluation*
11: Derive predictions from the proposed classification and test them against the object-language data.
12: Where sufficiently well supported, extend the evaluation from structural to interpretive predictions.

Throughout this thesis, I have tried to show that independence from interpretation and typological groundedness are often useful in giving theoretically-oriented descriptions of relative clauses in Old Iranian languages. Therefore, I have often used cross-linguistic data that are comparable to the constructions in question, and often only relied on interpreta-

tion when the structure can be helpful (for instance, I have not determined definiteness by solely determining uniqueness or familiarity within the context; rather, I have relied on occurrences within structures that entail definiteness, such as being modified by a demonstrative).

## 1.3 Old Avestan

Old Avestan is the language of the most ancient parts of the sacred Zoroastrian textual corpus, the Avesta. Alongside Young Avestan, it constitutes surviving evidence for the Eastern branch of Old Iranian languages. While the texts themselves cannot be dated with respect to any absolute historical or archaeological facts, the similarity of the language of the texts to that of Ṛgveda has been taken as an indicator that the language was spoken in the second half of the second millennium BC (probably 1500-900 BC). By the time of its final redaction and canonization (between the 3rd and the 7th centuries AD and perhaps around 400 years after Zarathuštra's time), Avestan may no longer have been a living spoken language, but it was preserved and transmitted orally by priests in ritual contexts (Skjaervø 2007, pp. 853–855). Despite the corpus being preserved only in much later manuscripts (using a special, constructed, and essentially phonetic script), its content and form reflect an Old Iranian language still closely related to Sanskrit and Old Persian, other Old Indo-Iranian languages.

The Old Avestan corpus is relatively small and highly distinctive. It consists chiefly of the Gāthās – seventeen hymns comprising 241 verses composed in archaic metrical verse and traditionally attributed to the prophet Zarathuštra (Zoroaster) himself.[6] Alongside the Gāthās is the Yasna Haptaŋhāiti ("Worship in Seven Chapters"), a liturgical text in Old Avestan prose in 37 verses. In the originally orally transmitted Yasna of 72 chapters, the Gāthās constitute chapters 28–34, 43–51, and 53, while the Yasna Haptaŋhāiti forms

[6]For a critical discussion of this claim, see Kellens and Pirart (1988, p. 17).

chapters 35–41 (the rest of the Yasna is in Young Avestan). The text serves a liturgical purpose: it is recited, as the core of the Yasna liturgy, during the Yasna ceremony by Zoroastrian priests.[7]

The genre of the Gāthās is important for interpreting the linguistic evidence they preserve. They are highly stylized liturgical-poetic texts, transmitted within a ritual tradition. The language is therefore shaped not only by grammar, but also by metre, formulaic expression, rhetorics, and the conventions of religious poetry. At the same time, these genre-specific properties do not make the corpus linguistically unusable; rather, they require that unusual word orders or constructions be evaluated with particular caution, especially where poetic or metrical factors may offer an alternative explanation.

The Old Avestan texts (particularly the Gāthās) have been edited and translated more often than any other part of the Avesta due to their theological significance and their historical linguistic interest (as reflecting one of the oldest stages in the history of Iranian languages). However, there are still many passages of the text where there is no consensus on their interpretation. Major modern translations and editions employing philological and linguistic methodologies mostly appeared after the publication of Bartholomae's seminal lexicon (Bartholomae 1904) and German translation of the Gāthās (Bartholomae 1905). These include (but are not limited to) Humbach 1959, Insler 1975, Kellens and Pirart 1988–1991, Humbach 1991, West 2010, Humbach and Faiss 2010, as well as Narten 1986 and Hintze 2007, dedicated solely to the Yasna Haptaŋhāiti. These are the editions and translations that we rely on here.[8]

The clausal syntax of Old Avestan is relatively understudied compared with its phonology and morphology/morphosyntax. However, while most grammars allocate only a few

[7]For a thorough introduction to the Old Avestan corpus, see Humbach 1991, v1. pp. 1-112. For an overview of the stylistic status of the corpus, see Hintze 2002.

[8]For an insightful and critical overview of the translations of the Gāthās, see Malandra 2000 in the Encyclopædia Iranica. A new lexicon and translation has recently been published by Uesugi and Catt (2024). As this resource appeared only after I had completed my data collection and initial analysis, it was not possible to integrate its findings into the present work.

pages to syntax, there are nonetheless several valuable resources for its study. In his work on relativization, Seiler 1960 includes data from Old Avestan. Kellens and Pirart 1990 contains extensive descriptions of various aspects of Old Avestan syntax. West 2011 is devoted entirely to the syntax of Old Avestan, and Skjaervø 2009 offers detailed grammatical descriptions of Old Avestan alongside other Old Iranian languages. In addition, Hale 1987a, 1993 examine word order in Old Avestan, and Lowe 2014b analyzes its transitive nominals.

While the language seems to have relatively free word order, Hale (1987a, 1993) has shown that its basic word order is SOV; however, topicalization and lowering of words and constituents are very common in both Young and Old Avestan, probably both for metrical considerations as well as emphasis. Adjectives and dependent genitives in Old Avestan often precede the noun they modify, and can also be disjoint from it. Demonstrative and monosyllabic possessive adjectives usually precede the noun. In terms of its morphosyntax, the language is highly inflectional: it marks eight cases (nominative, vocative, accusative, instrumental, dative, ablative, genitive, and locative), three genders (masculine, feminine, and neuter) and three numbers (singular, dual, and plural). Relative clauses, however, remain particularly challenging. Skjaervø (2009, p. 155) writes: "the Old Avestan relative clauses are particularly difficult to parse, partly because of the poetic word order and partly because of frequent ellipsis of antecedent, verb, etc." This thesis aims to uncover the syntax and semantics of a particularly intricate and understudied subset of these complex structures: non-postnominal relative clauses.

## 1.4 A formal classification of non-postnominal relativization

The canonical relativization strategy in Old Avestan is externally-headed postnominal relative clauses, where a noun phrase is followed by a *ya*-based relative pronoun. The attested forms of the relative pronoun are summarized in table 1.1.

| Case | Sg. Masc. | Sg. Neut. | Sg. Fem. | Pl. Masc. | Pl. Neut. | Pl. Fem. |
|---|---|---|---|---|---|---|
| Nominative | yə | yaṯ | yā | yōi | yā | ẙā |
| Accusative | yəm | hiiaṯ | yąm | yəṇg | yā | yą |
| Instrumental | yā | yā | – | yāiš | yāiš | – |
| Dative | yahmāi | – | – | yaēibiiō | – | – |
| Genitive | yehiiā | yehiiā | – | yaēšąm | yaēšąm | – |
| Locative | yahmī | – | – | yaēšū | yaēšū | – |

Table 1.1: Inflection of the Old Avestan relative pronoun *ya-*

In a postnominal relative clause, the noun phrase receives case marking from the predicate of the matrix clause, and the relative pronoun receives case marking from the predicate of the relative clause. For instance, in (1.1), the head noun *ahura-* bears accusative case marking as the object of the verb *yazamaideē* 'we praise'. The relative pronoun is nominative, as the noun *ahura-* is to be understood as the subject of the relative clause.

(1.1) yazamaidē ahurəm$_i$ mazdąm [yə$_i$ gąm=cā aṣ̌əm=cā
praise.PRES.1PL Ahura.ACC wise.ACC REL.NOM cow.ACC=CONJ truth.ACC=CONJ
dāṯ]
create.AOR.3SG
'We praise the wise Ahura, who created the cow and truth.' (Y 37.1)

However, postnominal relative clauses, for the most part, are not discussed in depth in this thesis. This also includes the ezafe construction (see Haider and Zwanziger 1984, Haig 2011a for diachronic views of ezafe, and Samvelian 2018 for an overview of the synchronic status of ezafe in Iranian languages).[9] Postnominal relative clauses are comparatively well understood and are not central to the classificatory problem addressed in this thesis. I therefore focus on the non-postnominal cases. In order to investigate such structures, we start with a simple and purely formal observation: we are looking for relative clauses that do not have an external head, meaning that there is no nominal outside

[9] In our discussion of Old Avestan, we only discuss the ezafe construction in comparison with the article-like construction, discussed in §2.3.3.2. We will also go back to discussing the ezafe construction in more depth in our discussion of Old Persian and Young Avestan, as the data in those languages give rise to a hypothesis about the relationship between non-postnominal relative clauses and the ezafe construction.

the relative clause that seems to be modified by that relative clause. This will potentially mean relative clauses that have an internal head (there is a nominal inside the relative clause that seems to be modified by the relative clause), or do not have a head at all (there is no nominal such that it is being modified by the relative clause). Such characterization is assumed to exhaust the space of logical possibilities, implying that no relative clause can be prenominal, or doubly-headed (the head noun appearing both internally and externally). This is because I have not seen one certain case of such relative clauses (thus, even if such a parse is available for a relative clause, an alternative structure described below can equally well be assumed).[10] This formal distinction is summarized in (1.2) – for a similar classification of Sanskrit relative clauses, see Lowe et al. 2025.

(1.2) a. **Non-postnominal:** [Rel... (N) ...]$_{RC}$

b. **Postnominal**: [NP [Rel...]$_{RC}$]

Note that we could have started our inquiry of relativization strategies in Old Avestan based on their semantic interpretation. Indeed, as we will see in §2.2, semantic classification of relativization patterns into restrictive, non-restrictive, and maximalizing is the most common approach to the typology of relative clauses in the literature, following the influential work of Grosu and Landman 1998. However, any such classification crucially depends on how the clause is interpreted, and interpretation in turn depends on often speculative reconstructions of meaning. In low-resource languages, interpretation may in turn depend on necessarily uncertain reconstructions of meaning from the available corpus. As a result, semantic classification is inherently less robust than one grounded in formal morphosyntactic criteria such as the one in (1.2).

In the rest of this section, I will find instances in the corpus that demonstrate the distinction in (1.2), and test this diagnostic against the interpretive and textual challenges

[10]Note that throughout this paper, by the term 'head' of a relative clause, I refer to the noun phrase that provides the lexical semantic content that the relative clause modifies; I remain agnostic as to whether this nominal syntactically heads the relative clause as well for now.

brought forth by the corpus. We will also see that the pattern in (1.2a) can be categorized further into subtypes. The aim is to establish whether the formal schema in (1.2) can give us a robust classification of relative clauses in Old Avestan, one that is formally, interpretively, theoretically, and typologically grounded. To do so, we start with relative clauses in the Yasna Haptaŋhāiti in the next section.[11]

### 1.4.1 Non-postnominal relative clauses in the Yasna Haptaŋhāiti

The poetic nature of most of the Old Avestan corpus complicates the study of relative clauses. Therefore, I begin by discussing non-postnominal relative clauses in the Yasna Haptaŋhāiti, where we can at least be certain that metrical considerations have not impacted the form.[12] There are 25 relative clauses in the Yasna Haptaŋhāiti. Among these 25 relative clauses, there are 5 cases that are undoubtedly non-postnominal as defined in (1.2a). Moreover, there are sub-patterns among these 5 instances – it will be shown that the rest of the Old Avestan corpus also contains a similar range of non-postnominal relative clauses.

The first pattern is where there is no overt nominal in the relative clause that can be the head of the relative clause. This can be seen in Y 37.2:

(1.3) təm aṯ̰ yasnaŋam pauruuatātā yazamaidē [yōi
DEM.ACC PRTCL worship.GEN excellence.INST worship.PRES.1PL REL.NOM.PL
gəuš hacā šiieiṇtī]
COW.ABL with dwell.PRES.3PL
'We worship him with the excellence of worships (of those) who are on the side

[11]Throughout the thesis, glosses are given minimally, except when crucial information is needed for the analysis. Gender is therefore not marked. The lack of number marking signifies singular. Plurality of nouns is always reflected in the plurality of the translated gloss. In verbs, the stem and non-indicative and non-injunctive mood have been marked. In case of examples adopted from other sources, the original glossing has been preserved.

[12]I will discuss cases where there are significant divergences among translators. However, these cases are rare, as the broader structure assumed for any one relative clause is usually common to all translations despite differences such as the meanings attributed to individual lexical items. I will not mention cases where the translations are not faithful to the original syntax of the text. For instance, see the footnote for example (1.8).

of the cow.' (Y 37.2)[13]

How are we to understand the relative clause in (1.3)? There is no expression in the matrix clause that the relative clause refers to; rather, the relative clause itself seems to refer to an entity that is the genitive modifier of *yasna-* 'worship'. Other translations (besides Humbach 1991, which is our baseline) have the same intuition about the interpretation and structure of this relative clause: they also similarly supply a demonstrative pronoun as the head of the relative clause.

Alternatively, there may be a nominal internal to the relative clause which can be assumed to be the head of the relative, such that the rest of the relative qualifies what this nominal refers to:

(1.4) rāitī tōi xrapaitī ... [hiiaṯ̰ mīždəm mauuaiϑīm
generosity.INST you.GEN shape.AOR.SBJV.3SG ... REL.ACC prize.ACC like me.ACC
fradadāϑā daēnābiiō mazdā ahurā]
allocate.PST.2SG beliefs.DAT wise.VOC Ahura.VOC
'Through your generosity there shall take shape ... which prize you have allocated to someone like me for the sake of our beliefs, O Wise Ahura.' (Y 40.1, 41.5).

What we see in (1.4) is again a relative clause that does not modify an expression outside the relative clause. Instead, it *contains* the noun that it modifies, *miīžda-* 'prize'. This constrasys with postnominal relative clauses in, e.g., English, where *prize* comes before and outside the relative clause.

But as mentioned before, Old Avestan is a difficult corpus to parse and interpret from various perspectives. Would our formal diagnostic be overshadowed by such complexities? The example in (1.4) is a great case study, as it presents a number of interpretive difficulties. First, *xrapaitī* treated above as a finite verb, can also be taken as an instrumen-

[13]Note that in theory, the relative clause can be headed by *yasnaṇąm* 'worship', as this word and the relative pronoun are both in masculine plural. However, the resulting meaning makes this reading highly unlikely, as *hacā ši-* 'be one the side of' implies an animate noun.

tal singular of an *i*-stem (for more discussion see Hintze 2007, p. 287–289). While Narten (1986, p. 40), Humbach (1991, p. 149) and Hintze have interpreted it as a verbal form with the same structure for the relative clause, Kellens and Pirart (1988, p. 138) take it as a nominal in instrumental singular. However, their translation shows that they interpret the relative clause as head-internal as well:

(1.5) 'During each of these presentations, O Wise Ahura, be attentive and make abundant by your compassionate generosity, as far as it concerns us, **the reward worthy of me, which you have always instituted for consciences**, O Wise Ahura.'[14] (Y 40 à la Kellens and Pirart)

Therefore, regardless of how we interpret *xrapaitī*, the structure of the relative clause itself is not in doubt: *mīždəm* is unambiguously the head noun inside the relative clause.

Moreover, Humbach's interpretation of this verse assumes a different macrostructure for the relative clause; he assumes that the relative clause is the beginning of a new sentence that continues in the next verse (against the tendency for verses in Old Avestan to be self-contained):

(1.6) [hiiaṯ̰ mīždəm$_{i}$ mauuaiϑīm fradadāϑā daēnābiiō mazdā
REL.ACC prize.ACC firm.ACC present.PERF.2SG religion.DAT wise.VOC
ahurā] | ahiiā$_{i}$ huuō nə dāidī ahmāi=cā
Ahura.VOC | DEM.GEN DEM.NOM us.DAT give.AOR.IMPER.2SG DEM.DAT=CONJ
ahuiiē manaxiiāi=cā
existence.DAT mental.DAT=CONJ
'The firm prize which Thou hast presented to our religious views, O Wise Ahura: do Thou grant us (a share) of that (prize) for both, this (corporeal) existence and the mental one.' (Y 40.1–2, Humbach's translation)[15]

Here, the referent of the relative clause is referred back to in the following verse by a

[14] "Lors de chacune de ces presentations, ô Maître Mazdā, Sois attentif et rends abondante par ta générosité compatissante, pour autant que cela nous concerne, la récompense digne de moi, que tu as depuis toujours instituée pour les consciences, ô Maître Mazdā."

[15] The symbol | is used to mark verse boundaries.

demonstrative pronoun *ahiiā*. However, what is crucial is that even such a drastic shift in interpretation does not change the parsing of the internal structure of the relative clause: it still modifies a noun inside the relative clause. One might argue that the relative clause is modifying the demonstrative that follows the relative clause. However, there are no prenominal relative clauses in Old Iranian languages at all (let alone only Old Avestan). In fact, we will see that this reflects the well-known and well attested CORRELATIVE construction which will be discussed (1.2). Thus, despite broader interpretive difficulties, it remains possible to securely classify the relative clause in (1.4) as non-postnominal.

Consider again Humbach's interpretation of Y 40.1–2 in (1.6). There are three other instances in the Yasna Haptaŋhāiti where we see a similar configuration: a non-postnominal relative clause, whose referent is referred to by a pronoun in the main clause, which we said are instances of correlativization:

(1.7) [[yā və ... ahurō mazdå̊ nāmąm$_i$ dadāṯ̰] ...
REL.ACC.PL you.DAT ... Ahura.NOM wise.NOM names.ACC give.PRES.3SG ...
[tāiš$_i$ vå̊ yazamaidē]]
DEM.INST.PL you.DAT worship.PRES.1PL
'Which names the wise Ahura ... assigned to you ... we worship you with them.'
(Y 38.4)

(1.8) [[hiiaṯ̰$_i$ vā tōi nāmanąm vāzištəm ātarə mazdå̊
REL.NOM PRTCL you.GEN names.GEN most invigorating.NOM fire.VOC wise.GEN
ahurahiiā]] [[tā$_i$ ϑβā pairijasāmaidē]]
Ahura.GEN DEM.INST you.ACC approach.PRES.1PL
'What is indeed the most invigorating of your names, O fire of the Wise Ahura, with that we approach you.' (Y 36.3)[16]

(1.9) [[yå̊s$_i$=cā tōi gənå̊ ahurā mazdā aṣ̌āṯ̰ hacā
REL.NOM.PL=CONJ you.GEN women.NOM Ahura.VOC wise.VOC truth.ABL with
vairiiå̊] [tå̊$_i$ yazamaidē]]
excellent.NOM.PL DEM.ACC.PL praise.PRES.1PL

[16] Kellens and Pirart's translation of this example (p. 135) does not reflect the original relativization: '(by these names of "fire" and "state of mind") or by the (name) of "most conveyor" among your names, O fire of Master Mazdā, we serve you.' ((par ces noms de "feu" et d'"état d'esprit") ou par le (nom) de "très convoyeur" parmi tes noms, ô feu du Maître Mazdā, nous te servons). Other translations maintain the relativization.

'And which women are yours and are excellent on account of truth, O Wise Ahura, we worship them.' (Y 38.1)[17]

The relative clause in the first example, (1.7), is a relative clause with an internal nominal as the head: the relative clause modifies the word *nāma-* 'name'. After restricting the reference of the noun in question by the head-internal relative clause, then they are referred back to via a demonstrative pronoun in the matrix clause. The same is true for (1.8) and (1.9), with the difference that they do not contain any nominal head. In these examples the relative clauses introduce a discourse referent, which is then referred back to in the matrix clause by a pronoun.

These three sets of examples represent the three possible configurations of a non-postnominal relative clause: (1.3) with no overt head, (1.4) with an overt internal head, (1.7), (1.8), and (1.9) a non-postnominal in a correlative construction (the latter with an internal head). These configurations are distinguished here because they differ in the overt realization and position of the nominal element associated with the relative clause. At this stage, these distinctions are intended to be purely descriptive rather than claims that the three patterns instantiate distinct construction types cross-linguistically. We can formally summarize these configurations in (1.10), elaborating on our initial formal schema in (1.2):

(1.10) a. **Non-postnominal:** [Rel... (N) ...]$_{RC}$:

i. [ ... [Rel ...]$_{RC}$ ... ]$_{Main}$

ii. [ ... [Rel ... N ...]$_{RC}$ ... ]$_{Main}$

[17] My translation here mostly follows the interpretation in Humbach 1991, vol.1, p. 147. Hintze (2007, p. 196) translates this sentence to 'and we worship these noblewomen of yours, O Wise Lord, who are excellent on account of Truth', following Narten 1986, p. 43. While this latter translation still assumes a relative clause with an internal head, the issue is that the head noun has been taken to be *tōi gənā̊* 'your women'. However, as discussed later in the paper, there are no other instances of the head noun in these relative clauses having a modifying genitive pronoun. Yet, crucially, we do not need to interpret the genitive as the modifier of the noun *gəna-* 'woman' here: we either take it as asyndetic coordination ('the women who are yours (and) are excellent'), or take it as the main predicate with the result of the clause in apposition: 'the women who are yours (and) are excellent.' Furthermore, note that the word *gəna-* 'women' has been mentioned at the beginning of the verse, so in theory it can be an external head for this relative clause. However, this would mean that the external head of the relative clause is repeated inside it. I have not seen any instance of such construction in Old Avestan.

iii. [REL ... ($N_x$)...]$_{RC}$ [DEM$_x$ ...]$_{Main}$

b. **Postnominal**: [ ... NP [REL...]$_{RC}$ ... ]$_{Main}$

Pattern (1.10a-i) corresponds to headless relative clauses, pattern (1.10a-ii) corresponds to non-postnominal relative clauses with an internal head, and pattern (1.10a-iii) to left-dislocated non-postnominal relative clauses with resumption. Note that this is a purely formal schema – interpretation has no bearing on this classification. Yet, this formal schema proves to be an efficient method for dealing with the complexities of a corpus like that of Old Avestan.

### 1.4.2 Non-postnominal relative clauses in the Gāthās

The patterns discerned in Yasna Haptaŋhāiti can also be found in the rest of the Old Avestan corpus, the Gāthās, which are liturgical poems. Despite metrical considerations and the highly complex and allusive style, similar relativization patterns as in Yasna Haptaŋhāiti can be found in the Gāthās, indicating that the schema in (1.10) is a robust categorization.[18]

The Gāthās have 285 examples of relative clauses. Among these 285, 130 instances are postnominal and 99 are non-postnominal. Of the non-postnominal relative clauses, 14 have an internal head, 62 are headless, and 23 are correlatives (4 with an internal head, 19 without). The remaining 56 relative clauses are structurally ambiguous or unclear (as a reminder, Yasna Haptaŋhāiti had 25 relative clauses, of which 5 were non-postnominal: 1 headless, 1 head-internal, 3 correlatives).

In what follows, I provide two examples from each category from the Gāthās. Regardless of differences in interpretations, what is important in these examples is the surface structure. Among these 99 cases of non-postnominal relativization, I have not seen any interpretation of the text where the relative clause has been taken to have an external

[18]Note that the proportions of distributions are not similar, mostly because Yasna Haptaŋhāiti is a very small part of the corpus.

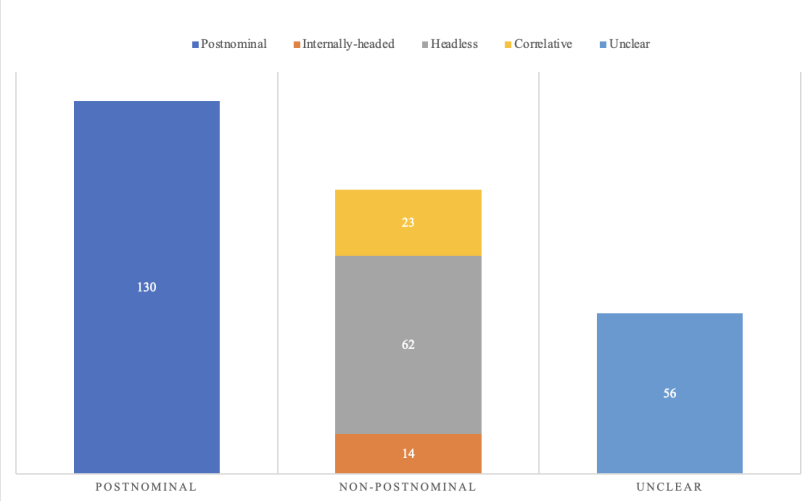



Figure 1.1: The distribution of relativization patterns in the Gāthās

head (as in pattern (1.10b)), meaning that a lexical item outside the relative clause has been translated as the head of the relative clause. While ambiguous cases exist, the fact that most relative clauses in the corpus can be categorized this way without any doubt (despite the complexities of the corpus) shows that the purely formal categorization suggested above is relatively powerful.

Starting with non-postnominal relative clauses without any overt head, the following two examples have this structure, following pattern (1.10a-i):

(1.11) varatā ... aṣ̌əm mainiiuš spəništō, ...
choose.AOR.3SG ... truth.ACC spirit.NOM most prosperous.NOM ...
[yaē=cā xšnaošən ahurəm]
REL.NOM.PL=CONJ satisfy.AOR.3PL Ahura.ACC
'The most prosperous spirit chooses the truth... also (those) who satisfy the Ahura [choose the truth].' (30.5)

(1.12) frauuaxšiiā [hiiaṯ̰ mōi mraoṯ̰ spəṇtō.təmō]
proclaim.PRES.FUT.1SG REL.ACC me.DAT tell.AOR.3SG most prosperous.NOM
'I shall proclaim (that) which the Most Prosperous One told me.' (Y 45.5)

In both (1.11) and (1.12), there is no external head noun that the relative clause can refer

to (as seen by the supplied demonstrative in the translations as the head of the relative clause).

As for non-postnominal relative clauses with an internal head, we will discuss examples (1.13) and (1.14) that follow pattern (1.10a-ii):

(1.13) då̊s=tū mazdā xšaiiā=cā [yā və̄
give.AOR.2SG=you.NOM wise.VOC rule.AOR.OPT.2SG=CONJ REL.INST you.GEN
mąθrā srəuuīmā rādå̊]
formula.INST hear.AOR.OPT.1PL bounties.ACC
'Grant, O Wise One, and rule with which formula we might hear (of) your bounties.' (28.7)[19][20]

(1.14) [yąm xšnūtəm rānōibiiā då̊ ϑβā āϑrā suxrā
REL.ACC satisfaction.ACC balance.INST give.AOR.2SG you.INST fire.INST red.INST
mazdā aiiaŋhā xšnūstā] aibī ahuuāhū daxštəm
wise.VOC metal.INST molten.INST PREV vital energies.LOC clear.ACC
dāuuōi
make.AOR.2SG
'Which satisfaction Thou apportion by means of your red fire, according to balance, O Wise one, (by the ordeal) with molten metal, make that clear in (our) vital energies.' (Y 51.9)

Example (1.13) is straightforward: once again, the relative clause is not modifying any noun external to the relative clause; rather, it is modifying *mąϑra-* 'formula' within the relative clause. Example (1.14) has several textual complications, and many words are interpreted differently in other translations (ours is based on Humbach 1991). However, in all other translations, as shown below, the internal structure assigned to the relative clause is consistent: the word *xšnūtəm* (whether 'satisfaction' or 'atonement') is the internal head of the relative clause, and *då̊* is the main verb of the relative clause:

[19] Contra Humbach's interpretation of *xšaiiācā*, as assumed in (1.13), Insler (1975, p. 27) interprets it as a vocative, with *då̊s* as the main predicate of the sentence, Kellens and Pirart (1990, p. 25) consider *xšaiiācā* more likely a first person singular optative, and West (2010, p. 41) translates it 'authority'. However, the structure of the relative clause itself remains the same in all these interpretations.

[20] Alternatively, we could translate this example as 'with which formula of yours we might hear (of) (the) bounties.'

- Insler (1975, p. 105): 'The satisfaction which Thou shalt give to both factions through Thy pure fire and the molten iron, Wise One, is to be given as a sign among living beings…'
- Kellens and Pirart (1988, p. 183): 'The satisfaction that you give to the two ... by your glowing fire, O Mazda, to obstruct the ... by the molten metal, during ... (so that the partisan of Deception may perish, do not cease to make opulent that of Harmony).'[21]
- West (2010, p. 157): '… is the atonement that Thou didst set for the two parties through Thy flaming fire, Mindful One, and through molten metal, to establish proof about our characters.'

The relative clause itself has different functions in these translations: in Humbach's, it is the object of the verb *dāuuōi*; in Insler's, it is the subject of the main clause; West takes the relative clause to be the predicate of the sentence in the preceding verse; Kellens and Pirart's translation is incomplete. But since the internal structure of the relative clause across all translations is a head-internal relative clause, and externally the relative clause is not left-dislocated and resumed in any of the translations, it can safely be categorized as an instance of pattern (1.10a-ii).

Examples (1.15)–(1.18) are correlative constructions following pattern (1.10a-iii), where the first two examples have a headless non-postnominal relative clause, and the second two examples have a non-postnominal relative clause with an internal head.

(1.15) [[yə̄$_i$ aṣ̌āunē vahištō x$^{v}$aētū vā aṯ̰ vā
REL.NOM truthful.DAT best.NOM family.INST DISJ PRTCL DISJ
vərəzə̄niiō airiiamnā vā ...] [huuō$_i$ aṣ̌ahiiā
community member.NOM tribe.INST DISJ ... DEM.NOM truth.GEN
aŋhaṯ̰ ... vāstrē]]
be.PRES.SBJV.3SG ... pasture.LOC
'(He) who is best to the truthful one by family (relationship) or (as) a member of

[21] "La satisfaction que tu donnes aux deux ... par ton feu rougeoyant, ö Mazdā, pour faire obstacle au ... par le metal fondu, lors de ... Pour que dépérisse le partisan de la Tromperie, ne cesse pas de rendre opulent celui de l'Harmonie."

the (same) community or by tribe... that one will be in the pasture of truth.' (Y 33.3)

(1.16) [[yāṇgs$_i$=tū mazdā hadəmōi minaš ahurā] [tāṇg$_i$
REL.ACC.PL=YOU.NOM wise.VOC abode.LOC foster.PRES.2SG ahura.VOC DEM.ACC.PL
zbaiiā vaŋhəuš uxδāiš manaŋhō]]
call.PRES.1SG good.GEN statements.INST thought.GEN
'(Those) whom Thou foster in (Thine) abode, O Wise Ahura, those I will call with the statements of good thought.' (Y 46.14)

(1.17) [[yōi$_i$ spəṇtąm ārmaitīm ... duš.šiiaoϑanā$_i$
REL.NOM.PL prosperous.ACC right-mindedness.ACC ... evil-doers.NOM
auuazazaṯ̰ ...] [aēibiiō$_i$ maš aṣā siiazdaṯ̰]]
let go.PRES.3PL ... DEM.ABL.PL master.NOM truth.ACC.PL chase.AOR.SBJV.3SG
'Which evil-doers let go of prosperous right-mindedness ... from them a master shall chase away truths.' (34.9)

(1.18) aṯ̰ [[yə̄$_i$ mā nā$_i$ marəxšaitē aniiāϑā ahmāṯ̰
PRTCL REL.NOM me.ACC man.NOM destroy.PRES.SBJV.3SG furthermore DEM.ABL
mazdā] [huuō$_i$ dāmōiš drūjō hunuš]]
wise.VOC DEM.NOM creator.GEN deceit.GEN offspring.NOM
'Also, which man furthermore tries to destroy me, O Wise One, that one (is) an offspring of the creator of deceit.' (51.10)[22]

In all these four cases, the non-postnominal relative clause introduces the referent for the following demonstrative in the matrix clause (which, in the case of head-internal ones, is the modified noun).

As examples (1.11)–(1.18) demonstrate, the schema proposed in (1.10), initially derived from the prose evidence of the Yasnā Haptaŋhāiti, is also robustly attested in the poetic Gāthās. Moreover, in the majority of cases, the formal schema presented in (1.10) withstands interpretive complications: regardless of how translators analyzed the meanings of individual words or the dependencies at the clausal level, the underlying relativiza-

[22] Insler (1975, p. 105) has a different reading. His reading also involves a head-internal relative clause, but without resumption. Moreover, the initial discourse particle *aṯ̰* seems to be a stylistic feature of many parts of the Gāthās. Other than such particles, no other element can precede the relative clause in a correlative construction.

tion structure remained the same. This suggests that the structural distinction our formal schema in (1.10) captures is a fundamental feature of Old Avestan syntax. Therefore, a clear distinction – at least in a formal sense – emerges between postnominal and non-postnominal relative clauses in the language.

### 1.4.3 Non-postnominal relative clauses in the Avestan grammatical literature

Although previous scholars have acknowledged the existence of relative clauses in Old Avestan that deviate from the canonical postnominal, externally-headed structures familiar from modern Indo-European languages, such cases have typically been treated as isolated anomalies or as secondary derivations of postnominal relative clauses. In practice, Old Avestan grammars and textual commentaries draw no systematic distinction between postnominal and non-postnominal relative clauses.

This lack of systematicity manifests in two ways. First, although some works do describe certain types of non-postnominal relative clauses, these treatments are fragmentary and fail to capture the full range of such constructions. As a result, many non-postnominal relative clauses are simply grouped with postnominal ones, obscuring structural and functional differences. Second, as mentioned above, the prevailing assumption in much of the literature is that non-postnominal relative clauses are merely surface variants ("disfigured" or re-ordered forms) of postnominal relatives. Yet this assumption lacks any formal justification. As we will see, cross-linguistic typology strongly suggests that non-postnominal relative clauses represent a distinct and independently attested relativization strategy, not a deformation of a default postnominal pattern.

A good example of such a treatment of Old Avestan clauses is Reichelt 1909. This work provides a remarkably form-oriented account of Old Avestan relative clauses, as it does distinguish some non-postnominal relative clauses from their postnominal counter-

parts by categorizing them separately. In §738 of his grammar, Reichelt describes relative clauses with an internal head as relative clauses where the relative pronoun is adjectival, which is "when the head noun ... is drawn into the relative clause or is repeated in it".[23] This description illustrates a tendency to at least implicitly derive the structure of these relative clauses from postnominal ones: it implies that the head originates outside the relative clauses, but (somehow) moves or gets drawn into the relative clauses. Moreover, in §737, he describes relative clauses where the head noun has to be understood from the context, under which he lists headless non-postnominal relative clauses. Nonetheless, he is not consistent in this categorization – in §736 and §742, he lists non-postnominal relative clauses (such as Y 46.8) alongside postnominal ones (such as Y 30.8).

Kellens and Pirart (1990) in their *réportoires grammaticaux* have a similar methodology, and the rationale for their categorization is not fully clear. Similar to Reichelt (1909), they dedicate separate categories to some non-postnominal relative clauses. For instance, they introduce a category where "the antecedent is integrated into the relative"[24] (p. 58) to describe relative clauses with an internal head. However, their categorization for headless relative clauses is less consistent: they list some of them under a category of relative clauses where "the antecedent is an implied word"[25] (p. 59), and they also have another category described as where "the relative pronoun has no antecedent" (p. 60) which contains some other instances of headless relative clauses. Furthermore, some other instances of non-postnominal relative clauses can be found alongside postnominal ones (for instance, under the category of "antecedent determined by an adjectival form" (p. 55)). Instances of correlatives are listed under the category "pronominal correlation" (pp. 53–4), which also includes constructions where a relative clause follows its pronominal head (the [*ta-*$_i$ ... *ya-*$_i$ ...] surface structure). Finally, note the use of the word 'antecedent' throughout the

[23] "Das substantivische Pron. wird adjectivisch, wenn sein Bezugswort ... in den Relativsatz gezogen ist oder darin wiederholt wird" (Reichelt 1909, p. 365). The only case of repeating the noun in Old Avestan that he mentions is 43.5–6, which will be discussed in the next chapter, example (2.14).

[24] "L'antécédent est intégré à la relative."

[25] "L'antécédent est un mot sous-entendu."

categorization, which shows that they assume an underlying structure with an external head followed by the relative clause for all of these relative clauses.

The treatment of relative clauses in West (2011) is less detailed, as he distinguishes fewer categories. He characterizes instances of relative clauses without an overt head as where the head has to be understood from the context (p. 78), or cases with the head contained in the relative pronoun (p. 79). As for relative clauses with an internal head, he states in a footnote (p. 77, fn. 78) that in Old Avestan relative clauses, the head is sometimes located inside the relative clause, and he mentions that therefore the use of *antecedent* is misleading. While this characterization is significantly more precise than the previous ones, when it comes to correlatives West again uses a vague description – he explains some of these cases as the relative clause preceding the main clause "for rhetorical purposes, to characterize the head before it plays its part in the main clause" (p. 79).

Skjaervø (2009, pp. 155–7) characterizes non-postnominal relative clauses as relative clauses that either do not have an implicit antecedent, or have an antecedent included in the relative clause (once again note the use of the word "antecedent".). He describes correlatives as having overt resumption. While this categorization is the most concise and comprehensive among the literature surveyed, Skjaervø complicates the matter by classifying all relative clauses into two types: those that come after the main clause, and those that do not. Since only correlatives have a defined position relative to the main clause, this does not serve to distinguish other non-postnominal relatives from postnominal relatives.

The existing literature therefore does not recognize as primary the distinction between postnominal and non-postnominal relatives. Additionally, there is a tendency to assume or imply an underlying postnominal structure for all types of relative clauses, most probably influenced by a bias towards modern Indo-European languages.[26] Furthermore, these

[26] Another example of this assumption can be found in Humbach (1991)'s commentary on the head-internal free relative in (1.13) (Humbach 1991, vol. 2, p. 25). Humbach writes that this structure is the same as (in his words, "i.e") the reconstructed example in (i), where the original internal head is external to the relative clause:

works generally do not relate their categorizations to broader cross-linguistic typology. This is not intended as a criticism: for several of the earlier studies, modern typological approaches had not yet developed, and in any case their primary aim was the description and interpretation of the Old Avestan material rather than cross-linguistically informed classification.

Before moving forward, it is worth mentioning that I do not claim that the formal schema in (1.10) can decisively account for all occurrences of relative clauses in Old Avestan, not in the sense of unambiguously determining the category to which each relative clause belongs. Some cases remain structurally ambiguous; for example, if a headless relative clause is in apposition to a noun, it may be parsed either as a postnominal relative clause or as a free relative. In other instances, the ambiguities of the text make interpretation and syntactic analysis altogether impossible.

Nonetheless, the schema in (1.10) captures all structural configurations that can be positively identified in the Old Avestan corpus. This does not entail that every individual relative clause can be assigned unambiguously to one of these configurations: as noted above, a substantial number of examples remain structurally indeterminate (mostly due to textual issues). It is not intended as a decision procedure for assigning grammatical categories to individual passages in the corpus, but rather as a theoretically and typologically grounded model of what was structurally possible in the language. In other words, all relative clauses in the language would belong to one of these categories (or at least one, if the structural ambiguity is not a result of our poor understanding of the language) – for instance, the schema in (1.10) claims that no relative clause in the language can have both an internal and an external nominal head.

In what follows, I will motivate this classification of the Old Avestan relative clauses,

(i) xšaiiā=cā **tā** **mąθrā** **yā** vō srəuuīmā rādå̊
rule.AOR.2SG=CONJ DEM.INST formula.INST REL.INST you.GEN hear.AOR.1PL bounties.ACC
'And rule with a formula with which we might hear (of) your bounties.'

first demonstrating a functional difference between non-postnominal and postnominal relative clauses and then motivating the categorization schematized in (1.10) based on the cross-linguistic typology of relativization.

### 1.4.4 Non-postnominal relative clauses versus postnominal ones

To show that non-postnominal relative clauses in Old Avestan are not just variations of their postnominal counterparts, we again need robust, formal criteria to distinguish between the two – we cannot rely on interpretations and translations. It turns out that specific distributional facts and observations about these constructions guide us towards a more comprehensive understanding of these data.

The most salient distinction between postnominal and non-postnominal relative clauses arises from the type of head nouns in them. In postnominal relative clauses, the external head may be of various types, but is typically not a non-referential bare noun.[27] The head noun may be a proper noun (e.g. the first relative clause in Y 46.11), a demonstrative pronoun (e.g. Y 30.8, Y 40.2), a noun modified by a demonstrative pronoun (e.g. the first relative clause in Y 38.1, the second relative clause in Y 49.6), a noun modified by a (usually definite) possessor in a genitive construction (e.g the last relative clause in Y 43.6, Y 46.7)[28], a generic noun (such as *pasukanąm* 'domestic animal', Y 39.1), or an abstract noun (such as *rafəδrəm* 'support', Y 46.2). These are all categories that tend to be typically referential and specific (cf. von Heusinger 2019). Cases where the head noun is not incontestably referential constitute only 18 out of the 130 unambiguous examples of postnominal relative clauses.[29]

On the other hand, in non-postnominal relatives, whenever there is an internal head (such as examples (1.4), (1.7), (1.13), (1.14), (1.17), and (1.18)), it is always a bare non-

[27] See von Heusinger 2019 for a discussion of referentiality.

[28] See Barker 1995 for a discussion of Definiteness Spread, where the definiteness of the possessor also makes the modified noun definite.

[29] This will essentially entail that most of these relative clauses are appositive and non-restrictive.

referential noun. None of the types of head mentioned in the previous paragraph are found as heads in non-postnominal relatives. Even adjectival modification of the internal head, which would serve at least to restrict the set of possible referents of the head, and could perhaps be sufficient to make a head referential, is not found in Old Avestan non-postnominal relatives. Note, here, that referentiality per se is not the main factor. The main distinction is that head nouns in postnominal relative clauses can be referential or non-referential (with a strong tendency towards referential), but there is no instance of a referential head noun in non-postnominal relatives. If these non-postnominal relative clauses were the same construction as their postnominal counterparts, we would expect two more types of data: cases where the overt head in non-postnominal relative clauses had a modifier (especially a determiner), and many more cases where the head noun in postnominal relative clauses was bare and non-referential. But there are zero cases of the former, and at best comparatively few cases of the latter.

The next argument for distinguishing between these two structures comes from the instances of correlative construction where there is no internal head. Let us assume that these correlative constructions are the same structure as the postnominal relative clauses. As discussed above, this is how Kellens and Pirart (1990, pp. 53–4) have analyzed Old Avestan correlatives. They assume that a correlative construction, such as the one in (1.19b) – which follows pattern (1.10a-iii) – is the same construction as postnominal relative clauses headed by a demonstrative pronoun that appears at the right-periphery of the sentence, as in (1.19a). According to this view, what we call the correlative clause, (1.19b), is only the result of inverting the relative clause and the main clause in (1.19a).

(1.19) a. $[\textsc{dem}_{x}\ \ldots]_{\text{Main}}\ [\textsc{Rel}\ \ldots]_{\text{RC}}$

b. $[\textsc{Rel}\ \ldots]_{\text{RC}}\ [\textsc{dem}_{x}\ \ldots]_{\text{Main}}$

Examples of the type (1.19a) are abundant in Old Avestan (e.g. Y 29.8). However, as mentioned above, another common pattern in Old Avestan postnominal relativization is

where the head noun is modified by a demonstrative pronoun (following pattern (1.20a)). If a correlative construction was only the result of inverting the main clause and the relative clause, we would expect to see correlative clauses of the type (1.20b), which is the inverted variant of (1.20a).

(1.20) a. $[\textsc{dem}\ N_x \ldots]_{Main}\ [\textsc{Rel}\ \ldots\ ]_{RC}$

b. $[\textsc{Rel}\ldots]_{RC}\ [\textsc{dem}_x\ N_x \ldots]_{Main}$

However, there is no correlative construction in Old Avestan following (1.20b) where the resumptive pronoun in the main clause occurs with a nominal.[30]

There are therefore two objective differences between postnominal and non-postnominal relative clauses in Old Avestan.[31] Head-internal non-postnominal relative clauses can only have a bare head noun, but such a restriction does not exist in postnominal relative clauses. Postnominal relative clauses can also be headed by a noun modified by a demonstrative, but in a correlative construction the demonstrative never occurs with a noun. Consequently, the non-postnominal constructions cannot be merely metrical, poetic or rhetorical variants of postnominal relative clauses. Instead, we are dealing with two distinct linguistic constructions.

### 1.4.5 The nature of non-postnominal relative clauses

The non-postnominal relativization strategies in the Old Avestan corpus have one feature in common: the absence of an external head. In this section, I will examine typologically comparable constructions and attempt to contextualize the Old Avestan patterns within

[30] Cf. Hindi correlatives where it is common for the NP to occur in the main clause following the resumptive pronoun, see Srivastav 1991.

[31] This complementary distribution also raises a diachronic question. If postnominal and non-postnominal relatives were merely positional variants of a single inherited construction, the systematic differences in the properties of their heads would be unexpected. The Old Avestan evidence therefore leaves open the possibility that the two patterns have distinct historical sources, or at least that they had already undergone substantial functional differentiation by the period of the Gāthās. I do not attempt to reconstruct their diachronic origin here; the point is simply that the synchronic distribution gives us no reason to assume a common derivation.

a broader typological perspective. The main purpose of this section is to provide further evidence for the schema in (1.10) by showing that this typology has cross-linguistic parallels.

#### 1.4.5.1 Headless relative clauses

Relative clauses that contain a relative pronoun but lack an overt head are commonly known in the literature as free relatives. Free relatives are defined as relative clauses that contain a relative pronoun and a gap, but have a nominal distribution, meaning that they can be replaced by a truth-conditionally equivalent DP (and, in some languages, prepositional phrases). Accordingly, free relatives can occur in argument positions (such as object in the examples below) which is usually where DPs occur (Caponigro 2003, p. 10). Free relatives can be found in many languages, including other Indo-European ones:[32]

(1.21) I tasted [what Adam cooked.] English

(= I tasted the food that Adam cooked)

(1.22) Ammiro [chi lavora duramente]
admire.1SG REL works hard
'I admire one who works hard.' Italian

(1.23) Ma maitsesin [mida sa küpsetasid]
I tasted REL you cooked
'I tasted what you cooked.' Estonian

(1.24) Ix-onh-lolon y-et' [mach tz-'al-an Kanjjob'al] .
PFV-B1PL-speak A3-with REL IPFV-speak-AF Q'anjjob'al
'We spoke with who speaks Q'anjjob'al.'[33] Chuj (Royer 2021, p. 342)

Old Avestan headless non-postnominal relative clauses follow the cross-linguistically attested structure of free relatives, in that they are clauses introduced by a relative pronoun without any external head. They also occur in argument position and have the dis-

[32] The first three examples are from Caponigro (2003).
[33] Glosses for examples cited from other sources correspond to the glossing in the original source.

tribution of a nominal (for instance, in (1.11) the free relative is the object of the verb of the main clause and could be replaced by a nominal meaning 'your knowledge'). Therefore, from now on, we will use this label to refer to headless relative clauses in Old Avestan. The typological status of Old Avestan free relatives will be further explored in §2.1.

#### 1.4.5.2 Relative clauses with an internal head

Free relatives are usually described as 'headless' relatives; whether they can include a nominal internal to the relative clause is controversial (see, for instance, the debates in Caponigro 2019, Donati et al. 2022, and Caponigro 2023). If we put free relatives aside, another construction that resembles the Old Avestan non-postnominal relatives with an internal head is known as the Internally Headed Relative Clause construction (henceforth IHRC). IHRCs are relative clauses with the head appearing clause-internally – which, at first glance, fully resembles the Old Avestan cases. Moreover, in some languages with IHRCs, the internal head cannot bear any definiteness marking (Williamson 1987). This indefiniteness constraint is an interesting parallel to the Old Avestan data in which the internal head is also always a non-referential bare noun.

(1.25) [nuna **bastya-ta** ranti-shqa-n] alli bastya-m ka-rqo-n
man horse-ACC buy-PERFECT-3 good horse-VALIDATOR be-PAST-3
'The horse that man bought was a good horse.' Ancash Quechua (Cole 1987, p. 277)

(1.26) [Juan-pa **waka** ranti-sqa-n]-qa yuraq-mi ka-rqo-n
Juan-GEN cow buy-NM-3SG-TOP white-EVID be-PAST-3G
'The cow that the Juan bought was a white cow.' Cuzco Quechua (Hasting 2004)

(1.27) [Mary **owiža** wa kaǧe] ki he ophewathu
Mary quilt a make DEM I-buy
'I bought the quilt that Mary made' Lakhota (Cole 1987, p. 277)

(1.28) [**i:pac** 'wu:w-pu-c] ciyaw
man I.saw-DEM-SUBJ sing
'The man who I saw sang.' Diegueño (Gorbet 1976)

While IHRCs are very similar to the Old Avestan relative clauses with an internal head, there are three facts that undermine this resemblance. First, IHRCs do not generally have a relative pronoun, whereas the Old Avestan cases necessarily begin with a relative pronoun. Moreover, IHRCs can often appear with an overt determiner at the edge, which is impossible in Old Avestan. Also, IHRCs have not yet been found in Indo-European languages to the best of my knowledge.[34]

With IHRCs ruled out as a viable typologically-grounded model of Old Avestan non-postnominal relative clauses with an internal head, we now turn back to free relatives. Despite the fact that the headlessness of free relatives has often been taken for granted, there are various reports of *headed* free relatives in Indo-European languages. In English, FUSED RELATIVES (Huddleston and Pullum 2002, pp. 1068–73) are basically free relatives with an internal head:[35]

(1.29) I gave you what money I had.

(1.30) What books she has are in the attic.

This configuration is also possible in other Indo-European and non-Indo-European languages, such as Dutch, Romanian, Modern Greek, Ancient Greek, Tsez, and Melchor Ocampo Mixtec:

(1.31) [welke **onverlaat** zoiets doets] krijgt straf
WH miscreant such.a.thing does gets punishment
'What miscreant does such a thing gets punishment.' Dutch (de Vries 2002, p. 47)

(1.32) am citi [ce **carte** ai citi şi tu]
have.1SG read WH book have.2SG read also you
'I read what book you also read.' Romanian (Caponigro 2019, p. 361)

(1.33) [Opjos fititis irthe sto parti] efxaristithike
REL student came to.the party enjoyed

[34] De Vries (2002, pp. 49–50) provides similar arguments to argue that Dutch free relatives with an internal head are not IHRCs (which he calls circumnominal relatives).
[35] Examples are from Huddleston and Pullum 2002, p. 1068.

'Which student came to the party had fun.' Greek (Cheng and Giannakidou 2006, p. 160)[36]

(1.34) héōs élthoien [hoùs pémpseie prós basiléa
until come.AOR.OPT.3PL REL.ACC.PL send.AOR.OPT.3SG to king.ACC
**angélous**]
messengers.ACC
'Until which messengers he had sent to King returned.' Ancient Greek (Probert 2015, p. 130)[37]

(1.35) [didiw/nāsi **uži** babi-y-ä ɦuł žek'-ä-(-si)]
what/which boy.ABS.I father.OS-ERG yesterday hit.PST.WIT.INTERR.ATTR
'whichever boy that Father beat yesterday'[38] Tsez (Polinsky 2015, p. 27)

(1.36) xèko=i [ndá **burro** kúú ri xìnu]
sell.POT=1SG WH donkey COP PRN.ANM ran
'I will sell the donkeys that ran.' Melchor Ocampo Mixtec (Caponigro 2019, p. 361)

These data challenge the assumption that free relatives are always headless. While the next chapter discusses the issue of heads in free relatives in more depth, for our purposes here it suffices to say that we can categorize Old Avestan non-postnominal relative clauses with an internal head as head-internal free relatives. In other words, patterns (1.10a-ii) and (1.10a-i) in our formal schema represent the same cross-linguistic category (the next chapter discusses the theoretical implications of this assumption in more depth).

[36]Data for free relatives without an internal head are occasionally discussed in literature not specifically focused on free relatives. For example, Cheng and Giannakidou 2006 is a paper primarily concerned with *-ever* free relatives. While *-ever* free relatives often contain an internal nominal head, a closer examination of the Greek data reveals that the relative clause is still grammatical in the absence of *ever*, which means that a free relative can be head-internal in Greek.

[37]The example as cited in the original source is longer and embedded in a conditional, which explains the optative mood. I have only cited the free relative and its immediate matrix clause. The glossing is mine.

[38]Note that there is no element in the original text that corresponds to *ever* – therefore, this is an instance of a genuine free relative and not an *-ever* free relative. The translation (adopted from the original source) could reflect the universal reading of a free relative, or simply the absence of a corresponding construction in colloquial English.

#### 1.4.5.3 Correlatives

The correlative construction in Old Avestan, again, represents a cross-linguistically attested pattern. Correlative constructions always consist of a non-externally-headed relative clause to the left of the main clause. A pronoun in the main clause usually refers to what the relative clause refers to (Bhatt 2015, pp. 715-7). The most well-known example of a correlative construction comes from Hindi from the pioneering work of Veneeta Srivastav (later known as Dayal) in 1991:

(1.37) [[jo$_i$ laRkii$_i$ khaRii hai] [vo$_i$ lambii hai]
which girl standing is DEM tall is
'Which girl is standing, that girl is tall.' Hindi (Srivastav 1991, p. 642)

(1.38) [[Khyodra-s gyag$_i$ gare$_i$ nyos yod na] [nga-s de$_i$ bsad pa yin]]
you-ERG yak what buy AUX if I-ERG that kill PERF AUX
'I killed whatever yak you bought.'

(lit. 'If you bought what yak, I killed that.') Tibetan (Cable 2009, p. 198)

The Old Avestan data fully mirror this pattern found in many Indo-European and non-Indo-European languages. However, this classification raises an important question: what is the relationship between the Old Avestan correlatives and the Old Avestan free relatives (headed or headless)? We will discuss this issue in the next chapter.

### 1.4.6 Taking stock

We began our investigation with a straightforward formal question: how should we understand the distinction between postnominal and non-postnominal relative clauses in Old Avestan? Starting with the prose data from the Yasnā Haptaŋhāiti, we developed a formal schema that captured a range of non-postnominal relative clause types. This schema was subsequently reinforced by parallel evidence from the Gāthās, and showed that the same structural patterns appear in both prose and poetic parts of the corpus.

Independent formal diagnostics further confirmed that the difference between postnominal and non-postnominal relative clauses in Old Avestan is not merely stylistic, metrical, or discourse-driven. Rather, the two types constitute functionally and structurally distinct constructions. By comparing our findings with cross-linguistic evidence, we ensured that the structures identified by our schema correspond to attested relativization strategies in natural language. We are therefore justified in concluding that Old Avestan had, alongside postnominal relative clauses, headless and head-internal free relatives, as well as correlative constructions.

## 1.5 Structure of the thesis

With a robust classification of non-postnominal relative clauses in place, we are now positioned to pursue the theoretical analysis and cross-linguistic comparisons that form the core of the remainder of this thesis. The chapters that follow undertake two theoretical investigations and one cross-linguistic study (focusing on other Old Iranian languages), all grounded in the inquiry and results presented in §1.4.

Chapter 2 draws on typological and theoretical insights about free relatives to take a closer look at Old Avestan free relatives. It begins with explaining a typological anomaly in Old Avestan free relatives, examines their semantics, and then goes on to show how certain properties of Old Avestan free relatives, namely head-internalness and the nature of the relative pronoun, can motivate a novel analysis of free relatives at the syntax-semantics interface. Topics such as certain diachronic developments of free relatives, the correlative construction, and case matching in free relatives are also discussed in Chapter 2.

Chapter 3 explores generalizing relative clauses in Old Avestan, motivated by cross-linguistic evidence that many languages possess constructions based on or related to free relatives that convey a generalizing or domain-widening interpretation, such as English

*-ever* free relatives. The chapter also examines certain Negative Polarity Items and Free Choice Items in Old Avestan, and aims to provide a compositional semantic account of the language's generalizing relative constructions.

Chapter 4 builds on the insights of the previous chapters to examine non-postnominal relativization patterns in two other Old Iranian languages: Old Persian and Younger Avestan. The chapter is primarily descriptive, focusing on the range of constructions attested in these languages and how they differ from the patterns observed in Old Avestan. As we will see, the constructions found in Old Persian and Younger Avestan, both chronologically later than Old Avestan, form a subset of those found in the older language. This chapter lays the groundwork for future diachronic studies of relativization in Iranian languages.

Appendix A takes a different theoretical approach to the structure of free relatives, using Lexical Functional Grammar (Bresnan et al. 2016, Dalrymple 2023). As shown in Chapter 2, capturing free relatives in mainstream generative syntactic frameworks is not straightforward. Lexical Functional Grammar, by contrast, offers a non-transformational architecture that is well-suited to handling the puzzles that free relatives give rise to. The appendix implements the analysis from Chapter 2 within this framework.

Finally, a few remarks are necessary for the reader of this thesis. First, I remain deliberately cautious in acknowledging the limitations of the corpus. In many cases, we simply lack sufficient data to offer a theoretically grounded analysis of a given phenomenon in the object language. As will become evident throughout this thesis, there are instances where we must accept gaps in our knowledge of these languages beyond a descriptive level. Second, when presenting statistics on the distribution of linguistic structures, it is important to note that many such cases are formulaic in nature. A given string may be repeated across the text, sometimes verbatim, leading to frequencies that are not statistically meaningful. The statistics reported here are based on occurrences in the body of

the text as presented in the main edition I have used. If an editor has omitted repeated lines (such as refrains at the beginning of verses in some parts of the Younger Avestan corpus) these omissions are reflected in my counts. Nonetheless, the figures still include some repetitions that are less systematic. Assessing which repetitions are meaningful and which are not lies beyond the scope of this study and would require detailed engagement with the non-linguistic structure and use of the texts. Lastly, I have only discussed interpretive differences among translations of the text when it has a bearing on the theoretical analysis. Therefore, unlike the discussions in §1.4 (where the interpretive differences were used to test the hypothesized formal schema), not all examples will be examined from a philological perspective.

# Chapter 2

# Free Relatives in Old Avestan

In the previous chapter, we categorized non-postnominal relative clauses in Old Avestan as instances of a construction existing in other natural languages: free relatives. This classification is not merely a terminological practice (as discussed in the previous chapter) – by claiming that Old Avestan has free relatives, we are also implying that the cross-linguistically robust generalization about free relatives should also extend to the Old Avestan cases. Moreover, theoretical analyses of free relatives should also be able to capture the Old Avestan data. The aim of this chapter is to address these questions.

The structure of this chapter is as follows. First, in §2.1, I examine the typological aspects of Old Avestan free relatives, showing that they exhibit a pattern that is novel cross-linguistically. Following this, in §2.2, I explore the interpretation of Old Avestan free relatives, particularly contrasting them with postnominal relative clauses. Subsequently, in §2.3, I illustrate that existing approaches to free relatives fall short of accounting for the Old Avestan data. Based on this, I motivate and outline an alternative analysis. Then, I address matching effects in free relatives in §2.4, and explore the predictions that my proposal would make about matching in Old Avestan free relatives. Finally, I explore free relatives that appear left-dislocated with resumption, namely correlatives, in §2.5.

## 2.1 Old Avestan free relatives from a typological perspective

Although the structural configuration of Old Avestan non-postnominal relative clauses closely resembles that of free relatives, they seem to diverge from other cross-linguistically attested free relatives in one property. Free relatives cross-linguistically are almost always defined as containing a morphologically interrogative pronoun as their relative marker (Caponigro 2003, p. 10, Šimík 2020, p. 2). Old Avestan free relatives deviate from this generalization: the relative pronoun is completely different from the interrogative one. The interrogative pronoun in Old Avestan is from a *ka-* stem, while the relative pronoun is based on *ya-*. This is not limited to Old Avestan: Sanskrit and Ancient Greek (and, as we will see, Old Persian and Young Avestan) also have free relatives (or what highly resembles a free relative) introduced by a non-interrogative relative pronoun.

We now have to ask ourselves whether our classification in the previous chapter was accurate. Does Old Avestan have genuine free relatives? I argue that this divergence does not necessarily imply that free relatives in these languages are distinct from the otherwise extremely similar construction in many other languages. This is because they share one other core similarity: affinity with embedded interrogatives.

### 2.1.1 Embedded interrogatives and free relatives

Caponigro (2003) and Chierchia and Caponigro (2013) observe a strong cross-linguistic association between *wh*-based free relatives and embedded interrogatives: in the languages Caponigro (2003) surveys, the lexical items introducing free relatives pattern with those introducing interrogatives, even where headed relatives employ a distinct relativizer.[1] Importantly, however, this use of the label free relative is restricted to headless relatives in-

[1]Throughout this thesis, the term 'relativizer' denotes a non-pronominal marker of relative clauses, contrasting with relative pronouns.

troduced by *wh*-words. The observation therefore does not by itself predict that all headless relative constructions cross-linguistically must pattern morphologically with embedded interrogatives. For an example, see the Hebrew sentences in (2.1):

(2.1) a. taglid li [**mi** oved kaše]
tell me who works hard
'Tell me who works hard.'

b. Ani ma'aric [**mi** še-oved kaše]
I admire who COMP-works hard
'I admire those who work hard.'

c. Ani ma'aric [anašim *(***mi**) še-ovdim kaše]
I admire people (*who) COMP-works hard
'I admire people who work hard.' Hebrew[2]

The embedded interrogative in example (2.1a) and the free relative in (2.1b) are both introduced by *mi-* (the free relative only has an extra complementizer following *mi-*). This *mi-* is, however, ungrammatical with a postnominal relative clause in (2.1c). The generalization is that the pronouns for free relatives and embedded interrogatives always pattern together, even if they differ from the pronoun introducing a postnominal relative clause.

The Old Avestan facts allow us to ask whether this association extends to a broader notion of free relatives, including headless relatives introduced by a non-interrogative relative series. Notably, a comparable association is also found in languages of this type. This pattern is attested in Homeric and Classical Greek (Faure 2011) and more interestingly for the purpose of this thesis, in Old Avestan and Vedic Sanskrit. In Vedic Sanskrit, when an interrogative clause is embedded, it is always introduced via *y*-pronouns (relative) rather than *k*-pronouns (interrogative) (Davison 2009, pp. 232–233). This pattern applies to both polar (2.2) and constituent questions (2.3) (examples are from Davison 2009, p. 232):

[2]The example is adopted from Caponigro 2003, p. 24, modified with the help of Noga Syon, to whom I am very thankful. Any mistakes are mine.

(2.2) ná tásya vidma tád u ṣu prá vocata
not this.GEN know.PRES.1PL this.ACC PRTCL good forth speak.IMPER.2PL
[yúvā ha yád yuvatyā́ḥ kṣéti yóniṣu]
youth.M.NOM PRTCL what.REL young girl.GEN lie.PRES.3SG womb.LOC.PL
'We do not know of this, tell us well whether the young man lies in the lap of the young girl.' (RV 40.11ab)

(2.3) nā́haṃ tád bhagavan veda yátra gamiṣyāmi
not=I this.ACC lord.VOC know.PRES.1SG where.REL go.FUT.1SG
'I do not know, O Lord, where I will go.' (S.B. 14.6.11.1)

As expected, such data can also be found in Old Avestan. An embedded interrogative in Old Avestan can be introduced by a relative pronoun rather than an interrogative one. For instance, the verb *fras-* 'to ask' can take a clausal complement introduced by the relative pronoun *ya-* and its cognates. These cases are not numerous in Old Avestan, and their syntax is complex. For instance, sometimes this verb appears in a formulaic fashion with a pronoun, which can be assumed as its direct object. In these cases, where the actual question is introduced by the relative pronoun, the most obvious analysis is that this relative pronoun is modifying the object pronoun. Yet case marking shows us otherwise:

(2.4) pərəsā auuaṯ̰ yā maēniš
ask.PRES.1SG DEM.ACC.**NEUT** REL.NOM.**FEM** chastisement.NOM.**FEM**
'That I ask, what (is) the chastisement?' (Y 31.15)

However, as we can see in (2.4), the object pronoun is in neuter form, whereas the relative pronoun and the predicate are feminine.[3] There is also one case where there is no object pronoun (although the structure is very complex and difficult to parse here):

(2.5) pərəsā=cā nå̊ yā tōi əhmā parštā
ask.PRES.2SG=CONJ us.DAT REL.ACC you.DAT us.INST asked.NOM
'And ask us what (is to be) asked by us of thee.' (Y 43.10)

[3]Also see Y 44.10, where this verb has another accusative pronoun as its object in addition to the formulaic pronoun.

Therefore, it seems that in both these cases, the clause introduced by *ya-* is the complement of the verb *fras-* 'to ask'. More straightforward are complements of the verb *mru-* 'to tell' (again, the rest of the text is quite unclear, but the form of the string serves our purpose here):

(2.6) frō vå̊ fraēšiiā mazdā aṣ̌əmcā mrūitē yā
PREV you.DAT.PL urge.PRES.1SG wise.VOC truth.ACC=CONJ tell.INFV REL.NOM.PL
və̄ xratəuš xšmākahiiā ā.manaŋhā
yourself.GEN intellect.GEN you.GEN passions.NOM
'O Wise One, I urge you and the truth, to tell which (are) the passions of your intellect, of yours.' (Y 49.6)

There are comparable cases elsewhere where such readings are possible: in Y 34.12, where the verb *frauuac-* 'to proclaim' is followed by a relative clause with an instrumental relative pronoun which is translated 'how' in Humbach 1991. Also, there are some instances of the adverbial form *yaϑā* 'how', derived from the relative pronoun *ya-*, introducing the complement clause of the verbs 'to ask' (Y 31.16, 44.1, 51.15), 'to know' (Y 48.9) and 'to discern' (Y 49.6).

Regardless of our theoretical understanding of this phenomenon, there seems to be a cross-linguistic affinity between embedded interrogatives and free relatives. If we do not take relative clauses resembling free relatives but based on non-interrogative pronouns in Old Avestan (as well as Sanskrit and Ancient Greek) as instances of free relatives, this affinity would be blurred. Instead, I suggest that the typology of free relatives should extend to languages where the relative pronoun is not interrogative-based, and Old Avestan relative clauses without an external head do indeed fall under the category of free relatives.[4]

[4]Note that this means that in languages with non-interrogative-based free relatives, the pronouns introducing an indirect, embedded question would be different from the pronouns introducing a canonical, matrix question.

### 2.1.2 Mesoamerican super-free relatives and Old Avestan free relatives

What if, instead of extending the typology of free relatives, we identified a different construction attested in the world's languages, one that better aligns with the patterns found in Old Avestan and offers a more appropriate classification of the data? Such a construction does, in fact, appear to exist. Discussing headless relative clauses in Mesoamerican languages, Caponigro (2021) introduces a category of such relative clauses where there is no *wh*-expression heading the clause, labelled SUPER-FREE RELATIVES. These relative clauses can be introduced by a general complementizer, a relativizing complementizer, or no marker at all. I will first compare super-free relatives in Mesoamerican languages with the Old Avestan free relatives, as they are both relative clauses without an external head and with no interrogative pronoun introducing the relative clause. Then, I will argue against assuming Old Avestan free relatives pattern with Mesoamerican super-free relatives.

Headless relative clauses in fifteen Mesoamerican languages have recently been subject to a thorough descriptive and theoretical analysis in Caponigro et al. 2021. While two of these languages, Southeastern Tepehuan and Acazulco Otomi do not have super-free relatives at all, other languages show different patterns of this construction. A super-free relative (henceforth SFR) can either be headed by a relativizer (a subordinator, complementizer, or clitic), a relative pronoun, or no marker. Languages where SFRs are introduced by a subordinator, complementizer or relativizer are Tlaxcala Náhuatl, Matlazinca, Iliatenco Me'phaa, Cho'l, Sierra Popoluca, and possibly Pesh, see (2.7) for an example. Only one language among the languages under discussion has SFRs introduced by a relative pronoun: San Pedro Mixtepec Zapotec (2.8). Lastly, SFRs in some other Mesoamerican languages do not have any special marker (2.9); in these cases, the SFR always appears as the argument of an existential verb (negative or affirmative). These languages are K'iche',

Q'anjob'al, Chuj , Tsotil, Tseltal, and Yucatec Maya. Additionally, Matlazinca's SFRs can also be unmarked (as well as headed by a subordinator).

(2.7) ga khwen hóhya **[n** gu khana pax-kwentu]
PRTCL 1PL.INCL.INCPL forget REL 3SG.INCPL well keep-talk
'And we forget about the one who has a good command of the language.'

Matlatzinca (Palancar and Carranza Martínez 2020, p. 168)

(2.8) g-òn nà **[méné** b-ìgré góz mdzìn]
COMPL-see 1SG REL.PRO.HUM COMPL-return manor deer
'I saw the people who came back from the hunt.'

San Pedro Mixtepec Zapotec (Antonio-Ramos 2020, p. 255)

(2.9) yaan [xíimbal-t-∅ te'el]-o'
EX visit-TR-SS.SUBJ.B3 DEM=DIST
'There is someone who visited there.'

Yucatec Maya (AnderBois and Chan Dzul 2020, p. 467)

While SFRs seem to be productive in Mesoamerican languages, it is worth mentioning that all the languages discussed in Caponigro et al. 2021 also have ordinary free relatives headed by a *wh*-pronoun.

Some of these SFRs, particularly those that are marked (by a pronominal or non-pronominal element), resemble Old Avestan free relatives due to the absence of an interrogative-based relative pronoun. However, certain properties of this construction undermine this similarity. To discuss these properties, we have to first examine how externally-headed relative clauses, embedded interrogatives, and *wh*-based free relatives are formed in these languages, as these are all constructions that closely correlate in their characteristics with one another, as well as with SFRs.

Starting with embedded interrogatives, all these languages have both matrix and embedded interrogatives that are introduced by the same set of *wh*-words, and are not formally different from one another. Furthermore, as mentioned above, all languages under

discussion also have a *wh*-based free relative strategy. This free relative always has a maximalizing interpretation,[5] and usually uses all or a subset of *wh*-words used in interrogatives. Some of these free relatives can contain an internal nominal, while others do not. But they are uniform in being headed by a *wh*-word and, therefore, formally similar to embedded and matrix interrogatives.

Externally headed relative clauses, on the other hand, are not as formally homogeneous a class as free relatives.[6] In all of the languages under discussion, there are various strategies for forming a headed relative clause. Headed relative clauses can be marked by a complementizer, a subordinator, a *wh*-word, or be simply unmarked. However, if a language has externally-headed relative clauses introduced by a *wh*-word, it usually uses a small subset of *wh*-words used in interrogatives and free relatives. On the other hand, in all but one language, the marker of an SFR is also used to mark an externally-headed relative clause. Table (2.1) provides an overview of different methods of marking free relatives, SFRs, and externally-headed relative clauses (EHRCs). A star next to *wh* represents a partial subset of the set of all *wh*-words in that language.

How do these data compare to the patterns we see in Old Avestan, and in free relatives cross-linguistically? As seen in §2.1, free relatives cross-linguistically tend to pattern with embedded interrogatives rather than externally-headed relative clauses: free relatives always share their markers with embedded interrogatives, but not always with

[5]The authors also discuss existential free relatives and free choice free relatives (both *wh*-based), which do not have a maximalizing interpretation. However, they slightly differ in form from standard free relatives.

[6]In addition to externally-headed relative clauses, Tlaxcala Náhuatl (Flores-Nájera 2021) and Pesh (Chamoreau 2021) have headed relative clauses with an internal head. Naturally, the question might arise whether these are cases of head-internal free relatives or whether head-internal SFRs are similar to head-internal free relatives we see in Old Avestan. The answer is no – these relative clauses seem to pattern with IHRCs, which are (as described in §1.4.5.2) internally-headed relative clauses without any relative pronoun, with an internal head, and no obligatorily maximal interpretation (Cole 1987, Basilico 1996, Grosu and Landman 1998). In Tlaxcala Náhuatl, both free relatives and SFRs have markers (the former a *wh*-pronoun, the latter a subordinator), but internally-headed relative clauses are not marked. In Pesh, these relative clauses are not introduced by a *wh*-word, so they cannot be cases of head-internal free relatives. Both relative clauses with an internal head and SFRs contain a clause-final case marker, but in SFRs this marker follows the case that the predicate of the relative clause assigns. This contrasts with relative clauses with an internal head where this case marker corresponds to the case of the matrix clause.

| Language | Marker in FRs | Marker in EHRCs | Marker in SFRs |
|---|---|---|---|
| Tlaxcala Náhuatl | *wh*, *wh*+SUB | ∅, SUB, *wh**, *wh**+SUB | SUB |
| Matlazinca | *wh* | ∅, COMP, SUB, *where* | ∅, SUB |
| Iliatenco Me'phaa | *wh* | COMP, *where, when* | COMP |
| SP Mixtepec Zapotec | *wh* | ∅, RELPRO, RELPRO+COMP | RELPRO |
| Sierra Popoluca | *wh* | SUB, *wh** | SUB |
| Ch'ol | *wh* | ∅, CL, *where* | CL |
| K'iche' | *wh*+DEF | ∅, COMP, *where* | ∅ |
| Q'anjob'al | *wh* | ∅, *where* | ∅ |
| Chuj | *wh* | ∅, *wh** | ∅ |
| Tsotil | *wh* | ∅, *wh**, COMP, *wh*+COMP | ∅ |
| Tseltal | *wh* | ∅, *wh**, COMP, *wh*+COMP | ∅ |
| Yucatec Maya | *wh* | ∅, *wh* | ∅ |
| Pesh | *where* | ∅, case marker, *where* | case marker |

Table 2.1: Relativization markers in Mesoamerican languages

externally-headed relative clauses. True free relatives in Mesoamerican languages subscribe to this tendency: they are always headed by *wh*-words, which are also used both in matrix and embedded interrogatives. SFRs, on the other hand, by definition lack a *wh*-word, so they do not pattern with embedded interrogatives. Instead, they align with externally-headed relative clauses: they use one of the marking strategies of externally-headed relative clauses. Therefore, SFRs seem to diverge further from free relatives.

Old Avestan free relatives and Mesoamerican SFRs share a core structure: they are relative clauses without a *wh*-word and without an external head. Nevertheless, despite this resemblance, there are strong reasons to avoid assuming Old Avestan free relatives are SFRs. The most important argument comes from the distribution of relativization markers: in Old Avestan, the same pronoun introduces embedded interrogatives, free relatives, and externally-headed relative clauses. Therefore, Old Avestan free relatives follow the cross-linguistic pattern between free relatives and embedded interrogatives discussed earlier. SFRs robustly deviate from it.

## 2.2 Interpretation of Old Avestan free relatives

Relative clauses are semantically categorized into three classes. The first class is **restrictive relative clauses**, in which the relative clause is an intersective modifier of the head noun, and the result of the intersection contributes to the domain of the determiner (starting from Quine 1960 (ch. 4: §23), Montague 1970; see Bhatt 2015 for an overview):

(2.10) a. (I saw) [the [[man]$_{\text{NP}}$ [who was walking]$_{\text{RC}}$]$_{\text{NP+RC}}$]$_{\text{DP}}$.

b. $\iota x.[\text{Man}(x) \wedge \text{Walking}(x)]$

The second class is the class of **non-restrictive relative clauses**. These relative clauses are modifiers of the whole DP head, so they do not restrict the denotation of the nominal head. They only comment upon the individual or the entity that the head has already identified. While analyzing their semantics is not as straightforward as that of restrictive relative clauses (see Potts 2005), there is a known constraint on the semantics of the head noun in these relative clauses, namely that the truth-conditional import of the nominal that functions as the head of a non-restrictive relative clause should not be affected by the relative clause. This entails that the head of a non-restrictive relative clause should, as a principle, be a referential noun, such as a proper name, definite description, or specific indefinite (Bhatt 2015).

(2.11) a. I saw [[the man]$_{\text{DP}}$, [who was walking]$_{\text{RC}}$]$_{\text{DP+RC}}$.

b. [[Ali]$_{\text{DP}}$, [who is my colleague]$_{\text{RC}}$]$_{\text{DP+RC}}$, will deliver the lecture.

**Maximalizing relative clauses** are the third class of relative clause constructions, semantically speaking. The interpretation of these relative clauses is always the maximal set that satisfies the relative clause. This can be seen in English degree relatives, as reported in Grosu and Landman 1998, p. 136:[7]

[7]The sharpness of these judgments may vary across speakers; what matters here is the pattern reported by Grosu and Landman and the generalization they derive from it.

(2.12) a. I took with me every book/any books/the books/the three books/three of the books that there was/were _____ on the table.

b. # I took with me three books/few books/many books/some books/most books/no books that there were _____ on the table.

What (2.12) shows is that in English degree relatives, the head noun can only be modified by a universal quantifier, a definite determiner, or a partitive made from a definite determiner. The reason why a non-definite partitive or a weak quantifier (such as *many* and *few*) are infelicitous here is that degree relatives are maximalizing and the relative construction refers to the maximal set of the books on the table. The exact mechanism of maximalization (which will be discussed in §2.3.2) differs across constructions which involve maximalization (Grosu and Landman (1998) discuss many cases, including degree relatives), but the result always amounts to uniqueness and definiteness, and sometimes to universal quantification.

In the Old Avestan corpus, determining the exact interpretation of relative clauses is not always possible, mostly because of non-linguistic issues (our insufficient contextual knowledge, for instance). However, I argue that the properties of the head of the relative clause can be a reliable indicator that postnominal relative clauses are not maximalizing. As described in §1.4.4, the overwhelming majority of Old Avestan postnominal relatives are headed by elements that are referential descriptions. Proper nouns only head a postnominal relative clause – they never occur in free relatives. In many instances, the head noun is a referential demonstrative pronoun, or a noun modified by a demonstrative pronoun with a [[DEM NP]$_{DP}$ [RC]] structure where the DP is referential. When the head noun is modified by a possessor in a genitive construction, the possessor is almost always a definite noun. In a genitive construction, if the possessor is itself definite, the DP as a whole will also have a definite (and referential) interpretation (Barker 1995). Finally, many instances where a bare noun heads a relative clause are cases where the head noun

is an abstract noun or a generic noun, such as *pasukanąm* 'domestic animals' (Y 39.1), *rafəδrə̄m* 'support' (Y 46.2), etc. In all of these constructions, the head noun is referential or has referential properties, resulting in a non-restrictive interpretation. The head noun in a free relatives (if one exists), on the other hand, is always a bare N.

Now, what about other cases of postnominal relative clauses? What is their interpretation, and could they be maximalizing relatives? The remaining relative clauses are where the head is a non-referential demonstrative pronoun, where the structure of the relative clause is [[DEM] [NP RC]], where the head noun is modified by an adjective, a few cases where the head noun is modified by a non-definite possessor, and a few cases where the head noun is bare, non-generic, and non-abstract. It is very likely that in many of these cases the interpretation of the relative clause is restrictive – after all, it would be bizarre that an Indo-European languages would have non-restrictive relative clauses and (probably) maximalizing relative clauses, but no restrictive ones. But is maximalization also possible in these constructions? I think the stark contrast between the head in free relatives and postnominal relatives tells us otherwise: in free relatives only bare nouns can be the internal head of a relative clause, but in postnominal relative clauses bare nouns rarely occur as the head – and when they do, they usually have generic or abstract interpretations. I posit that the division of labour here is that postnominal relative clauses have restrictive and non-restrictive readings, and free relatives have a maximalizing reading. This would explain the rareness of bare nouns as the head of postnominal relative clauses.[8]

Now, is it a plausible hypothesis that free relatives in Old Avestan are maximalizing? The typology of relativization constructions that involve maximalization reveals an inter-

[8]Note that it is still possible for bare noun to be the head of a postnominal relative clause with a, probably, restrictive reading. This construction is certainly allowed in the grammar. What matters for my argument is that it tends to happen rarely. The point that I would like to make here mostly relies on the fact that free relatives always have bare head nouns, and therefore are probably maximalizing relative clauses. Now, if postnominal relative clauses can also have bare nouns as head nouns, this does not mean that they need to also have a maximalizing semantics. As an article-less language, this bare noun might have all sorts of semantic interpretations that are not possible to detect, due to the complexities of the text.

esting possibility about Old Avestan free relatives. In their seminal paper about maximalizing relative clauses, Grosu and Landman (1998) show that in addition to degree relative clauses, some other relativization strategies across world languages involve maximalization: internally-headed relative clauses,[9] free relatives, and correlatives. This assumption is so far widely held in the literature – these constructions almost always have a definite, universal or generic interpretation, which are all manifestations of maximality.[10] These are precisely the types of constructions that the Old Avestan free relative clauses represent. Therefore, it is a plausible working hypothesis that these relative clauses are maximalizing.

This hypothesis is not just backed up by typological tendencies. While it is not always possible to determine the precise interpretation of the Old Avestan data, there are some examples of free relatives in Old Avestan that, undoubtedly, have the interpretation of a definite description (definiteness is one manifestation of maximalization). I will elaborate on the relationship between definiteness and maximalization in §2.3.2). First, in three instances of these relative clauses, the head of the relative clause has been previously mentioned:

(2.13) varatā karapā **xšaϑrəm=cā** īšanąm drujəm |
prefer.PRES.1PL Karapan.NOM power.ACC=CONJ approaching.GEN deceit.ACC |
[**yā** **xšaϑrā** grəhmō hīšasaṯ̰ acištahiiā dəmānē
REL.INST power.INST Grəhma.NOM settle.PRES.3SG worst.GEN house.LOC
manaŋhō]
thought.GEN

'... the Karapans prefer the power of those who approach deceit | By which power, the Grəhma gang tries to settle in the house of worst thought.' (Y 32.12–13)

(2.14) dāmōiš **uruuaēsē** apəmē | [[**yahmī** spəṇtā ϑβā
creation.GEN turning point.LOC final.LOC | REL.LOC prosperous.INST your.INST

[9] As described in §1.4.5.2, internally-headed relative clauses are distinct from free relatives with an internal head in that free relatives always have a relative pronoun. Therefore, they should not be confused with free relatives with an internal head.

[10] The only exception that I have been able to find is Caponigro 2001, which shows that in some languages, free relatives as the complement of an existential verb are non-definite. Also see Caponigro 2003, ch. 3.

mainiiū **uruuaēsē** jasō mazdå̊ xšaϑrā]] [**ahmī** ...
spirit.INST turning point.LOC come.PRES.2SG wise.NOM power.INST DEM.LOC ...
aēibiiō ratūš sōṇghaitī ārmaitiš]]
DEM.DAT.PL judgements.ACC pronounce.PRES.3SG right-mindedness.NOM
'... at the final turning point of creation. | At which turning point Thou comest with Thy prosperous spirit, wise through power, there ... right-mindedness pronounces for them the judgements.' (Y 43.5–6)

(2.15) nōiṯ̃ uruuāϑā dātōibiias=cā karapanō vāstrāṯ̃ arəm ...
NEG ally.NOM order.ABL=CONJ Karapan.NOM pasture.ABL appropriately ...
xᵛāiš šiiaoϑanāiš=cā **sōṇghāiš=cā** [**y**ə īš
their.INST action.INST=CONJ proclamation.INST=CONJ REL.NOM DEM.ACC
**sōṇghō** apəməm drūjō dəmānē ādāṯ̃]
proclamation.NOM finally deceit.GEN house.LOC put.AOR.3SG
'The karapans are not allies in accordance with orders and pasture, with their own actions and proclamations, ill-disposed towards the cow of the patron, which proclamation in the end, will put them in the house of deceit.' (Y 51.14)

These data show that a non-definite interpretation is impossible, at least in these cases, because the referent is known in the discourse, which is one of the core components of definiteness.[11]

Another case that shows a certainly definite interpretation is Y 50.6:

(2.16) [**y**ə **mąϑrā** vācəm mazdā baraitī uruuaϑō aṣ̌ā
REL.NOM disciple.NOM voice.ACC wise.VOC raise.PRES.3SG ally.NOM truth.INST
nəmaŋhā] zaraϑuštrō
reverence.LOC Zarathuštra.NOM
'Which disciple raises his voice, O Wise One, ally through truth, in reverence, (is) Zarathuštra.' (Y 50.6)

Here, the predicate of the matrix clause is a proper noun (the name of the Zoroastrian

[11]Note that in examples (2.13) and (2.15), parsing the relativization structure is quite difficult. The relative clause is clear to understand, but there seems to be no matrix clause. The relative pronoun in these cases seems to be interchangeable with a demonstrative pronoun or a definite article. If this is the case, the analysis that will be given for the relative pronoun in §2.3.3 will nicely account for these data as well. Another possibility is that this is only due to textual or scribal errors.

prophet), so the free relative (subject of the sentence) cannot have a non-definite interpretation.

In another case, we see that what a relative clause in a correlative construction refers to is modified by a universal quantifier in the matrix clause. A non-definite interpretation would also be incompatible here:

(2.17) [[**yə** vā mōi nā gənā vā mazdā ahurā
REL.NOM DISJ me.DAT man.NOM woman.NOM DISJ wise.VOC Ahura.VOC
dāiiāṯ … aṣīm] … [**yąs=cā** haxšāi
give.AOR.OPT.3SG … reward.ACC … REL.NOM.PL=CONJ spur.AOR.SBJV.1SG
xšmāuuatąm vahmāi.ā frō] [**tāiš** vīspāiš
like you.GEN laudation.DAT PREV DEM.INST.PL all.DEM.INST.PL
cinnuatō frā pərətūm]]
account keeper.GEN cross.PRES.SBJV.1SG bridge.ACC
'Which man or woman, O Wise Ahura, will grant me … reward … and (those) whom I shall have spurred on the laudation of those such as you, with all those I shall cross over the account-keeper's bridge.' (Y 46.10)

I do not claim that these examples are conclusive evidence that Old Avestan free relative clauses are necessarily definite, and therefore maximalizing.[12] However, I have not found any example among instances of this construction that has a certainly indefinite interpretation, or where an indefinite interpretation is more likely.[13] I believe this lack of negative evidence, and the existence of cases where the maximal reading is the only possibility, shows us that Old Avestan free relatives are highly likely to follow the robust cross-linguistic generalization that free relatives, as maximalizing relative clauses, always have a definite or universal interpretation. In the analysis proposed in the next sections, I aim to explain why maximalization patterns with this specific syntactic configuration

[12] See the discussion below in §2.3.2 for why definiteness, maximalization, and free relatives are correlated.

[13] It is also worth mentioning that Ancient Greek free relatives (also headed by a non-interrogative-based relative pronoun) have been shown to be maximalizing (Probert 2015). Given that the corpus of Ancient Greek is significantly larger and more varied, this conclusion can be accepted with greater confidence. The same argument seems to hold for Sanskrit (Lowe et al. 2025).

that is free relatives.[14]

## 2.3 Structure of free relatives

The goal of this section is to provide an analysis of Old Avestan free relatives at the syntax-semantics interface. I will first discuss a selection of existing approaches to the syntax (§2.3.1) and semantics (§2.3.2) of free relatives; I will only discuss the theories that have been the most influential in the literature, and their foundational premises are compatible with the Old Avestan data. For instance, I will not discuss the analysis of Chierchia and Caponigro (2013) who derive free relatives from *wh*-questions, as this account is a priori untenable for Old Avestan free relatives as they do not involve any interrogative morpheme. After this discussion, in §2.3.3 I will show that properties of Old Avestan free relatives cannot be well captured within these approaches. Therefore, I motivate and outline an alternative analysis. I provide additional arguments in favour of my proposal based on article-like free relatives (§2.3.3.2) and cross-linguistic evidence from Georgian (2.3.3.3).

### 2.3.1 Syntax of free relatives: an overview

Syntactic analyses of free relatives all aim to provide an adequate solution for issues of headedness in these seemingly headless relative clauses: whether there is a head in the

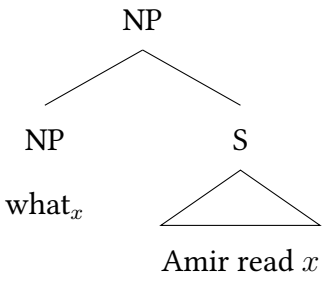
[14]It is true that not all non-externally-headed relative clauses are maximalizing (for instance, IHRCs) and not all maximalizing relative clauses are non-externally-headed. However, there are interesting correlations cross-linguistically between the syntactic structure of relative clauses and their semantics. For instance, Bianchi (2002) compares restrictive, non-restrictive, and maximalizing relative clauses across four properties: existence of a relative pronoun, existential *there*, Principle C effects, and optional resumptive pronouns (the first three are tested only in English, but the last property is examined in a sample of 11 languages). One of the results she infers from this comparative study is that restrictive relative clauses usually pattern with non-restrictive relative clauses across these properties, but if their head is non-specific, they tend to pattern with maximalizing relative clauses. As we see in the Old Avestan data, the head of a postnominal relative clause is usually a specific head (since many cases are referential). If Bianchi's generalization holds, and these properties are indicators of a deeper underlying syntactic structure for these constructions, we would expect syntactic properties of postnominal relatives in Old Avestan (which certainly do have a restrictive function) to differ from those of free relatives, a prediction that is borne out in Old Avestan.

relative clause, and if yes, what (and where) this head is. Answering these questions interacts with two other issues in the syntax of free relatives, namely the status of the relative pronoun, and mechanisms of matching. In what follows, I will briefly summarize some of the main approaches to the syntax of free relatives: the classical HEAD and COMP analyses, as well as recent debates about the syntax of free relatives. I will defer discussions on matching effects in free relatives to §2.4 and, in this section, will solely concentrate on the structural descriptions of free relatives concerning the issue of headedness.

The HEAD analysis of free relatives by Bresnan and Grimshaw (1978) resolves the two questions above by suggesting that free relatives are headed by the relative pronoun. The HEAD analysis assumes that the relative pronoun is base-generated as the head of the relative clause, and the gap in the free relative is occupied by a pronominal element that is deleted under identity with the head, according to a rule called Controlled Pro Deletion. The main argument for this analysis comes from matching. The tree in (2.19) illustrates the structure that the HEAD analysis assigns to (2.18).

(2.18) I recommend what Amir read.

(2.19)




In essence, the HEAD analysis of free relatives considers free relatives as only superficially headless, and considers them special instances of externally-headed relative clauses, with the relative pronoun as the head.

The other main analysis of free relatives initially proposed by Groos and van Riemsdijk (1981), called the COMP analysis, suggests that the relative pronoun is in the SPEC,CP position of the free relative. The evidence for this analysis comes from extraposition.

In Dutch and German, relative clauses can be extraposed (2.20a), but they cannot be extraposed with their head noun as a whole DP, as seen in (2.20b) (since these languages lack Heavy NP Shift). However, free relatives can be extraposed (2.20c), showing that the relative pronoun cannot be the external head of the relative clause (examples from van Riemsdijk 2006):

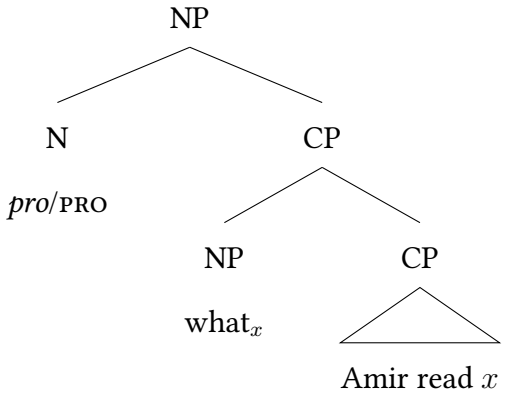
(2.20) a. Der Hans hat [das Geld] zurückgegeben, [das er gestohlen hat]
the Hans has the money returned REL he stolen has
'Hans has returned the money that he has stolen.'

b. * Der Hans hat zurückgegeben, [das Geld das er gestohlen hat]
the Hans has returned the money REL he stolen has
'Hans has returned the money that he has stolen.'

c. Der Hans hat zurückgegeben, [was er gestohlen hat]
the Hans has returned REL he stolen has
'Hans has returned what he has stolen.'

In the canonical version of this analysis, the head is filled with an empty category, either PRO or pro. The structure that such an analysis assigns to (2.18) is (2.21):

(2.21)



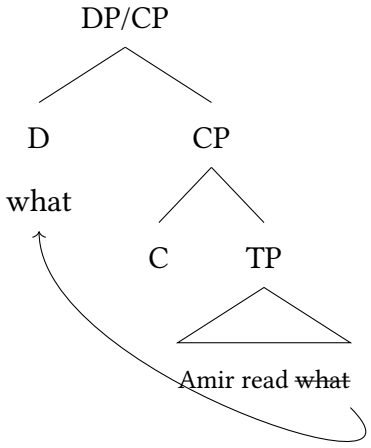

There are also variants of this analysis where there is no head, and the relative pronoun is shared between the matrix clause and relative clause. There are different proposals as to how this sharedness can be captured in the syntactic structure assigned to free relatives; see Citko 2000 for a multidominance analysis and van Riemsdijk 2006 for a grafting one.

Numerous studies have made compelling arguments both supporting and challenging these two predominant analyses of free relatives, mostly adopting the COMP analysis, such as Citko 2000, Grosu 2003, van Riemsdijk 2006, Ott 2011. However, the core generalizations in these works have stayed the same, and the breadth of empirical data has not seen significant shifts. The fundamental assumption underlying both of these archetypal analyses of free relatives is that, in essence, free relatives lack a nominal head, as seen in externally-headed relative clauses. Therefore, the only remaining options are either assuming that the relative pronoun is the head, or the head is silent, or there is no head at all. This assumption is the basis of these other works on free relatives as well. Nonetheless, a recent series of papers has sparked new discussions on the empirical and theoretical underpinnings of free relatives, leading to innovative approaches to their study. These developments are particularly relevant to the examination of Old Avestan free relatives. Therefore, in the remainder of this section I will focus on these papers.

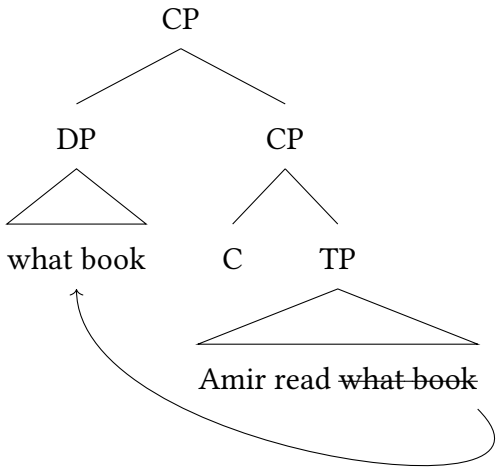
In the spirit of the HEAD analysis, Donati and Cecchetto (2011) discuss free relatives in the context of the labelling algorithm in syntax. They propose a phrase structure with a crucial assumption that lexical items can always provide the label of their dominating category label when they are merged with another category. On the other hand, a phrasal item can only provide the label if it is the probe of the merge operation. In this framework, they posit that in a string [RELPRO C], such as 'what Amir read' (as in (2.22a)), when the *wh*-word (as a lexical item) and the rest of the relative clause are merged, both of them are able to label the syntactic structure dominating them. If the complex *wh*-phrase provides the label, we have a DP structure, hence a free relative. If the labelling feature comes from C, the result would be a clausal structure, namely an embedded interrogative.

On the other hand, in a string like [[RELPRO DP] [C]] in English, such as 'which book Amir read', because of phrasal movement only the C can project, and therefore in English these strings are only assigned an embedded interrogative structure, as seen in (2.22b).

(2.22) a.




b.



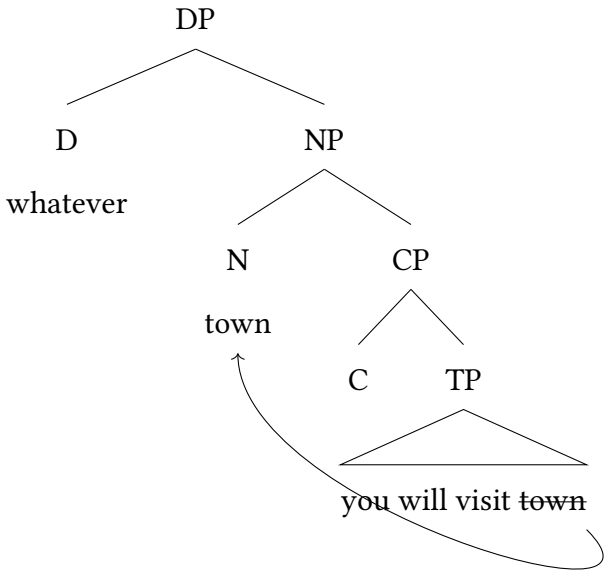

Donati and Cecchetto's analysis of *-ever* free relatives is also interesting for the purpose of this thesis. They suggest that *-ever* free relatives do not have the same structure as plain free relatives; instead, they should be treated as headed relative clauses, in line with a raising analysis of externally-headed relative clauses. While they do not directly discuss the fact that *-ever* free relatives are introduced by a complex *wh*-phrase,[15] which contains a nominal (as well as other elements, but the focus here is on nominals, contrasting with plain free relatives which are introduced by just a *wh*-word), they posit that these relative clauses are ordinary quantificational DPs by virtue of the head-movement of a nominal

[15] I use the term 'complex *wh*-phrase' to refer to a *wh*-word followed by a noun or an adjective, such as *what books* or *how happy*. In the papers discussed in this section, all the authors use the term '*wh*-phrase' to refer to such constructions, but as plain *wh*-words are phrases as well, I do not use this terminology.

and merging with the above C, as in (2.23) (from Donati and Cecchetto 2011, ex. 111). The relative pronoun is base-generated as a sister to NP (it is not clear to me why they do not have a similar structure for (2.22b) and (2.23)):

(2.23) a. I will visit whatever town you will visit.

b.



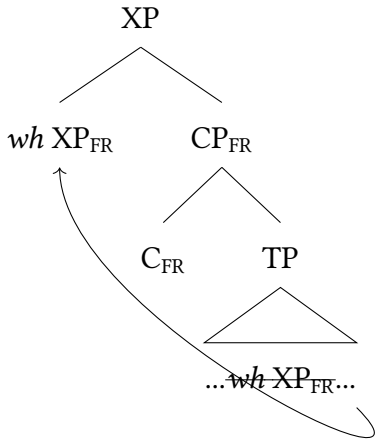

Crucially, Donati and Cecchetto's analysis of plain free relatives versus that of *-ever* free relatives makes an interesting prediction: that relative clauses introduced by a complex *wh*-phrase (for instance, containing a nominal) are not the same construction as plain free relatives. This prediction has started an interesting debate between Donati and Ceccheto (and their co-authors in Donati et al. 2022) and Caponigro (2019, 2023), one that is noteworthy for the current work, as what I have called an 'internal head' in Old Avestan free relative constitutes a phrase with the relative pronoun, making them equivalent to what these authors call free relatives introduced by complex *wh*-phrases. Providing data from languages where free relatives can be introduced by a complex *wh*-phrase, such as Romanian, Melchor Ocampo Mixtec, and varieties of American English,[16] Caponigro (2019) argues that Donati and Cecchetto (2011)'s analysis is not borne out, as free relatives can

[16]These are the data we used to show that free relatives can be head internal. See the relevant discussion in §1.4.5.2.

be introduced by complex *wh*-phrases. Donati et al. (2022), in their response to Caponigro, focus on experimental and corpus work on *-ever* free relatives (which are irrelevant to the current work), and pay little attention to the data that Caponigro has put forth. They analyze Romanian data as externally-headed by assuming that they are headed by a silent demonstrative. Their treatment of the English data is different, and to some extent vague: they suggest that because in the English examples the head noun is always mass or plural, '*what* has a double life as a non-wh-determiner selecting plural/mass nouns' (p. 548).

Caponigro (2023)'s response again underscores the relevance and importance of free relatives introduced by a complex *wh*-phrase. Since Donati and Cecchetto's 2011 theory of labelling was based upon Chomsky 2008, Caponigro (2023) revisits it in light of Chomsky 2013, 2015, proposing the following labelling mechanism: as long as the merged phrases and the phrase it merged with agree in relevant features, the merged phrase can trigger labelling, both in Internal Merge and in External Merge. This last part deviates from both Chomsky 2013 and Chomsky 2015 in what triggers labelling: Chomsky (2013) suggests that the shared feature is responsible for labelling, and Chomsky (2015) argues that the combination of the heads triggers labelling. Caponigro's analysis is based on Citko 2008 and Ott 2011. This formulation of labelling paves the way for *wh*-phrases to label a free relative. Therefore, Caponigro proposes a new syntactic analysis of free relatives that accounts for free relatives introduced by a *wh*-phrase:

(2.24)




This proposal now allows *wh-phrases* to label the relative clause. Caponigro then shows that the English, Romanian, and Melchor Ocampo Mixtec data will be accounted for within this account of free relatives. This is the first syntactic analysis of free relatives where the existence of nominals inside a free relative has been accounted for.

### 2.3.2 Semantics of free relatives: an overview

Formulating and characterizing the formal semantics of free relatives is challenging: free relatives, at face value, are clauses with a gap. However, they occur in argument position and can be substituted by a definite description. The challenge is that as clauses, it is not straightforward to explain how they combine with the predicate; they either need to be $e$ type and denote an individual, or $\langle\langle e,t\rangle,t\rangle$ and a quantified expression.[17] On the other hand, the clausal syntax of the free relative should yield an $\langle e,t\rangle$ type, as free relatives contain a trace, which is lambda-bound via Heim and Kratzer (1998)'s Predicate Abstraction rule[18], in the spirit of Quine 1960 (ch. 4: §23) and Montague 1970 (or in similar fashions, as we will shortly see in our discussion of Caponigro 2003). For instance, the example in (2.18) will have the denotation in (2.25), corresponding to the set of all things

[17] In syntactic terms, this puzzle can be reformulated as free relatives having a CP form but a DP distribution. An important question here is whether this is a semantic puzzle, or a puzzle at the syntax-semantic interface.

[18] Note that traces are typically assumed to be of the type $e$, following Heim and Kratzer (1998).

that Amir read.[19]

(2.25) $[\![$what Amir read $x]\!]$: $\lambda x.$[Read(Amir)($x$)]

On the other hand, free relatives have the same interpretation and are equivalent to definite descriptions (as first shown by Jacobson 1995), denoting individuals and being of type $e$. An $\langle e, t\rangle$ type semantics is not, therefore, the semantics that we would expect from a free relative. Some operation is required to change the type of the relative clause from properties to individuals. Approaches to this question in literature on the semantics of free relatives differ in two main aspects: **1.** what they assume as the source of definiteness, and **2.** how they resolve the type mismatch.

Before discussing different approaches to semantics of free relatives, it is crucial to address what definiteness means in this context. It has long been noted that plain free relatives (in addition to *-ever* free relatives) can also have a universal interpretation. This universal interpretation is sometimes less salient, but still possible to access – for instance, (2.18) can mean 'I recommend all the books that Amir read.' In example (2.26) (from Jacobson 1995, p. 455), the universal reading is clear:

(2.26) Do what the babysitter tells you to do.

Theoretical considerations and empirical facts refute ambiguity accounts of free relatives (an ambiguity account was the first proposal about this dual meaning of free relatives proposed by Bach and Cooper (1978); for arguments against these analyses see Caponigro 2003, §2.5.1). The availability of a universal reading is captured by assuming that definiteness is obtained via maximalization, following Link (1983). In other words, a definite description denotes the maximal plural entity that satisfies the relevant NP. If an NP

[19] I assume that as relative clauses these constructions contain a gap, and this assumption is reinforced by the existence of a *wh*-word; the binding of the gap can take place via a syntactic operation or via the relative pronoun. I remain agnostic to these details as they have no bearing on the analysis of free relatives, and presuppose a simplified version of the semantics of relativization given in Heim and Kratzer 1998 for the aspects of semantics of relativization that are not under discussion here.

is singular, the NP denotes a singleton, and the maximal entity would refer to the single member of the set, as in (2.27). However, if an NP is plural, its maximal plural entity would be the sum of all atomic entities as seen in (2.28). The sum operation is responsible for grouping atomic entities to build plural entities. The binary sum, expressed via $\bigoplus$, is associative and commutative. The examples below illustrate these points; assume in (2.27) the only book on the table is Shahname, whereas in (2.28) there are three books on the table: Shahname (Sh), Catcher in the Rye (CR), and Madame Bovary (MB).

(2.27) *the book*

a. NP: $[\![book]\!] : \{Shahname\}$

b. DP: $[\![the\, book]\!] : Shahname$

(2.28) *the books*

a. NP: $[\![books]\!] : \{Sh, CR, MB, S \bigoplus CR, S \bigoplus MB, MB \bigoplus CR, S \bigoplus CR \bigoplus MB\}$

b. DP: $[\![the\, books]\!] : Shahname \bigoplus Catcher\, in\, the\, Rye \bigoplus Madame\, Bovary$

Since the maximal plural entity is always unique, definiteness will always be obtained. Under the right circumstances, a universal reading would also be possible: when the NP bears plural marking, and linguistic material (such as aspect) and context enable universal quantification (see Dayal 1995 for an illustrative example, and Šimík 2020 for arguments against assuming that a definite reading and a universal one always go hand in hand). Therefore, the definite reading is the basis, and the universal one is secondary. The maximalization-based account of definiteness is adopted by many theories of the semantics of free relatives. I will now discuss some of these theories.

In the most influential work on the semantics of free relatives, Jacobson (1995) highlights the similarities between them and *wh*-questions in English. As the semantics of questions also involves the notion of exhaustivity, Jacobson builds the notion of maximality into the semantics of the *wh*-words. For her, *wh*-words are functions from a set to the subset containing the maximal plural entity of the set, having the denotation in (2.29) where "$\leq$"

is the inclusion notation.

(2.29) $[\![wh]\!] : \lambda P \lambda x.[P(x) \wedge \forall y(P(y) \rightarrow y \leq x)]$

- $x$ and $y$ are variables over atomic and plural members of the set (and the null set).

Informally, the denotation in (2.29) picks out the maximal individual or plurality satisfying the predicate $P$: it contains every atomic or plural individual that satisfies $P$, and any other individual satisfying $P$ must be included in it. In less formal terms, the expression identifies the unique maximal sum of individuals for which the relative-clause predicate is true. Thus, if the predicate is book on the table, the relevant individual is the sum of all books on the table.

This semantics unifies questions and free relatives. In free relatives, following the COMP analysis, the *wh*-word combines with the rest of the relative clause which denotes a set. The result would therefore be the set containing the maximal plural entity that the relative clause refers to. However, this is still a set, having an $\langle e, t \rangle$ type. Yet, it is guaranteed to be a singleton, as there exists only one maximal entity. Therefore, Jacobson suggests, it is ready to shift into an $e$ type meaning, denoting the single individual characterized by the predicate. Now, the iota type-shifting rule (Partee 1987) comes into play and shifts the type to $e$. For instance, the free relative in (2.18) would have the following analysis before and after iota type-shifting:

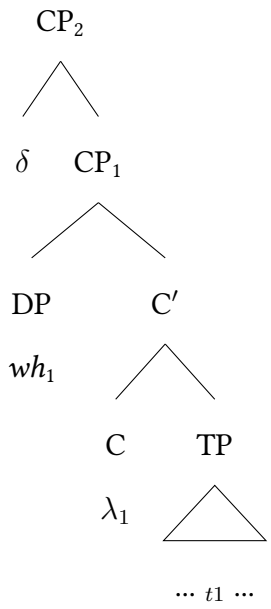
(2.30) a. $[\![\text{what Amir read}]\!] : \lambda x[\text{Read(Amir)}(x) \wedge \forall y(\text{Read(Amir)}(y)) \rightarrow y \leq x)]$

b. $[\![\text{what Amir read}]\!] : \iota x[\text{Read(Amir)}(x) \wedge \forall y(\text{Read(Amir)}(y)) \rightarrow y \leq x)]$

The other seminal work on the semantics of free relatives is Caponigro 2003. As mentioned in §2.1, Caponigro defines free relatives as necessarily containing an interrogative pronoun (a *wh*-word or phrase) – this is crucial to his analysis, as this work ultimately aims to give a unified account of interrogative pronouns. For Caponigro, maximalization

is a strategy to remedy the type mismatch. Among possible operations that can close an open formula and shift the $\langle e, t \rangle$ type to $e$, quantification is unavailable because Caponigro assumes that only overt lexical items can trigger quantification. The best possible strategy is therefore maximalization, because little information is lost in going from a set to its maximal entity, by definition. However, in this approach, maximalization does not originate from the relative pronoun (contra Jacobson), but is triggered by a covert lexical element $\delta$ containing Link (1983)'s $\sigma$ operator, which returns the maximal individual of a set.[20] Caponigro proposes the following LF for free relatives:

(2.31)




Caponigro assumes that at the $CP_1$ level, the complementizer C of a *wh*-clause ($\lambda$) inherits the same index as the *wh*-word in its Spec (he hypothesizes that this happens by Spec-Head agreement), and triggers $\lambda$-abstraction over the co-indexed free variable. Crucially, in this analysis, the *wh*-word only acts as the restrictor of the set that the relative clause at the C′ level denotes. The semantics that Caponigro suggests for the *wh*-word is (2.32).

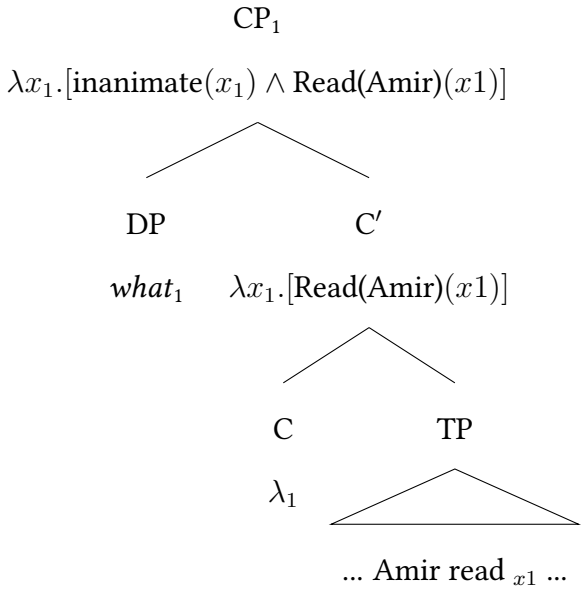
[20] Caponigro (2003) proposes that there are two conditions for licensing $\delta$: 1. the existence of a maximal plural entity, and 2. that lexical blocking cannot apply. The second condition prevents the $\delta$ from combining with bare count nouns, as in these cases there is an overt lexical element, namely *the*, that can occur instead.

(2.32) a. $[\![wh_1]\!] : \lambda X \lambda x_1.[\pm\text{animate}'(x_1) \wedge {}^*X(x_1)]$

b. * is an operator that applies to a singular one-place predicate (denoting a set of atomic entities), and turns it into a plural predicate denoting a set containing both atomic and plural entities.

The *wh*-word is, in other words, a function from a set of entities to a subset of it. Therefore, if at the C′ level the free relative in (2.18) is 'Amir read $x_1$' and interpreted as the set of all things that Adam liked, the CP 'what Amir read $x_1$' denotes the inanimate things Amir read, because *what* is a form only used for inanimate entities.[21]

(2.33)



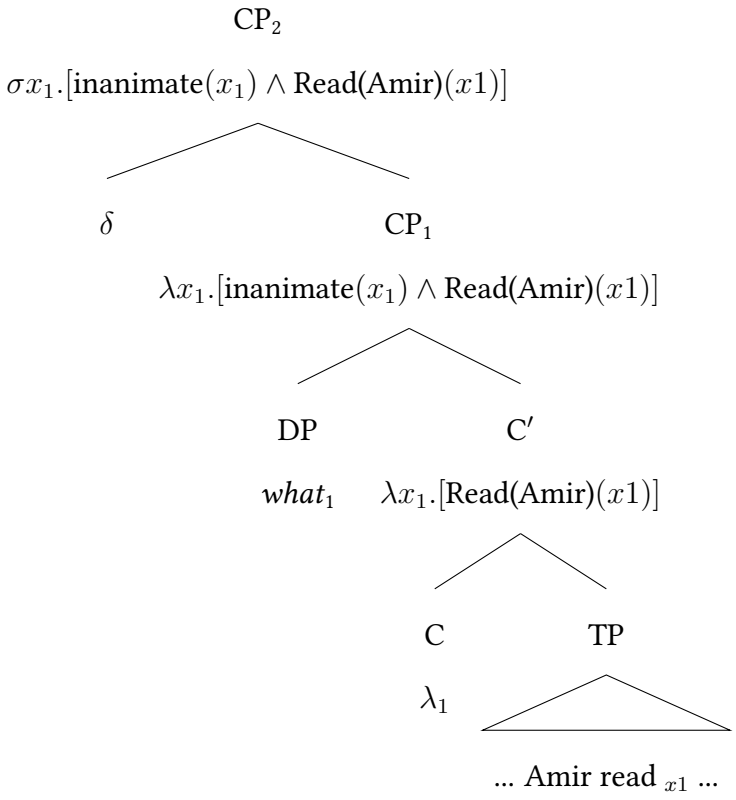

Now, the $\delta$ adjunct in $CP_2$ is responsible for this type-shifting. $\delta$ combines with a set-denoting XP to return the maximal individual of the set denoted by XP:

(2.34) $\delta \rightsquigarrow \lambda X \sigma x.[X(x)]$

The $\delta$ ultimately amounts to the definite determiner (the difference being that $\iota$ applies to a set with either atomic or plural entities, but $\delta$ can apply to a set containing both). The resulting structure would therefore have a type $e$ semantics, and the mismatch is resolved.

[21] This also means that the atomic entities would now be sortally homogeneous, which is a requirement for maximalization to happen (a maximal entity can only be picked out once a set actually denotes a maximal entity, which is not possible if the set is not sortally homogeneous).

(2.35)




The properties of the accounts of free relatives in Caponigro 2003 and Jacobson 1995 can be summarized as in table 2.2:

| | Jacobson 1995 | Caponigro 2003 |
|---|---|---|
| Source of definiteness | *wh*-word | $\delta$ (due to type mismatch) |
| Type-shift mechanism | iota (due to maximalization) | $\delta$ (covert maximalizer) |
| Function of relative pronoun | definiteness | set-restrictor |

Table 2.2: Properties of different accounts of the semantics of free relatives

### 2.3.3 An alternative account of the syntax-semantics interface

The literature discussed in the previous sections represents only a selection of various perspectives and analyses of free relatives in syntax, semantics, and their interface, but it encapsulates the essence of current approaches to free relatives. The question at hand is twofold; whether we can capture the Old Avestan data within the existing analyses, and whether the Old Avestan data motivate a new analysis. I argue that the answer to

the former question is no, and to the latter yes. Two properties of Old Avestan free relatives deviate from the prototypical free relatives that are the basis of existing analyses. First is the unrestricted availability of an internal nominal head. Apart from the recently-published suggestion in Caponigro 2023 about the syntactic structure of free relatives, other approaches canonically attribute the position of the head of the relative clause to the relative pronoun or a null element. This assumption is due to the empirical observation that the data (mostly English) do not indicate otherwise. Note that although free relatives introduced by a complex *wh*-phrase (as found in Romanian and other languages) are sporadically mentioned in the literature, researchers have not, until the work of Caponigro (2023), been compelled to consider free relatives as head-internal. One illustrative example of how these examples are treated in the literature is Donati et al. 2022, who vigorously reject these data as free relatives, as discussed above. The nominal in *-ever* free relatives has similarly not prompted such an analysis, given that these relative clauses cannot be rephrased into a postnominal externally-headed relative clause. Therefore, it has been taken to be unlikely that the internal nominal serves as the head anyway.

The other distinct property of the Old Avestan free relatives is the fact that they are not based on a *wh*-word or any type of interrogative construction. Therefore, the definite interpretation cannot be attributed to the exhaustiveness of the interrogative pronoun, and the structure assigned to the relative clause should ideally pattern with postnominal relative clauses rather than questions.

In what follows, I outline a novel analysis of free relatives at the syntax-semantics interface that is compatible with the empirical properties of Old Avestan free relatives. Moreover, I argue that the Old Avestan data prove valuable in minimizing the use of empty categories and silent operators – my analysis will have minimal recourse to such stipulations, thanks to the availability of an internal head and the nature of the relative pronoun. This approach is not an entirely unprecedented perspective towards free relative; instead, it represents a synthesis of existing analyses, substantiated by empirical justification for

this particular combination. In particular, it follows Jacobson (1995) in assuming that maximality comes from the relative pronoun, and it aligns with the syntax suggested in Caponigro 2023.[22] While my proposed analysis differs from Caponigro 2003 in what it takes to be the source of definiteness, it is very much influenced by its line of thinking about free relatives. For instance, the function of an internal nominal head in my analysis is similar to the function that Caponigro (2003) assigns to the *wh*-word. Moreover, it should be noted that the core analysis of Caponigro 2003 can still capture the Old Avestan data. Some of his assumptions, however, do not fit the patterns in Old Avestan, which I will address in this section. My proposed analysis will be given in a general framework of minimalist grammar without adopting features; instead, I explain movement as a result of derivation clash because of type-mismatch. I use traces instead of copies, but this analysis can also be formulated in the same fashion that Johnson (2012) accounts for *wh*-movement and quantifier raising via multidominance.

The starting point in my analysis is that Old Avestan free relatives are relative clauses containing the same relative marker as postnominal externally-headed relatives. Evidently, they should share some properties with one another, and differ in others. As properties of postnominal externally-headed relatives are clearer to describe and analyze, a contrastive analysis can enhance our understanding of free relatives. Free relatives differ from externally-headed relatives in two aspects:

1. Free relatives have a definite semantics. Externally-headed relatives do not;
2. Free relatives either do not have an overt nominal head, or – at least in Old Avestan – have an internal overt nominal head. Externally-headed relatives always have an external nominal head.

I believe these two distinctions are not independent. Ideally, an analysis of free relatives should reveal the interdependence of these distinctions, suggesting that one gives rise to

[22]The structure of free relatives presented here was developed independently of Caponigro 2023 in Autumn 2023, and I only became aware of this work in February 2024.

the other.

My analysis is as follows. We know that in Old Avestan free relatives which have an overt head, the head noun consistently lacks elements in determiner position (demonstrative, quantificational, and possessive). I believe this is an important clue about the internal structure of this construction, namely that whatever position the determiner otherwise occupies is unavailable here. This distinction stands in contrast to externally-headed relatives and, therefore, should not be considered in isolation from the other two distinctions mentioned earlier. I propose that the unavailability of this determiner position follows from the fact that the relative pronoun in these relative clauses always precedes the overt head noun (if there is one). In essence, the relative pronoun occupies this position, leading to the absence of other determiner position elements in free relatives with an overt nominal head.

In semantic terms, the overt nominal head of a free relative should, as a bare noun, always be a non-referential (non-specific) indefinite. Now, consider that I propose that the relative pronoun is substituting for the demonstrative, the possessive, or the quantificational determiner, all of which play a role in determining the definiteness or quantificational nature of the whole DP. I propose that the definite/quantificational force comes from the relative pronoun in that determiner position. It is important to clarify that this force is not attributed solely to the relative pronoun itself, rather to the relative pronoun preceding the noun.

Now, why should a relative pronoun carry a definiteness or quantificational operator, and how would this semantics be reconciled with the usual functions of a relative pronoun? It is easy to see how this would work when the relative pronoun is interrogative-based (as discussed in Jacobson 1995), but this is not the case in Old Avestan. Here, I would like to explore a relevant discussion about the history of the *ya-* relative pronouns in Indo-European languages, which motivates my proposal about the contribution of the relative

pronoun. The Old Avestan relative pronoun *ya-* has been reconstructed as Proto-Indo-European **yo-*,[23] but its original function has been a topic of debate. While some scholars assume that **yo-* was the original Proto-Indo-European relative pronoun, another hypothesis is that this form was originally a demonstrative form (for thorough overviews on discussions about this debate, see Probert 2015, ch. 3 and Ram Prasad 2022, ch. 3). This is due to the fact that the form of the relative pronoun **yo* has a striking resemblance to that of anaphoric pronouns of the root **i-/*ei-*. This hypothesis aligns with plausible diachronic scenarios, as relative pronouns are usually derived from interrogative or demonstrative pronoun, and we are certain that **yo-* is not derived from the former (because of the existence of another class of relative pronouns in Indo-European languages, **$k^w$e-/*$k^w$i-*, which pattern with interrogative pronouns, and the fact that **yo-* pronouns never occur in direct questions). Despite ongoing controversies, the hypothesis of the anaphoric source of **yo-* and its descendant forms remains a viable proposition, one that I adopt here. Therefore, as anaphoric expressions are likely to be definiteness markers, I assume that this can be built into the semantics of these relative pronouns.

The preliminary picture of the syntax-semantics interface in free relatives is rather clear now: the particular configuration of the head noun following the relative pronoun translates into the relative pronoun acting as a determiner for the bare head noun, and giving it a definite semantics. Hence the definite semantics of free relatives.[24]

To spell out this proposal, let us take a look at the canonical semantics of the relative pronoun, if one wants to give it any (diverging from analyses in which the relative pronoun is just an identity function). In an externally-headed relative clause, one can assume that a relative pronoun acts as a linker between the head noun and the relative clause

[23] In the context of reconstruction, the star shows unattested reconstructed forms, and should not be confused with the ungrammaticality marker in theoretical linguistics.

[24] Another possibility is to say that the relative pronoun functions similarly to demonstratives, and this is how free relatives receive their definite interpretation. Considering examples (2.13)–(2.15), where the head noun had been previously mentioned, this seems like a plausible idea. However, as there are many other cases where a demonstrative-like interpretation seems unlikely, and in general there is no known deictic feature in Old Avestan free relatives (or relative pronoun) otherwise, I do not adopt this idea here.

(which contains a gap and, therefore, denotes properties): it takes two properties and intersects them.

(2.36) $[\![\text{ya-}]\!]_{EHRC}$: $\lambda P \lambda Q \lambda x.[P(x) \wedge Q(x)]$[25]

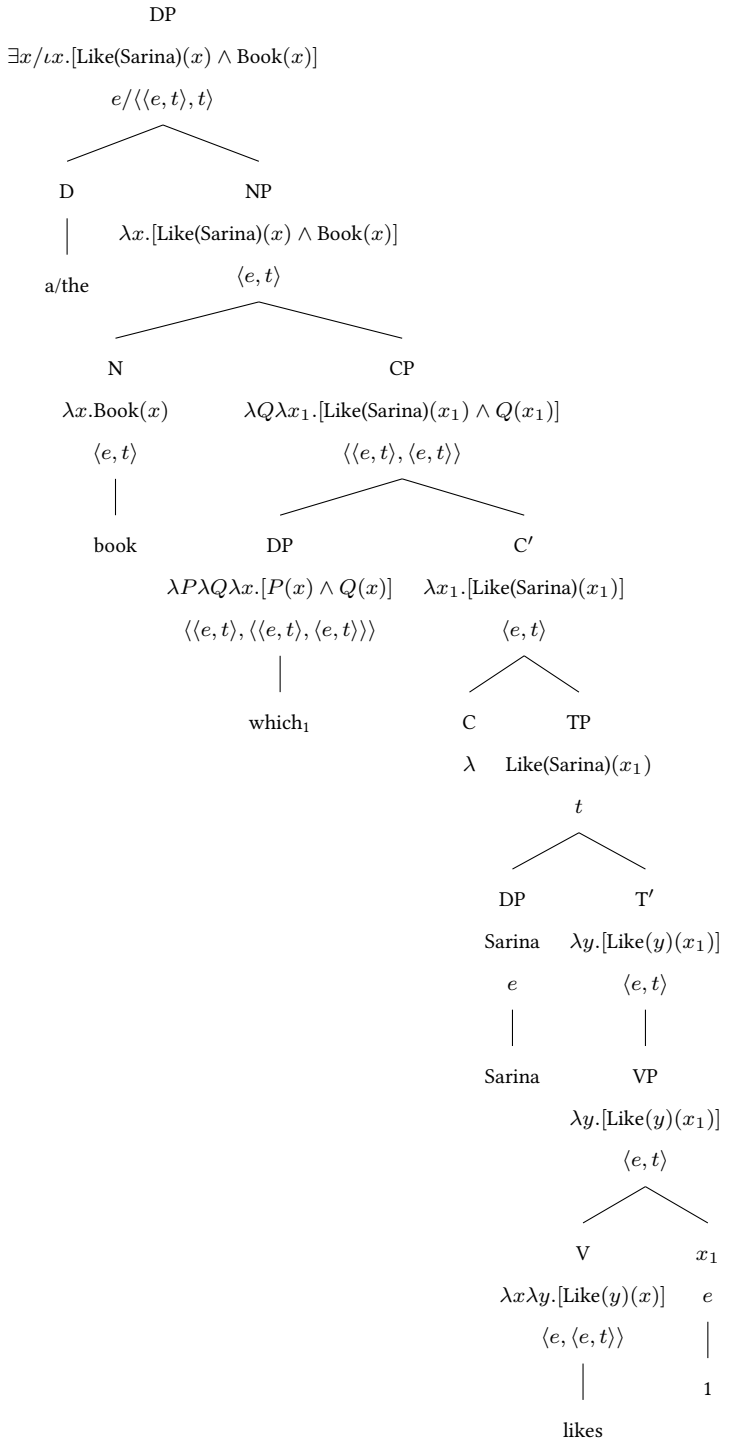
For instance, the standard English relative clause *book which Sarina likes* would have the following LF (assuming a semantics of adjectival modifiers as functions of $\langle\langle e,t\rangle,\langle e,t\rangle\rangle$ type):[26]

(2.37) (I read) a/the book which Sarina likes.

[25] See Caponigro and Fălăuș 2023 for a similar denotation for the pronoun *ce* in Romanian which introduces a free relative.

[26] In the following trees, the $\lambda$ node in C is a representation of the Predicate Abstraction rule following Heim and Kratzer (1998).

(2.38)

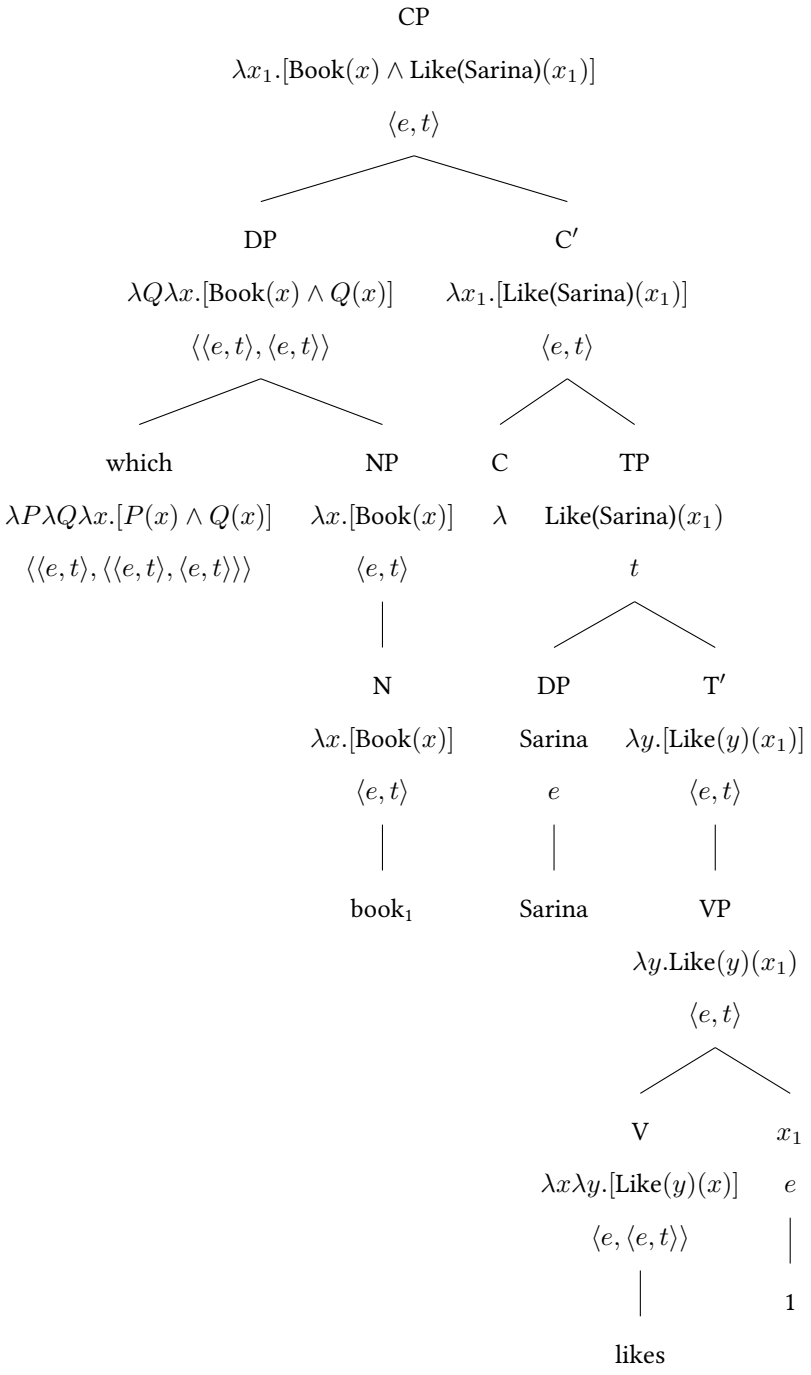



In my analysis, the relative pronoun in free relatives has a similar semantics, but not quite the same. Let us assume that the free relative counterpart of (2.37) with an overt nominal head is well-formed in English, as in (2.39). Now, observe how the derivation proceeds when the nominal head is internal, if the relative pronoun has the same seman-

tics as in (2.36):

(2.39) (I read) which book Sarina likes.

(2.40)



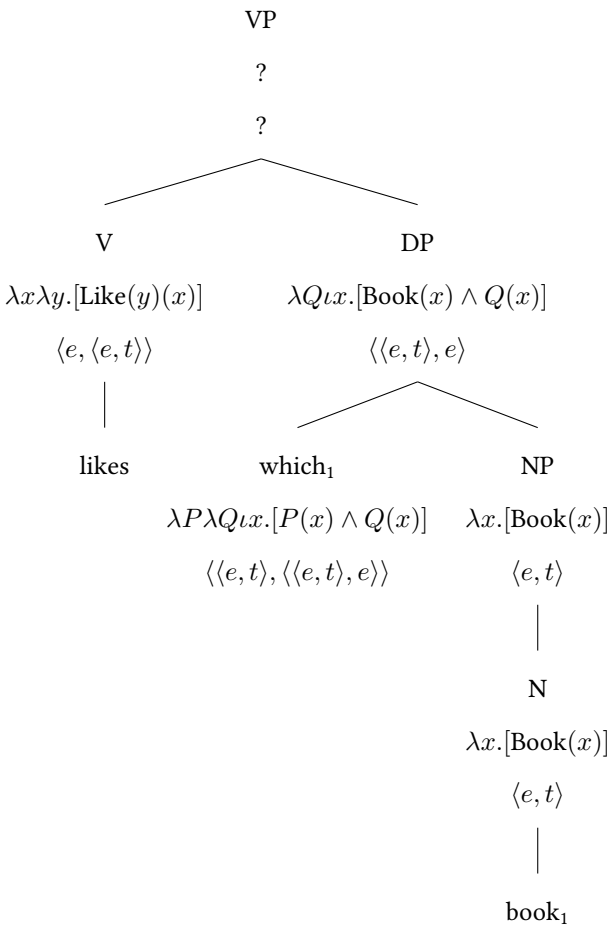

As a free relative, this CP is in argument position, yet its denotation is an open formula. I propose that the best strategy is for the relative pronoun to bind the free variable in a way that closes the open formula. The difference between its function in externally-

headed relatives and free relatives, then, would amount to how the free variable is bound: a lambda-operator in externally-headed relatives, or, by virtue of being at the left of the head noun (a canonical position for determiners) and its original anaphoric function, an iota-operator in free relatives. Therefore, I suggest that the relative pronoun has the following semantics in free relatives:

(2.41) $[\![\text{ya-}]\!]_{FR}$: $\lambda P \lambda Q \iota x[P(x) \wedge Q(x)]$

The question is, what type of syntactic structure do we need to make this semantics work. The LF given in (2.40) is obviously incorrect, since the moved NP does not c-command its trace. Therefore, the NP should merge with the relative pronoun in base position. However, in this case, the DP cannot semantically combine with the verb, as seen in (2.42).

(2.42)



Since the DP (consisting of the relative pronoun and the head noun) cannot combine with the VP, it moves to specifier of CP, where the types match. This mismatch and its resolution explain an empirical fact about free relatives, namely the fact that the relative pronoun (and the internal head noun, if there is one) always appears clause-initially, at the left edge of the relative clause. In English, unavailability of *wh-in situ* can explain this fact, but the Old Avestan data should have a different story (see the discussion in §2.5.2). Moreover, Donati and Cecchetto (2015, pp. 50–51) have observed that there are no free relatives where the *wh*-word is *in situ*.[27] If this is a universal property of free relatives, and maximalization is another such universal, then an account that links the two is preferable: the movement of the relative pronoun (or the phrase it heads) is motivated by a semantic type mismatch, and that mismatch arises from the very property that makes a free relative maximal.

However, this assumption has a caveat. This caveat is that the head noun can also appear disjoint from the relative pronoun, further embedded into the clause (see (2.43) for an example) – I believe this is due to the fact that Old Avestan is highly scrambling, and sometimes the head noun is later scrambled to a more internal position.[28] Admittedly, I do not yet have answers as to why the relative pronoun does not scramble to a position within the relative clause and only nouns do so.

Now, we have all the necessary ingredients for working with an actual Old Avestan example such as (2.43). I ignore some parts of the sentence here; the dative *vō* 'to you' and the

[27] Polinsky (2015, p. 25) points out that in Tsez free relatives the *wh*-expression can be *in situ*:

(i) [ɦuł babi-y-ä šebi žek'-ä-(-si)] ∅-ik'i-s
yesterday father.OS-ERG who/what.ABS hit.PST.WIT.INTERR.ATTR I-go.PST.WI
'Whoever Father beat yesterday left.' (Polinsky 2015, p. 27)

However, she also points out that Tsez head-internal free relatives, as seen in (1.35) (which she calls free relatives headed by a complex *wh*-expression), are strongly dispreferred with *wh-in situ*. Moreover, in some of the examples that Polinsky cites as instances of free relatives with *wh-in situ*, the *wh*-word is put in parentheses. These two empirical observations make one wonder whether *wh-in situ* free relatives in Tsez and *wh*-initial free relatives have the same underlying structure.

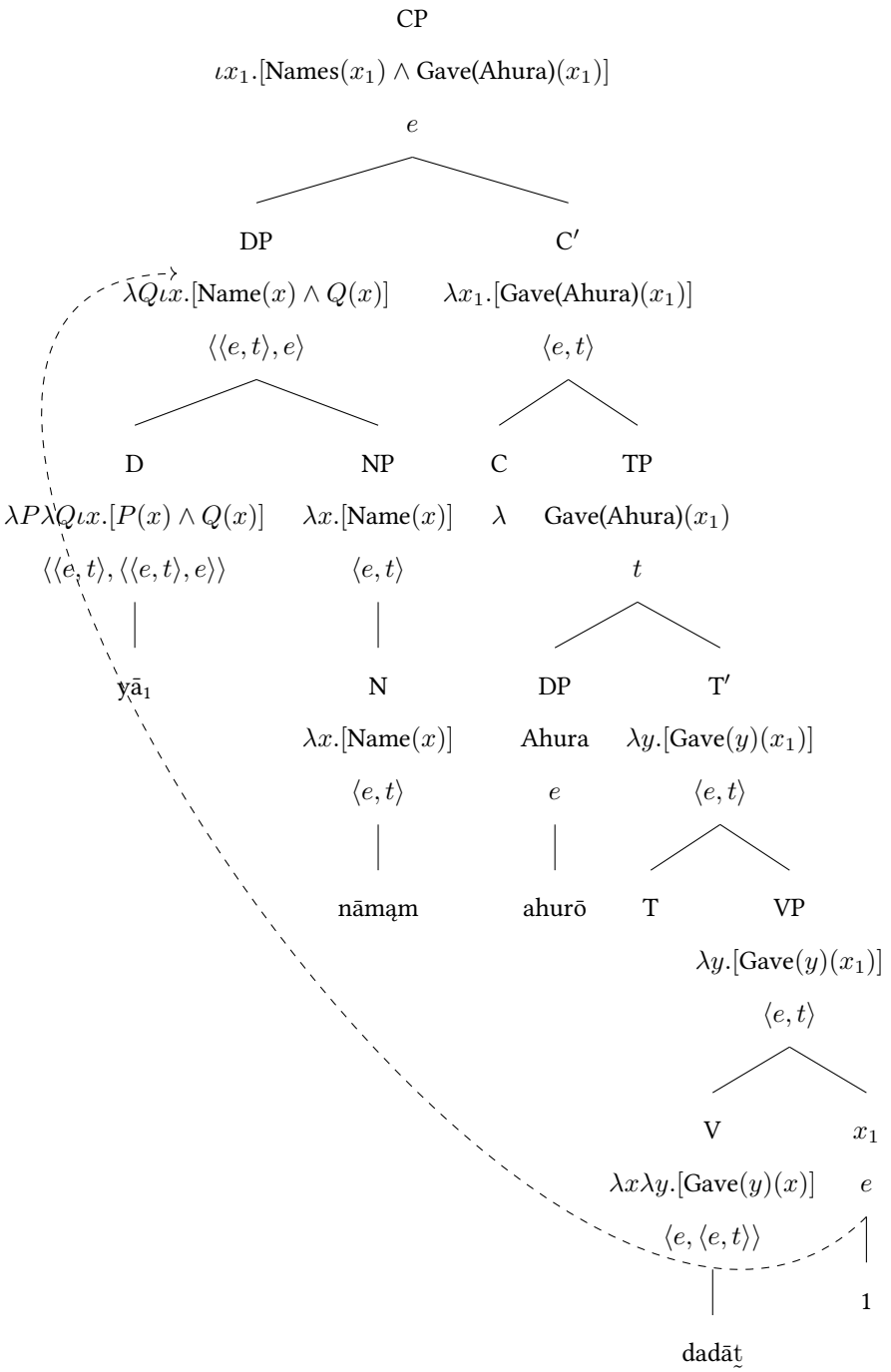
[28] Adopting the copy theory of movement might be more explanatory here, as one can assume that sometimes the lower copy can be pronounced, sometimes the higher copy. However, the rules governing this distribution are not clear to me from the available data.

adjective *mazdå̊* ‘wise’ for the sake of simplicity (as this language is a highly scrambling language and pinpointing the position of these elements in the syntax raises challenges that are irrelevant to the current discussion). As this is an instance of correlativization, I also omit the matrix clause as the focus here is on the internal syntax of the free relative. I also do not discuss the scrambling of the internal head. The structure that my analysis assigns to this example is (2.44).[29]

(2.43) [[yā vō ... ahurō mazdå̊ nāmąm dadāṯ̃] ...
REL.ACC you.DAT ... Ahura.NOM wise.NOM name.ACC give.PRES.3SG ...
[tāiš vå̊ yazamaidē]]
DEM.INST.PL you.DAT praise.PRES.1PL
‘Which names which wise Ahura ... gave you ... we praise you with them.’ (Y 38.4)

[29] At this point, it is not evident whether the whole structure should be a CP or DP; I will discuss this further in §2.3.3.1.

(2.44)




Note that the evidence for base-generation of the head noun adjacent to the relative pronoun comes from the case agreement between the relative pronoun and this overt nominal head, which has no exception.

To take stock, my analysis of free relatives assumes that the source of the definite mean-

ing is the relative pronoun being the determiner of the head noun internal to the relative clause.[30] Syntactically, the DP moves to the Spec,CP of the relative clause, giving rise to a configuration where the relative pronoun introduces the whole clause.

Now, what about free relatives with no overt internal nominal head? I posit that in these cases there is a silent nominal head. Here, I would like to make a comparison with Caponigro's analysis of free relatives: for him, the contribution of the relative pronoun is to delimit the range of what the relative clause can refer to. For instance, in (2.45a) denotes all the things and persons that Sarina likes, whereas (2.45b) denotes the things that Sarina likes.

(2.45) a. $[\![\lambda_1 \text{Sarina liked } t_1]\!] \rightsquigarrow \lambda x_1.[\text{Like(Sarina)}(x_1)]$

b. $[\![\text{what}_1 \text{ Sarina liked } t_1]\!] \rightsquigarrow \lambda x_1.[\text{inanimate}(x_1) \wedge \text{Like(Sarina)}(x_1)]$

There are reasons to believe such an analysis cannot apply to Old Avestan (or, perhaps, any language without the *what vs. who* distinction of English), aside from the fact that such an assumption arises from the interrogative basis of the relative pronoun in English. Old Avestan relative pronouns do not differentiate between inanimate and animate entities per se. Their case marking shows what they refer to, which is determined by their (internal or external) head noun. If the head noun is, for instance, feminine plural, the relative pronoun is going to be case-marked as feminine plural; the relative pronoun does not impose any semantic restrictions on its own. In a sense, my analysis is very much in the spirit of Caponigro 2003's, in that the internal head noun in my analysis serves the same purpose that Caponigro's *wh*-words do: they are overt expressions that are responsible for restricting the set of what the $\lambda$-bound relative clause refers to by virtue of their

[30] The caveat for such an analysis is that in many languages, free relatives can appear as the argument of an existential verb with a non-definite interpretation (Caponigro 2003, ch. 3). As there is no such data in the Old Avestan corpus (i.e. no free relative in the corpus appears as the argument of an existential verb), I have not discussed this issue here. However, I hope to account for this behaviour of free relatives in my analysis in future work. An interesting approach to such cases can be found in Hinterwimmer 2008, who derives the non-definite reading from a kind semantics by taking free relatives as ambiguous between ordinary individuals and kinds-denoting.

lexical semantics (so not just animate versus inanimate, but *book* versus *name* versus *man* etc.), and their denotation intersects with that of the rest of the relative clause, and the result of the intersection defines the domain of the iota-operator.

Now, where this overt nominal head is absent, I believe there is a default covert *person* or *thing* as the head, the former giving masculine case marking to the relative pronoun, the latter neuter.[31] This means that throughout this thesis, when I mention a head-internal free relative, I refer to an overtly head-internal one – all free relatives (at least in Old Avestan and according to my analysis) are, in fact, head-internal, with the head overt or covert. The data supporting this assumption are interesting. There are few cases in Old Avestan free relatives without an overt head where the relative pronoun bears feminine case marking. Almost all free relatives are introduced by a masculine or neuter relative pronoun, the former for animate [+person] free relatives, and the latter for inanimate ones. The three cases where there is a feminine relative pronoun in a free relative are all predicative free relatives, such as (2.46):

(2.46) vaocā ahurā məṇdāidiiāi [yā tōi mazdā
tell.AOR.IMPER.2SG ahura.VOC put in mind.INF REL.NOM.FEM you.GEN wise.VOC
ādištiš]
advice.NOM.FEM

'Tell me to note in mind what your advice is, O Mazdā.' (Y 49.6)[32]

[31]Note that is my only use of a silent element in my analysis. One comparable case is English relative clauses introduced by *why*, which modify a silent head *reason* according to Caponigro (2003, p. 43):

(i) This is [the reason] why I decided to leave.

Elbourne (2013) also assumes that in the structure of Voldemort sentences in English, there is a phonologically null noun phrase. Voldemort sentences are restrictive relative clauses that follow a pronoun without an overt noun. Elbourne argues that there is a silent *person* as the head of the relative clause, as in (iii).

(ii) a. He Who Must Not Be Named killed Lily and James Potter.
b. Those who hesitate are lost.

(iii) [he [person [who ...]]].

[32]Interestingly, two of these three cases (this and Y 49.6) show case mismatch: the free relative is introduced by a nominative relative pronoun as the subject is the gap, but the matrix predicate requires a direct object in accusative. Also, note that here the relative clause is the argument to a question-selecting verb, so we are in fact dealing with an embedded interrogative.

In these cases, since the predicate is a feminine noun, the relative pronoun receives feminine case accordingly. Semantically, the set of things that $\lambda x_1.[\text{Advice}(x_1)]$ denotes already contains only entities that the grammar marks as feminine, therefore the relative pronoun is not imposing any further constraints.[33]

I believe that, in Old Avestan, if the relative pronoun itself were to impose a restriction on the set that the gapped clause denotes (à la Caponigro), we would observe a wider range of free relatives with a feminine relative pronoun. To illustrate what I mean by this wider range, see the example in (2.47), repeated from (1.9):

(2.47) [yå̊s$_i$=cā tōi gənå̊ ahurā mazdā aṣ̌āṯ̰
REL.NOM.PL.FEM=CONJ you.GEN women.NOM.FEM Ahura.VOC wise.VOC truth.ABL
hacā vairiiå̊]
with excellent.NOM.PL
'And which women are yours and are excellent on account of truth...' (Y 38.1)

The free relative in (2.47) refers to the women (explicitely mentioned) who belong to the deity and are excellent. Now, observe (2.48), which is minimally different from (2.47) only in the absence of the internal overt head *gənå̊*:

(2.48) [yå̊s$_i$=cā tōi ahurā mazdā aṣ̌āṯ̰ hacā
REL.NOM.PL.FEM=CONJ you.GEN Ahura.VOC wise.VOC truth.ABL with
vairiiå̊]
excellent.NOM.PL
'And which (women) are yours and are excellent on account of truth...'

As the relative pronoun is in plural feminine, what the relative clause would refer to in (2.48) is the set of women to whom the rest of the clause applies. This is truth-conditionally similar to (2.47). But there are no such case in the corpus. After all, if the relative pronoun in Old Avestan can impose semantic constraints on discourse referents (as Caponigro

[33] Another motivation for postulating these two basic silent denominators might come from the fact that adjectives frequently appear in argument position in Old Avestan, for instance the superlative adjective *vahišta-* 'the best' can easily mean 'the best thing(s)'; if an adjective has neuter marking, it refers to inanimate entities; if it has masculine marking, it refers to animate ones. Additionally, participles can also have such interpretations. The active participle *hātąm* 'existing' occurs in argument position, meaning 'the existing people' (often translated in English to 'those who exist').

argues), and if the morphosyntactic option is available to distinguish between feminine entities and other entities (especially, feminine individuals and masculine individuals) in restricting sets of entities, I can see no reason why the language would not use it.[34]

#### 2.3.3.1 Free relatives, DPs or CPs?

In the analysis outlined above, a crucial issue in the study of free relatives was overlooked, namely the category of free relatives as a syntactic unit. As mentioned in §2.3.1, one of the challenges that the previous literature had to overcome was reconciling the clausal internal syntax of free relatives with their DP-*like* nature. The reason why previous analyses of free relatives assume that free relatives are DPs is distribution. For instance, van Riemsdijk in his review paper on free relatives (2006) writes:

> "[If the empty category representing the DP head has no properties at all ...] why not go one step further and assume that the FR is simply a CP whose Spec is accessible to government from the outside? This is indeed a logical possibility. But the type of argument [...] concerning the distribution of FRs as opposed to regular complement or adjunct CPs suggests otherwise. If the FR as a whole can have the distribution of a DP, then how can this fact be derived in a pure CP analysis?" (van Riemsdijk 2006, p. 1674)

However, distributional evidence alone may not always accurately determine a syntactic category. Lowe (2020) argues that among the three main criteria for determining syntactic categories, namely internal syntax, distribution, and morphosyntax, it is internal syntax that can better account for the data on Arabic *masdar*, English gerunds, and attributive adjectives. Finally, from a more semantically-oriented standpoint, distribution is hardly different from having the right type for the composition – as long as types match, the derivation proceeds without errors. On the other hand, the choice of a syntactic category

[34] Indeed, the limitations discussed in the first chapter apply to this argument: mere lack of data cannot be conclusive evidence. Therefore, this argument is by itself rather weak; however, coupled with our other observations, it could be indicative.

has consequences for other aspects of grammar; for instance, if we adopt the assumption that free relatives in argument position are CPs, then we have to posit that (at least) some predicates in the language can subcategorize for CPs as well as DPs.

The virtue of my analysis lies in its ability to derive the necessary semantics without the need for a DP-like syntax that assumes an external empty nominal head[35] – in fact, in this analysis, one cannot even stipulate an empty D head for the relative clause to turn the clause into a nominal, simply because the semantic head of the relative clause is accounted for internally. On the other hand, the syntactic structure that I assign to free relatives is similar to that of Caponigro 2023, and he has been able to derive a DP category through a modified version of the labelling algorithm in Chomsky 2013 and 2015. Therefore, if the evidence is conclusive for a DP category for free relatives independently of its semantics, my proposal can still be modified to accommodate this.

Finally, the question of syntactic category is also relevant to the affinity between embedded interrogatives and free relatives. The paucity of data does not allow us to make broader generalizations about this affinity; however, if the pattern turns out to be robust, analyses such as the concealed questions account (Frana 2020) which are independently motivated for other languages can handle these data. Be that as it may, we have to note that accounts such as Chierchia and Caponigro 2013, which explain this affinity by compositionally deriving free relatives from questions, cannot explain non-interrogative-based free relatives.

Moreover, embedded interrogatives exhibit typical clausal characteristics in their syntax. Can we then posit that they share the same structure as canonical free relatives? At the surface level, the form of these examples aligns with the typical pattern of free relatives. However, the semantics pose a challenge: if these constructions are indeed free relatives, how do they adopt a question-type semantics when functioning as arguments of

[35]Note that in my proposed analysis, the internal head of the relative clause is not the syntactic head, it is in the specifier position of CP.

a question-selecting predicate? The answer may lie in another related phenomenon: concealed questions. Concealed questions are (mostly definite) DPs that can be the argument of certain question-selecting verbs (Frana 2020):

(2.49) I know the bookstore's address.

(2.50) Students asked the results of the exam.

There are different proposals about how to obtain the necessary semantics here from a definite description (discussed by Frana 2020), but already a pattern starts to emerge: definite descriptions, similar to free relatives, can be the argument of a question-selecting predicate. In fact, Faure (2011) has shown that embedded questions in Ancient Greek (which are introduced by a non-interrogative pronoun, similar to Ancient Greek free relatives) are free relatives functioning as concealed propositions (semantically akin to concealed questions) rather than interrogative clauses. Similar arguments have been put forth by Caponigro and Heller (2007) for pre-copular *wh*-clauses in specificational pseudoclefts. The same proposal can potentially be extended to interrogative-based free relatives: instead of deriving free relatives from questions, maybe we can derive the semantics of embedded interrogatives from free relatives.[36]

In sum, the syntactic classification of free relatives and embedded interrogatives cannot be based solely on their distribution, as their observed patterns remain consistent with a nominal semantic interpretation. However, the available Old Avestan data lack the empirical breadth necessary to resolve this question.

#### 2.3.3.2 Article-like free relatives

In this section, I provide further evidence for my proposal about the function and semantics of the relative pronoun given in (2.41) from case attraction. In Old Avestan, there

[36]Such an analysis would, however, blur the morphological similarity between indirect and canonical questions.

are two examples where the relative pronoun precedes a noun without involving relativization or any type of long distance dependency. Descriptively, these resemble (and are probably derived from) copular free relatives without an overt head and with a predicate. However, the relative pronoun and the predicate bear the case of the matrix predicate. Since there is no nominative case in the relative clause, one cannot postulate an omitted copula, hence the absence of long distance dependency. Old Avestan grammars have described these cases as *article-like* (also see Jügel 2017, pp. 557–558).

(2.51) frauuaxšiiā aŋhəuš mainiiū paouruiiē yaiiå̊
proclaim.PRES.FUT.1SG existence.GEN spirit.ACC.DU prime.LOC REL.GEN.DU
spaniiå̊ ūitī mrauuaṯ̰ **[yəm aŋgrəm]**
more prosperous.NOM thus address.PRES.SBJV.3SG REL.ACC harmful.ACC
'I shall proclaim the two spirits in the primal of one's existence, of whom the more prosperous one shall address **the harmful one**.' (Y 45.2)

(2.52) viiādarəsəm … **[yəm mazdąm ahurəm]**
see.AOR.1SG … REL.ACC wise.ACC ahura.ACC
'I have now seen ... **the Wise Ahura**.' (Y 45.8)

In general, these data are instances of case attraction. Case attraction is broadly defined as where a nominal bears the case marking corresponding to a different predicate than the predicate from which it should receive case (case attraction is further discussed in §2.4). Meanwhile, there is another type of case attraction that happens in postnominal relative clauses, namely the ezafe construction. As my aim is to show that case attraction in (2.51) and (2.52) takes place because of properties of free relatives, I will show that in free relatives, case attraction is not of the same nature as that of the ezafe construction. Then, I show that the result of this case attraction in free relative is that the relative pronoun has an article-like semantics, which can be accounted for by the semantics that I have proposed for the relative pronoun in free relatives.

Case attraction in postnominal relative clauses happens frequently. These postnominal relative clauses are copular, and the relative pronoun and the predicate bear the case

marking of the external head (instead of nominative case). For instance, in (2.53), the relative pronoun and the adjectival predicate of the relative clause bear instrumental case, the case of the external head:

(2.53) tāiš **šiiaoϑanāiš** **yāiš** **vahištāiš** fraēšiiāmahī ...
DEM.INST.PL action.INST.PL REL.INST.PL best.INST.PL urge.PRES.1PL ...
'Through **the actions that are best**, we urge ...' (Y 35.4)

The standard account of case attraction in these cases (ever since Reichelt 1909, including more recent works such as Haider and Zwanziger 1984, Meyer 2015) is that the omission of copula, which is common in this language, leads to reanalysis. Reanalysis, or the *Z-model of language change*, is how language change takes place during the course of first language acquisition (Anderson 1973):

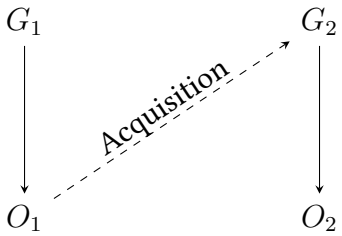



Figure 2.1: The Z-model of language change

The diagram in (2.1) shows that in a language with the grammar $G_1$, an output $O_1$ is generated. However, during the course of language acquisition, the child assigns another grammar $G_2$ to $O_1$ (as $O_1$ is ambiguous between two structural descriptions and two grammars can generate it) and learns it. However, once the child acquires $G_2$ instead of $G_1$, she now produces strings such as $O_2$. The string $O_2$ cannot be generated by the original grammar ($G_1$). As $G_2$ replaces $G_1$, language change takes place.

In the case of the ezafe construction, the reanalysis would take place in the following steps:

1. $\text{NP}_{\text{NOM,ACC,etc.}}$ [$\text{RelPro}_{\text{NOM}}$ $\text{NP/AdjP}_{\text{NOM}}$] (COP)

- **šiiaoϑanāiš yā vahištā** həṇtī $G_{REL}$
  action.INST.PL REL.NOM.PL best.NOM.PL COP.PRES.3PL

2. $NP_{NOM}$ [$RelPro_{NOM}$ $NP/AdjP_{NOM}$] ~~(COP)~~

   - **šiiaoϑanā yā vahištā** $G_{REL}$, $G_{AGREE}$
     action.NOM.PL REL.NOM.PL best.NOM.PL

3. $NP_{ACC}$ [$RelPro_{ACC}$ $NP/AdjP_{ACC}$]

   - **šiiaoϑanāiš yāiš vahištāiš** $G_{AGREE}$
     action.INST.PL REL.INST.PL best.INST.PL

The first step shows a regular relativization pattern in these cases, produced by a relativization grammar. In cases where the head noun is also in nominative and the copula is omitted, the formal agreement between the head, the linker (=relative pronoun) and the predicate means that two grammars can produce it: a relativization grammar (which assumes an omitted copula), and an AGREE grammar which takes *vahištā* as the modifier of the head noun and *yā* as a nominal linker. This leads to reanalysis and the loss of the long-distance dependency, resulting in the structure (in the third step) where the relative pronoun and the predicate follow the case of the external head of the former relative clause. The relativization grammar cannot produce this structure: it would require nominative case marking for the relative pronoun and the adjectival predicate (assuming an omitted copula as the verb), which is not possible. The only remaining possible grammar is the AGREE grammar (modification), leading to the emergence of the ezafe construction with the relative pronoun as a nominal linker.[37]

The same reanalysis, however, cannot fully capture what is happening in (2.51) and (2.52): with the absence of an external nominal head, an AGREE grammar cannot be in play. In other words, the formal identity between the case of the external head and the material inside the relative clause (the relative pronoun and the predicate) is crucial to the reanalysis in the case of the ezafe construction. Such formal identity is lacking in the case of free relatives.

[37] See §4.1.3.2 for an alternative account of the diachrony of the ezafe construction.

One can, however, imagine another path of grammaticalization. In these cases, the relative pronoun resembles an article. Note the interpretation of both cases in (2.51) and (2.52): both are definite. In (2.51), the harmful one is the unique primordial spirit which is not the more prosperous one; there are two primal spirits, and the uniqueness of one is obtained via contrast with the other. In (2.52), the wise Ahura is the unique deity of Zoroastrianism, the religion of Old Avestan speakers. I believe this means that the relative pronoun is maintaining its semantics as in other free relatives. The only difference is that there is no long-distance dependency involved. Therefore, the reanalysis path would be as follows: in cases where the free relative is copular, the [RelPro NP/AdjP] constituent can be understood as a DP instead of a CP, receiving case from the predicate of the matrix clause.

1. $[\text{RelPro}_{\text{NOM}}\ \text{NP/AdjP}_{\text{NOM}}\ (\text{COP})]_{\text{CP}}$

   - yə aŋgrə astī $G_{REL}$
     REL.NOM harmful.NOM COP.PRES.3SG
2. $[\text{RelPro}_{\text{NOM}}\ \text{NP/AdjP}_{\text{NOM}}\ \sout{(\text{COP})}]_{\text{CP}}$

   - yə aŋgrə $G_{REL}$, $G_{DET}$
     REL.NOM harmful.NOM
3. $[\text{RelPro NP/AdjP }]_{\text{DP}}$

   - yəm aŋgrəm $G_{DET}$
     DET.ACC harmful.ACC

In the first step, with an overt copula, the only possible structural description for the string can come from a relativization grammar (more precisely, copular free relative). In the absence of an overt copula, however, two possible grammars should have been able to produce the string. One is the relativization grammar. The other, I argue, is a determiner grammar. The relative pronoun had to be reanalyzed as the determiner of the expression inside the relative clause. Once this grammar is acquired and established, the whole phrase can receive case from the predicate of the matrix clause (similar to any other DP and NP). But the third string can no longer be generated by a relativization grammar (as an omitted

copula would assign nominative case marking).[38]

The semantics given for the relative pronoun in free relatives paves the way for such reanalysis. The only part that should be discarded is the part responsible for the long-distance dependency. Now that there is no relativization, the relative pronoun amounts to a mere definite operator:

(2.54) $[\![\text{ya-}]\!]_{Article}$: $\lambda P \iota x.[P(x)]$

Crucially, note that case attraction is just a description of what has happened here, not its explanation. There should be reasonable semantic and syntactic grounds for the case attraction to happen. According to my proposal, when the Old Avestan speaker uttered the sentences in (2.51) and (2.52), she did not have a long distance dependency in mind, otherwise she was not licensed to implement case attraction.

Interestingly, such use of the relative pronoun still exists in Northern Kurdish, a Modern Western Iranian language, which scholars have called ANAPHORIC EZAFE (Haig 2011b, Gündoğdu 2023):

(2.55) a. ez [**ya** bi rû] di-xwaz-im
1SG.DIR EZ.FEM P cover PROG-want.PRES-1SG
'I want the one with the hard cover.' (Gündoğdu 2023, p. 13)

b. [**yē** dwē] ...[**yē** sēyē]
EZ.M second ... EZ.M third
'The second one ... the third one' (Haig 2011b, p. 368)

The use of the anaphoric ezafe, as reported in the literature, appears to match precisely the article-like construction in (2.51) in involving substantivization. Referring to this construction as ezafe, therefore, seems to be a misnomer, as it is (even synchronically) distinct

[38] Diachronically, this reanalysis need not involve the immediate replacement of one grammar by another. The crucial intermediate stage is one of structural ambiguity: once the copula is no longer overt, the same string can in principle be analysed in two ways. The two analyses may therefore coexist for some period, with one analysis becoming increasingly conventionalized over time. The pathways described should thus be understood as a direction of reanalysis rather than as three categorically successive stages.

from the nominal linker use of the same morpheme in Northern Kurdish.

One question that might arise here is if there is such a definite determiner in the language, why is its use so limited? In other words, if a canonically article-less language already has strategies to shift the type of bare nouns to an $\langle e, \langle e, t\rangle\rangle$ type expression (for indefinites) or an $e$ type expression (for definites) covertly, why would it have a covert definite determiner that is rarely used? Note that in Old Avestan, there are no canonical articles: bare nouns can be both be interpreted as a definite description or an indefinite one.

While in the absence of extensive data it is difficult to answer this question, the two cases in (2.51) and (2.52) seem to involve some sort of discourse prominence and substantivization. In the case of (2.51), the text introduces two spirits as primordial beings. As a result, having introduced one member of this set (*spaniiā̊* 'the more prosperous'), the other member of the set, which is what the article-like *yəm aŋrəm* 'the harmful one' denotes, would be in contrastive focus. In (2.52), *yəm mazdąm ahurəm* 'the wise Ahura' is the name of the (perhaps sole) deity in the liturgy. It might not be a coincidence that later on, in later Young Avestan, Old Persian and in Zoroastrian texts in Middle Iranian languages, the name of the deity becomes the fossilized *Ahura Mazdā*/*Auramazdā*/*Ohrmazd* (respectively): example (2.52) might show that from early on, the modifier *mazdā-* 'wise' in combination with the noun *ahura-* 'Ahura, lord' was a particularly salient description of the deity to the extent that it became substantivized. It seems that the denotation of the article in (2.54) should be enriched with some presupposition in a way that it explains why not all definite nouns can appear with *ya-*. The nature of this presupposition, however, cannot be identified with the little data we have in hand.[39]

[39]It is possible to interpret (2.52) as an appositive-noun structure. In this cases, both uses of an article-like construction would be substantivization. However, this analysis raises two issues. First, I have not seen any appositives in the corpus preceding the noun. Second, we will see in Chapter 4 that the same article-like use again occurs with nouns.

#### 2.3.3.3 Evidence from Georgian

A cross-linguistic motivation for assuming that the source of definiteness is the relative pronoun comes from Georgian. As described in Bhatt and Nash 2023, Georgian has a type of relative clauses that are introduced by a relativizer *rom* which is not a relative pronoun. *Rom*-relatives contain an internal head, and can either be in argument position, or part of a correlative construction as hanging topics with resumption. Therefore, they are very similar to Old Avestan free relatives (and other free relatives across languages that have an internal head) modulo having a relative pronoun.

Interestingly, when a *rom*-based relative clause is part of a correlative construction, it necessarily has a definite interpretation:

(2.56) [[p'oet'-ma **rom** (kalak-i) da=atvalier-a] [**is** lamazi kalak-i
poet.ERG COMP city.NOM PREV=visit-AOR.3SG DEM beautiful city.NOM
m-iq'var-s]]
1OBJ-love-PRES.3SG
'I love the beautiful city that the poet visited.' (Bhatt and Nash 2023, p. 507)

Yet, such constraint does not exist when the relative clause is in argument position. In these cases definiteness is not required:

(2.57) da=v-p'at'iž-e [nino-s **rom** gogo mo=sc'on-s]
PREV=1SUBJ-invite-AOR.1SG Nino.DAT COMP girl-NOM PREV=like-PRES.3SG
'I invited a girl that Nino likes.' (Bhatt and Nash 2023, p. 541)

According to Bhatt and Nash, these relative clauses receive a definite interpretation in correlative constructions because they are taken as arguments of the demonstrative pronoun resuming them, and the demonstrative pronoun's denotation contains an iota-operator (à la Elbourne 2008). In argument position on the other hand, these relative clauses act as bare NPs which, in Georgian, can be bound by various silent Ds and receive various interpretations.

I take this to be an interesting parallel with the Old Avestan cases, suggesting that the

requirement of definiteness originates in the presence of a relative pronoun. When no relative pronoun is present (as in Georgian) definiteness must be triggered by some other element, such as the demonstrative in a correlative construction. By contrast, when a relative pronoun is present, as in free relatives cross-linguistically (including Old Avestan), a definite interpretation arises independently of other definiteness-triggering elements; free relatives, unlike Georgian *rom*-relatives, do not need to occur in a correlative construction to be interpreted as definite. Georgian *rom*-relatives differ from free relatives in two respects: they are headed by a relativizer rather than a relative pronoun, and they do not yield a definite interpretation in argument position. These two properties must be related, and the most natural explanation is that the source of definiteness in free relatives lies in the relative pronoun itself.

## 2.4 Matching effects

In many languages, free relatives systematically display a pattern in which the case and/or category assigned by the matrix predicate matches the case and/or category assigned by the predicate of the relative clause. As a language without a widespread system of case marking, English free relatives show categorial matching, meaning that the category of the relative pronoun (assigned by the predicate of the relative clause) should match the category that the matrix clause selects for (examples are from van Riemsdijk 2006):

(2.58) a. I like [what you bought]. (DP)

b. *I like [with what you did it]. (DP vs. PP)
(cf. *I wonder with what you did it.*)

However, in languages such as German with case marking, matching is even more evident, as the case that the predicate of the matrix clause assigns to the free relative should match the case that the relative pronoun bears (here, by "case of the relative pronoun" the case assigned by the predicate of the relative clause is intended). In (2.59a) and (2.59c),

both matrix clause and relative clause require the same case. However, in (2.59b), the matrix clause requires an accusative object, but the relative clause receives dative case from the predicate clause. This case mismatch results in ungrammaticality:

(2.59) a. Amir vermisst [wen er möchte]
Amir misses REL.ACC he likes
'Amir misses whom he likes.'

b. * Amir vermisst [wem er das Geschenk gemacht hat]
Amir misses REL.DAT he the gift made has
Intended meaning: 'Amir misses the person for whom he made the gift.'

c. Amir hilft [wem er das Geschenk gemacht hat]
Amir helped REL.DAT he the gift made has
'Amir helped the person for whom he made the gift.'

The empirical evidence for matching effects is overwhelming, therefore matching requirements are built into the architecture of many syntactic accounts of free relative. In fact, matching has arguably been the key attribute of free relatives in determining a suitable structure for them. On the other hand, if matching requirements are built into the syntax assigned to free relatives, then the prediction would be that matching should always be observed. Case mismatch, thus, would systematically be ruled out, and taken as performance errors. This is how the HEAD analysis and one version of the COMP analysis approach matching effects.

The HEAD analysis of free relatives captures matching in a straightforward fashion. If the head of the relative clause is the relative pronoun, then just like externally-headed relative clauses it would be the argument of the matrix clause and would receive case from it, resulting in case matching. Because of identity under CONTROLLED PRO DELETION, it will also satisfy the requirements of the relative clause's predicate. On the other hand, one version of the COMP analysis (Citko 2000, van Riemsdijk 2006) assumes that the *wh*-word is shared between the relative clause and the matrix clause, in that it is base-generated inside the relative clauses, moves to SPEC,CP, and satisfies the requirements of the predicate of

the matrix clause SPEC,CP. The sharedness necessitates matching.

The only type of syntactic analysis that allows for type mismatches is a version of COMP analysis where the head of the free relative is external but phonologically null (such as Grosu 1994, Himmelreich 2017). In this case, case matching between the covert head and relative pronoun is not required, as is the case in externally-headed relative clauses – the covert head takes its case from the predicate of the matrix clause, the relative pronoun from the predicate of the relative clause.

### 2.4.1 Case mismatch

Case mismatch in free relatives, broadly defined, is when the case that the predicate of the matrix clause assigns differs from that which the predicate of the relative clause assigns. In a sense, some realizations of case mismatch are more tolerated than the others, i.e. there are contexts and strategies in which there is a tendency for case mismatch to occur (van Riemsdijk 2021). One such context is **case syncretism**: if the cases assigned differ, but happen to be morpho-phnologically similar, the mismatch would be tolerated in many languages (see Groos and van Riemsdijk 1981 for discussions). For instance, in (2.60), the mismatch between accusative and nominative cases is tolerated, due to the fact that *was* 'what' is syncretic for nominative and accusative:

(2.60) [Was du gekauft$_{acc}$ hast] ist$_{nom}$ geschmacklos
REL.NEUT you bought have is tasteless
'What you have bought is tasteless.'

Another strategy to resolve case mismatch is **case superimposition**, where some case hierarchy defines which case is to be realized. In German, for instance, when case mismatch takes place, the case of the relative pronoun can be realized if it is more marked than the case of the matrix clause (Pittner 1991, Vogel 2011). This markedness is determined by the following case hierarchy: nominative $<$ accusative $<$ dative. In (2.61), the

case mismatch is tolerated because the dative case assigned by the relative clause is more marked than the case of the matrix clause, accusative.

(2.61) Sie lädt ein$_{acc}$ [wem sie zu Dank verpflichtet$_{dat}$ ist]
she invites REL.DAT she to thank obliged is
'She invites who she is obliged to thank.'

A third strategy is **case attraction**. When case attraction takes place, one of the predicates assigning case wins over the other in a systematic fashion; while by definition this can happen in both directions, in the context of free relatives, what is called case attraction is usually when the predicate of the matrix clause attracts the case of the relative pronoun. Ancient Greek is a language where mismatch is resolved via case attraction (see Kakarikos 2014, Probert 2015 inter alia). In (2.62), the free relative is the argument of a preposition assigning dative case. This is the case realized on the relative pronoun, despite the fact that the relative clause assigns accusative case:

(2.62) Deitai sou touton ekpiein sun$_{dat}$ [hois malista phileis$_{acc}$]
request.3SG you this to-drink with REL.DAT best love.2SG
'He requests you to drink this with those who you love best.'

In what follows, I use the term "case attraction" only for construction where the case assigned by the matrix clause is realized.

### 2.4.2 Matching in Old Avestan free relatives

Of 61 free relatives without an overt internal head in Old Avestan that are not in a correlative construction (since in those cases case matching is not an issue), only 15 cases show strict case matching, where the free relative shows the same case as assigned by the predicate of the matrix clause. The case in most of these instances is nominative; otherwise, there are only three instances in accusative and one in dative. In 9 instances, the mismatch is resolved via case syncretism. As for (overtly) head-internal free relatives

(11 cases), which are less common, the majority of cases (at least 6) show case matching, and at least one example involves resolution via syncretism. In what follows, I will first discuss resolution via case syncretism (2.4.2.1), then instances of case mismatch (2.4.2.2), and finally, in 2.4.2.3 evaluate my proposed analysis of free relatives with regard to these data.

#### 2.4.2.1 Case syncretism

As defined above, if the matrix clause's predicate and relative clause's predicate assign different cases which are formally identical, the formal identity between the two cases resolves such case mismatches. Such cases are common in Old Avestan, but restricted. All cases of case matching via syncretism are between accusative and nominative forms of neuters. In (2.63), the matrix clause assigns accusative case, and the predicate clause assigns nominative. As the free relative refers to an inanimate entity, the relative pronoun would be in neuter. As neuter case is synrectic for nominative and accusative, case mismatch is resolved. Example (2.64) involves an overt internal head, but it is a neuter noun and therefore syncretic for accusative and nominative. This time, the former is assigned by the relative clause, and the latter is assigned by the matrix clause.[40]

(2.63) aṣ̌āunē cōiš [yā zī cī=cā vahištā]
truthful.DAT accord.AOR.2SG REL.NOM/ACC.NT PRTCL INTER=CONJ best.NOM
'Thou accordest to the truthful one whatever is the best thing.' (Y 37.1)[41]

(2.64) rāitī tōi xrapaitī ... [hiiaṯ̰
generosity.INST you.GEN take place.PRES.SBJV.3SG ... REL.NOM/ACC.NT
mīždəm mauuaiϑīm fradadāϑā]
prize.ACC.NT like me.DAT allocate.PERF.3SG

[40]Note that the relative pronoun is glossed as NOM/ACC for the sake of clarifying the point. A more accurate gloss would be the one assigned by the relative clause, especially for the example with an overt internal head. This way, the constituency between the relative pronoun and the head noun would be captured.

[41]This is an example of a generalizing relative clause in Old Avestan, similar to *-ever* free relatives in English. The core structure is still a free relative. See Chapter 3 for a discussion of this and similar examples. The gloss INTER for *cī* is tentative and used only because *cī-* is interrogative-based. We will revise this gloss in Chapter 3.

'Through your generosity there shall take shape ... which prize you have allocated to someone like me.' (Y 40.1)

However, neuter nominative/accusative forms are not the only possible instances of syncretism in Old Avestan; there are other possible pairs with identical form (e.g. instrumental singular masculine and nominative/accusative plural neuter). Yet, we do not see free relatives where case mismatch is resolved via this other types of syncretism. While this might be only accidental, there are other possible explanation. One is that syncretism on Old Avestan requires minimal difference in function: between a nominative neuter form and an accusative neuter one (both in the case of singulars and plurals), the only difference is case. Gender and number always have to be similar. However, all other possible pairs of forms with formal identity involve differences in gender and/or number as well. This can be a reason why they are not allowed. Another explanation is that the difference between nominative and accusative cases in neuter forms has disappeared in this stage of the language, which would mean that these examples are not actually cases of syncretism, but just case matching. However, the fact that nominative vs. accusative distinction still exists across all other genders and numbers undermines this hypothesis.

#### 2.4.2.2 Case mismatch

In Old Avestan, free relatives frequently exhibit case mismatches. Yet, these occurrences are subject to a specific constraint: the free relative always retains its integrity, meaning that the only case marking on the relative pronoun and the internal head (if it is overt) is the case that the predicate of the relative clause assigns. In other words, when the free relative's internal case is different from the case that the matrix clause assigns, the former case is realized. For instance, the free relative in (2.65) is the oblique object of *dā-* 'to give', but the relative pronoun retains the nominative case assigned by the relative clause. The same phenomenon can be seen in (2.66), with the difference that the two free relatives are accusative objects of the matrix clause, yet bear nominative case marking.

(2.65) dadāṯ ahurō ... vaŋhāuš vazduuarə manaŋhō [yə
grant.PRES.3SG Ahura.NOM ... good.GEN fat.ACC thought.GEN REL.NOM
hōi mainiiū šiiaoϑanāišcā uruuaϑō]
he.GEN spirit.INST action.INST ally.NOM
'The Ahura grants ... the fat of good thought (to him) who (is) his ally in spirit and actions.' (Y 31.21)

(2.66) [yə vahiiō vaŋhāuš dazdē] [yas=cā hōi vārāi
REL.NOM better.ACC good.GEN elect.PRES.3SG REL.NOM=CONJ DEM.GEN will.ACC
rādaṯ] ahurō xšaϑrā mazdå
heed.AOR.SBJV.3SG Ahura.NOM power.INST remember.PRES.3SG
'(He) who decides in favour of (what is) better than good, and who will heed His will, the Ahura remembers (him) with power.' (Y 51.6)

The only instances that seem like case attraction in free relatives are article-like free relatives discussed in §2.3.3.2, which are structurally reanalyzed as DPs.[42]

#### 2.4.2.3 Mismatch, syncretism, and the structure of free relatives

The presented data reveal that Old Avestan exhibits a unique pattern of case mismatch in free relatives, diverging from cross-linguistic norms. While mismatches are permitted to a certain degree, the material internal to the relative clause, i.e. the relative pronoun and the overt head noun, can never receive case from the matrix clause. Therefore, case superimposition and case attraction are not allowed in Old Avestan free relatives.

The structure proposed in §2.3.3 provides a straightforward explanation of the absence of case attraction and case superimposition. Since the relative pronoun and the overt head noun (if any) are base-generated in their original position within the relative clause, they receive case there. They are never directly accessed by the matrix clause, or shared with the matrix clause. Therefore, they will always maintain the case assigned by a predicate contained in the relative clause.

[42] As discussed earlier, case attraction also takes place in postnominal relative clauses, as in (2.53). However, it has been shown that in those cases the existence of an external head is crucial to case attraction.

Since my proposed analysis of free relatives does not have any built-in machinery to prevent mismatch, matching effects would follow the general mechanisms of case assignment within the language. This seems to be an acceptable result: for instance, Himmelreich (2017) has shown that tolerance of languages for case mismatch in free relatives is different. Polish only allows case mismatch if case syncretism resolves it, but German freely allows case mismatch as long as the relative pronoun bears the internal case of the free relative (similar to Old Avestan).[43]

While examining the exact mechanism of case assignment in Old Avestan is outside the scope of this work, I would like to entertain a hypothesis here about why case mismatch is sometimes allowed, as in (2.65) and (2.66). A closer look at these cases reveals an interesting tendency: 15 out of 18 instances are nominative free relatives in a non-nominative position. As an explanation for this tendency, I suggest that as nominative case is morphologically (and probably semantically) the least marked case, a phrase with nominative case marking on the surface is more likely (than a phrase with non-agreeing non-nominative case) to be a non-nominative argument of some predicate. Kornfilt and Preminger (2015) have argued that unmarked cases, in particular nominatives, are grammatical representations of the absence of case assignment. Under this view, if a free relative bears nominative case, no actual case assignment has taken place. This paves the way for a predicate (in this case, predicate of the matrix clause) to select this free relative as a non-nominative argument, as there is no robust contrast between the case assigned by the predicate matrix clause and the case assigned by the predicate of the relative clause.

As for case syncretism, an analysis which assumes there is a pronominal head to the relative clause or the *wh*-word is the head would struggle to capture this phenomenon, as the external head and the gap in the relative clause (in Spec,CP) are related via agreement, and agreement is sensitive to features rather than form (van Riemsdijk 2006). My

[43] Himmelreich (2017, ch. 5) also derives the case hierarchy effects in German (described in §2.4.1) from general principles of case assignment.

analysis of free relatives does not make any prediction with regard to case syncretism. I argue that this is not a shortcoming of my analysis: as mismatch resolution via syncretism is cross-linguistically attested in various unrelated syntactic constructions (e.g. definiteness agreement in Hungarian, and DAT-NOM agreement in Icelandic), Bjorkman (2021) has convincingly argued that it should be morphologically accounted for. The fact that my analysis remain silent about this strategy is, therefore, a feature – any morphological account would be compatible with this proposal.

## 2.5 Correlatives

As shown earlier, one syntactic configuration in which Old Avestan free relatives occur is within correlative constructions. In these cases, the free relative precedes the matrix clause, and a pronominal element (henceforth resumptive pronoun) appears in the matrix clause, referring back to it. Although in all Old Avestan correlatives the internal structure of the relative clause matches that of free relatives, this observation calls for further scrutiny within a broader cross-linguistic and theoretical context.

### 2.5.1 Approaches to correlatives

At first glance, the relative clause in a correlative construction has essentially the same internal configuration as a free relative. In a correlative construction, the relative clause is never a (superficially) externally-headed relative clause: the head noun is either inside the relative clause, or it does not appear at all. However, upon a closer look, because of the existence of a proform (and sometimes a noun accompanying it), a correlative construction could potentially be taken as an externally-headed relative clauses. Such an analysis of correlatives assumes that correlatives are simple relative clause modifiers of a noun phrase in the matrix clause, which are moved to the left periphery and adjoined to the matrix clause. The schema in (2.67) is an elementary sketch of this approach to

correlatives, abstracting over nuances about the nominal head.

(2.67) $[\textsc{rel}\ \ldots\ ]_{\text{CorrelCP}}\ [[\textsc{dem}\ [\sout{\textsc{rel}\ \ldots}\ ]_{\text{CP}}]_{\text{DP}}]_{\text{TP}}$

The syntactic approaches to correlatives that have tried to unify correlatives with headed relative clauses are not, however, favourable for the Old Avestan data.[44] As mentioned in §1.4.4, the fact that the resumptive pronoun in a correlative construction never appears alongside a nominal argues against a unified analysis of postnominal relatives and correlatives in Old Avestan. Postnominal relative clauses can be headed by a noun modified by a demonstrative pronoun. If correlatives were the same construction as externally headed relative clauses in Old Avestan, we would expect to find correlatives in which the matrix clause contains both a noun and a demonstrative. However, this is not attested; the matrix clause contains only a demonstrative.

The more mainstream approach to correlatives is that these relative clauses are fundamentally different from externally-headed relative clauses. According to Lipták (2009), there are three main categories within this approach. The HIGH ADJUNCTION & BINDING account (Srivastav 1991) argues that correlatives are base-generated and left-adjoined to the matrix clause IP. Consequently, the relative clause and the resumptive never form a constituent. Rather, the correlative clause (i.e. what the correlative clause refers to) acts as a generalized quantifier and binds the resumptive pronoun as a variable. Evidence for this account comes mainly from locality effects in island violations. The LOW ADJUNCTION & MOVEMENT account (Bhatt 2003) captures the locality effects by assuming that the relative clause is base-generated in adjunction to the resumptive pronoun and, then, is moved and adjoined to the IP. Additional arguments for this approach comes from reconstruction effects and the data for low adjunction in overt syntax in Hindi. The third account, called

[44] For an overview of this approach to correlatives, see Lipták 2009, pp. 13–15, who calls these the UNIFORMITY accounts. For a more recent analysis of correlatives from this approach, see Cinque 2010, 2020.

HIGH ADJUNCTION & CORRELATE-RAISING by Lipták, combines insights from the other two approaches: it assumes that the correlative clause is base-generated adjoined to the matrix clause, but explains locality effects via movement of the resumptive pronoun to the left periphery of the matrix clause (Izvorski 1996, Lipták 2012).

Semantic approaches to correlatives, on the other hand, are not too varied. This is mostly due to the fact that cross-linguistically, correlatives involve maximalization, similar to free relatives. For instance, Dayal (1996) adopts the analysis of Jacobson (1995) in giving a semantics for Hindi correlatives. Often, the correlative clause is taken to bind the resumptive pronoun in the matrix clause, which contains a variable. Differences in analyses are mostly in the details of how maximalization within the relative clause takes place (Grosu 2000), or the relationship between the relative clause and the resumptive pronoun (Grosu and Landman 1998, Belyaev and Haug 2014).

However, what is often overlooked in the literature on correlatives is their relationship to free relatives. The internal structure of argument-position free relatives and the relative clause in a correlative construction is similar in both syntax and semantics. Aside from proponents of the unified analysis of correlatives and headed relatives, most other approaches must still address the question of how correlatives relate to free relatives.

### 2.5.2 Correlatives versus free relatives

In the literature on correlatives, there is sometimes a discussion of *genuine* correlative constructions as opposed to HANGING FREE RELATIVES. Such a distinction is (to the best of my knowledge) first made by de Vries (2002), who argues that there exists a construction called hanging free relatives which only superficially resembles correlatives. He provides the following Dutch example:

(2.68) [wie$_i$ dit gedaan heeft] [die$_i$ krijgt straf]
REL this done has DEM gets punishment
'Who has done this, he gets the punishment.'

As Dutch also has free relatives in argument position, de Vries (2002) analyzes this construction as involving left-dislocation of a free relative clause with resumption. Therefore, he asserts that a string such as (2.69) does not necessarily represent correlativization, but can also represent left-dislocation with resumption.

(2.69) $[\textsc{rel} \ldots (N_x)\ldots]_{RC}\ [\textsc{dem}_x \ldots]_{Main}$

This distinction is based on an assumed functional difference: according to de Vries, the Dutch hanging free relative construction is nominal in nature, while correlative constructions are necessarily clausal. In other words, correlative clauses in a correlative constructions cannot have a nominal nature. If they do, they are not correlatives, but only left-dislocation with resumption, i.e. hanging free relatives. Belyaev and Haug (2020a) assume the same thing (their example is from German).

To distinguish hanging free relatives from correlatives (presumably in Dutch), de Vries suggests three criteria: **1.** in hanging free relatives, the demonstrative is always clause initial in the matrix clause, **2.** in headed hanging free relatives, only a generic interpretation is available (whereas correlatives allow for both definite and generic interpretations), and **3.** hanging free relatives cannot occur in a subordinate clause. The overarching problem with these criteria is that correlation is mistaken for causation. It is not clear how the difference between the nominal nature of the relative clause in hanging free relatives and the clausal nature of the relative clause in correlatives accounts for the distinctions between the two constructions. In other words, how does the fact that hanging free relatives are nominal, while correlatives are clausal, explain differences in the position of the demonstrative, their semantics, or the structure of subordination? These properties may co-occur in Dutch, but they cannot necessarily be used as diagnostic criteria in other languages.[45]

[45]This is not to say that correlatives and hanging/free relatives cannot be distinguished by independent diagnostics in particular languages. Romanian, for instance, has both *wh*-correlatives and *wh*-free relatives, which differ in their syntactic distribution and resumption strategies: correlatives are associated with a

Almost all those who have discussed this category have relied on de Vries's account, but his very reasoning for assuming such a construction seems to be methodologically flawed. First of all, note that he never mentions a *true* correlative clause in Dutch. Therefore, when he suggests that in normal correlative constructions the demonstrative can be *in situ* whereas this is not available in hanging free relatives, his point of reference is the general cross-linguistic correlative construction. However, it might be possible that the correlative construction in Dutch happens to be subject to a language-specific constraint that forbids an *in situ* demonstrative. The same criticism applies to the second test: when there is no *true* correlative in the language, the fact that the so-called hanging free relatives should primarily have a generic interpretation does not show that it differs from the correlative construction. In fact, Belyaev and Haug (2020a) show that interrogative-based correlatives have a strong tendency toward universal interpretations: a *wh*-based correlative always has a universal reading, although a definite reading may also be available. Thus, if Dutch has a genuine *wh*-based correlative construction, the availability of a generic or universal interpretation in the constructions discussed by de Vries does not distinguish them from correlatives. At most, the absence of a definite reading would be compatible with the typology of *wh*-correlatives rather than evidence against a correlative analysis. Therefore, the interpretation reported for Dutch is fully compatible with a *wh*-correlative analysis and cannot by itself serve as a diagnostic distinguishing hanging relatives from correlatives. The third test is rather ambiguously described: "a third difference with correlatives is that a hanging free relative is impossible in a subordinate clause (contrary to a normal free relative)"(p. 48). Described as such, it means that the difference is between hanging free relatives and normal free relatives, not the former and correlatives. In any case, as de Vries mentions no example of a *true* correlative construction in Dutch, this test again does not seem to work.

demonstrative in the matrix clause, whereas free relatives themselves occupy an argument or adjunct position; when dislocated, the latter pattern with dislocated nominals in using resumptive clitics. The two constructions also differ in the inventory of *wh*-elements they allow; see Caponigro and Fălăuș (2018, §3.6).

There is, however, some truth to the distinction that de Vries (2002) makes: while some languages have both correlatives and argument-position free relatives, some languages only have one. For instance, Hindi (Srivastav 1991, Bhatt 2003), Ossetic (Belyaev and Haug 2014), Polish (Citko 2009), and Tibetan (Cable 2009) are languages where correlatives are the main relativization strategy, but which do not have argument-position free relatives (while in English there are no correlatives, but free relatives are common). Moreover, in Hindi and Hittite correlatives can be multi-headed. A multi-headed correlative is where the relative clause contains two relative pronouns, and consequently the matrix clause contains two proforms resuming what each relative pronoun refers to, such as the Hindi example in (2.70):

(2.70) [jis-ne$_i$ jo$_j$ kar-na: cha:h-a]$_{i,j}$ [us-ne$_i$ vo$_j$ ki-ya:]
REL.ERG REL do-GER want-PFV DEM.ERG DEM do-PFV
'who wanted to do what, she/he did that.'

→ 'For $x, y$ s.t. $x$ wanted to do $y$, $x$ did $y$.' Hindi (Bhatt 2003, p. 492)

In case of multi-headed correlatives, the relative clause is evidently different from a free relative: no free relative in natural language can introduce two discourse referents (i.e. include two relative pronouns). However, we should also consider the fact that very few languages outside the Indo-Aryan language family have multi-headed correlatives. In most languages with a correlativization strategy, multi-headed correlatives are not found (see, however, Caponigro and Fălăuș 2018 for an exception in Romanian).[46]

Moreover, the distinction that de Vries (2002) makes relies on the difference between the CP-nature of correlatives and the DP-nature of free relatives. Depending on what we

[46]One reason for this distribution might be that multi-headed correlatives produce cross-serial dependencies in syntax: in (2.70), if we draw lines connecting co-indexed expressions, the two lines connecting *i*-indexed and *j*-indexed expressions cross one-another. Cross-serial dependencies are computationally complex. Context-free grammars (in the sense of the Chomsky Hierarchy of formal languages) cannot generate languages with cross-serial dependencies, while computationally more complex formal grammars such as (mildly) context-sensitive ones can. In fact, the evidence that natural language syntax should have more computational power than context-free grammars comes from empirical occurrences of cross-serial dependencies in Swiss German, Dutch, Bulgarian, etc. (Bresnan et al. 1982, Shieber 1985, Stabler 2004). Nonetheless, constructions with cross-serial dependencies are exceedingly rare in natural language.

mean by categories and labels, these terminologies might imply functional differences. For instance, in Polish, the predictions that such distinction makes are in fact borne out; Citko (2009) has shown that, with respect to Left Branch Extraction and reconstruction effects, Polish free relatives pattern with headed relative clauses while correlatives pattern with *wh*-questions. But when considering this case study, we should remember that Polish is a language with multi-headed correlatives. In case of languages with both free relatives and single-headed correlatives, these tests might yield a different result.

Another distinction made in the literature between free relatives and correlatives, brought to light by Demirok (2017), is that free relatives are extremely rare in *wh-in situ* languages, whereas correlatives are relatively common. Languages like Chinese, Japanese, or Turkish, which do not front *wh*-words in questions, typically either lack free relative clauses or have very constrained versions of them. Yet some of these languages do have a productive correlativization strategy. Demirok explains this distribution in Turkish by proposing a semantic typology distinguishing two kinds of *wh-in situ* languages: Type-1, characterized by covert *wh*-movement that creates predicate abstraction, thus enabling the formation of free relatives; and Type-2, involving genuinely *in situ* interrogative pronouns that denote alternatives and combine with the rest of the clause via Pointwise Functional Application, thereby precluding the formation of free relatives. Turkish is argued to be a Type-2 language, as evidenced by its lack of island-sensitivity and strong intervention effects. Consequently, Turkish does not produce genuine free relatives; instead, it has interrogative-based correlatives. These correlatives are analyzed as semantically similar to conditional or unconditional clauses, containing an operator that transforms the alternatives triggered by the interrogative into conjunctions of conditional statements.

As we have seen, while there are arguments against unifying correlatives and free relatives, there is a need for a cross-linguistic and systematic study of how these two constructions differ. More importantly, without such a study, it remains unclear why they should exhibit such similar internal syntax and semantics if they are indeed entirely separate

constructions, particularly in languages that employ both relativization strategies.

Finally, it is worth mentioning that in many languages, the relative pronoun in a correlative construction is based on a demonstrative pronoun, rather than an interrogative-based one. Belyaev and Haug (2020b) name the following languages: Ancient Greek, Old Czech, Sanskrit, Hindi (Indo-European), Udihe (Tungusic), Ket (Yenisean), Kita, Mandinka, Bambara, Soninke, Vai, Supyire (Niger-Congo), Once we extend typology of free relatives to include non-interrogative-based free relatives (as argued in §2.1), correlatives and free relatives seem to share yet another property: the range of possible morphological make-ups of the relative pronoun.

### 2.5.3 Old Avestan correlatives

Old Avestan correlatives do not show much variation. With approximately 23 instances in the Gāthās and 6 in the Yasna Haptaŋhāiti, we are, empirically speaking, not in a position to determine which theoretical approach to correlatives best captures the Old Avestan data. Nonetheless, Old Avestan correlatives appear to involve free relatives, regardless of how these are integrated into the matrix clause. Most notably, Old Avestan lacks multi-headed correlatives. In the presence of multi-headed correlatives, one would need strong justification to unify single-headed correlatives with free relatives. This hurdle does not arise in Old Avestan. Moreover, we have already seen in (2.17), repeated in (2.71), that Old Avestan correlatives can involve stacking:

(2.71) [[**yə** vā mōi nā gənā vā mazdā ahurā
REL.NOM DISJ me.DAT man.NOM woman.NOM DISJ wise.VOC Ahura.VOC
dāiiāṯ] … [aṣīm … **yąs=cā** haxšāi
give.AOR.OPT.3SG … reward.ACC … REL.NOM.PL=CONJ spur.AOR.SBJV.1SG
xšmāuuatąm vahmāi.ā frō] **[tāiš** vīspāiš
like you.GEN laudation.DAT PREV DEM.INST.PL all.DEM.INST.PL
cinnuatō frā pərətūm]]
account keeper.GEN cross.PRES.SBJV.1SG bridge.ACC

'Which man or woman, O Wise Ahura will grant me ... reward ... and (those) whom I shall have spurred on the laudation of those such as you, with all those I shall cross over the account-keeper's bridge.'(Y 46.10)

Stacking in correlatives is often assumed to be impossible (Srivastav 1991, Grosu and Landman 1998), and the only reported case seems to be from Sanskrit (Davison 2009). Moreover, in yet another (more complex) instance of stacking, the resumptive pronoun does not seem to always be fully coreferential with the relative clauses:

(2.72) [[**yā šiiaoϑanā yā vacaŋhā yā yasnā**
REL.INST action.INST REL.INST word.INST REL.INST worship.INST
amərətatātəm aṣəm=cā taibiiō dåŋhā mazdā
immortality.ACC truth.ACC=CONJ you.DAT give.AOR.2SG wise.VOC
xšaϑrəm=cā hauruuatātō] [**aēšąm** tōi ahurā əhmā
power.ACC=CONJ integrity.GEN DEM.GEN.PL you.DAT Ahura.VOC us.INST
pourutəmāiš dastē]]
numerous.INST.PL give.PRES.3SG
'Through which action, the word, the worship Thou takes for Thyself immortality and truth and power of integrity O Wise One, of these is offered to Thee, O Ahura, by us in greatest number.' (Y 34.1)

The relative clauses in (2.72) appear to involve ellipsis of the verb phrase. More interestingly, the resumptive pronoun is a plural partitive genitive. This suggests that the relationship between the relative clauses and the pronoun cannot be one of straightforward variable binding. Instead, the interpretation must involve a looser form of co-referentiality, possibly via discourse or pragmatic mechanisms.

It is also worth mentioning that stacking of relative clauses also exists in Ossetic (Belyaev and Haug 2014), which is a Modern Eastern Iranian language but not a direct descendant of Avestan. Moreover, Ossetic correlatives can involve BRIDGING or indirect coreferentiality, where what the relative clause refers to is not directly coreferent with what the demonstrative resumptive (which is followed by a noun) refers to. Indirect coreferentiality is very similar to partial coreferentiality in Old Avestan in terms of the absence of a

full anaphoric link between the correlative clause and the resumptive. Example (2.73) is an example of stacking, and example (2.74) shows indirect coreferentiality in correlatives (examples are from Belyaev and Haug 2020a):

(2.73) [sard-ɜj sə konflict-tɜ$_{\text{i}}$ išt-a] [sɜ χarakter-tɜ$_{\text{j}}$ ɜvdəšt-a]
life-ABL what conflict-PL take-PST.3SG what character-PL demonstrate-PST-3SG
wədon$_{\text{i+j}}$ wəd-əštə kadɜʒ-ə ɜrmɜg
those be-PST.3PL legend-GEN material
'What conflicts he took from life, what characters he demonstrated, they were legendary material.'

(2.74) [adɜjmag χ$^{\text{w}}$ažd ɜr sə vžag-əl$_{\text{i}}$ zur-a] wə-sə
person better what language-SUPER speak-SBJV.3SG that-ATTR
adɜməχat:-ɜj$_{\text{j}\sim\text{i}}$ u
nation-ABL be-PRES.3SG
'A person belongs to the nation whose language s/he speaks better.'
(lit. 'What language a person speaks better, from that nation he is.')

While Ossetic does not have free relatives in argument position, the situation in Ossetic reflects that of Hindi: Sanskrit has both free relatives and correlatives (Lowe et al. 2025), while Hindi only has correlatives. Therefore, I do not interpret the Ossetic evidence as argument against assuming that Old Avestan correlatives, similar to Ossetic correlatives, do not involve free relatives. Rather, I infer that the unattested ancestor of Ossetic (a sister language to Avestan) also had the same patterns as Avestan, with only correlativization remaining in the current stage of the language.

All in all, if the attested instances of correlatives are a reliable reflection of how such constructions were formed in the language, what we observe in Old Avestan is essentially free relatives that are left-dislocated and resumed via discourse anaphora. Analyzing these correlatives as free relatives accounts for both the possibility of stacking and the partial coreferentiality observed in the data. What this assumption implies for the broader typology of correlatives and their relationship to free relatives is more complex. Cross-linguistically, correlatives do not seem to form a uniform class: in some languages, free

relatives and correlatives are fundamentally distinct constructions, despite surface-level similarities; similarities that themselves demand explanation. In other languages, the two may share the same underlying structure.

Crucially, this question cannot be answered without first clarifying what we mean by correlatives. If surface-level syntax and semantics are the defining criteria, then most of what the literature refers to as correlatives (perhaps modulo multi-headed correlatives) are indeed quite similar to free relatives, at least from a cross-linguistic perspective. But at a deeper structural level, the degree to which the relative clause is integrated with the matrix clause varies: in some languages, correlatives are tightly integrated syntactically (giving rise to locality effects), while in others they function more as discourse-level phenomena. Until we achieve a more fine-grained understanding of whether correlatives themselves form a homogeneous class, we cannot resolve the question of how they relate to free relatives.

## 2.6 Conclusion

The aim of this chapter was, for the most part, showing that insights from typology and theoretical linguistics can provide us with better grammars for ancient languages, and in return they will be enriched by the data from these languages. The Old Avestan data, together with the comparative evidence discussed in this thesis, motivate a structural definition under which headless relative clauses introduced by non-interrogative relative pronouns belong to the same broader category when they have the distribution and interpretation characteristic of free relatives. This separates the structural notion of free relativization from the morphological source of the relativizer and extends the empirical domain of the category beyond the *wh*-based constructions that dominate the existing literature.

As free relatives almost always have a maximalizing semantics, the interpretation of

these relative clauses in Old Avestan was also explored, leading to the conclusion that Old Avestan free relatives also conform to this cross-linguistic generalization. Finally, it was demonstrated that because in the Old Avestan free relatives an overt internal head can be freely available, and they are headed by a non-interrogative-based relative pronoun, previous accounts of free relatives cannot well explain it. Therefore, a novel analysis of why maximalization only occurs in non-postnominal relative clauses was sketched with minimal recourse to stipulative measures. Such an analysis, which attributes the definite semantics of free relatives to the specific configuration of the relative pronoun, was formalized and motivated based on the existence of article-like free relatives in Old Avestan, as well as cross-linguistic evidence from Georgian. Matching effects and correlatives, two phenomena intertwined with free relatives, were also explored. Now, we can discuss another construction that is, cross-linguistically, close to free relatives: *-ever* free relatives and their counterparts in Old Avestan.

# Chapter 3

# Generalizing Relative Clauses

Many languages that have free relatives also have a corresponding construction equivalent to English *-ever* free relative clauses:

(3.1) The boss promoted [whoever he wanted].

Such constructions also exist in Old Avestan, formed by having a generalizing expression,[1] based upon the interrogative pronoun, in the relative clause. However, unlike the cross-linguistic tendency, in Old Avestan this construction is not limited to free relatives: externally-headed relative clauses can also occur with that morpheme:

(3.2) [**yōi** mōi ahmāi səraošəm dąn **caiias=cā**]
REL.NOM.PL me.DAT DEM.DAT obedience.ACC give.AOR.SBJV.3PL *ci*.NOM.PL=CONJ
upā.jimən hauruuātā amərətātā
attain.AOR.SBJV.3PL integrity.ACC immortality.ACC
'Whosoever will give me obedience to it here will attain integrity and immortality.' (Y 45.5)[2]

[1] The term 'generalizing expression' is used in an athoeretic sense here and does not denote universality or genericity.

[2] We gloss *ci-* in these examples as *ci-* to remain agnostic about its semantic contribution. As will be discussed in §3.2.3.1, it is derived from the interrogative root, but is a different stem than the interrogative pronoun *ka-*.

(3.3) aṯ hōi vohū səraošō jaṇtū manaŋhā
PRTCL DEM.DAT good.INST obedience.NOM come.AOR.IMPER.3SG thought.INST
mazdā [**ahmāi** [**yahmāi** vašī **kahmāi=cīṯ**]]
wise.VOC DEM.DAT REL.DAT wish.PRES.2SG INTERR.DAT=PRTCL
'Let obedience come to him through good thought, O Wise One, to him, to whomsoever Thou wishest.' (Y 44.16)

This chapter aims to understand the semantic contribution of these expressions to the relative clause. Given the extremely limited data – only six examples of this construction – it is not possible to offer a fully developed analysis. Instead, the goal is to provide an underspecified semantic foundation for these forms, one that remains flexible enough to be integrated into different theoretical accounts of generalizing relative clauses.

We begin in §3.1.1 by reviewing several existing compositional accounts of generalizing relative clauses. In §3.2, we turn to the Old Avestan data, examining both the generalizing relative clauses and the occurrences of the generalizing expressions outside of relative clause contexts. Finally, in §3.3, we take the first steps toward an analysis by identifying the semantic contribution of the generalizing expressions.

Throughout this chapter, I use the term *generalizing relative clauses* (mostly to refer to the Old Avestan cases) rather than the more familiar *-ever* free relatives, in order to emphasize that Hindi correlatives and Old Avestan postnominal generalizing relative clauses also fall under this broader category.

## 3.1 Generalizing relative clauses: an overview

The literature on the semantics of *-ever* free relatives (henceforth EFRs), the most studied case of generalizing relative clauses, has mostly been concerned with capturing the two different readings that these constructions cross-linguistically have. These readings are often called the *ignorance* and the *indifference* readings (adopted from von Fintel 2000). With an *ignorance* reading, there is an inference that the speaker does not know what the

free relative refers to:

(3.4) Whichever movie is playing at Phoenix Picturehouse (#namely Blade Runner) is very popular.

Essentially, in the EFR in (3.4) with an *ignorance* reading, there is a unique movie presupposed that is being played at the Phoenix Picturehouse, but the sentence implies that the speaker does not know its identity. This implication causes *namely* to be infelicitous in these EFRs.

The other prominent reading of an EFR is the *indifference* reading (also called the *free choice reading*), where the uniqueness requirement of the EFR no longer holds.

(3.5) Whichever movie plays at Phoenix Picturehouse is very popular.

In (3.5), the speaker does not care about the identity of the movie that plays – the implication is that as long as a movie plays at Phoenix Picturehouse, it will be popular. The *indifference* reading of EFRs is the result of certain properties of tense and aspect which give rise to a generic interpretation.

A related major debate in the literature on EFRs is whether they are, at their core, definite or universal, paralleling the same discussion on standard free relatives. As discussed in the previous chapter, free relatives are known to have a definite interpretation. However, this is not always the case with EFRs, despite the fact that they are based upon a free relative: with the *indifference* reading, in particular, EFRs seem to have a rather universal reading. One view in the literature is that EFRs are not definite descriptions: this view has been supported by empirical observations such as the licensing of polarity items, pseudocleft compatibility, and interactions with adverbial quantification (Iatridou and Varlokosta 1998, Tredinnick 2005). In particular, the inability of EFRs to appear in specificational pseudoclefts has been taken to suggest that they are not of type $e$, but rather generalized quantifiers. Dayal (1997), however, has shown that the readings in question arise due to

the interplay of the relative pronoun, the generalizing expression (in this case, *ever*), and the tense and aspect properties of the verb. Moreover, it is essential to emphasize that, descriptively, EFRs do have definite readings: the *indifference* reading entails uniqueness. Thus, any account that treats EFRs as primarily universal and secondarily definite – while standard free relatives are primarily definite – must account for this asymmetry.

The issue is also more complicated when we take other languages into account. Caponigro and Fălăuș (2018) argue that the interpretation of EFRs depends not simply on the presence of variation, but on the nature of that variation and on the epistemic basis for it, drawing on comparative data from English, Italian, and Romanian. Šimík (2020) also mentions that many accounts of EFRs have been developed for English, which has both definite-like and universal-like EFRs. Yet, in some languages the only possible reading is a universal-like reading:

(3.6) a. # [Opjadhipote jineka ine i arxisinadaktria aftou to
which:EVER woman be.3SG the editor this.GEN the.GEN
periodikou] pire ena vravio xthes vradi
magazine.GEN got.3SG a prize last night
Intended reading: 'Whichever woman [who I don't know] is the editor of this magazine got a prize last night.'

b. [Opjadhipote jineka ine i arxisinadaktria aftou to
which:EVER woman be.3SG the editor this.GEN the.GEN
periodikou] perni sinithos pola vravio
magazine.GEN get.3SG usually many prizes
'Whichever woman [=every woman] is the editor of this magazine usually gets a lot of prizes.' Greek (Cheng and Giannakidou 2006, 166–167)[3]

As we see in (3.6), in Greek, only an *indifference* reading (which amounts to a universal interpretation) is possible. Such data also exist in other languages such as Czech, Hungarian, Italian, etc.[4] However, Šimík mentions that despite this evidence, a definiteness-based

[3]Originally, *Opjadhipote* has been glossed as FCI for Free Choice Item. I have adopted the glossing by Šimík (2020).

[4]Based on this evidence, Šimík (2020) argues that theories of generalizing free relatives should not treat

semantics for EFRs still manages to capture the cross-linguistic properties of these relative clauses better than a universal-based one.

As we will see in our overview of the Old Avestan data, distinguishing between these two ranges of meaning in Old Avestan is not possible. This is because the standard diagnostics, such as interactions with quantifiers, pseudoclefts, and related constructions, require data that are simply not attested in the corpus. This does not mean that the interpretive distinction should be set aside entirely. Where the textual context permits, I consider whether one reading is more plausible than the other. The important result, however, is that in the absence of independent structural or distributional diagnostics, such contextual interpretation does not allow us to distinguish the two readings with confidence. I therefore do not build the formal analysis on this distinction. Instead, the focus will be on developing a compositional semantics for these relative clauses that both accounts for the attested data (as discussed later in the chapter) and remains sufficiently underspecified to avoid making incorrect predictions about data we lack.

### 3.1.1 Semantic contribution of the generalizing morpheme

The discussion of the semantics of EFRs is usually confined to the readings of these free relatives as a whole, where their compositional semantics is less discussed. In fact, Šimík points out that the *-ever* morpheme has typically been treated as syncategorematic or non-compositional in terms of its semantic contribution. However, two noteworthy exceptions are Dayal 1995 and Dayal 1997: the former discusses the equivalent of *ever* in Hindi correlatives, and the latter is concerned with the English *ever*. Her starting point, is however, a comparison with the English *any* and its semantics according to Kadmon and Landman (1990). As we will see later, this work is the basis of almost all scholarship that is relevant to this chapter. Therefore, I will first give an overview of Kadmon and Landman

the modal component (either *indifference* or *ignorance*) as an inherent property of this construction. This, as Šimík admits, goes against a large portion of the previous literature, and has its own limitations.

1990. We will then see how Dayal (1995, 1997) uses this account to explain the semantic contribution of the generalizing expression in Hindi and English relative clauses, and how von Fintel (2000) revises Dayal's account.

#### 3.1.1.1 Kadmon and Landman 1990: Free Choice *any*, polarity-sensitive *any*

In Kadmon and Landman 1990, the authors attempt to account for the dual use of *any*. In English, *any* has two uses. One use, as in (3.7a), is a NEGATIVE POLARITY ITEM: expressions that are only licensed under specific circumstances such as negation, polar questions, etc. (see Homer 2021 for an overview of Negative Polarity Items). For instance, the affirmative counterpart of (3.7a), as seen in (3.7b) is infelicitous in English. The other use of the English *any* is as a FREE CHOICE ITEM: Free Choice Items are expressions that convey universal quantification over a domain of alternatives within certain modal or nonveridical contexts (see Alonso-Ovalle and Menéndez-Benito 2021 for an overview of Free Choice Items). While they sometimes share licensing environments with Negative Polarity Items, their interpretation is distinctively different: Free Choice Items express a kind of generalized possibility across all relevant alternatives. In English, examples such as *anyone*, *whoever*, or *whatever* demonstrate this behaviour. In a sentence like (3.8), the Free Choice Item *any book* does not simply mean that some book can be taken; rather, it signals that each book in the relevant domain is a possible choice, yielding a universal-like interpretation under the scope of the modal *can*.

(3.7) a. I did not see any goats.

b. #I did see any goats.

(3.8) You can take any book.

Kadmon and Landman adopt the view that *any*, at its core, is an existential quantifier. Then, they argue that *any* has two properties, one semantic (WIDENING) and one functional (STRENGTHENING):

- WIDENING: In an NP of the form [any CN],[5] *any* widens the interpretation of the common noun phrase CN along a contextual dimension.
- STRENGTHENING: *Any* is licensed only if the widening that it induces creates a stronger statement
  i.e. only if the statement on the wide interpretation $\overset{entails}{\Longrightarrow}$ the statement on the narrow interpretation.

WIDENING is the semantic property that accounts for the generalized meaning of an expression accompanying *any*. In a sense, *any* reduces the tolerance for exception. To see how this works, let us discuss the examples in (3.9) (examples from Kadmon and Landman 1990, p. 230):

(3.9) a. Every match I strike lights.
b. Any match I strike lights.

Upon hearing (3.9a), Kadmon and Landman argue, it is typically understood that wet matches and used matches are excluded, as quantification is restricted to a domain of relevant contexts. However, (3.9b) can, more easily, include such matches too; this difference arises from the WIDENING effect of *any*.

STRENGTHENING, on the other hand, is the function of *any*: a statement with *any* entails the same statement without *any*, so the former is stronger than the latter. For instance, imagine a scenario where a neighbour asks me for baking potatoes. I can utter one of the sentences in (3.10):

(3.10) a. We don't have potatoes.
b. We don't have any potatoes.

While (3.10a) appears to be contextually restricted to the relevant potatoes (baking potatoes), (3.10b) indicates that the speaker has no potatoes at all, baking or any other kind.

[5] CN stands for common noun.

Therefore, (3.10b) entails (3.10a).

As we can see, STRENGTHENING is tied to the widening effects. If the WIDENING does not provide the necessary context for STRENGTHENING, *any* is infelicitous. One such context is affirmative sentences such as (3.11b), still within the context of when a neighbour asks for baking potatoes:

(3.11) a. We have potatoes.

b. #We have any potatoes.

Here, WIDENING would have a similar effect as it did for the negated example in (3.10b): the narrow interpretation without *any* (3.11a) is that we have baking potatoes, and the wide interpretation (3.11b) is that we have potatoes of some kind (baking or not). As such, (3.11b) does not entail (3.11a). Therefore, STRENGTHENING is not satisfied. This is the reason why *any* has made the sentence infelicitous in (3.11b).

The combination of WIDENING and STRENGTHENING accounts for the occurrence of *any* as a Negative Polarity Item licensed by negation, modals, and similar elements (which they discuss extensively in the paper). However, free choice *any* can appear outside the scope of a negative polarity licensor, suggesting that some other mechanism must be responsible for its licensing. Kadmon and Landman point out that a free choice [*any* CN] has a universal interpretation (as in (3.9b)). By comparing such interpretations to generics, they conclude that a free choice *any* is the result of interpreting [*any* CN] generically: the properties of generics provide the necessary STRENGTHENING, thus satisfying WIDENING and licensing *any*. In essence, they argue that the only difference between the polarity sensitive *any* and the free choice *any* is that the former is an indefinite while the latter is a generic indefinite. To see how this idea works, let us take a look at the generic statement in (3.12):

(3.12) An owl hunts mice.

Essentially, Kadmon and Landman argue that in a generic statement, we have a contextually-relevant set of properties that are in a sense *normal*: for instance a statement such as (3.12) presupposes the set of healthy owls. Moreover, Kadmon and Landman argue that generics have two properties: first, they are tolerant of exceptions; if a few owls in the world do not hunt mice, (3.12) would not be judged false. Second, they are modal and law-like; (3.12) entails that if you are an owl (and not an exception), you will hunt mice. These properties of generics make them universal-like.

As an existential in its core, the free choice *any* is essentially the *an* in (3.12), only with WIDENING and STRENGTHENING. In (3.13), for instance, what *any* does is that it extends the set of contextually relevant owls to sick and healthy owls.

(3.13) Any owl hunts mice.

Note that this WIDENING takes place along only one of the contextual dimensions of owls: now, the set of *normal* owls (as far as the generic statement is concerned), is the set of healthy and sick owls. It still tolerates exceptions, though under a different kind of contextual restriction.

As a result of this WIDENING, the narrow statement in (3.12) will be entailed by the widened one with *any* (3.13):

(3.14) **Wide**: Every sick or healthy owl that is *normal* hunts mice.
$\overset{entails}{\Longrightarrow}$ **Narrow**: Every healthy owl that is *normal* hunts mice.

As this entailment holds and STRENGTHENING can be satisfied, *any* is licensed.

#### 3.1.1.2 Dayal 1995: The Hindi *bhii*

In her discussion of Hindi correlatives, Dayal (1995) observes that *bhii* can contribute a domain-widening effect. In some cases, it indicates that the identity of the individual picked out by the relative clause is unknown or irrelevant; in others, it yields an interpre-

tation comparable to English *any*.

(3.15) a. [[jo bhii laRkii is patrikaa kii sampaadikaa hai] [usko inaam miltaa hai]]
whichever girl this magazine's editor is.EPIS her prize given is

'Whichever girl is the editor of this magazine, she gets prizes.'[6]

b. [[jo bhii laRkii is patrikaa kii sampaadikaa hotii hai] [usko inaam miltaa hai]]
whichever girl this magazine's editor is.HABIT her prize given is

'Any girl who is the editor of this magazine, she gets prizes.'[6]

Note that she does not analyze these uses as distinct ignorance and indifference readings as in the later terminology of the EFR literature. Nevertheless, the contrast she identifies closely anticipates that distinction: (3.15a) involves uncertainty or irrelevance concerning the identity of the referent, whereas (3.15b) has a general/universal interpretation. Dayal (1995, pp. 194–196) points out that examples in (3.15a) and (3.15b) differ only minimally: their only difference is in the verb form of the relative clause. The example with an *ignorance* reading (3.15a) has an epistemic copula, while the one with the *indifference* reading (3.15b) has a generic copula.

Dayal establishes that *bhii* is a Negative Polarity Item in Hindi, as it occurs in negative or modal context, but is ungrammatical otherwise:

(3.16) a. ramaa kisiiko bhii nahii jantii
Rama someone NPI NEG know

'Rama doesn't know anyone.'

b. * ramaa kisiiko bhii dekh rahii hai
Rama someone NPI is seeing

Intended meaning: 'Rama is seeing anyone.'

[6] In the glossing of these examples, EPIS stands for episodic and HABIT for habitual. This is my addition to the original example in Dayal 1995 to reflect the aspectual distinction of the copula.

In order to account for why a Negative Polarity Item such as *bhii* can give rise to generalizing interpretations in a correlative construction, Dayal adopts Kadmon and Landman (1990)'s account of English *any*, which can also occur both as a polarity sensitive item (3.7a), and a Free Choice Item (as in (3.8), having an *indifference* reading), as the latter mirrors the interpretation of a correlative with *bhii*. The core of Dayal's analysis is that *bhii* shares the same properties as English *any*, and its semantic contribution to correlatives should also be spelled out in terms of interactions between its WIDENING and STRENGTHENING properties. In her own words, *bhii* should involve "widening along a particular dimension and that this widening is licensed by strengthening" (p. 196).

To flesh out the semantic contribution of *bhii*, Dayal first compares the example in (3.15a) (which has an epistemic copula in the relative clause) with its *bhii*-less counterpart:

(3.17) [[jo laRkii is patrikaa kii sampaadikaa hai] [usko inaam miltaa hai]]
which girl this magazine's editor is her prize given is
'The girl who is the editor of this magazine, she gets the prize.'

The standard correlative in (3.17) refers to the unique editor of the magazine. However, such uniqueness can be interpreted in two different ways, as the speaker might not know the referent, but only the uniqueness of the referent. Therefore, in uttering (3.17), the speaker might use the correlative in a *referential* sense (=the actual referent is known) or an *attributive* one (=the actual referent is unknown, its uniqueness is known). Which reading applies depends on whether the speaker has a particular individual in mind – essentially, a *de re* vs. *de dicto* contrast. Dayal claims that a *bhii*-correlative differs from (3.17) in not allowing a referential reading. Therefore, it fulfils the criterion of WIDENING: the identity of what the relative clause refers to is now not presuppositionally restricted.

Furthermore, Dayal argues that such WIDENING also results in STRENGTHENING. This means that the *bhii*-correlatives in (3.15) should entail the *bhii*-less correlative in (3.17). Starting with the *ignorance* reading in (3.15a), Dayal shows that in (3.17), the attributive use entails the referential use, but the referential use does not entail the attributive use.

Then, as (3.15a) only has the attributive reading, Dayal concludes that it entails (3.17) which allows both readings. Therefore, it is strengthened compared to (3.17).

As for *bhii*-correlatives with an indifference reading such as (3.15b), Dayal points out that the attributive versus referential distinction is irrelevant, as we are dealing with a generic statement in which presuppositions about identity do not even come into play. However, Dayal posits that we should still be able to explain the semantics of *bhii* in terms of its WIDENING and STRENGTHENING properties.

To do so, Dayal argues that in the case of *indifference* correlatives, WIDENING takes place with respect to evaluation situations. She compares (3.15b) with (3.18), its *bhii*-less counterpart which has a generic copula in the relative clause.

(3.18) [[jo laRkii is patrikaa kii sampaadikaa hotii hai] [usko inaam miltaa hai]]
which girl this magazine's editor is her prize given is
'The girl who is the editor of this magazine, she gets prizes.'

A generic statement such as (3.18), according to Dayal, tolerates exceptions (we would judge (3.18) true even if the magazine has had, among others, one incompetent editor who did not win any prize). Adding *bhii* reduces this tolerance: (3.15b) would be judged false in case of any exceptions. Therefore, *bhii* widens the range of situations that count for evaluation. As including atypical situations entails typical ones, we can see that STRENGTHENING is also involved.

As mentioned above, this work is pioneering in considering the compositional semantics of a generalizing free relative based on its generalizing morpheme. However, it seems to have not influenced the literature on EFRs in English and other languages. I believe the reason why Dayal's discussion of the Hindi *bhii* has not been considered more widely in the discussions of EFRs is that in Hindi, as mentioned in §2.5, there are no free relatives in argument position and a free relative can only occur as part of a correlative construction. Therefore, these *bhii*-correlatives have not been considered on a par with EFRs. Yet, if we

put the matter of external syntax aside, the internal configuration of the relative clause in a Hindi correlative is exactly the same as the internal configuration of a free relative, and we have just seen that *bhii*-correlatives mirror EFRs in terms of their possible generalizing readings. I have argued in §2.5 that the internal structure of correlatives and free relatives are essentially the same in Old Avestan too. Therefore, Dayal's discussion of *bhii*-correlatives in Hindi is relevant to our discussion of EFRs. Moreover, it is Dayal herself who extends such a compositional analysis to English free relatives in her later work.

#### 3.1.1.3 Dayal 1997: The English *-ever* and EFRs

In 1997, Dayal revises her stance on Kadmon and Landman (1990)'s account of polarity and free choice licensing, and consequently her analysis of the Hindi *bhii* and English *-ever*. She first argues against treating EFRs as bona fide universal quantifiers. Then, she turns to the question of why the combination of *-ever* with free relatives (which are inherently definite) gives EFRs universal-like properties.

Central to Dayal's proposal is the claim that *ever* introduces a modal dimension. Specifically, *ever* triggers universal quantification over "i(dentity-)alternative" worlds: epistemically alternatives that differ only in the identity of the free relative's referent. This gives the free relative a kind of world-sensitive definiteness that captures both the referential and the attributive readings of an *-ever* free relative. Crucially, Dayal unifies free relatives and EFRs: they both have definite readings, and even the two readings of EFRs only obtain due to a contextual restriction imposed by the properties of tense, aspect, etc.: for example, in episodic contexts (e.g., *Whatever Mary is cooking smells good*), the FR picks out a unique individual whose identity is epistemically underspecified, yielding an *ignorance* reading. In generic or non-episodic contexts (e.g., *Whatever Mary cooks smells good*), the same mechanism yields an *indifference* reading due to quantification over situations. This unified treatment accounts for both interpretations without positing lexical ambiguity.

To see how the notion of i-alternatives work, let us consider example (3.19a). The uncertainty in the food that Mary is cooking is represented via the various alternatives.

(3.19) a. Whatever Mary is cooking is delicious.

- Alternatives:
- pasta
- curry
- lentil soup

b. Assertion: for all alternatives, the food cooked by Mary is delicious.

Essentially, *-ever* requires that the speaker has no belief about the identity of what the EFR denotes (for instance, what Mary is cooking) – if the speaker does, then uttering (3.19a) is infelicitous. The EFR asserts that in each of these epistemic alternative worlds (for instance, the world in which what Mary is cooking is pasta), the sentence without *-ever* is true.

To flesh this out, Dayal first gives the following formalization for *i*-alternative worlds that only differ in the denotation of the EFR, and are otherwise fully similar:

(3.20) a. A world $w' \in f(w)(s)$ is an i-alternative iff there exists some $w'' \in f(w)(s)$, such that $\iota x[\mathrm{P}(w')(x)] \neq \iota x[\mathrm{P}(w'')(x)]$

b. $f(w)(s) = \{w' : \forall p.[s \text{ believes } p(w) \rightarrow p(w')]\}$
for a world of evaluation $w$ and speaker $s$, $f(w)(s)$ is the set of worlds in which the speaker's beliefs about $w$ hold.

With this notion of i-alternatives, Dayal then gives the denotation in (3.21) for EFRs.

(3.21) $whatever_j[\![\mathrm{IP}_{\ldots t_j \ldots}]\!]$ denotes at $w =$
$\lambda Q\, \forall$i-alternatives $\in f(w)(s).\, [Q(i)\, (\iota x.[\mathrm{P}(i)(x)])]$
where P is the property derived by abstracting over $x_j$ in the IP denotation.

In (3.21), the universal quantification over worlds comes from *-ever*, and the definite semantics comes from the free relative without *-ever*. Essentially, *whatever* quantifies over speaker-belief worlds, and it picks out the unique individual that satisfies a certain property in each of those worlds, then checks whether some further condition $Q$ holds of that individual across all those worlds.[7]

#### 3.1.1.4 von Fintel 2000: More on English *-ever*

Building on Dayal 1997, von Fintel (2000) endorses the intuition that *-ever* contributes a meaning component that is absent in standard free relatives. He revises Dayal's proposal by proposing two different analyses for the *ignorance* and the *indifference* readings of EFRs. For his *ignorance* analysis, von Fintel alters Dayal's analysis in two ways: first, he does away with the intermediary notion of i-alternatives. Second, he provides data to show that EFRs do not have any epistemic assertion. In his analysis, von Fintel attributes the variability of the referent of the EFR to a presupposition, contributed by the meaning of *ever*:

(3.22) *whatever* $(w)(F)(P)(Q)$:

a. Presupposition: $\exists w', w'' \in F : \lambda x.\, P(w')(x) \neq \lambda x.\, P(w'')(x)$

b. Assertion: $Q(w)(\iota x.P(w)(x))$

The presupposition is relative to the modal base $F$, a set of epistemically accessible worlds. For the sentence in (3.19a), (3.22) denotes the following: a presupposition that among the worlds of the modal base, i.e. the speaker 's epistemic alternatives, there is variation with regard to what Mary is cooking, and an assertion that there is a unique thing that Mary is cooking. This analysis captures that the speaker does not know the identity of what Mary is cooking at a presuppositional level, but the assertion is no different from a standard, *ever*-less free relative.

[7] von Fintel (2000) later shows, however, that this account only captures the *ignorance* reading.

However, von Fintel (2000) shows that neither his analysis in (3.22) nor Dayal's (1997) analysis capture the indifference inference in the case of an *indifference* reading. To resolve this, he compares *indifference* readings of EFRs to conditionals:

(3.23) a. Joe grabbed whatever tool was handy.

b. Joe grabbed the tool that was handy, and if a different tool had been handy, Joe would have grabbed that.

The truth-conditional equivalence between (3.23a) and (3.23b), von Fintel argues, shows that EFRs with *indifference* readings have a conditional semantics. This is captured by a presupposition that a minimal change in what the EFR refers not does not make a difference in the truth of the sentence.

(3.24) *whatever* $(w)(F)(P)$:

a. Presupposition: $\forall w' \in \min_w . [F \cap (\lambda w' . \iota x . P(w')(x) \neq \iota x . P(w)(x))] : Q(w')(\iota x . P(w')(x)) = Q(w)(\iota x . P(w)(x))$

b. Assertion: $Q(w)(\iota x . P(w)(x))$

As in the case of the *ignorance* reading (3.22), the assertion is what a standard free relative without *ever* asserts. The presupposition is, however, different. We again have the modal base $F$, containing the worlds that are epistemically accessible to the speaker. The worlds are intersected with the set of worlds where the referent of the free relative differs from its referent in the actual world $w$. The resulting set is fed to the $min_w$ operator, which selects the minimally different worlds from the actual world $w$.[8] Then, the formula says that for all such worlds, the truth of the sentence is the same in each such world as it is in the actual world $w$. Based on this analysis, (3.23a) asserts that Joe grabbed a unique handy tool, but presupposes that in all possible worlds minimally different from the actual world where a different tool was handy, Joe grabs that tool if and only if in the

[8]The $min$ operator is independently motivated in the literature on conditionals, see Kratzer 1981, 1991.

actual world, he grabs a handy tool (if the assertion is evaluated true).

Then, von Fintel explores the possibility of unifying these two analyses within a broader framework where the variation in meaning arises from contextual shifts in the modal base (epistemic vs. counterfactual). However, this approach faces some empirical issues (with scope islands and presupposition projection behaviours), leaving von Fintel (2000) hesitant in arguing for a unified theory of *indifference* and *ignorance* readings.

### 3.1.2 Taking Stock

While the details and formal machinery of these three accounts differ, they share a core component: an alternative-based, modal analysis of the meaning of generalizing relative clauses. At heart, the variation among these proposals lies in how they formally capture the set of alternatives and the domain-widening effect characteristic of generalizing relatives, and in how these mechanisms are manipulated to derive their dual readings. At their core, however, all agree that the generalizing expression is responsible for generating certain alternatives that can widen the domain of what the free relative refers to. In what follows, we adopt the notion of alternatives as the foundation for analyzing the semantics of generalizing relative clauses, and aim to derive it compositionally from the meaning of generalizing expressions.

It is also worth mentioning that none of these accounts attempt to unify the use of the generalizing expressions (English *ever* and Hindi *bhii*) within relative clauses with their use outside these constructions. While Dayal (2019) later proposes a unified analysis of all uses of *bhii-*, I am not aware of a similar attempt for English *ever*. In what follows, I adopt a fully compositional approach and aim to unify the various uses of the Old Avestan generalizing expressions, to the extent permitted by the available data.

## 3.2 The Old Avestan data

In Old Avestan, only six examples of generalizing relative clauses are attested. However, we will see later in the chapter that additional data from the corpus enables a compositional account of their core generalizing interpretation, while setting aside finer-grained distinctions that cannot be pursued due to the limited data. Notably, the Old Avestan corpus also includes postnominal generalizing relative clauses, a construction that is of typological interest. Old Avestan employs two formally distinct strategies for forming generalizing relative clauses. In free relatives, the generalizing expression is formed with *ci-* and *-cā*, whereas postnominal relatives employ *ka-* and *-cīṭ*. The internal structure and historical status of these expressions will be discussed in §3.2.3. Although postnominal relatives are not the focus of this thesis, examining them contributes to a fuller understanding of the generalizing free relative constructions. I begin with the free relatives and turn to the postnominal cases thereafter.

### 3.2.1 Generalizing free relatives

In generalizing free relatives, a generalizing expression *ci- -cā* appears within the free relative, where *ci-* agrees with the relative pronoun. While *-cā* is undoubtedly the conjunction *and* marker in the language, *ci-* seems to have a more complex status which will be discussed in §3.2.3.1. Therefore, for now, I only gloss it as *ci.* There is no overt internal head for the free relative in any of the three examples of such construction.

(3.25) [**yōi** mōi ahmāi səraošəm dąn **caiias=cā**]
REL.NOM.PL me.DAT DEM.DAT obedience.ACC give.AOR.SBJV.3PL *ci*.NOM.PL=CONJ
upā.jimən hauruuātā amərətātā
attain.AOR.SBJV.3PL integrity.ACC immortality.ACC
'Whosoever will give me obedience to it here will attain integrity and immortality.' (Y 45.5)

This is a rather straightforward example to start with. The free relative, in nominative

and subject of the matrix clause, contains *caiias=cā* where *caiias*, the nominative plural form of *ci-* (when followed by an enclitic) agrees with the relative pronoun *yōi*. The reading here seems to be *indifference*, as the context seems to indicate that the free relative denotes the followers of the religion.[9]

(3.26) aṣāunē cōiš **[yā** zī **cī=cā**
truthful.DAT procure.AOR.2SG REL.NOM.PL.NT PRTCL *ci*.NOM.PL.NT=CONJ
vahištā]
best.PL.NT
'Thou accordest to the truthful one whatever are the best (things).' (Y 47.5)

Again, in (3.26) we have a free relative as the direct object of the verb *ciš-* 'to procure' (the free relative is internally nominative, with case syncretism between nominative and accusative in neuter resolving the case mismatch). The generalizing expression *cī=cā* appears within the free relative, with *cī* agreeing in case with the relative pronoun. Here, too, the inference seems to be *indifference*.[10]

(3.27) huuō mainiiūm zaraθuštrō vərəṇtē mazdā
DEM.NOM spirit.ACC Zarathuštra.NOM choose.PRES.3SG wise.VOC
[**yas**=tē **ciš=cā** spəṇištō]
REL.NOM=your.NOM *ci*.NOM=CONJ most prosperous.NOM
'This Zarathuštra chooses the spirit, whatever [spirit] is Thy most prosperous one, O Wise One.' (Y 43.16)

Example (3.27) is formally and interpretively the most challenging instance of generalizing relative clauses in Old Avestan. Formally, this example can also be taken to be a postnominal relative clause modifying *mainiiūm* – in this case, the translation would

[9] Tredinnick (2005) has convincingly argued that the universal reading of *-ever* free relatives actually arise from *indifference* readings of these constructions. Interestingly, Humbach and Faiss (2010, p. 129) have translated this example with a universal quantifier in parentheses: '(All those) who show me obedience to it.'

[10] Alternatively, we could treat the expression as accusative throughout, with *cī=cā* functioning as a determiner-like generalizing element modifying substantivized *vahištā* 'best (things)'. A similar analysis is possible for (3.27). As seen later, some translators have assumed such an analysis as well. However, I have not seen examples that are unambiguously determiner-like, so I will not entertain this possibility here. Still, the existence of article-like free relatives elsewhere in Old Avestan suggests that a comparable reanalysis of generalizing free relatives cannot be excluded.

not be very different ('the spirit whichsoever is the most prosperous one.'). This seems to be an attractive structural analysis of this example; however, (3.27) differs from all other instances of generalizing postnominal relative clauses in Old Avestan (as seen below) in the morphological makeup of its generalizing expression: (3.27) has a generalizing expression of the root *ci- -cā*, similar to other generalizing free relatives, while generalizing postnominal relative clauses contain a *ka- -cīt*-based form. Moreover, all other generalizing postnominal relative clauses are headed by a pronominal form, while an externally-headed parse of (3.27) would have nominal head. Based on these two distinctions between generalizing postnominal relatives and (3.27), I will take this example to be a free relative.

The relative clause in (3.27) is also interpretively problematic, as *mainiiu- spə̄ṇišta-* can be interpreted as a definite noun phrase in Old Avestan with a unique referent, which is strange in a generalizing relative clause (which is supposed be domain-widening). While in Young Avestan and the later Zoroastrian canon *Spenta Mainyu* becomes involved in a duality against the evil spirit *Angra Mainyu*, in Old Avestan it only seems to refer to the creative force of the deity *Wise Ahura* (Kreyenbroek 1993, p. 102). However, the picture seems not to be sufficiently sharply defined: Kreyenbroek has shown that over time (especially in Pahlavi texts), the creative power of *mainiiu- spə̄ṇišta-* has been attributed to *Ahura Mazdā*, and *mainiiu- spə̄ṇišta-* has lost its individuality. Could this passage reflect early signs of this change? It would be hard to answer this question, but such a possibility may grant us more legitimacy to assume some degree of variability in the referent of the relative clause in (3.27): the reading could be an *ignorance* reading that entails uniqueness of identity – one of the spirits of the *Wise Ahura* is the most prosperous one, but the speaker does not know (or cannot know) which one that is, or what its properties are.

Be that as it may, the internal structure of the free relatives leaves no doubt that (3.27) is another instance of a generalizing free relative, as the generalizing expression *ciš=cā* is within the free relatives, and *ciš-* agrees with the relative pronoun.

Before discussing generalizing externally-headed relative clause, it is worth taking a look at how different translations have interpreted *ci- -cā* in these three examples:

(3.28) Y 45.5 (Example 3.25)

- Insler (1975, p. 75): 'Those of you who shall give obedience and regard to this (Lord) of mine, they shall reach completeness and immortality.'
- Kellens and Pirart (1988, p. 156): '... my men, who show him obedience and respect and thus attain integrity and immortality through the acts of the spirit.'[11]
- Humbach (1991, v1. p. 165): 'Who**soever** will give me obedience to it here (those) will attain integrity and immortality.'
- Humbach and Faiss (2010, p. 129): '(All those) who show me obedience to it will attain integrity and immortality.'
- West (2010, p. 117): 'What**ever** people comply with it for me will attain health and continuing life.'

(3.29) Y 47.5 (Example 3.26)

- Insler, p. 89: 'Thou hast promised for the truthful person what **indeed** are the very best things.'
- Kellens and Pirart, p. 168: 'You attribute to the supporter of Harmony (the Cow) who is **so** good.'[12]
- Humbach, v1. p. 175: 'Thou accordest to the truthful one what**ever** best (things).'
- Humbach and Faiss, p. 129: 'You assign to the truthful one what**soever** best (things).'
- West, p. 117: 'Thou didst assign to the righteous one what**ever** best things there be.'

[11] "Mes hommes, qui lui montrent obéissance et respect, et accèdent (ainsi) à l'intégrité et à l'immortalité par les actes de l'état d'esprit divin."

[12] "tu attribues au partisan de l'Harmonie (la Vache) qui est si bonne."

(3.30) Y 43.16 (Example 3.27)

- Insler, p. 65: 'This Zaraθuštra chooses that very spirit of thine which **indeed** is the most virtuous of all, Wise One.'
- Kellens and Pirart, p. 148: 'O Lord Mazdā, behold, Zaraθuštra chooses your spirit, which is **so** beneficial.'[13]
- Humbach, v1. p. 156: 'This Zaraθuštra chooses which**ever** is Thy most prosperous one, O Wise One.'
- Humbach and Faiss, p. 120: 'This Zaraθuštra chooses **any** (manifestation) of the spirit that (is) your most beneficent one.'
- West, p. 101: 'This Zaraθuštra chooses that will, which**ever**, Mindful One, is Thy most bounteous one.'

Insler and Kellens and Pirart have either ignored *ci- -ca*, or have consistently translated it as an intensifier. Other translations have conveyed the generalizing sense, either by using *-ever* free relatives, or using a universal quantifier or *any*.

### 3.2.2 Postnominal generalizing relatives

In postnominal relative clauses that are generalizing, the generalizing expression is built on the interrogative pronoun *ka-* plus *-cīt*. Interestingly, the head in all of these relative clauses seems to be a pronoun – we cannot know whether this is due to a constraint on such relative clauses, or only a matter of available data. The pronominal does not seem to be exactly deictic, as they are not referential.[14]

[13] "Ö Maitre Mazdā, voici que Zaraθuštra choisit ton état d'esprit qui est si bénéfique."

[14] one might also assume that these are cases of LIGHT-HEADED RELATIVES, relative clauses that have a content-free demonstrative as their head and are assumed to be distinct from true externally-headed relative clauses:

(i) Jan czyta to co Maria czyta
Jan read this what Maria reads
'Jan reads what Maria reads.' Polish (Citko 2004, p. 96)

(ii) ho comprato ciò che mi= hai suggerito
have.1SG bought that that CL.DAT.1SG= have.2SG recommended

It should be noted too that as discussed by Caponigro and Fălăuș (2018), English externally-headed relative clauses headed by an *any*-based DP are also generalizing, where their Romanian counterparts would be generalizing free relatives:

(3.31) The doorman must write down the name of anyone who enters the building.

(3.32) Pick any book (that) you like.

The existence of such examples makes the occurrence of a generalizing expression in a postnominal relative clause in Old Avestan less curious.

The data in this category are as follows:

(3.33) uštā [**ahmāi** [**yahmāi** uštā **kahmāi=cīt̰**
desire.LOC DEM.DAT REL.DAT desired.ACC.PL INTERR.DAT=PRTCL
vasə̄.xšaiiąs mazdå̊ dāiiāt̰ ahurō]] utaiiūitī
ruling at will.NOM wise.NOM grant.AOR.OPT.3SG Ahura.NOM stability.ACC
təuuīšīm gaṯ.tōi vasəmī
might.ACC come.INF wish.1SG
'I wish that, as desired, might(iness) along with stability should come to him to whomsoever the Wise Ahura, ruling at his will, may grant the (things) desired.'
(Y 43.1)

In (3.33), the relative clause is headed by *ahmāi*, a demonstrative pronoun. Inside the relative clause, *kahmāi=cit̰* gives the relative clause a generalizing sense. In this expression, *kahmāi* (from the interrogative *ka-*), agrees with the relative pronoun (similar to generalizing free relatives).

Interestingly, all of the translations consulted have translated this example with a generalizing sense (Kellens and Pirart have added *quel qu'il soit*, while other translators have

'I bought that which you suggested to me.' Italian (Cecchetto and Donati 2023, ex. 68)

However, Citko (2004) identifies a contrast between free and light-headed relatives with respect to *-ever*: while *-ever* may form part of the *wh*-expression introducing a free relative, it is incompatible with the *wh*-expression introducing a light-headed relative. Importantly, however, Citko shows that the same restriction holds of ordinary headed relatives. The distribution of the Old Avestan generalizing expression therefore cannot by itself distinguish a light-headed analysis from an externally headed one.

used ‘who(m)soever’). Translations are different in this case, but they all convey an *indifference* inference. This is because first, there is no unique person under discussion whose identity is unknown, and second, a universal interpretation of the relative clause is possible.

(3.34) aṯ hōi vohū səraošō jaṇtū manaŋhā
PRTCL DEM.DAT good.INST obedience.NOM come.AOR.IMPER.3SG thought.INST
mazdā [**ahmāi** [**yahmāi** vašī **kahmāi=cīṯ**]]
wise.VOC DEM.DAT REL.DAT wish.PRES.2SG INTERR.DAT=PRTCL
‘Let obedience come to him through good thought, O Wise One, to him, to whomsoever Thou wishest.’ (Y 44.16)

Again, the generalizing expression within the relative clause agrees with the relative pronoun. Similarly to the previous example, all translators uniformly interpret (3.34) with a generalizing sense and an *indifference* inference.

(3.35) [**huuō**] mazdā īžā=cā āzūitiš=cā [**yə** daēnąm
DEM.NOM wise.VOC abundance.NOM=CONJ fat.NOM=CONJ REL.NOM religion.ACC
vohū sārəštā manaŋhā ārmatōiš
good.INST associate.AOR.3SG thought.INST right-mindedness.GEN
**kas=cīṯ** aṣā huzəṇtuš]
INTERR.NOM=PRTCL truth.INST well-acquainted.NOM
‘But that person, O Wise One, (is) abundance and fat, who shelters religious view with good thought, whoever by virtue of right-mindedness (is) well-acquainted with truth.’ (Y 49.5)

This example is more complicated, not the least because the relative clause is extraposed. Translators have different interpretations of this example. The translation I have given in (3.35) reflects the interpretations of Humbach 1991, with Kellens and Pirart having a similar interpretation.[15] However, Humbach’s translation has two relative clause, probably

[15]Kellens and Pirart, p. 172: ‘But he is the invigoration and the libation, O Mazdā, the faithful of Deference, whoever he may be, who has united his consciousness to Harmony by divine Thought’ (“Mais il est l’invigoration et la Iibation, Ô Mazdā, le fidèle de la Déférence, quel qu’il soit, qui a uni sa conscience a l’Harmonie par la divine Pensée”). While the clausal boundary of the relative clause is quite different from the interpretation of Humbach, the internal structure for our purposes is similar.

because both *sārəštā* 'associates' and *huzāṇtuš* 'well-acquainted' can be predicates, one verbal and the other one adjectival. But there is only one relative pronoun in the verse, meaning that we either have to take *huzāṇtuš* as an appositive, or assume that it is outside the relative clause.

On the other hand, other translators have taken *kas=cīt̰* as belonging to a new sentence. Insler (1975, p. 95) has taken *kas=cīt̰* as the subject of a new sentence, modified by *ārmatōiš* (see more on this use of *kas=cīt̰* in §3.2.3.2):

- 'But that man, O Wise One, is both milk and butter (for Thee), namely, the one who has allied his conception with good thinking | Any such person of piety is of the (same) good lineage with truth.'

Moreover, Humbach and Faiss (2010, p. 146) seem to have taken *kas=cīt̰* as an indefinite coordinated with the preceding postnominal relative clause.

- 'But that one, O Wise One, is cream-offering and fat-libation who allies his view/view-soul with good thought, anybody who out of right-mindedness (is) a nobleman (attached to truth).'

As we will see shortly, both of these patterns seem to be available in Old Avestan. In fact, such interpretations would resolve the question of having two predicates in the relative clause. However, it seems that there are no conclusive arguments for or against any of these interpretations. If this example does not constitute a generalizing relative clause, the number of generalizing relative clauses in the corpus will reduce to 5 – however, the previous examples unambiguously show that such a construction existed in the languages. If this example is a case of generalizing relative clauses, it again has an *indifference* reading and a universal-like meaning.

### 3.2.3 The generalizing expression

As we have seen, there are two strategies to turn a standard relative clause into a generalizing relative clause, summarized in table 3.1:

| Relativization strategy | Generalizing expression |
|---|---|
| Free Relatives | *ci-* + *-cā* |
| Postnominal Relative Clauses | *ka-* + *-cīt̰* |

Table 3.1: Generalizing expressions in Old Avestan relative clauses

The compositional semantics of the generalizing expression in these patterns remains a puzzle. It is evident that the element in question is always built upon two morphemes: first, the interrogative pronoun or a form based upon the interrogative stem (*ka-* and *ci-*), and a particle. I will call the former group *k*-morpheme, an umbrella term for all interrogative-based forms.

Grammars have sometimes called this generalizing expression an indefinite, for instance by Skjaervø 2009, p. 82.[16] Some other grammars provide slightly more detailed descriptions. For instance, Kellens and Pirart (1990, p. 163) say that *ciš* is an unstressed (Fr. *atone*) indefinite pronoun, and to form the stressed (Fr. *tonique*) indefinite pronoun, either *ci-* attaches to *-cā*, or *ka-* attaches to *cīt̰*. West (2010, p. 52) also counts these forms as indefinite pronouns, but mentions that *ciš* plays a larger role – he does not define what this larger role is. He mentions that in a relative clause, *ciš* + *cā* produces a "comprehensive force." Moreover, he points out that *ka- -cīt̰* means 'any' and 'whatever it may be'; but he does not explicitly mention its use in relative clauses. We will see that this specific of *ka- -cīt̰* characterization is accurate.

However, none of the existing accounts offer sufficient precision. It remains unclear what distinguishes *ci-* from *ka-*, or *ci- -cā* from *ka- -cīt̰*. Moreover, referring to these expressions as *indefinites* is not entirely accurate, as they do not consistently function as

[16] Skjaervø also calls the relative clauses containing these generalizing morphemes *indefinite relatives*.

indefinite markers or pronouns. Rather, their distribution appears to be restricted. This kind of behaviour is also cross-linguistically attested and merits further consideration. In his pioneering and influential typological study of indefinites, Haspelmath (1997) observes that in Indo-European languages (as well as in Chinese), interrogative forms with indefinite functions appear only in specific constructions: typically those expressing non-emphatic, non-specific meanings (Haspelmath himself notes that this distribution remains puzzling). In the case of Old Avestan, as we will see, the data reveal robust patterns that distinguish between the canonical interrogative pronoun and the derived forms that exhibit indefinite-like behaviour. Clarifying the precise function of each element not only contributes to a more accurate understanding of the Old Avestan pronominal system, but also – crucially for our purposes – lays the groundwork for a compositional account of generalizing relative clauses.

Let us begin with the *k*-morphemes. *K*-morphemes seem to be derived from a core interrogative root in two forms: *a*-stem and *i*-stem. However, notably, the *i*-stem only appears in a question in Y 43.7; in all other cases, the *i*-stem *k*-pronoun has non-interrogative uses. All of the *i*-stem *k*-pronouns have *a*-stem counterparts, used in questions (as seen in table 3.2).[17]

| | NOM.SG.MASC | ACC.SG.MASC | ACC.SG.NEUT | NOM.SG.FEM |
|---|---|---|---|---|
| *i*-stem | ciš | cīm | cīt̰ | cī |
| *a*-stem | kə | kəm | kat̰ | kā |

Table 3.2: Paradigm of *k*-morpheme pronouns

Interestingly, the non-interrogative *i*-stem and *a*-stem *k*-pronouns seem to appear in distinct environments. These non-interrogative uses are key in explaining the semantics of generalizing relative clauses in Old Avestan. We will first start with the *i*-stem *k*-morpheme, and then discuss the *a*-stem one.

[17] On the other hand, *a*-stem *k*-pronouns appear in many more morphological inflections than their *i*-stem counterparts.

#### 3.2.3.1 *ci-*

The composed form *ci- -cā*, as we see in generalizing free relatives, does not appear outside relative clauses. However, *ci-* on its own does. Interestingly, *ci-* seems to mostly have a non-interrogative use. Moreover, the non-interrogative uses of *ci-* are restricted to certain environments: negation, and questions, and probably conditionals. The data for these uses are as follows:

##### 3.2.3.1.1 *ci-* under negation

(3.36) **mā ciš** aṯ̃ və drəguuatō mąθrąs=cā gūštā
PROH *ci*.NOM PRTCL you.GEN deceitful.GEN formulas.ACC=CONJ listen.PRES.3SG
sāsnå̊s=cā
teachings.ACC=CONJ
'Let no one of the deceitful listen to your formulas and teachings.' (Y 31.18)

(3.37) aēšąm aēnaŋhąm **naē=cīṯ̃** vīduuå̊ aojōi
DEM.GEN.PL crimes.GEN NEG=*ci*.ACC aware.NOM declare.PRES.1SG
hādrōiiā
straightness.LOC
'I sincerely declare myself not at all conscious of any such crimes.' (Y 32.7)[18]

(3.38) **naē=cīm** təm aniiəm yūšmaṯ̃ vaēdā aṣ̌ā
NEG=*ci*.ACC DEM.ACC other.ACC you.ABL know.PERF.1SG truth.INST
'In truth, I don't know anyone in the least other than You.' (Y 34.7)[19]

(3.39) ratuš səṇghaitī ārmaitiš ϑβahiiā
judgements.ACC pronounce.PRES.3SG right-mindedness.NOM you.GEN
xratəušᵢ yəmᵢ **naē=ciš** dābaiieitī
intellect.GEN REL.ACC NEG=*ci*.NOM deceive.PRES.3SG
'Right-mindedness pronounces the judgements of Thy intellect which nobody can deceive.' (Y 43.6)

[18] One other possible structural analysis of this example is that *aēšąm aēnaŋhąm* is the genitive modifier of *vīduuå̊*, and *cīṯ̃* is simply a particle meaning 'even' (as we will in the discussion of *ka- -cīṯ̃* in §3.2.3.2. However, in Y 48.2, the argument of *vīduuå̊* is a free relative with accusative case marking – *vīduuå̊* does not have any arguments in any of its other occurrences. Therefore, it seems that here, too, *cīṯ̃* is the accusative object of *vīduuå̊*, which as a participle can govern accusative objects.

[19] The function of *təm* is not clear to me in this example.

(3.40) darəgahiiā yaoš yəm vå̊ **naē=ciš** dārəšt
long.GEN lifetime.GEN REL.ACC you.ACC.PL NEG=*ci*.NOM oblige.AOR.3SG
itē
accede.INF
'(The desire) for long life which nobody obliges you to accede.' (Y 43.13)

Looking at (3.37)–(3.40), we might be tempted to assume that in Old Avestan there existed a *naēci-* negative indefinite form corresponding to the English *anyone*, *anything*; but (3.36) with a prohibitive negation *mā* shows otherwise. The *i*-stem *k*-morpheme seems to appear in argument position (subject in (3.36), (3.39), and (3.40); object in (3.37) and (3.38)), functions that match its pronominal nature. However, crucially, in these examples, it is the existence of negation that licenses these pronominal forms. But this form also appears in other contexts.

#### 3.2.3.1.2 *ci-* in questions and conditionals

(3.41) **kaṯ̃** mōi uruuā isē **cahiiā auuaŋhō**
INTERR me.GEN soul.NOM command.PRES.1SG *ci*.GEN help.GEN
'Does my soul command any of help?' (Y 50.1)

(3.42) **kadā** vaēdā **yezī cahiiā** xšaiiaϑā mazdā aṣ̌ā
when.INTERR know.PERF.1SG if *ci*.GEN control.PRES.2SG wise.VOC truth.INST
yehiiā mā āiϑiš duuaēϑā
REL.GEN me.ACC fear.NOM scare.PRES.3SG
'When shall I know if you have control over anything/some through truth O Wise One, the fear of which scares me.' (Y 48.9)[20]

While in (3.41) *ci-* is clearly in the context of a polar question (introduced by *kaṯ̃*), example (3.42) is not that clear. The larger structure is a *when*-question (introduced by *kadā*), but the k-morpheme pronoun is in the clausal complement of the verb *vid-* 'to know', a clause introduced by *yezī* 'if.' Therefore, it might be the case that the *k*-pronoun is licensed

[20]The meaning of *āiϑiš duuaēϑā* in Old Avestan is unclear. My translation follows that of Humbach. The structure of the sentence and the licensing of *ci-* remains the same in all interpretations of these two lexical items.

in a conditional clause rather than a question. However, both hypotheses (licensing by a question or licensing by a conditional) align with the proposed account for this construction.

Besides licensing, in these examples *ci-* has the same distribution as in cases with negation: in (3.42), it is the nominal complement of *xša-* 'to have control over'; in (3.41) it is the adjectival modifier of *auuah-* 'help.' However, the caveat is that in these cases, *cahiiā* seems to be *a*-stem from a morphological perspective, and not an *i*-stem *k*-morpheme pronoun. Since the initial consonant is an alveo-palatal, it seems like this form should be from a *ca*-stem – but no other k-morpheme in Old Avestan seems to derive from such a stem (as implied by Martínez and de Vaan (2014, §22.5); such forms are, however, found in Young Avestan). This morphological discrepancy raises the following question: is this *ca-* stem pronoun a hybrid or intermediary form between *ka-* and *ci-*, or merely a phonological realization of one of these forms? A full exploration of this question is outside the scope of this work; for now, I take cases in (3.41) and (3.42) to contain an *i*-stem *k*-morpheme.

The environments that the *i*-stem *k*-morpheme occurs in give us a compelling clue about the nature of this morpheme (whether it is only negation, or negation as well as conditionals and polar questions). Recall the discussion of Negative Polarity Items in §3.1.1.1 – Negative Polarity Items are exactly licensed in the contexts where *i*-stem *k*-morphemes appear: under negation, polar questions, and conditionals, among others. Moreover, there is a cross-linguistic tendency for Negative Polarity Items to be diachronically related to interrogative pronouns (Haspelmath 1997, p. 197). In this sense, it is accurate to call *i*-stem *k*-morpheme (henceforth *ci-*) an indefinite pronoun, as many Negative Polarity Items are in fact indefinites (for instance, we have seen in §3.1.1.1 that *any* is taken to be an existential quantifier corresponding to the English indefinite article *a*). However, we should note that not all Negative Polarity items are indefinites (for instance, some minimizers in English such as *to give a damn, to lift a finger*, or degree expressions such as *at all*), and not all indefinites are Negative Polarity items (such as English *a* or *someone*).

To conclude this section, it appears that we can confidently categorize *ci-* as a Negative Polarity Item. However, this is only the first step towards understanding what *ci-* means in combination with the conjunction *-cā* in generalizing relative clauses. Before discussing that, let us also first explore what *ka- -cīt̰* means.

#### 3.2.3.2 *ka– -cīt̰*

Unlike *ci-*, *ka-* does not have non-interrogative uses on its own. However, when combined with *cīt̰*, it does occur outside generalizing relative clauses with non-interrogative uses.[21] The data are as follows: (also see the discussion of (3.35), which might also be a case of the construction under discussion):

(3.43) mərəždātā mōi **ādāi** **kahiiā=cīt̰** paitī
pity.PRES.IMPER.2SG me.DAT appointment.LOC INTERR.LOC=PRTCL PREV
'Do have mercy on me at any appointment!' (Y 33.11)

(3.44) aṣ̌ahiiā āaṯ sairī aṣ̌ahiiā vərəzənē **kahmāi=cīt̰**
truth.GEN PRTCL union.LOC truth.GEN community.LOC INTERR.DAT=PRTCL
**hātąm**
beings.GEN
'(I now tell) every human being in union with Truth and in the community of Truth...' (Y 35.8)[22]

(3.45) aṣ̌āunąm āaṯ urunō yazamaidē **kudō.zātanąm=cīt̰**
truthful.GEN.PL PRTCL souls.ACC praise.PRES.1PL INTERR.born.GEN.PL=PRTCL
naręm=cā nāirinąm=cā
men.GEN=CONJ women.GEN=CONJ
'Now we worship the souls of the truthful ones, men and women, wherever the may have been born.' (Y 39.2)

[21] The exact semantic contribution of *cīt̰* remains elusive. Throughout the Old Avestan corpus, it attaches to a range of nouns and pronouns. It has often been translated, as an emphatic and concessive particle, to *even*, *very*, *indeed*, etc. Identifying the exact semantics of *cīt̰* is beyond the scope of this thesis.

[22] This translation follows Hintze (2007, p. 91); translators greatly vary in their interpretation of this part of the text. However, the phrase *kahmāi=cīt̰ hātąm* has a similar translation everywhere.

(3.46) īm hujiiātōiš pāiiāṯ nōiṯ dužjiiātōiš
him.ACC good life.ABL protect.PRES.OPT.3SG NEG bad life.ABL
**kā=cīṯ** mazdā duuaēšaŋhā
INTERR.INST=PRTCL wise.VOC hostility.INST
'... they may prevent him from a good life, not from a bad life, however these [actions are], O Wise One, all with hostility.' (Y 46.8)

The first two examples are relatively straightforward. In (3.43), *kahmāi=cīṯ* is a modifier of *ādā-* 'appointment.' The precise interpretation of (3.44) is very unclear; however, in all translations, *kahmāi=cīṯ* has a nominal function in the dative, being modified by *hātąm* 'existing.' Neither of these two examples contains a typical Negative Polarity Item licensor. Rather, semantically, both (3.43) and (3.44) have a free choice interpretation (the English translations should not tempt us to assume that (3.44) has a universal force while (3.43) does not; truth-conditionally, both sentences are equivalently universal, a fact true of many Free Choice Items cross-linguistically).

Example (3.45) is more complicated. The word *kudō.zātanąmcīṯ* 'wherever they may have been born' includes a final *cīṯ* and has a free choice interpretation. However, is it a hapax legomenon in the corpus. To the best of my knowledge, the only discussion of this form is given by Narten (1986, pp. 255–256), who agrees with Bartholomae (1904) that this form is indeed interrogative-based (or, in our terminology, *k*-morpheme-based), from *kudō* 'where' and *zāta-* 'born.'[23] The *k*-pronoun *kudō* seems to be a *u*-stem form of the *k*-morpheme, and not an *a*-stem one. However, as it appears alongside *-cīṯ*, I consider (3.45) on a par with the other examples. Moreover, the whole expression seems to have a modifying function in relation to the nouns following it, as seen in (3.43) and (3.44).

Example (3.46) is even more difficult. The only certain fact about it is that we are still dealing with an *a*-stem *k*-morpheme pronoun without an interrogative meaning. However, the structure of the verse is unclear, translations vary greatly, and it is not clear

[23] Narten (1986, p. 256) also has an interesting discussion about how this generalizing semantics has liturgical and theological consequences: if the truthful people came from their own tribes and countries, their veneration would have been self-evident. The use of *cīṯ* gives this part of the liturgy general validity.

what this *kā=cīt* refers to. Humbach (1991, p. 170) takes it to refer to *šiiaoϑanāiš* 'actions' mentioned earlier, Insler (1975, p. 83) takes it to refer to *duuaēšaŋhā* 'hostility' (translating to 'with every sort of enmity'); none of them explain their choices further in their commentaries. I have adopted the latter in my translation.

Complexities of the text aside, the interpretations of *ka- -cīt* in (3.43)–(3.46) make it similar to Free Choice Items (for a definition of these elements, see the discussion in §3.1.1.1). However, we do not how reliable modern translations are; therefore, we cannot take them as the basis of our classification of *ka- -cīt*. Yet, we see that the examples in (3.43–3.46) show other properties of Free Choice Items (as outlined in Alonso-Ovalle and Menéndez-Benito 2021): one such property is a universal reading, which is a possible translation for all these cases. Another property of Free Choice Items is incompatibility with episodic, non-modal affirmative contexts: example (3.43) is an imperative, and imperatives are assumed to be non-episodic.[24] Examples (3.45) and (3.46) are more difficult to explain in terms of modal properties of contexts licensing Free Choice Items, but it is evident that none of these examples are simple, episodic, non-modal affirmative contexts. As we will see, assuming that *ka- -cīt* is a Free Choice Item also aligns with its occurrence in generalizing relative clauses (which have been shown to be closely related to Free Choice Items in their interpretation).

Lastly, these expressions are typologically interesting, in that two widespread patterns of the formation of Negative Polarity or Free Choice Items do not extend to Old Avestan: it has been shown (Haspelmath 1997, Bhat 2007) that in many languages, conjunctive particle, i.e. a morpheme whose independent function is coordination ('and/or'), attaches to an interrogative to make it into a non-specific indefinite – essentially a Free Choice Item.[25] Example (3.47) from Dravidian shows this phenomenon:

[24]For instance, in Kaufmann (2012)'s modal semantics of imperatives, an imperative is a necessity (essentially, universal) modal and the modal base contains all facts known to the speaker. The imperative is true if and only if in all worlds of the modal base, the prejacent of the imperative holds.

[25]Interestingly, Bhat (2007, p. 251) says that it is misleading to call these formations *derivation*, because in many cases the conjunctive attaches noun phrase containing the indefinite pronoun and not directly

(3.47) a. allige a:ru ho:-ku
there INTERR go-SBJV
'Who would go there?'

b. allige a:ru-de ho:-ku
there INTERR-CONJ go-SBJV
'Anybody would go there.' Dravidian (Bhat 2007, p. 251)

Moreover, according to Chierchia (2013), Negative Polarity Items are commonly formed based on adding a focal element (such as words for *even* or *also*) to an indefinite or a *wh*-word:

(3.48) a. koii aayaa
INDEF/INTERR came
'Someone came.'

b. koii bhii nahiiṇ aayaa
INDEF/INTERR *bhii* NEG came
'No one came.' Hindi (Chierchia 2013, p. 59)

The Old Avestan data do not follow these widespread patterns. The morpheme *ci-* is, by itself (comparable, for instance, to *-ever* in English EFRs). If we assume that *ci-* combined with *-cā* in generalizing relative clauses forms a Free Choice Item, then the first pattern also extends to Old Avestan. However, it remains puzzling why *ci- -cā* does not appear as a Free Choice Item outside of relative clauses. Conversely, *ka- -c̃īt* is clearly a Free Choice Item, but it does not contain a conjunction; instead, it includes a discourse particle (which might have been focal). This form deviates from both common tendencies: as a free choice expression based on an interrogative, it lacks a conjunctive element (contrary to the first tendency), and as a combination of an interrogative and a discourse particle, it is not a Negative Polarity Item (contrary to the second tendency).

the pronoun. In the case of Old Avestan, a derivation seems to be more likely, as *ka- -c̃īt* seems to form a constituent.

## 3.3 Towards an analysis

How can we understand and analyze generalizing relative clauses in Old Avestan? First, let me reiterate that we must acknowledge the limitations of the data: Old Avestan offers too little evidence to determine the precise meaning of generalizing free relatives in the language, let alone to address broader cross-linguistic or theoretical questions. For example, the Old Avestan data do not allow us to revisit issues such as whether generalizing relative clauses are semantically ambiguous across different readings, or whether generalizing free relatives are distinct from standard free relatives.

However, we can be reasonably confident that a generalizing meaning is present, most likely with a free choice flavour. This is the aspect of the meaning for which we do have some analytical tools. In fact, the compositional puzzle seems to be well-motivated and interesting: we have two generalizing expressions, *ci- -cā* and *ka- -cīt̰*, with their own compositional semantics unclear, which can give a generalizing sense to a relative clause.

Starting with *ci- -cā* in generalizing free relatives, we have seen that *ci-* seems to be a Negative Polarity Item. However, free relatives are not typical licensors of a Negative Polarity Item:

(3.49) #I liked what any student said.

(3.50) #She believed who had ever asked a question.

How can we then explain the occurrence of *ci-* in Old Avestan free relatives? This question relates to the next one, which concerns *-cā* – what is the semantic contribution of *-cā*? We know that it is a conjunction, but taking *-cā* at its face value does not help much with this question, as we are not dealing with coordinated expressions here. The contribution of *-cā* must be more subtle. We have also seen that *ka- -cīt̰* seems to be a Free Choice Item. As we will see, some accounts of Free Choice Items unify them with Negative Polarity Items by taking both as indefinites, and explain the differences based on

interactions with external operators (Kadmon and Landman 1990, Aloni 2007, Chierchia 2013, a.o.). These accounts, however, cannot be straightforwardly applied to Old Avestan, since the language does not have a single generalizing expression that simultaneously functions as a Negative Polarity Item and a Free Choice Item, and also occur in relative clauses. Instead, we are dealing with four distinct morphemes with different functions and combinatorial properties. As shown in Table 3.3, unlike English *ever* or Hindi *bhii*, which are compositionally simple and occur as atomic generalizing as well as polarity-sensitive elements across various contexts, the Old Avestan forms exhibit a range of functions that do not necessarily align or overlap.

| Morpheme | Negative Polarity | Free Choice | Generalizing RC |
|---|---|---|---|
| OAv. *ci-* | ✓ | × | × |
| OAv. *ci- -cā* | × | × | ✓ |
| OAv. *ka-* | × | × | × |
| OAv. *ka- -cīt̰* | × | ✓ | ✓ |
| English *ever* | ✓ | × | ✓ |
| Hindi *bhii* | ✓ | ✓ | ✓ |

Table 3.3: A comparison of generalizing expressions across Old Avestan, English, and Hindi

As we see, the relationship between the different morphemes and their role in a generalizing relative clause seems to have a more complicated story in Old Avestan than in English or Hindi. In particular, besides giving analyses for Negative Polarity Items, Free Choice Items, and generalizing relative clauses, we need to solve the following compositional puzzles:

1. How can a Negative Polarity Item *ci-* appear in generalizing relative clauses when it precedes the conjunction?
2. Why does the interrogative *ka-* become a Free Choice Item in combination with a discourse particle *-cīt̰*?
3. What is the contribution of *ci- -cā* and *ka- -cīt̰* in a generalizing relative clause?

To answer these questions, I will first review some of the relevant literature on Negative

Polarity and Free Choice Items. The aim in this section is to have a theoretical scaffolding for an explanation of the underlying mechanisms in the meaning of these elements. Once we know the components of the meanings of these forms, we can understand the compositional puzzles better.

### 3.3.1 Going back to Hindi *bhii*

In §3.1.1.2, we saw that Hindi *bhii* functions both as a Negative Polarity Item and as a Free Choice Item, and also appears in the Hindi correlative construction, where it yields a generalizing relative clause interpretation. This is very close to what we see in Old Avestan, but not exactly the same distribution (see table 3.3). Dayal (2019) mentions that the Hindi *bhii* also has the meanings 'even' and 'also':

(3.51) a. Anu haṇs rahii hai. Ravi **bhii** haṇs rahaa hai
Anu laugh is Ravi also laugh is
'Anu is laughing. Ravi is also laughing.'

b. ek **bhii** baccaa nahiiṇ haṇsaa
One even kid not laughed
'Not even one kid laughed.'

In this regard, Hindi *bhii* appears to combine all the functions of Old Avestan *-cā*, *ka- -cīt̰*, and *ci-*. Examining how a single morpheme in Hindi can encompass these meanings helps us understand why the combinations *ci- -cā* and *ka- -cīt̰* have the semantics they do.

Dayal argues that all meanings of *bhii* have a common core, unlike previous works that have taken *bhii* to be lexically ambiguous. To flesh this idea out, Dayal first discusses what *also* and *even* mean. The semantics of 'also' can be described in terms of ADDITIVITY: additivity involves the presupposition that, alongside the truth of the asserted proposition, at least one distinct focus alternative is also true. This means that the use of an additive particle, such as *also*, signals that at least one other relevant alternative to the proposition it modifies is true. For instance, in (3.52) the presupposition triggered by *also* is that

there exists at least one alternative individual (distinct from Amir) who is a scientist. The assertion is that Amir is a scientist. The preceding sentence (Alireza is a scientist) satisfies the presupposition, making the discourse coherent.

(3.52) Alireza is a scientist. **Amir** is also a scientist.

The semantics of *even* also involves additivity: like *also*, *even* implies that other alternatives are true. But crucially, it also involves SCALARITY: the expression in focus presupposes a scale of alternatives, and the assertion is at the extreme end of that scale. The scale may be based on probability, numerical value, social expectations, or other contextual factors. In the example (3.53), the scale reflects the likelihood of being a scientist. The focus expression, Sara, is presented as the least likely person to be a scientist.

(3.53) Even **Sara** is a scientist.

Dayal argues that the core of the meaning of *bhii* is additivity, while scalarity arises due to prosodic influences such as focus. Abstracting away from scalarity, the additive contribution of *bhii* can be represented as in (3.54). Here, $C$ is the contextually salient set of alternatives and $P$ is the relevant predicate.

(3.54) $[\![\textit{bhii}\ A]\!] = [\![A]\!]$

**Presupposition**: $\exists x[x \in C \wedge x \neq [\![A]\!] \wedge P(x)]$

Coming to the semantic contribution of *bhii* in generalizing correlatives, Dayal argues that the current account is faced with a challenge: according to Dayal's (1995) semantics of correlatives, correlatives have a uniqueness presupposition due to maximalization (similar to free relatives discussed in Chapter 2). This uniqueness is represented in the definiteness of what the relative clause in the correlative construction refers to. However, the presupposition of *bhii*, as formalized in (3.54), is in contradiction with uniqueness, as seen in (3.55b) – the two last lines of the denotation of the *bhii*-correlatives contradict the first line.

(3.55) a. [jo bhii kitaab mez par rakhii hai] [vo moṭii hai]
REL *bhii* book table on kept COP DEM fat COP
'The book on the table is very fat' + ⟦bhii⟧.

b. Fat($\iota x$[book($x$) $\wedge$ on-table($x$)]) $\wedge$
$\exists y[y \neq x \wedge (\text{book}(y) \wedge \text{on-table}(y))] \wedge$
$\forall y(\text{book}(y) \wedge \text{on-table}(y)) \rightarrow y = x)$

The first line of the denotation in (3.55b) establishes the existence of a unique book on the table (contribution of maximalization), but the following line establishes that there exists another book on the table (contribution of *bhii-*). Therefore, the denotation in (3.55b), as it stands, is contradictory.

As Dayal argues, what we need is a way to reconcile uniqueness with certain forms of epistemic variation, such as ignorance of identity. In other words, Dayal's solution is that the additivity of *bhii* operates at an epistemic level (by saying that the speaker is ignorant of the identity of what the relative clause refers to). To this end, she returns to her earlier work in Dayal 1997, where she accounted for English *ever* in EFRs using modality (as seen in §3.1.1.3). This means that while there is only one book on the table in reality, the speaker is ignorant of its specific identity. The speaker considers multiple possibilities, or DOXASTIC ALTERNATIVES,[26] for what that unique book might be. This is how additivity obtains. In this solution, as an additive expression, *bhii-* gives rise to doxastic alternatives for the speaker. For instance, in the case of (3.55a), the speaker might believe that the book could be *Fahrenheit 451* or *Brave New World*:

(3.56) Speaker's doxastic alternatives: {Farenheit451 $=_{w1}$ $\iota x$[book $\wedge$ on-table($w$)($x$)],
BNW $=_{w2}$ $\iota x$[book $\wedge$ on-table($x$)]}

The clash of the two presuppositions would be resolved by taking the doxastic alternatives into account. In each of these doxastic alternatives, the book in question is going to

[26] A doxastic alternative is a possible world that is compatible with what the speaker believes.

be unique, so the uniqueness presupposition will be satisfied:

(3.57) $\forall w' \prec_{\text{sda}} w \, \exists x \, [\text{book}_{w'}(x) \wedge \text{on-table}_{w'}(x) \wedge \forall y \, (\text{book}_{w'}(y) \wedge \text{on-table}_{w'}(y) \rightarrow y = x)]$

In all doxastic alternatives $w'$ that are accessible from the actual world $w$ according to the speaker's beliefs, there is a unique book on the table.

While Dayal does not make clear whether (3.57) is a presupposition of *bhii* or part of its denotation,[27] its contribution is clear. It ensures that uniqueness presupposition is satisfied in each of these belief-worlds, as there is only one book on the table in each.

The very existence of these distinct doxastic alternatives satisfies the additivity presupposition. It's not that there are multiple books in reality, but rather that there are multiple epistemic possibilities for the identity of the unique book. This is formalized in (3.58) as the denotation of *bhii-*:

(3.58) $\exists z \exists y [z \neq y \; \wedge$
$\Diamond z = \iota x [\text{book}(x) \wedge \text{on-table}(x)] \wedge$
$\Diamond y = \iota x [\text{book}(x) \wedge \text{on-table}(x)]]$

The denotation in (3.58) says there are two distinct epistemic possibilities for the identity of the book. So additivity is satisfied not in the actual world, but in the epistemic space – via variation in identity across doxastic alternatives; i.e., that across these alternatives, the identity of the unique book may differ.

Going back to the case in hand, we have to note that Old Avestan cases involve more decomposition than Hindi *bhii* requires because of the morphology of the generalizing expressions. However, Dayal's analysis of *bhii* provides valuable insights about how we can think about the compositional semantics of the Old Avestan generalizing morphemes. The idea of additivity and alternatives, and how they can exist alongside the uniqueness of free relatives, is the foundation upon which the proposed analysis of the Old Avestan

[27] Note that Dayal 2019 is a set of slides from a talk, so naturally the ideas are not fully formalized and fleshed-out.

cases will be developed. With this foundation, the next sections examine alternative-based accounts of Negative Polarity Items and Free Choice Items.

### 3.3.2 Negative Polarity Items and alternative semantics

We already know that *ci-* is an interrogative-based form functioning as a Negative Polarity Item. Formal affinity between interrogative and indefinite pronouns is cross-linguistically very common (Haspelmath 1997), but why do interrogatives have this formal affinity with indefinites? There are two paths to follow: one is that these two forms have the same core, or that these two forms are homonyms with different meanings. The latter approach assumes that interrogatives are indefinites plus some sort of *demand-for-answers* meaning. However, entertaining the possibility that interrogatives are derived from grammaticalization from an embedded interrogative or similar constructions, Haspelmath argues that the absence of any diachronic evidence for such grammaticalization path makes this hypothesis untenable. Therefore, he adopts an explanation in terms of systematic polysemy. Following previous literature, Haspelmath suggests that the common core of this systematic polysemy is ignorance; both interrogatives and Negative Polarity Items mark what Bhat (2007) calls an information gap.[28]

Now, how can we go from the information gap to a polarity item, and specifically a Negative Polarity Item? The scope of this thesis does not allow me to give a full overview of the rich and vibrant literature on Negative Polarity Items, and different accounts of their semantics. Moreover, the Negative Polarity Item *ci-* in Old Avestan does not seem to combine directly with a relative clause. Therefore, polarity on its own is not directly relevant to our inquiry in this chapter. Instead, I aim to show how a Negative Polarity

[28] Haspelmath makes an important caveat: in this polysemy, the interrogative function of pronouns appears to be primary, while the indefinite function emerges secondarily. Diachronically, interrogative pronouns may retain their question-marking function while losing their ability to mark indefiniteness. For instance, Latin *quis/quem* 'who(m)' survived into the modern Romance languages exclusively as interrogatives, with no indefinite use. A similar development is observed in Greek, where Classical *tis* 'who' no longer functions as an indefinite in Modern Greek. This is also the development we see in Iranian languages: at least in Persian, the remnant of *k*-morpheme pronouns only has interrogative uses.

Item can be compositionally part of a generalizing relative clause. To this end, I will focus on one influential account of the semantics of Negative Polarity Items within alternative semantics, namely Chierchia 2013, as this account aims to unify Negative Polarity Items with Free Choice Items. The diachronic puzzle about interrogatives, indefinites, and Negative Polarity Items remains, however, unsolved. In the concluding chapter of this thesis, I will go back to this puzzle with more data from Iranian languages and show how this thesis provides the groundwork to understand the diachrony of these forms.

As this account of Negative Polarity Items is based upon the notion of SCALAR ALTERNATIVES, I will give a brief overview of this notion in formal semantics and pragmatics. Cross-linguistically, some focal elements in a sentence belong to a scale of meaning – like *some*, *many*, *all* – where each item on the scale is stronger or weaker than the others. Using a weaker item (like *some*) can suggest that a stronger one (like *all*) is not true. For instance, (3.59a) entails (3.59b) (meaning that in all situations where (3.59a) is true, (3.59b) is true as well): therefore, *all* is a stronger alternative than *some*. We see this in (3.60) too: (3.60a) does not entail (3.60b), because *some* is weaker than *all*.

(3.59) a. I met all students.

b. $\overset{entails}{\Longrightarrow}$ I met some students.

(3.60) a. I met some students.

b. $\overset{entails}{\not\Longrightarrow}$ I met all students.

In a conversation, we tend to convey the amount of information needed, not less and not more, following the MAXIM OF QUANTITY of Grice 1975. Therefore, in a situation where I have met all students, as a rational speaker I would not use (3.59b), even though it will be truth-conditionally true: having met all students also makes having met some students true. In other words, speaker choose to always use the most informative option in a scale of alternatives.

This principle has another side too: when I choose to use the less informative option, I

am conveying that the more informative option does not hold. In other words, if I utter (3.60a), I am implying that (3.60b) is false and I have not met all students. Otherwise, I would have chosen the more informative utterance, (3.60b). These intuitions form the foundation of alternative semantics, a way of positioning this pragmatic reasoning into grammar.

Scalarity in Negative Polarity Items was first discussed in Fauconnier (1975) for superlatives, but later adopted for other scalar Negative Polarity Items. Fauconnier argues that certain linguistic expressions, such as superlatives (*the faintest noise*) and Negative Polarity Items like *any* acquire special readings due to the pragmatic scales implied in context. Both of these items implicitly introduce a low point on an unspecified pragmatic scale; this is easy to see in the case of *the faintest noise* where the scale is **the faintest < slightly faint < slightly loud < the loudest**. The property of such a scale is that if a predicate holds for the lowest point of the scale, it also holds for the highest point. For instance, (3.61a) pragmatically entails (3.61b):[29] the interpretation, Fauconnier argues, is a universal interpretation: all sounds bother the baby. In this case, the corresponding sentence with *any* has a free choice reading.

(3.61) a. The baby is bothered by the faintest sounds.

b. ⇒ The baby is bothered by the loudest sounds.

(3.62) The baby is bothered by any sound

Negation changed the direction of the entailment. The interpretation this time is existential: no sound can bother the baby. Now, the stronger statement (3.63a) corresponds to the polarity reading of *any*.

(3.63) a. The baby is not bothered by the loudest sounds.

b. ⇒ The baby is not bothered by the faintest sounds.

[29]Note that the entailment is not necessarily logical, but given the world knowledge it can be a valid inference and uncancellable.

(3.64) The baby is not bothered by any sound.

As mentioned before, *any*'s dual function makes its occurrence in an affirmative sentence felicitous. Expressions that are only Negative Polarity Items are, however, infelicitous in many affirmative contexts. The issue of capturing the licensing of Negative Polarity Items remains one of the main issues of fully pragmatic accounts of Negative Polarity Items, developed by Fauconnier (1975), Kadmon and Landman (1990), Israel (1996), among others. One of the most prominent accounts of why Negative Polarity Items need to be licensed is that of Ladusaw (1979), who builds on Fauconnier 1975 to provide the following licensing condition:

(3.65) a. Downward Entailment:

A function $f$ is downward entailing if and only if for all $x, y$ such that $x \Rightarrow y$, $f(y) \Rightarrow f(x)$.

b. Fauconnier-Ladusaw Hypothesis:

Negative Polarity Items are licensed in downward entailing environments.

To see how this concept works, consider the affirmative sentence in (3.66a), which entails (3.66b), because being a biologist entails being a scientist. This is an upward entailing environment, where a more specific expression entails a less specific one.

(3.66) a. Homa is a biologist.

b. Homa is a scientist.

Negation reverses this entailment relation; now, (3.67b) entails (3.67a).

(3.67) a. Homa isn't a biologist.

b. Homa isn't a scientist.

Negation provides a downward entailing environment which matches the definition in (3.65a): $biologist(h) \Rightarrow scientist(h)$ and $\neg scientist(h) \Rightarrow \neg biologist(h)$. These are the

contexts that allow Negative Polarity Items.[30]

While downward entailment is essentially formalized in terms of set-theoretical relations, Ladusaw (1979, p. 143) himself begins this formalization by using scales (hence the name *Fauconnier-Ladusaw*). Crucially, contexts such as negation reverse scales. Scale reversal can then be translated into entailment relations based on the meaning of expressions.

The Fauconnier-Ladusaw condition shows that scalarity is a crucial idea for formalizations of Negative Polarity Items. However, it explains the licensing conditions, not why Negative Polarity Items should behave this way. Two works that address this challenge are Kadmon and Landman 1990 and Chierchia 2013. Going back to §3.1.1.1, one of the main insights in Kadmon and Landman 1990 is that we choose to say (3.68b) instead of (3.68a):

(3.68) a. We don't have potatoes.

b. We don't have any potatoes.

The reason is the combination of WIDENING and STRENGTHENING – with WIDENING, we get an extended interpretation of the noun that *any* modified. In the case of (3.68a), this will result in potato having a set of meanings such as *baking*, *cooking*, *sweet*, *russet*, etc. On the other hand, STRENGTHENING ensures that the sentence after widening is stronger than the sentence without widening: (3.68b) is stronger than (3.68a), while in the affirmative counterpart of these two sentences, such relation does not hold.

Lastly, another important notion in alternative semantics is EXHAUSTIFICATION. Once alternatives are triggered in a sentence by using a scalar expression, they cannot remain active.[31] In case of scalar alternatives, if an alternative is entailed by the assertion, it

[30]It has been shown that downward entailment is not as restrictive as the empirical evidence suggests. Von Fintel (1999) has proposed the notion of STRAWSON DOWNWARD ENTAILMENT to capture these additional restrictions. However, the core of the analysis remains the same, which is what we require for the Old Avestan data.

[31]For instance, prosodical focus gives rise to alternatives that make a sentence infelicitous if it is not

is part of the conveyed information. But what about alternatives that are not entailed? Exhaustification is a semantic mechanism that strengthens the meaning of an expression by excluding alternatives that are not entailed by the assertion. It can be compared to the English *only* (in fact, the exhaustifier operator in grammar, EXH, is assumed to be a "a covert, non-presuppositional counterpart of *only*" (Homer 2021, p. 28)): in the literature, *only* is usually given a denotation along the same lines in (3.69):

(3.69) a. $[\![\text{Only}_C \phi]\!] : \phi \wedge \forall p \in C[p \rightarrow \phi \subseteq p]$ (where $\subseteq$ = *entails*) (Chierchia 2013, p. 31)

b. $\phi$ is true and any member of the set of alternatives $C$ should be entailed by $\phi$.

According to this definition, overt *only* exhaustifies alternatives:

(3.70) John only saw Paul and Sue.

(3.71) a. Only [John saw Paul and Sue ]

b. ALT: John saw {Paul/ Sue/ Mary/ …/ Paul and Sue/ Paul and Mary/ …/ Paul and Mary and Sue/ …}

c. [[3.70]]: John saw Paul and Sue $\wedge \forall p \in$ ALT$[p \rightarrow$ John saw Paul and Sue $\subseteq p]$
Any member of the set of alternatives ALT which is true must be entailed by 'John saw Paul and Sue'.

Essentially, *only* ensures that for its prejacent, any member of the set of alternatives which is not entailed by the prejacent must be false. This is what an exhaustifier also does.

With these background and ideas about the semantic and pragmatic underpinnings of

embedded in the right context, such as (i) with focus on JOHN when uttered out of the blue:

(i) ??I saw JOHN.

(ii) a. Did you see the kids?
b. I saw JOHN. (Chierchia 2013, p. 37)

licensing of Negative Polarity Items, I will now discuss a proper treatment of Negative Polarity Items within alternative semantics. As revealed later on, this account also marries Negative Polarity Items to Free Choice Items in an elegant and economical fashion, which will become handy in explaining the Old Avestan data.

#### 3.3.2.1 Chierchia 2013: Negative Polarity Items

The proposal in Chierchia 2013 highlights the importance of alternatives in the licensing of Negative Polarity Items in an elaborated fashion. According to Chierchia, Negative Polarity Items are focal elements and carry a grammatical feature called D (for *domain*) which activates a set of domain (D-)alternatives.[32] Given that the analysis is within the minimalist program, this feature also needs to be checked off syntactically. Chierchia postulates a c-commanding $O_d$ operator to check the D feature. This $O_d$ operator is an exhaustifier: it excludes the alternatives that are not entailed by the assertion.

To see how this view of alternatives and exhaustification captures the semantics and the licensing of Negative Polarity Items, let us consider example (3.72) in a context where the domain of students is Mary and Sarah. The subdomain alternatives with subsets of $\{m, s\}$ would be $m, s$.[33] The assertion of (3.72) before the application of $O_d$ is (3.73a). Prosodic stress on *any* activates the D feature, giving rise to the alternatives in (3.73b).

(3.72) Hannah didn't see **any** student.

(3.73) a. $\{\neg\exists x \in \{m, s\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\}$

b. ALT: $\{\{\neg\exists x \in \{m\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\} \wedge \{\neg\exists x \in \{s\}[\text{Student}(x) \wedge \text{Saw}(h)(x)]\}\}$

As (3.72) entails the alternatives in (3.73b), the application of $O_d$ would not negate any

[32] Chierchia talks about two types of alternatives, subdomain alternatives and scalar alternatives. While scalar alternatives are based on lexical scales ordered by informativeness (e.g., some, many, all), and typically arise in scalar implicatures, subdomain alternatives involve restricting the quantificational domain to subsets or individuals (e.g., John, Bill, Alice) and often appear in focus constructions like *only*.

[33] Note that the subdomain alternatives must constitute a proper alternative-set, so it cannot contain the actual prejacent (in this case, $\{m, s\}$).

alternatives. Therefore, it will have no effect on the semantics (but it is crucial to the syntax to check the D feature of *any*).

In an ordinary episodic affirmative context, which is upward-entailing, this process will result in a contradiction. Take the affirmative counterpart of (3.72) as an example.

(3.74) *Hannah saw **any** student.

(3.75) a. $\{\exists x \in \{m, s\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\}$

b. ALT: $\{\{\exists x \in \{m\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\} \wedge \{\exists x \in \{s\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\}\}$

Exhaustification by $O_d$ would result in a contradiction: its result contradicts the assertion in (3.75b):

(3.76) $O_d[\![\text{Hannah saw **any** student}]\!]$ :

$\{\{\exists x \in \{m, s\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\} \wedge \neg\{\exists x \in \{m\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\} \wedge \neg\{\exists x \in \{s\}.[\text{Student}(x) \wedge \text{Saw}(h)(x)]\}\}$

There is one student from the domain that Hannah saw, but Hannah did not see Mary and Hannah did not see Sarah.

This utterance is infelicitous, resulting in the incompatibility of Negative Polarity Items in upward entailing environments.

As we see, Chierchia assumes that Negative Polarity Items are focus-sensitive and, as a result, alternative-generating. And since the exhaustification of these alternatives leads to contradiction, their use is infelicitous. For Chierchia, upward entailing environments are those where exhaustification results in a contradiction.

### 3.3.3 Free Choice Items

In §3.2.3.2, we have seen that *ka- -cīt* seems to be a Free Choice Item. The challenge now is to derive the free choice meaning from *ka-* and *cīt*, and see how they would make a

relative clause generalizing. As previously mentioned, I have not found any instance of *ka-* on its own outside an interrogative clause, so we can safely assume a question semantics for *ka-*. Question semantics and Free Choice Items are indeed related: early accounts of Free Choice Items (e.g., Kratzer and Shimoyama 2002) had proposed that Free Choice Items emerge from interrogative *wh*-words through mechanisms like alternative semantics, where a *wh*-word introduces sets of alternatives that are interpreted universally.

Going back to *ci- -cā*, the Old Avestan data can motivate an interesting working hypothesis: a Free Choice Item, such as *ka- -cīt̰*, can turn an ordinary relative clause into a generalizing relative clause. This is the case for postnominal relative clauses. Now, one way to look at generalizing free relatives in Old Avestan is to assume that they are also based on a Free Choice Item. In other words, if we can find a way to interpret *ci- -cā* as a Free Choice Item, we can give a unified semantics for all generalizing relative clauses in Old Avestan (regardless of whether they are postnominal or free). To do so, *-cā* should be the element that transforms a Negative Polarity Item into a Free Choice Item.[34] Is this a plausible hypothesis?

This, as it turns out, is a plausible hypothesis. As noted at the beginning of this section (§3.3), some scholars have sought to unify Free Choice Items and Negative Polarity Items, motivated by expressions like English *any*, which exhibit both types of behaviour. However, our goal here is to identify accounts that derive the semantic distinction between Negative Polarity Items and Free Choice Items in a way that can be attributed specifically to the presence of *-cā*; that is, accounts in which Negative Polarity Items have a base semantics $\nu$ and the addition of some further mechanism, such as conjunction, yields the free choice interpretation $\phi$:

(3.77) Negative Polarity Item + *cā* = Free Choice Item

[34]The caveat of such hypothesis is that *ci- -cā* does not appear outside generalizing relative clauses as a Free Choice Item. However, it is possible that it has been grammaticalized into a free-relative-specific construction, which may explain the unusual vocalization and contrast with *ka- -cīt̰*.

$$\rightarrow \nu + [\![\text{cā}]\!] = \phi$$

Chierchia's 2013 program exemplifies precisely this kind of approach. He provides compelling evidence for the strong relationship between Negative Polarity Items and Free Choice Items through historical linguistics. He observes that the English indefinite *any* originates from the Old English term *ænig* (literally, 'one-y'), which itself traces back to Proto-Germanic **ainagas* and ultimately Proto-Indo-European **oinos* 'one.' Chierchia mentions that *any* evolved from being exclusively a Negative Polarity Item in Old and Middle English, with a usage nearly identical to *ever* until approximately the late 15th or early 16th century, when it developed its contemporary dual function. On the other hand, in German, the cognate *einig* maintained a simple indefinite/existential meaning without evolving into a Negative Polarity or Free Choice Item. Italian, however, provides a distinct bifurcation: the singular form *alcuno* is strictly a Negative Polarity Item without a free choice usage, while its plural counterpart *alcuni* functions solely as a regular indefinite. As a result, Chierchia argues that these varying linguistic outcomes reflect closely interconnected grammatical classes, where minimal semantic or pragmatic shifts facilitate transitions from plain indefinites to Negative Polarity Items and further to Free Choice Items. Such a minimal semantic switch would help account for both the typological diversity and the historical linguistic shifts observed among these related items.

In what follows, I will discuss two works in the literature on Free Choice Items. It is worth noting that the literature on Free Choice Items is as rich and vibrant as the literature on Negative Polarity Items, if not more. Therefore, we have to pick the works that align with the question in hand. I will first discuss Aloni (2007) as a representative of a line of research on the semantics of Free Choice Items that uses a question-based approach to capture the semantics of Free Choice Items. As the canonical Old Avestan Free Choice Item *ka- -cīt̰* and the hypothesized Free Choice Item *ci- -cā* are both based upon an interrogative root, this work is helpful in analyzing the Old Avestan forms.

Then, we will go back to Chierchia (2013), this time exploring his account of Free Choice Items. We will see how it seamlessly ties into his account of Negative Polarity Items and how it fits the formal paradigm of our puzzle: assuming a missing piece to turn a Negative Polarity Item into a Free Choice Item.

#### 3.3.3.1 Aloni 2007: Free Choice Items and Questions

Aloni (2007) attempts to show that an alternative-based semantics for questions can also account for Free Choice Items. In this account, Free Choice Items such as *any* and *or* are not treated as simple existential or Boolean operators but rather as generators of propositional alternatives. The starting point of this analysis is questions: Aloni assumes that the semantics of a question is essentially a set of propositional alternatives whose truth value is under discussion. In a polar question, the only propositional alternative is the prejacent of the question – the meaning of (3.79a), then, is whether (3.79b) holds or not. For a constituent question (3.81a), the propositional alternatives are those for whom the prejacent holds. This semantics gives rise to a set of alternatives, as seen in (3.81c).

(3.78) Propositional alternative in polar questions: $\exists x.Q(x)$

(3.79) a. Does anybody bake?

b. $\exists x.\text{Bake}(x)$

(3.80) Propositional alternative in constituent questions: $\exists p.(p \wedge \exists x.(p = Q(x)))$

(3.81) a. Who bakes?

b. $\exists p.(p \wedge \exists x.(p = \text{Bake}(x)))$

There exists a true proposition $p$, and $p$ is the proposition '$x$ bakes' for some $x$.

c. $\{\text{Bakes}(a), \text{Bakes}(b), \text{Bakes}(c), \text{Bakes}(d), ...\}$

Aloni argues that this semantics motivates a similar account of Free Choice Items. A Free Choice Item, such as *any* or *or*, also gives rise to a set of alternatives whose truth

value is what is at stake. In this account, a sentence with *any* would have the semantics in (3.82), which is the same as the semantics of a constituent question (3.81c).

(3.82) $\exists p.(p \wedge \exists x.(p = Q(x)))$

The idea is that *any*, like a *wh*-word, introduces a set of propositional alternatives, each corresponding to a different instantiation of the predicate over possible domain elements. These alternatives are then quantified over by operators that allow Free Choice Items, such as modals, generics, or some imperatives (recall that Free Choice Items cannot occur in simple affirmative sentences – see Alonso-Ovalle and Menéndez-Benito 2021, Giannakidou 2001). For instance, in the sentence (3.83a), the relevant interpretation (3.83b) involves universal quantification over the individual propositions of the form *Take($x$)* for each card $x$ in the domain. This yields the intuitive free choice reading: every card is a permissible option.

(3.83) a. Amir may take any card

b. MAY $(\exists p.\ (p \wedge \exists x.(\text{Card}(x) \wedge p = \text{Take}(a)(x))))$

While Aloni suggests that *any* has the same semantics as constituent questions, this claim should be understood carefully. Aloni does not propose that the lexical item *any* itself denotes a set of propositional alternatives, nor does she assign it a compositional semantic entry akin to *wh*-words in traditional Hamblin semantics. Instead, what she demonstrates is that sentences containing *any*, when embedded under modal or imperative operators, give rise to semantic structures that are formally equivalent to those assigned to constituent questions. For example, a sentence like (3.83a) receives an interpretation of the form in (3.83b), which mirrors the logical structure Aloni assigns to *wh*-questions such as *what did Hannah take?* (namely, $\exists p.(p \wedge \exists x.(p = \text{Take}(h)(x)))$). In this sense, *any* does not itself denote a question-like object, but it licenses a compositional derivation that results in a question-like alternative set at the propositional level. Thus,

the equivalence Aloni posits lies not in the lexical meaning of *any*, but in the semantic type and logical behaviour of the full clause in which it appears.

#### 3.3.3.2 Chierchia 2013: Free Choice Items

Chierchia (2013) starts his account of Free Choice Items by looking at free choice disjunction. Crucially, disjunction with modals gives rise to a unique implicature:

(3.84) a. Ali takes ice cream or cake.

b. $p \vee q$

c. $\not\Rightarrow$ p

d. $\not\Rightarrow$ q

(3.85) a. Ali may take ice cream or cake.

b. $\Rightarrow \Diamond p$

c. $\Rightarrow \Diamond q$

d. $\Diamond(p \vee q) \Rightarrow \Diamond p \wedge \Diamond q$

With ordinary disjunction, as in (3.84a), there is no commitment to the truth of any of the disjuncts (Ali taking ice cream or Ali taking cake). However, with free choice disjunction as in (3.85a), the speaker is committed to the truth of any of the disjuncts: in fact, what (3.85a) means is that Ali may take ice cream "and" Ali may take cake.[35]

To explain how these implicatures arise, Chierchia again uses the notion of exhaustification. Starting with the case of disjunction, Chierchia argues that we get two types

[35]The same reasoning is valid for the free choice *any* compared to the non-free choice existential quantifier *some*: with *some*, there is a disjunction-like interpretation. In (ia), if there are five cakes in the domain, the inference is that Ali takes either of the cakes. However, a sentence with *any* such as (iia) would have a conjunction-like meaning:

(i) a. Ali takes some cake.
b. $\exists x.[x \in D_{\text{cakes}} \wedge \text{Takes(Ali)}(x)]$
c. $\Rightarrow$ Ali takes $\text{cake}_1 \vee$ Ali takes $\text{cake}_2 \vee \ldots \vee$ Ali takes $\text{cake}_{10}$

(ii) a. Ali can take any cake.
b. $\Rightarrow$ Ali can take $\text{cake}_1 \wedge$ Ali can take $\text{cake}_2 \wedge \ldots \wedge$ Ali can take $\text{cake}_{10}$

of alternatives: scalar alternatives, and subdomain alternatives. A scalar alternative to disjunction is conjunction, and subdomain alternatives are each conjunct:

(3.86) a. Utterance: $\diamond(p \vee q)$

b. Alternatives:

Scalar: $\diamond(p \wedge q)$

Domain: $\diamond p$, $\diamond q$

However, as seen in the case of Negative Polarity Items outside downward-entailing environment (3.76), exhaustifying these alternatives would lead to a contradiction:

(3.87) $O(\diamond(p \vee q)) : \diamond(p \vee q) \wedge \neg \diamond (p \wedge q) \wedge \neg p \wedge \neg q$

This formula is contradictory because it explicitly requires at least one of $p$ or $q$ to be possible $\diamond(p \vee q)$, yet simultaneously denies the possibility of each alternative individually and together, leaving no logically possible scenario.

To resolve this issue, Chierchia introduces the notion of pre-exhaustified alternatives in Free Choice Items. To motivate this notion, he points out that, ordinarily, when speakers provide answers to implicit questions about permissible alternatives, their responses are naturally interpreted exhaustively:

(3.88) A: Which dessert may Ali take?

B: Ali might take ice cream ($\diamond p$)

(3.89) Interpretation of B's reply:

$O(\diamond p) = \diamond p \wedge \neg \diamond q$

Therefore, Chierchia argues, it is intuitive and natural that when considering the alternatives for exhaustification, we do not simply use the raw, literal meanings but instead interpret these alternatives as already exhaustified statements. According to this view, we will have the following alternatives for free choice disjunction:

(3.90) a. Utterance: $\diamond(p \vee q)$

b. Alternatives:

Scalar: $O(\diamond(p \wedge q))$

Domain: $O(\diamond p)$, $O(\diamond q)$

Now, if we do the following calculations, we will see that exhaustifying these pre-exhaustified alternatives would amount to an exclusive reading of free choice disjunction:

(3.91) $O(\diamond(p \vee q)) = \diamond(p \vee q) \wedge \neg O \diamond p \wedge \neg O \diamond q \wedge \neg O(\diamond[p \wedge q])$

a. $\neg O \diamond p = \neg(\diamond p \wedge \neg \diamond q) = (\diamond p \rightarrow \diamond q)$

= It is not the case that you can do $p$ without being able to do $q \Rightarrow$ conditional (if May($p$) then May($q$)).

b. $\neg O \diamond q = \neg(\diamond q \wedge \neg \diamond p) = (\diamond q \rightarrow \diamond p)$

= It is not the case that you can do $q$ without being able to do $p \Rightarrow$ conditional (if May($q$) then May($p$)).

c. $\neg O(\diamond(p \wedge q)) = \neg \diamond (p \wedge q)$

$O(\diamond(p \wedge q)) = (\diamond(p \wedge q))$: conjunction is the strongest in the scale of alternatives, so its exhaustification would be vacuous. Therefore, the result of its negation would also simply be $\neg\diamond(p \wedge q)$. Exhaustification of pre-exhaustified scalar alternatives is vacuous.

$\Rightarrow O(\diamond(p \vee q)) = \diamond(p \vee q) \wedge (\diamond p \rightarrow \diamond q) \wedge (\diamond q \rightarrow \diamond p) \wedge \neg \diamond (p \wedge q)$

Either May($p$) or May($q$) is true, if one of them is true the other one must be true, but $p$ and $q$ can never be true together.

The result of exhaustification, then, can be simplified:

(3.92) $O(\diamond(p \vee q)) = \diamond p \wedge \diamond q \wedge \neg \diamond (p \wedge q)$

This denotation explicitly captures the exact intuitive idea of "free choice" permission

explicitly stated clearly: Ali may pick ice cream or cake. Ali cannot take both simultaneously, but explicitly both options must individually be allowed.

The same reasoning can apply to a Free Choice Item – here, I will provide an example with the German free choice indefinite *irgendein*, as it exclusively has a free choice interpretation:

(3.93) Du darfst mit irgendeinem Professor sprechen
you can with FC professor talk.INF
'you can speak with any professor.'

(3.94) a. Assertion: $\diamond\exists x_D$.Professor$(x) \wedge$ Speak-with$(you)(x)$

b. D-Alt = $\{\diamond\exists x \in D'$.Professor$(x) \wedge$ Speak-with$(you)(x) : D' \subseteq D\}$

c. Scalar-Alt = $\diamond\exists x_D.n(x) \wedge$ Professor$(x) \wedge$ Speak-with$(you)(x) : n > 1$

Essentially, the domain alternatives that (3.93) gives rise to are the subset of the domain of all the professors, and the scalar alternatives are being able to talk to more than one professor. Let us assume that there are three professors in the domain of professors: $D = \{a, b, c\}$. Therefore, the assertion and alternatives (before undergoing exhaustification) would have the following form:[36]

(3.95) a. Assertion: $\diamond$(Speak-with(you)$(a) \vee$Speak-with(you)$(b) \vee$Speak-with(you)$(c)$)

b. Alternatives:

Scalar: $\diamond(a \wedge b \wedge c)$

Domain: $\diamond(a \vee b), \diamond(a \vee c), \diamond(b \vee c), \diamond a, \diamond b, \diamond c$

Pre-exhaustifying the alternatives follows the previously-explained logic. Exhaustifying the scalar alternative results in the scalar alternative itself (as it is already the strongest statement), and exhaustifying the domain alternatives goes as follows:

(3.96) a. $O \diamond (a \vee b) = \diamond(a \vee b) \wedge \neg \diamond c$

[36] In the calculation of alternatives, I follow Chierchia in using the variables over alternatives (*a,b,c,...*) to refer to the predicates applied to these variables. For instance, $\diamond(a \vee b)$ means $\diamond(P(a) \vee P(b))$.

b. $O \diamond a = \diamond a \wedge \neg \diamond b \wedge \neg \diamond c$

...

Once we exhaustify these pre-exhaustified alternatives, they will be negated. Therefore, the result of exhaustifying the main sentence with the Free Choice Item would have the form in (3.97), correctly representing the exclusive free choice interpretation:

(3.97) $O(\diamond(a \vee b \vee c)) = \diamond a \wedge \diamond b \wedge \diamond c \wedge \neg \diamond (a \wedge b \wedge c)$

Chierchia goes into more depth about how different readings of Free Choice Items obtain as a result of interaction with other elements in the sentence (for instance, how an inclusive free choice reading becomes possible in modal contexts). However, the main takeaway of his work is what distinguishes Free Choice Items from Negative Polarity Items: both involve exhaustification of alternatives, but Free Choice Items involve recursive exhaustification: once over the alternatives independently, and then over the actual sentence.

### 3.3.4 Sketch of an analysis

We are now at a place where we can use the theoretical insights to better understand the patterns in Old Avestan. Taking a top-down approach, let us begin with a working hypothesis about the semantics of generalizing free relatives. Based on extensive data and a variety of diagnostics, Horn (2000) argues that *-ever* free relatives in English pattern with the free choice readings of *any*, concluding that *-ever* free relatives indeed have a free choice meaning. Caponigro and Fălăuș (2018) have also shown that Romanian and Italian generalizing free relatives have a free choice semantics.

In the Old Avestan generalizing relative clauses – at least in postnominal ones where the generalizing expression is a Free Choice Item – this seems to be a plausible hypothesis. One aim of what follows is to cash out this intuition and see how it fits with the accounts of generalizing relative clauses in §3.1.1.

Going back to the discussions in §3.1.1 and 3.3.1, we can postulate that what a free choice item in a generalizing relative does is to activate alternatives across a modal domain. Take, for instance, the sentence in (3.98) – a simplified version of (3.25).

(3.98) [**yōi** mōi ahmāi səraošəm dąn **caiias=cā**]
REL.NOM.PL me.DAT DEM.DAT obedience.ACC give.AOR.SBJV.3PL *ci*.NOM=CONJ
upā.jimən hauruuātā
attain.AOR.SBJV.3PL integrity.ACC
'Whosoever will give me obedience to it here will attain integrity.

The alternatives, in this case, could be $\{\text{person}_a, \text{person}_b, \text{person}_c, ..., \text{person}_n\}$.

However, how these alternatives arise has to be explained: how does the existence of each of these generalizing expressions, namely *ci- -cā* and *ka- -cīt*, contribute to the activation of these alternatives? In what follows, I will discuss this question. I also pay special attention to the puzzle of *ci-*: how can *ci-*, as a Negative Polarity Item, appear in free relatives?

Note that the issue of alternatives also relates to the issue of the dual readings of generalizing relative clauses – a central concern, for instance, in von Fintel 2000. Although most cases in Old Avestan seem to show an *indifference* reading, the data are too sparse to determine whether both *indifference* and *ignorance* readings are both available or not. I therefore seek an account that remains underspecified between these two readings. For this reason, I will not attempt to adjudicate between the various theories discussed in §3.1.1. Instead, my goal is to show that the proposed compositional semantics for the generalizing expression is compatible with any of the existing accounts of generalizing relative clauses. What is crucial is that all such relative clauses share a core free choice component.

#### 3.3.4.1 Postnominal relative clauses and *ka- -cīt̰*

First, let us examine the case of postnominal relative clauses with *ka- -cīt̰*. As discussed previously, *ka-* is fundamentally an interrogative pronoun. According to Aloni's (2007) proposal, interrogative pronouns introduce sets of propositional alternatives corresponding to different possible answers or individuals. Crucially, these propositional alternatives become the core ingredient for free choice interpretations once combined with modal operators or similar constructions, such as these relative clauses. Going back to Dayal 1997 and von Fintel 2000's account of English EFRs, alternatives were a core component of their analyses too.

Now, the outstanding question is how the contribution of *-cīt̰* can be captured. Aloni's proposal will not help us here, as it is not in essence compositional and does not make it clear how an expression containing a Free Choice Item is compositionally different from questions outside of alternatives. On the other hand, the meaning and functions of *-cīt̰* is not clear in the Old Avestan corpus. Therefore, any compositional semantics of *ka- -cit̰* should be regarded with some degree of caution. While Chierchia (2013)'s pre-exhaustification account can be adopted, I do not think it is a straightforward explanation: Chierchia's theory does not cover interrogatives and their semantics, and is more appropriate for deriving the free choice meaning from polarity-sensitive expressions (as seen in the next section). I, however, take for granted that *ka- -cit̰* is a Free Choice Item involving alternatives. An alternative-based account of the Free Choice Item in generalizing relative clauses ties the meaning of free choice to theories of generalizing relative clauses in §3.1.1: once we have alternatives, they can be used in an implementation of Dayal (1997)'s notion of i-alternatives, the variability presupposition proposal by von Fintel (2000), the conditional semantics of von Fintel (2000), or the doxastic variation by Dayal (2004). All these proposal are based upon the same insight: there are alternatives across possible worlds. In the case of *ka- -cīt̰*, the interrogative introduces the alternatives. The modalization might

come from the meaning of *ka- -cīt̰*, or other elements in the sentence. However, note that accounts reviewed in §3.1.1 seem to attribute the modalized alternatives to the meaning of the generalizing expression (*bhii* or *ever*), but in the Old Avestan case, this would not be straightforward: *ka- -cīt̰* appears as a stand-alone Free Choice Item, and in those cases the alternatives do not need to be modalized.

I also remain agnostic about how to capture the universal reading of the generalizing relative clauses in Old Avestan. This is because the universal reading is tied to the *indifference* reading, and we do not know whether an *ignorance* reading of generalizing relative clauses was also possible in the language or not. The details of how quantification over alternatives takes place and how different readings are obtained would be set aside – all that matters for now is how alternatives are generated and exhaustified over, in a way that is **1.** compositionally sound, and **2.** in line with other theories of generalizing relative clauses (as reviewed in §3.1.1).

For an example of how my underspecified compositional account works and can be integrated into various frameworks in §3.1.1, consider the Old Avestan generalizing post-nominal relative clause in (3.99), simplified from (3.34):

(3.99) hōi səraošō jaṇtū [**ahmāi** [**yahmāi** vašī
DEM.DAT obedience.NOM come.AOR.IMPER.3SG DEM.DAT REL.DAT wish.PRES.2SG
**kahmāi=cīt̰**]]
INTERR.DAT=PRTCL
'Let obedience come to him, to him, to whomsoever Thou wishest' (Y 44.16)

Following Aloni's approach, the semantic contribution of *ka- -cīt̰* is analyzed as follows:

- The generalizing expression *ka- -cīt̰* (minimally) introduces propositional alternatives, generating a set of potential referents: individuals who are desired by the Wise Ahura (who is the interlocutor):

$$\{\text{person}_a, \text{person}_b, \text{person}_c, \ldots, \text{person}_n\}$$

- These alternatives are modalized with respect to a possible world, either due to the semantics of *ka- -cīt̰* or some modal element in the generalizing relative clause:

$$\{\text{person}_{a,w1}, \text{person}_{b,w2}, \text{person}_{c,w3}, \ldots, \text{person}_{\alpha,wn}\}$$

The relative clause in (3.99) thus triggers propositional alternatives of the form:

(3.100) $\text{ALT}_{3.99}$ = Thou wishest obedience to
$\{\text{person}_{a,w1}, \text{person}_{b,w2}, \text{person}_{c,w3}, \ldots, \text{person}_{\alpha,wn}\}$

Integrating Aloni's alternative-based semantics with modal analyses in Dayal 1997 we can assume that the imperative mood in the main clause introduces a universal modal quantification over these epistemic alternatives (Kaufmann 2012). Or, we can explain this as a conditional à la von Fintel (2000), with the worlds containing these alternatives intersecting with the modal base. What matters is that in this analysis of (3.99), the previous compositional theories of EFRs are readily accessible for capturing the Old Avestan data: the alternatives generated by *ka- -cīt̰* are precisely the epistemically relevant alternatives that Dayal and von Fintel consider.

In sum, while we simply do not have the required tools to choose the best possible option among the theories introduced in §3.1.1 for our data, we now have a clear compositional account of how *ka- -cīt̰*, as a Free Choice Item, contributes to the generalizing interpretation that is the basis of all analyses discussed in §3.1.1. In the next section, we aim to see how we can obtain a free choice meaning for *ci- -cā*, such that a similar analysis to what we suggested for the contribution of *ka- -cīt̰* can extend to *ci- -cā*.

#### 3.3.4.2 Free relatives and *ci- -cā*

The puzzle of generalizing free relatives with *ci- -cā* is more complicated. Before discussing the relative clauses, we have to first see how *ci-*, as a Negative Polarity Item, is

licensed in environments that are not downward-entailing. Based on the logic explained in §3.3.3, we also have a desideratum: if there is a way to get to a free choice semantics, we can unify these relative clauses with the *ka- -cīt͡* ones. In order to do so, we have to find a compositional solution: a Negative Polarity Item plus conjunction should, somehow, equal free choice. Ideally, we also want the puzzle and the desideratum to be correlated; that is, whatever allows *ci-* to be licensed in a non-downward-entailing environment is also what contributes to the free choice meaning. Taking steps towards solving this puzzle is the main contribution of this chapter.

To solve this puzzle, I propose that the semantic contribution of the conjunction particle *-cā* is additivity: conjunction requires at least two arguments, while additivity is monadic. This has first been remarked on by Mitrović (forthcoming), whose theoretical framework predicts such non-conjunctive uses for *-cā*. He labels the use of *-cā* (and its Sanskrit cognate *-ca*) in generalizing relative clauses MONADIC CONJUNCTION.

Moreover, I propose that additivity here is responsible for pre-exhaustification (as discussed by Chierchia 2013). Recall that according to Chierchia, free choice meanings emerge through a two-step exhaustification process: first, alternatives are pre-exhaustified independently, and then the resulting structure undergoes a final round of exhaustification. I argue that *-cā*, as a conjunction-like morpheme, precisely fulfills this function by quantifying inclusively over the domain alternatives generated by the negative polarity item *ci-*.

To see how this idea works at an abstract level, let us return to the original motivation behind pre-exhaustification in Chierchia's account. Pre-exhaustification strengthens each alternative by explicitly interpreting it as exclusive: only this alternative, and no others. This strengthening is precisely what allows subsequent recursive exhaustification to produce a coherent free-choice interpretation, as it ensures mutual exclusivity and maximal informativeness for each alternative. But how could conjunction, a morpheme whose

essential contribution is additivity and inclusivity, possibly fulfil the same function?

My answer is that additivity ensures each conjunct independently asserts a distinct possibility. When we additively combine two alternatives, we explicitly signal that multiple possibilities independently coexist. Crucially, additivity serves to clearly distinguish each alternative: instead of evaluating each alternative against others to determine informativity (as we do with Negative Polarity Items), an additive element explicitly asserts that each alternative individually represents a strong and independent possibility. Thus, additivity achieves a pragmatic separation of alternatives akin to pre-exhaustification, though via explicit enumeration rather than implicit exclusion.

To see how this works in action, let us take (3.98) as an example. Note that here, I will not discuss how the Free Choice Item comes to have a universal interpretation in combination with subjunctive verb – this is a common pattern discussed extensively by Chierchia (2013) and Dayal (2004) among others. For now, it matters that we get the free choice reading in combination with the definite meaning of the free relative.

In the previous chapters, I have argued that free relatives contain a built-in definite semantics, captured formally by an $\iota$ operator. Thus, a free relative such as the one in (3.98) modulo the generalizing expression would be semantically represented as the unique maximal individual satisfying the descriptive content of the relative clause. How then does the additive conjunction *-cā* yield a free-choice interpretation when it attaches to a Negative Polarity Item-like indefinite, such as *caiias*? Following Chierchia's approach to free choice phenomena, consider first the domain of alternatives triggered by *ci-* explicitly enumerated in (3.99):

(3.101) $\text{ALT}_{3.99} = \diamond(\{\text{person}_a, \text{person}_b, \ldots, \text{person}_n\}$ such that gives me obedience, attain integrity$)$.

In combination with *-cā*, these alternatives will be pre-exhaustified: *-cā* explicitly enumerates these alternatives, thereby essentially implementing pre-exhaustification. The

resulting pre-exhaustified alternatives (after application of *-cā*) is as follows.

(3.102) $\text{ALT}_{3.99}{}^{\text{Pre-Exh}}$ = {◇(only person$_a$ give me obedience and attains integrity), ◇(only person$_b$ gives me obedience and attains integrity), …, ◇(only person$_n$ gives me obedience and attains integrity)}

This set of alternatives, which were the result of pre-exhaustification, is the most crucial result that we need: this set of alternatives for a generalizing free relative is very similar to the (modalized) set of alternatives we saw in the case of a generalizing postnominal relative clause in (3.100). While we had different compositions in each case (interrogative-based Free Choice Item for postnominal relative clause (3.100), Negative Polarity Item for free relatives (3.102)), the end-result of alternatives is similar: both (3.100) and (3.102) give us a set of modalized alternatives.

Now, we can adopt any framework to see how these alternatives would be used. We can continue an exhaustification-based approach – for instance, in the case of (3.102), the subsequent application of recursive exhaustification (via the operator $O$) to the disjunction over these pre-exhaustified alternatives yields the characteristic free-choice interpretation. Formally, this exhaustified interpretation is represented as follows:

(3.103) $O(\text{ALT}_{3.99}{}^{\text{Pre-Exh}})$=

$$\Diamond(\text{person}_a)\wedge\Diamond(\text{person}_b)\wedge\cdots\wedge\Diamond(\text{person}_n)\wedge\neg\Diamond(\text{person}_a\wedge\text{person}_b\wedge\cdots\wedge\text{person}_n)$$

Intuitively, this semantics captures explicitly the meaning of free choice in this example: generalizing free relatives refer to the maximal set of individuals each of whom independently could possibly give obedience. The universal reading and inclusive free choice can also be further captured by considering the properties of tense and aspect. Doing so would also integrate insights from Dayal (1997) and von Fintel (2000).

While I remain agnostic about the precise syntax and the syntax–semantics interface

of these constructions (largely due to the paucity of data), I note that the syntactic position of the generalizing expression differs from that in languages where it is somehow morphologically fused with the relative pronoun or always adjacent to it. For instance, in Hindi, the particle *bhii* always follows the relative pronoun, or the Romanian *ori-* is a prefix attached to the *wh*-word (the same holds for Free Choice Items in generalizing relative clauses in Greek (Cheng and Giannakidou 2006), Italian (Caponigro and Fălăuș 2018), among others). In contrast, in Old Avestan generalizing relative clauses the generalizing expression never appears immediately after the relative pronoun: in (3.26) and (3.27) only a second-position clitic intervenes, but in other examples one or more free words do. At the same time, the generalizing expression does seem to form part of the same constituent as the relative pronoun (as suggested by agreement), though it is not morphologically fused with it. One possibility is that it is base-generated within the DP headed by *ya-* as a modifier and later scrambled to more embedded positions. However, since there is no evidence of its occurring directly adjacent to the relative pronoun, it is unclear whether this analysis is ultimately viable.

From the perspective of the syntax–semantics interface, the Old Avestan data appear to be compatible with the analysis of *bhii*-correlatives in Dayal 2019: Free Choice Items (*ci- -cā*, *ka- -cīt̰*) take wide scope over the free relative with a core existential semantics. This is precisely the semantic hallmark of Free Choice and Negative Polarity Items (taken often as an existential quantifier in their core) and compatible with the alternatives that these generalizing expressions introduce into the relative clause (with an exclusive free choice interpretation). The universal sense is then secondary, the result of modal interactions. The definiteness associated with the free relative is nevertheless maintained. Following Dayal 2019, epistemic variation ensures that the unique referent is evaluated across possible worlds. The precise mechanism remains open as we do not have enough data to prefer one of the proposed analyses over the others, but this general analysis can be incorporated within all more fine-grained accounts of generalizing relative clauses.

My main objective in this chapter has been explaining how *ci- -cā* and *ka- -cīṯ* give rise to a generalizing meaning. While the case of *ka- -cīṯ* was relatively straightforward due to its occurrence as a stand-alone Free Choice Item, the main puzzle concerned how a Negative Polarity Item such as *ci-* could appear within free relatives (which are not typically licensors of Free Choice Items). As for the details of how the syntax-semantics interface would work in these cases, it appears that we can maintain the free relative structure as described in the previous chapter, with the generalizing expression taking scope over the whole proposition (following Chierchia 2013, Dayal 2019). However, I do not think the data are enough for a more elaborated account of the syntax-semantics interface. Going back to the puzzle of the Negative Polarity Item *ci-* in non-downward-entailing environments, I will also discuss a similar case of Negative Polarity Items appearing in non-licensing contexts in English before concluding this chapter.

#### 3.3.4.3 Negative Polarity Items outside downward-entailing environments: the case of English *even*

The account given for *ci- -cā* and how *-cā* solves the issue of the licensing of *ci-* outside downward-entailing environments might seem stipulative. However, such behaviour among Negative Polarity Items is not uncommon, and there are different mechanisms to explain them. In what follows, I will explain one such account and how the methodology of explaining the licensing mirrors my proposal about *ci- -cā*.

It has long been observed that Negative Polarity Items in English can appear in the scope of restrictors of non-monotone quantifiers. Non-monotone quantifiers are quantifiers that are neither upward-entailing nor downward-entailing. Unlike monotone quantifiers, which allow inferences from subsets to supersets (or vice versa), non-monotone quantifiers block such inferences. For example, the quantifier *exactly two* is non-monotonic: from *exactly two students passed*, one cannot infer *exactly two people passed* (upward) or *exactly two linguistics students passed* (downward). By definition, such quantifiers cannot

license Negative Polarity Items. However, examples in (3.104) are felicitous:

(3.104) a. Exactly four people in the whole world have ever read that dissertation: Bill, Mary, Tom, and Ed.

b. Exactly three people with any money showed up.[37]

Crucially, Negative Polarity Items are not always felicitous with non-monotone quantifiers, making this distribution even more puzzling:

(3.105) a. #Exactly one hundred people have ever read that dissertation.

b. #Exactly ten of my twelve students said anything in my seminar.

Therefore, a response to our puzzle might be that downward-entailment environments are not necessary to license NPIs, and whatever licensing condition licenses NPIs in the above examples also licenses *ci-* in generalizing free relatives. We will, however, see that this is not the case, as there are specific licensing conditions that hold in these cases but not in the Old Avestan data. The work that we will discuss here is Crnič 2014, which attempts to resolve this puzzle in light of a similar pattern seen by *even*. When *even* is associated with a weak, focused element (marked by capital letters here, thereafter weak *even*), it is licensed in the same environments as Negative Polarity Items:

(3.106) a. #Amir saw the film even ONCE.

b. Amir did not see the film even ONCE.

c. Did Amir see the film even ONCE?

However, weak *even* may also be acceptable within the scope of a non-monotone quantifier. Once again, this is not always the case, as seen in (3.108).[38]

(3.107) a. Exactly two congressmen read the constitution even ONCE.

[37] Examples are from Crnič (2014, p. 188), who cites the sources for each example.

[38] The sharpness of this contrast appears to vary across speakers; I reproduce it here because it forms part of the empirical motivation for Crnič's analysis.

b. Exactly four people in the whole world even OPENED that dissertation.

(3.108) a. #Exactly four hundred congressmen read the constitution even ONCE.

b. #Exactly one hundred people even OPENED that dissertation.

(Crnič 2014, p. 171)

To account for this, Crnič first gives a basic semantics for *even*. Following previous literature, Crnič suggests that *even* requires its prejacent to be less likely than all the relevant focus alternatives to the focal expression that *even* is associated with. In other words, in uttering *I even ate A CUPCAKE*, we are presupposing that my eating a cupcake is less likely than, say, my eating an apple or some yogurt. This is indeed contextually determined: in this case, the contextual information that *I try to eat healthy* determines this likelihood scale. The proposition $p$ being less likely than $q$ is formalized as $p <_{\text{likely}} q$, or simply $p < q$. Therefore, *even* would have the denotation in (3.109) – crucially, *even* has no assertive content.

(3.109) $[\![\textbf{even}]\!]^C$ : **Assertion** : $p$

**Presupposition**: for all $q$ in $C$ : $p \neq q \rightarrow p < q$.

$[\![\textbf{even}]\!]$ is defined only if for all the alternatives to $p$ based on the context $C$, $p$ is less likely than those alternatives.

This proposal explains why (3.106a), repeated below, is infelicitous. Note that likelihood, here in the case of scalar implicatures, can be understood in terms of logical entailment: logically stronger propositions are at most as likely as the logically weaker ones. Therefore, if a proposition $p$ entails proposition $q$, $p$ is equally or less likely than $q$.

(3.110) #Amir saw the film even ONCE.

(3.111) a. [even [Amir saw the film once$_{\text{Focus}}$]]

b. $[\![$(3.110)$]\!]$ is defined only if for all relevant n > 1: that Amir saw the film once $<$ that Amir saw the film n-times.

The scalar presupposition in (3.111b) cannot be satisfied: usually, seeing a film once cannot be less likely than seeing a film more than one time. In other words, seeing a film more than once entails seeing a film once, so seeing a film more than once is always at most as likely as seeing a film once. There is no alternative that is more likely than the prejacent (seeing a film ONCE).

Crnič postulates that *even* moves at LF without leaving a trace, and takes scope over negation. This assumption helps us explain why (3.106a) is felicitous under negation, similar to Negative Polarity Items:[39]

(3.112) Amir did not see the film even ONCE.

(3.113) a. [even [¬ ~~even~~ [Amir saw the film once$_{\text{Focus}}$]]]

b. ⟦(3.112)⟧ is defined only if for all relevant n > 1: that Amir did not see the film once < that Amir did not see the film n-times.

The presupposition in (3.112) is easily satisfied: if Amir has not seen a film once, then he has not seen it more than one time – therefore, the prejacent (Amir seeing the film once) is stronger and less likely than the contextual alternatives. The presupposition is, consequently, satisfied.

The examples discussed so far involved scalar implicatures (triggered due to the numeral focal expression). Scalar alternatives, however, do not need to be logically dependent. The necessary condition that arises from the presupposition in (3.109) is that no relevant alternatives to the prejacent of *even* entails it: this condition can be met if an entailment relationship is not even relevant. The only relationship that needs to hold between the prejacent of *even* and its alternatives is the likelihood relation. This assumption can explain the data in (3.107) and (3.108), repeated below.

(3.114) Exactly four people in the whole world even OPENED that dissertation.

[39] If negation takes scope lower than negation, the presupposition of *even* projects beyond negation, and will still remain unsatisfied.

(3.115) a. [even [exactly four people in the whole world opened$_{\text{Focus}}$ that dissertation]

b. ALT: Exactly four people in the whole world {read/understood} that dissertation.

c. ⟦3.114⟧ is defined only if for all the relevant x in {read/understood}: that exactly four people read that dissertation < that exactly four people x-ed that dissertation.

(3.116) #Exactly one hundred people in the whole world even OPENED that dissertation.

(3.117) a. [even [exactly one hundred people in the whole world opened$_{\text{Focus}}$ that dissertation]

b. ALT: Exactly one hundred people in the whole world {read/understood} that dissertation.

c. ⟦3.116⟧ is defined only if for all the relevant x in {read/understood}: that exactly one hundred people read that dissertation < that exactly one hundred people x-ed that dissertation.

The scalar alternatives in (3.115b) and (3.117b) are logically independent: none of them entail the prejacent of *even*.[40] Then, how can we explain why the presupposition in (3.115c) is satisfied, but the presupposition in (3.117c) is not?[41] This is where the likelihood relation from (3.109) comes to the rescue: world knowledge serves as a foundation for the following expectations about the proposition in question:

(3.118) Approximation of expectations:

a. the number of people who opened the dissertation ≈ high (50)

b. the number of people who read the dissertation ≈ moderate (20)

[40] Although verbs like understand, read, and open often stand in an intuitive hierarchy (e.g., understanding presupposes reading, which presupposes opening), Crnič emphasizes that these relationships are contextual, not logical in the formal semantic sense. Logical entailment requires that a proposition hold in all possible worlds where its antecedent does; by contrast, the entailments among open, read, and understand depend on world knowledge and are not encoded in their lexical semantics.

[41] Crnič also convincingly shows that the issue is not merely about the numeral being too low or too high.

c. the number of people who understood the dissertation ≈ low (10)

This distribution plays a crucial role: in the sentence *Exactly four people even opened that dissertation*, the expectation regarding the prejacent (*exactly four people opened it*) is much lower than the expected number (50), and thus less likely. By contrast, the alternatives (e.g., read, understood) are actions associated with lower expectations, so saying that four people did those things is actually more plausible relative to the expectation. Based on these expectations, the likelihood relation in (3.115c) holds: the prejacent is less likely than the alternatives. As the presupposition in (3.115c) is satisfied, (3.114) is felicitous.[42]

On the other hand, in (3.117c), the alternatives are less likely: given the expectation that approximately fifty people opened the dissertation, saying that one hundred people did so is already more than expected. In contrast, one hundred people reading or understanding the dissertation would be even more surprising, since the expected numbers for these actions are lower (around twenty and ten, respectively). In Crnič's words (p. 185), "the proposition that exactly one hundred people opened that dissertation will be closer to our expectations than the proposition that exactly one hundred people read or understood it." Thus, among the relevant alternatives, the prejacent does not stand out as the least likely proposition. The presupposition in (3.117c) is therefore not satisfied, resulting in the infelicity of (3.116).

Now that we know how *even* is licensed in non-monotonic environments, we have the necessary tool to tackle the puzzle of Negative Polarity Items in such contexts. Crnič draws a close parallel between *even* and Negative Polarity Items, suggesting that Negative Polarity Items can be modelled as weak elements associated with covert even. While Crnič thoroughly discusses this proposal and its relevance to previous literature within various approaches, here I will focus on how the theory of Negative Polarity Items in Chierchia (2013), as discussed in §3.3.2, can incorporate Crnič's proposal. As explained

[42] The judgments are context-sensitive and may change in sufficiently different contexts. What matters is that the relevant expectations be independently motivated, not stipulated post hoc to rescue the sentence.

above, Chierchia (2013) argues that when Negative Polarity Items give rise to subdomain alternatives, they are associates of an exhaustifier ($O_d$). However, this does not explain the occurrence of Negative Polarity Items with a non-monotone quantifier. One component of Chierchia's theory is the principle of Minimality (Rizzi 1990), which ensures that if an exhaustifier applies to all domain alternatives of the Negative Polarity Item, it also affects any intervening quantifiers. With this in mind, a sentence with a Negative Polarity Item in a non-monotone context, such as (3.119a), will have the following structure according to Chierchia's theory:

(3.119) a. Exactly two congressmen read any book last year.

b. [ **exh** [ exactly two$_D$ congressmen read any$_B$ book ] ]

(3.120) $O_d[\![$(3.119a)$]\!]$: Exactly two congressmen read a[43] book, and $\forall D' \subseteq D, B' \subseteq B$, if $(D', B') \neq (D, B)$, then $\neg$((exactly two congressmen in $D'$ read a book in $B'$) $\rightarrow$ inconsistent.

The result of exhaustification in (3.120) is an inconsistent inference: (3.120) says that no other pair of a subset of congressmen and a subset of books satisfies the predicate "exactly two congressmen read a book." This exhaustive inference is typically unsatisfiable in realistic domains, where multiple pairs of congressmen and books exist. For example, if A and B read a book, the prejacent is satisfied, but so are many logically overlapping or weaker alternatives (e.g., A and B reading a subset of books), which contradict the exhaustive inference. The contradiction arises because the exhaustifier excludes all alternative subset pairings except the prejacent – an implausibly strong requirement in natural contexts.[44] As a result, Chierchia's theory makes the incorrect prediction that (3.119a) should be infelicitous.

[43] Note that *any* is essentially an existential quantifier, with some extra semantics/pragmatic constraints that turn it into a Negative Polarity Item.

[44] Crnič notes (fn. 17) that this contradiction depends on the assumption that the restrictor domain contains more than n individuals – a presupposition often carried by quantifiers like *exactly n NP*.

Crnič suggests two modifications to Chierchia's proposal to resolve this incorrect prediction. His main modification is that Negative Polarity Items such as *any* can also give rise to scalar alternatives in addition to subdomain alternatives. For instance, the scalar alternatives of *any* would be {one, two, three, ...} (as lexically, *any* is essentially just an existential quantifier). The second modification is actually inherent to Chierchia's proposal: for Chierchia, if a Negative Polarity Item gives rise to scalar implicatures (such as *lift a finger* or *a single NP*), it is associated with a covert *even* instead of an exhaustifier. Therefore, if we assume that *any* can also trigger scalar implicatures, then we can explain its occurrences with non-monotone quantifiers by postulating that it is associated with a covert *even*. In this view, (3.119a) would have the structure in (3.122):

(3.121) Exactly two congressmen read any book last year.

(3.122) a. [ **even** [ exactly two congressmen read any book ] ]

b. ALT: {m, n $\geq$ 1 | that exactly m congressmen read n books last year}

c. $[\![$(3.121)$]\!]$ is defined only if for all relevant m, n $\geq$ 1: if (m, n) $\neq$ (2, 1), then that exactly two congressmen read a book last year < that exactly m congressmen read n books last year.

The scalar presupposition triggered by even is satisfied if the alternatives are such as *exactly four hundred congressmen read a book*, which aligns with the shared expectation that this is a common occurrence and therefore relatively likely, and alternatives like exactly two congressmen read five or ten books, which are less expected and thus less likely. In such a context, the prejacent (*exactly two congressmen read a book*) can plausibly be the least likely among the alternatives, satisfying *even*'s presupposition.

Essentially, the covert *even* takes away the need for the strengthening requirement of Negative Polarity Items within the prejacent of *any*: as long as the prejacent of *even* is contextually less probable than its scalar alternatives, the sentence is felicitous.

This account, however, cannot be adopted for the Old Avestan case. If we follow Crnič (2014), we must say *-cā* is the equivalent of *even*, and a sentence with *ci- -cā* bears the presupposition that this sentence it the least likely across its contextually-determined alternatives. For instance, (3.123) would have the interpretation that some person will give obedience the speaker obedience, and the other people within the domain of these people are more likely to do so.

(3.123) **yōi** mōi ahmāi səraošəm dąn **caiias=cā**
REL.NOM me.DAT DEM.DAT obedience.ACC give.PRES.SBJV.3PL *ci*.NOM=CONJ
upā.jimən hauruuātā amərətātā
attain.SBJV.3PL integrity.ACC immortality.ACC
'Whosoever will give me obedience to it here will attain integrity and immortality' (Y 45.5)

This, indeed, is not the desired reading. A likelihood relation does not seem to be in play in these cases, and there does not seem to be any scalar alternatives. In fact, no type of exhaustification (as seen in Negative Polarity Items) would give us the desired reading. The interpretation of these generalizing free relatives is that alternatives are *included*, rather than *excluded*: we do not want to say that there is one unique person who will give the speaker obedience and all other stronger alternatives to this person do not do so, we actually want to say the opposite: the predicate applies to all other alternatives.

However, if Crnič's analysis of English *even* is on the right track, this work provides an interesting parallel to the suggested analysis of the Old Avestan data. A Negative Polarity Item can be turned into a Free Choice Item when accompanied by a covert or overt particle that changes the dynamics of exhaustification. Moreover, my proposal has the advantage of using overt elements to explain the shift. In fact, it is likely that a proposal such as mine can provide some motivation for stipulation of covert elements in Crnič's fashion.

## 3.4 Conclusion

Aside from introducing generalizing relative clauses in Old Avestan, the theoretical contribution of this chapter has been deliberately modest. Given that the corpus contains only six examples of such clauses, it is not possible to develop highly nuanced or fine-grained proposals about their syntax and semantics. That said, my aim has been to offer a cautiously underspecified theoretical account of the semantic contribution of the generalizing expressions *ci- -cā* and *ka- -cīt̃* within these relative clauses, approached from a compositional perspective. We saw that, although these two expressions differ morphologically, they contribute similarly at the level of interpretation: both yield a specific set of alternatives distributed across possible worlds. This property is a core feature of all accounts of generalizing relative clauses. In developing this analysis, the chapter also addressed an intriguing puzzle; namely, the occurrence of the Negative Polarity Item *ci-* within free relatives.

# Chapter 4

# Old Persian and Young Avestan

Having established an understanding of non-postnominal relativization in the earliest attested Old Iranian language, Old Avestan, we are now in a position to turn to the other attested Old Iranian languages: Old Persian and Young Avestan. The first half of this chapter (§4.1) examines non-postnominal relative clauses in the Old Persian corpus, which consists primarily of Achaemenid inscriptions. The second half (§4.2) explores this construction in a sample of the Young Avestan corpus, specifically the four liturgical texts Frawardin Yašt, Mihr Yašt, Hōm Yašt, and Zamyād Yašt.

The focus of this chapter is primarily descriptive, aiming to provide a high-level overview of how the constructions attested in Old Avestan are manifested in these temporally and geographically distinct varieties of Old Iranian. Crucially, we cannot assume a direct diachronic change from Old Avestan to either Old Persian or Young Avestan, as neither is a direct descendant of Old Avestan. The relationship between Old and Young Avestan is particularly complex. Although Young Avestan represents a later linguistic stage in the Avestan textual tradition, it should not simply be treated as the direct descendant of the Old Avestan variety represented by the Gāthās. The two corpora reflect distinct linguistic varieties and transmission histories, so similarities and differences between them cannot automatically be interpreted as successive stages of a single linear development.

Nevertheless, as the analysis will show, the direct ancestors of Old Persian and Young Avestan appear to have shared similar patterns of free relatives with Old Avestan. This is because both languages preserve similar types of constructions, albeit with significantly less variability and productivity.

## 4.1 Old Persian

Old Persian is the language of the Achaemenid royal inscriptions composed between the mid-sixth and late fourth centuries BCE. It belongs to the Southwestern branch of the Iranian languages and is attested exclusively in cuneiform inscriptions commissioned by the Persian kings, most prominently Darius I and Xerxes I. The script, known as Old Persian cuneiform, was likely devised specifically for royal use, and exhibits a semi-syllabic structure unlike the older Mesopotamian writing systems. While the initial decipherment of the script took place in the nineteenth century (mostly by Georg Friedrich Grotefend), we owe much of our understanding of the language and texts to the works of Roland Kent, particularly his edition of the texts (Kent 1953) accompanied by a grammar and a lexicon. Later on, Rüdiger Schmitt edited the texts again (mostly within the Corpus Inscriptionum Iranicum program) (Schmitt 1981, 1991, 2000, 2009), and published an accompanying lexicon (Schmitt 2014). The examples and translations in this chapter in principle follow the work of Schmitt. With the textual basis established, we can now turn to the syntactic properties of Old Persian that are relevant for the analysis of relative constructions, in particular its word-order system.

Even though at first glance, Old Persian appears to be non-configurational, there are, upon closer examination, robust word order patterns. In his detailed study of Old Persian word order, Hale (1988) demonstrates that the language exhibits a strongly verb-final structure, with the finite verb typically appearing at the end of the clause and the nominative subject preceding the verb phrase. Despite this underlying regularity, Hale

identifies two systematic processes that give rise to surface variation: primary topicalization, which moves a single constituent (such as a direct object or prepositional phrase) to a clause-initial position for pragmatic emphasis, and secondary topicalization, which places a constituent after the finite verb in a sentence-final position. These processes are tightly constrained: only one constituent may be topicalized per clause. They also operate alongside Wackernagel's Law, which governs the placement of clitic elements in second position.

To my count, there are 338 relative clauses in the Old Persian corpus. This includes the article-like and the ezafe constructions, but excludes occurrences of a fossilized relative pronoun functioning as a complementizer (which also exists in Old Avestan). It should also be noted that as the corpus is quite formulaic, many sentences have been repeated throughout the corpus. However, despite the limitations of the data, a close examination of the relative clauses shows some interesting divergences from what we observe in the Old Avestan corpus.

The relative pronoun in Old Persian has two realizations in a suppletive paradigm: *haya*, used exclusively for nominative masculine and feminine forms, and *taya-* used for all other forms. The morphological form of this relative pronoun has been a subject of debate among scholars of Old Persian. The exact counterparts of these forms cannot be found in Old Avestan (where *ya-* directly continues the Proto-Indo-European **io)*.[1] The writing system of the Old Persian inscriptions allows two possible transcriptions of this form: *hya/tya-* and *haya-/taya-*. Bartholomae (1904), Meillet and Benveniste (1931) and Kent (1953) have adopted the former. Kent (1944) argues that *hya/tya-*, correlating with the Sanskrit forms *sya-/tya-*, is an amalgamation of the original Indo-Iranian demonstrative stem *sa-/ta-* and relative stem *ya-*. However, the current state of scholarship has adopted the *haya/taya* transcription. In this case, the relative pronoun is an Old Persian

[1] In turn, *ya*-based morphemes can be found in Old Persian only in fossilized complementizers such as *yadi* 'if, when' and *yātā* 'until.'

innovation, the result of amalgamation or some type of fusion between the Proto-Indo-European demonstrative pronouns **sa-*, *tā-* and the **io*-based relative pronoun (Tavernier 1999, Schmitt 2014). Be that as it may, I do not believe that either of these proposals concerning the origin of the relative pronoun has any bearing on the forms and function of relative clauses in Old Persian.

### 4.1.1 Strategies of relativization: an overview

Old Persian has, in essence, the same three relativization strategies as in Old Avestan: postnominal relative clauses (4.1), free relatives (4.2), and correlatives (4.3).

(4.1) imā dahaya-āva [tayā manā patiyāiša] vašnā
DEM.NOM.PL countries.NOM REL.NOM.PL me.GEN come to.PST.3PL favour.INST
Ahuramazdāha manā bandakā āhantā
Ahuramazdā.GEN me.GEN subordinates.NOM be.PST.3PL
'The countries which came to my possession became my subordinates by the favour of Ahuramazdā.' (DBa 18–19)

(4.2) ima [taya adam akunavam]
DEM.NOM REL.ACC me.NOM do.PST.3SG
'This (is) what I have done.' (DB 4.3)

(4.3) [[taya adam akunavam] [visam vašnā Auramazdāha akunavam]]
REL.ACC me.NOM do.PST.3SG all.ACC help.INST Auramazdā.GEN do.PST.3SG
'What I did, all (that) I did with the help of Auramazdā' (DSf 20)

However, as we will see below, the forms and functions of these strategies do not precisely correspond to their Old Avestan counterparts.

### 4.1.2 Postnominal relative clauses and resumption

Postnominal relative clauses in Old Persian can be restrictive or non-restrictive. The context sometimes makes it straightforward to distinguish between restrictive and non-restrictive interpretations: for instance, in the context of (4.4), there is a part of the Persian and Median army that is with the king, and another part that is against the king.

Therefore, the relative clause has to be interpreted restrictively. On the other hand, the final relative clause (in the square brackets) in (4.5) has to be non-restrictive, because the discourse referent it modifies, *imaibiš ūnaraibiš* 'with these skills' has already been introduced into the discourse in the preceding text.

(4.4) adam kāram Pārsam utā Mādam frāišayam [haya upā
me.NOM army.ACC Persian.ACC CONJ Median.ACC send.PST.1SG REL.NOM under
mām āha]
me.ACC COP.PST.3SG
'I sent forth the Persian and Median army which was under me.' (DB 3.30)

(4.5) (imā ūnarā tayā Auramazdā upari mam
DEM.NOM.PL skills.NOM REL.ACC.PL Auramazdā.NOM upon me.ACC
niyasaya ...) taya=mai kr̥tam imaibiš ūnaraibiš
bestow.PST.3SG ... REL.NOM=me.DAT do.PTCP.NOM DEM.INST.PL skills.INST
akunavam [tayā mām Auramazdā upari niyasaya]
do.PST.1SG REL.ACC.PL me.ACC Auramazdā.NOM upon bestow.PST.3SG
'(These are the skills that Auramazdā has bestowed upon me ...) what has been done by me, I have done with these skills which Auramazdā has bestowed upon me.' (DNb 45–49)

While the topic of this study is not postnominal relativization, a noteworthy feature of Old Persian postnominal clauses sets them apart from the Old Avestan cases – namely, postnominal relative clauses modifying a topicalized noun with resumption. This feature serves as a useful transition into the following discussions, as it underscores the productivity of topicalization in Old Persian, a pattern also found in non-postnominal relative clauses.

In Old Avestan relative clauses, with the exception of correlatives, resumption does not exist. In Old Persian, on the other hand, postnominal relative clauses do often involve resumption when they are modifying a topicalized noun. These relative clauses are, in terms of their external syntax, similar to Old Avestan correlatives: there is a relative clause at the left periphery, and what the relative clause refers to is resumed by a demonstrative pronoun (or the whole NP in one case) in the matrix clause.

However, it is important to note that this left-dislocated constituent does not appear to be syntactically integrated into the matrix clause. In all but one case of such topicalized nouns with a postnominal relative clause, the external noun bears nominative case marking, regardless of its semantic or grammatical role within the clause. Skjaervø (2009, p. 159) describes this phenomenon as ANTECEDENT NOMINATIVUS PENDENS, adopting the Latin grammatical term for nominative elements that stand outside clause-internal syntactic dependencies.

(4.6) [[imā dahayāva$_i$ [tayā adam agr̥bāyam]] ...
DEM.NOM.PL countries.NOM REL.ACC.PL me.NOM seize.PST.3SG ...
adam=šām$_i$ patiyaxšayaiy
me.NOM=DEM.GEN.PL rule.PST.3SG
'These countries which I seized ... I ruled over them.' (DNa 16–19)

As we see in (4.6), the external head *imā dahayāva* 'these countries' bears nominative case marking, despite the fact that its case in both the relative clause and the matrix clause (the latter manifested in the case of the resumptive pronoun) is genitive (ruling out a potential case attraction scenario). In the syntactic literature, this phenomenon is known as HANGING TOPICS (see for Alexiadou 2006 for an overview). The consensus of the syntactic literature is that these topics are base-generated at the left periphery, co-indexed with a syntactically-integrated pronoun.

Only one counterexample appears, in Xerxes's inscription XPf 23, where the external head of the left-dislocated relative clause bears accusative case, which is the case it would have if it were in argument position in the matrix clause and is the case that the resumptive pronoun has.[2] This is most plausibly assigned by the predicate of the matrix clause:

(4.7) [Dārayavaum$_i$ [haya manā pitā]] avam$_i$ xšāyaϑiyam
Darius.ACC REL.NOM my.NOM father.NOM DEM.ACC king.ACC

[2]There are some cases of these left-dislocated relative clauses in the corpus where case syncretism allows us to assume either a nominative or accusative case for the external head noun. However, as there are no instances in Darius's inscriptions where a non-nominative interpretation is obligatory, I do not take these ambiguous cases as having accusative case.

akunauš
make.PST.3SG
'Darius, who was my father, him he made king' (XPf 22–24)

Skjaervø describes this construction as involving "overt resumption," and this label is apt if we assume that resumption entails syntactic integration of the resumed constituent into the matrix clause. On this view, the XPf example represents the only instance in Old Persian of genuine topicalization with resumption, while the other cases reflect dislocated topics that are not assigned case by the matrix predicate and thus stand outside the clause's syntactic domain.

As there is only one example of an integrated topic in the corpus, we cannot postulate a diachronic path from hanging topics to integrated topicalization (and we need not do so, since languages such as German synchronically exhibit both constructions; see Nolda 2004). What matters for our purposes is that topicalization appears to have become a more productive strategy in Old Persian.

### 4.1.3 Free relatives

Although Old Persian does have free relatives, both *in situ* and in a correlative construction, *in situ* free relatives show a more limited distribution in Old Persian. Among the 33 definite cases of an *in situ* free relative in Old Persian, only three examples have a non-copular overt verb – in all the other cases, the predicate of the free relative is a copula (mostly covert, only overt in DB 1.57). These three non-copular examples are not all different: in fact, the free relative in all three is the same free relative we saw in (4.2) with the verbal predicate *akunavam* (of the verbal root *kar-* 'to do'). The fact that this is the only non-copular verb we see in *in situ* free relatives might be related to the fact that the majority of copular free relatives are in fact predicated by a participial form of the verb *kar-* 'to do' (such as (4.8)). This means that even these three *verbal* free relatives do not indicate a lot more variability (and, probably, productivity) than we see in copular free

relatives.

(4.8) [taya manā kr̥tam] vr̥navatām θuvām
REL.NOM me.GEN do.PTCP.NOM convince.PRES.IMPER.3SG you.ACC
'Let that which is done by me convince you' (DB 4.43)

This property of the predicate of free relatives entails that in all *in situ* free relatives (except the three where the verb is *akunavam* 'I've done'), the internal case of the free relative (assigned by the predicate of the relative clause) is nominative. These free relatives may occasionally appear as objects of the matrix clause, but only when case syncretism permits such a usage (as was also common in Old Avestan). For instance, as the neuter singular relative pronoun *taya* is syncretic between accusative and nominative cases, the free relative in (4.9) can be the object of the verb *patibar-* 'to restore', even though it is internally copular and therefore nominative.

(4.9) adam [taya parābr̥tram] patiyābaram
me.NOM REL.NOM take away.PTCP.NOM restore.PST.1SG
'I restored what had been taken away' (DB 4.43)

The lack of variability in Old Persian free relatives is striking. If the corpus in hand provides a reasonably faithful representation of the language, it seems like the *in situ* free relative construction had become quite unproductive in the stage/register of Old Persian that the inscriptions represent (even from the beginning, considering that the DB inscriptions are the oldest documents written in Old Persian).

There is another point of divergence between Old Avestan and Old Persian free relatives and another indicator that the free relative construction was not as productive in Old Persian as it was in Old Avestan: there are no certain cases where a free relative in Old Persian is overtly head-internal. All free relatives in Old Persian have a covert internal nominal head. An overtly head-internal interpretation is, however, possible in two cases. One is DB 1.57 (4.10):

(4.10) ... avājanam utā [tayai=šai fratamā martiyā anušiyā
... slay.PST.1SG CONJ REL.NOM.PL=DEM.GEN first.NOM.PL men.NOM followers.NOM
āhantā]
COP.PST.3PL
'I slew ... which men were his foremost followers / (those) who were his foremost following men.' (DB 1.57)

As we can see, it is possible to take *martiyā* as an internal head in this example. The corpus provides motivations for this interpretation too. In DB 2.77 (as well as DB 3.49, 51, 74, 90, 91), there is a postnominal counterpart of this example with *martiyā* as the head noun – this might show that its free relative counterpart was also likely to be head-internal by *martiyā*:

(4.11) [martiyā [tayai=šai fratamā anušiyā āhantā]] ...
men.NOM REL.NOM.PL=DEM.GEN foremost.NOM.PL followers.NOM COP.PST.3PL
'The men, who were his foremost followers...' (DB 2.77)

Crucially, however, because the sentence is copular, we need not do so; *martiyā* can also be the nominal predicate.[3]

One other possible case is DB 4.51, which contains a free relatives in a correlative construction (discussed in §4.1.4):

(4.12) [[tayai paruvā xšāyaϑiyā yātā āhā] [avaišām avā nai
REL.NOM.PL former.NOM.PL kings.NOM while COP.PST.3PL DEM.GEN.PL much NEG
asti kr̥̊tam]]
COP.PRES.3SG do.PTCP.NOM
'The previous kings, as long as they lived, by them so much has not been done.'
(DB 4.51)

The translation in (4.12) reflects Schmitt (1991), who has taken this as an article-like construction (which will be discussed in §4.1.3.1). It is also possible to take this instance

[3]The only complication of taking (4.10) as having a covert internal head is that the relative clause contains two nominals: *martiyā* 'men' and *anušiyā* 'followers'. However, we can assume that *martiyā* and *anušiyā* are coordinated via asyndetic coordination, or *anušiyā* is functioning as an adjective as in the case of DB 2.95.

as head-internal: 'which kings were previously', or as containing a covert head: '(those) who where the kings previously' – so we cannot be sure whether this is a genuine head-internal free relative or not. Note that the obscurity of the meaning of *yātā* here makes it difficult to interpret this example however we take it. This is due to the fact that (4.12) is the only occurrence of *yātā* in a different function than a complementizer.

As we can see, a head-internal analysis of either of the two examples above is not fully straightforward. More importantly, these are the only two cases in which such an analysis is even possible (and yet not obligatory). If there were even one unambiguous head-internal free relatives in the corpus, we might assume that their scarcity is merely coincidental. However, the total absence of such cases is compatible with the assumption that in Old Persian, free relatives could not have been head-internal.

#### 4.1.3.1 Article-like

In the Old Persian corpus, there are four cases where the relative pronoun seems to have an article-like function: there is no long-distance dependency, and the case of the relative pronoun and the (otherwise) predicate of the relative clause comes from the matrix clause:[4]

(4.13) imā dahyāva [tayanā manā dātā] apariyāya
DEM.NOM.PL countries.NOM REL.INST me.GEN law.INST obey.PST.3PL
'These countries obeyed my law' (DB 1.23)

(4.14) [tayām imaišām martiyānām taumām] ubr̥tam paribarā
REL.ACC DEM.GEN.PL men.GEN offspring.ACC well protect.PRES.IMPER.2SG
'Take good care of the offspring of these men.' (DB 4.87)

(4.15) [tayam=šām maϑištam] agr̥bāya
REL.ACC=DEM.GEN.PL chief.ACC capture.PST.3SG
'He captured their chief.' (DB 5.12)

[4] A question that might arise is how Old Persian can have article-like constructions despite not having any head-internal free relative (for instance, Rinder (2025) has assumed that existence of cases such as (4.17) shows that Old Persian has head-internal relatives). However, note that article-like constructions are the result of reanalysis from predicative copular free relatives, as discussed in §2.3.3.2.

(4.16) haya taviya [tayam škauϑim] nai janti
REL.NOM strong.NOM REL.ACC weak.ACC NEG slay.PRES.3SG
'He who is strong does not kill the weak.' (DSe 39)

Other than cases in (4.13)–(4.16), there are also cases where an article-like analysis of the structure is possible, but not necessary. These are cases where the free relative bears nominative case, which results in an ambiguity between article-like constructions and copular free relatives with an omitted copula. In addition to the examples below, one such case is the subject in (4.16), which will be discussed shortly.

(4.17) [haya amāxam taumā] xšāyaϑiyā āha
REL.NOM us.GEN family.NOM kings.NOM COP.PST.3PL
'Those who were our family/ our family has been kings.' (DB 1.8)

(4.18) [haya aniya kāra pārsa] pasā mām ašiyava Mādam
REL.NOM other.NOM army.NOM Persian.NOM after me.ACC go.PST.3PL Māda.ACC
'Those who were the rest of the Persian army/ the rest of the Persian army went to Māda behind me.' (DB 3.32)

The existence of these article-like constructions has long attracted the attention of the scholars of Old Persian. In his lexicon, Kent (1953) actually separates the entries for *haya-* and *taya-* into three sub-entries: relative pronoun, demonstrative pronoun,[5], and interestingly definite article. However, not all instances of relative pronouns that Kent categorizes as definite article are the article-like free relatives that we are interested in. Many are ezafe or ezafe-like constructions. For instance, (4.19) and (4.20) are actual ezafe constructions where the external head noun, the relative pronoun, and the adjectival predicate have accusative case: there is no way to assume an omitted copula in the structure in any of these cases. On the other hand, (4.21) and (4.22) are ambiguous between an ezafe construction and an externally-headed relative clause with an omitted copula. Instances of both these

[5]For a demonstrative use of the relative pronoun, Kent cites DSf 14 and DB 3.73. in the more recent edition of the text by Schmitt (2009), DSf 14 does not contain any relative pronoun. The relative pronoun in DB 3.73 does not seem to involve any long distance dependency, but a demonstrative use of it is also unclear. This line of the text also seems to suffer from scribal errors, see footnote 73 in Schmitt 1991, p. 66.

kinds of relative constructions are listed under the definite article function of the relative pronoun in Kent's lexicon.

(4.19) [paϑīm tayām rāstām] mā avarada
path.ACC REL.ACC straight.ACC PROH leave.INJ.2SG
'Do not abandon the straight path.' (DNa 59)

(4.20) avam [gaumātam tayam magum] avājanam
DEM.ACC Gaumāta.ACC REL.ACC magus.ACC slay.PST.1SG utterly
'I slew that magus Gaumāta.' (DB 1.50)

(4.21) xšaçam taya [gaumāta haya maguš] adinā
kingdom.ACC REL.NOM Gaumāta.NOM REL.NOM magus.NOM deprive.PST.3SG
Kambūjiyam
Cambyses.ACC
'The kingdom that the magus Gaumāta/ Gaumāta who was magus deprived Cambyses of.' (DB 1.44)

(4.22) [dārayavauš haya manā pitā] pasā tanūm mām maϑištam
Darius.NOM REL.NOM me.GEN father.NOM after self.ACC me.ACC greatest.ACC
akunauš
do.PST.3SG
'My father Darius / Darius who was my father made me the chief after himself.' (XPf 30)[6]

In an earlier work, Kent (1944) dives deeper into this apparent heterogeneity in the functions of the Old Persian relative pronoun.[7] In this work, Kent first discusses cases

[6]Note that in the ezafe construction in Iranian languages, the ezafe linker comes between a noun and its adjectival or genitive modifier.

[7]Many insights in Kent 1944 contribute significantly to a better understanding of relative constructions in Old Iranian. Although Kent 1944 is not a theoretically informed contribution per se, the methodology employed in analyzing the data is, in essence, notably formal. For example, Kent observes that nominative free relatives with an omitted copula, such as (ia), are ambiguous between functioning as relative clauses and as article-like constructions. He argues these are better understood as free relative clauses, given the existence of overt verbs in their corresponding constructions, such as (ib).

(i) a. taya=maiy piça kr̥tam
REL.NOM=me.GEN father.D do.PTCP.NOM
'what was done/ the deed by my father.' (XPa 19–20)

b. taya=maiy piça kr̥tam āha
REL.NOM=me.GEN father.D do.PTCP.NOM COP.PST.3SG
'what was done by my father.' (XPf 38)

where a non-relative-pronoun function is possible, but not necessary. These involve both ambiguity between free relatives and article-like constructions, and ambiguity between postnominal relative clauses and the ezafe construction (for a formal overview of such ambiguities, see the descriptions in §2.3.3.2). He lists 10 cases in the corpus where the relative pronoun is "articular", which are the cases where the relative pronoun (or, more precisely, what used to be relative pronoun) precedes a noun. Of these cases, four are sentences where the relative pronoun and the predicate (nominal or adjectival) are in nominative: the cases are DB 1.8 (4.17) and its repetition in DBa 12, DB 3.32 (4.18), the subject relative clause in DSe 39 (4.16), DNa 56, and DSf 12. As our discussion of (4.17) and (4.18) demonstrated, these cases fall outside the category of obligatory article-like functions of the relative pronoun. This is what Kent also admits. This paper shows that despite what we see in the lexicon of Kent (1953), he himself was aware that the only uncontroversial cases of the relative pronoun as an article are those in (4.13)–(4.16).

Although article-like cases in Old Persian are not particularly numerous, they are nonetheless twice as frequent as those in Old Avestan (a contrast that becomes even more striking when we consider the highly formulaic nature of the Old Persian corpus). A closer look at them also reveals interesting properties about this construction (at least in the Old Persian spatiotemporal context).

Starting with (4.13), repeated in (4.23), note that we cannot assume the constituent introduced by *tayanā* is a relative clause with an omitted copula: if that was the case, we would expect nominative marking on *taya-* and *dāta-* 'rule'. As we know from other occurrences of the verb *pariyay-* 'to respect, to obey' that its argument bears instrumental case marking (XPh 49 and 52), we can safely assume that here, too, the case marking on *taya-* and *dāta-* comes from the predicate outside this constituent. In other words, *tayanā manā dātā* is an article-like construction rather than a free relative.

(4.23) imā dahyāva [tayanā manā dātā] apariyāya
DEM.NOM.PL countries.NOM REL.INST me.GEN law.INST obey.PST.3PL

'These countries obeyed my law.' (DB 1.23)

However, this assumption comes with a caveat. Recall our discussion of Old Avestan free relatives in §2.3.3, where we proposed that the relative pronoun occupies the determiner position of the internal head of a free relative. This proposal was motivated by the observation that the internal head does not co-occur with demonstratives or possessive modifiers, elements which would otherwise occupy the determiner position. Thus, with the determiner position presumably empty, we concluded that it was occupied by the relative pronoun. This analysis could readily extend to article-like uses, where the relative pronoun essentially functions as a definite article. However, this assumption faces difficulties when applied to example (4.13), where the first-person possessive pronoun would compete for the same position as *tayanā*. One possible solution is to assume that Old Persian possesses a different underlying structure for such modifiers compared to Old Avestan, more similar to languages like Italian or Greek, where possessive pronouns occupy a separate structural position from the definite article. Arguing conclusively for or against this proposal is challenging due to corpus limitations, especially given that Old Persian lacks independent definite determiners altogether, and article-like uses of relative pronouns are attested in only two occurrences.

However we choose to analyze this example, it is crucial to remember that prior to grammaticalization into a determiner phrase, the noun or adjective functioning as the argument of the pronoun served as a predicate in the corresponding free relative clause. To clarify this, let us examine the free relative counterpart of (4.23), which shows case mismatch between the internal nominative case and the external instrumental case requirement:

(4.24) imā dahyāva [taya manā dātam] apariyāya
DEM.NOM.PL countries.NOM REL.NOM me.GEN law.NOM obey.PST.3PL
'These countries obeyed that which is my law.' (DB 1.23)

In this example, the possessor does not pose any structural issues, as *manā dātam* functions as the predicate rather than as the argument of a determiner. It is therefore plausible that the original predicate structure influenced the subsequent grammaticalization process, leading to a configuration in which the now-definite article and the possessive modifier occupy distinct positions.

The same issue arises for the examples in (4.14) and (4.15), repeated in (4.25) and (4.26):

(4.25) [tayām imaišām martiyānām taumām] ubr̥̊tam paribarā
REL.ACC DEM.GEN.PL men.GEN offspring.ACC well protect.PRES.IMPER.2SG
'Take good care of the offspring of these men.' (DB 4.87)

(4.26) [tayam=šām maϑištam] agr̥̊bāya
REL.ACC=DEM.GEN.PL chief.ACC capture.PST.3SG
'He captured their chief' (DB 5.12)

Again, the noun *taumām* 'offspring' and the substantivized adjective *maϑištam* 'chief' are modified by possessive phrases. This configuration is therefore not anomalous: in three out of four instances of an article-like construction, the article (originally a relative pronoun) co-occurs with a possessive phrase. However, although the syntactic positioning of these two elements in Old Persian remains at least partially unexplained, the attested pattern supports the proposed semantics of the construction. In all three cases discussed, the genitive modifiers are clearly definite. In (4.23), *manā* is the genitive form of a first-person demonstrative; in (4.25), *martiyānām* 'men' is accompanied by a demonstrative; and in (4.26), the noun is modified by the third-person genitive enclitic *-šām*. According to the well-known principle of Definiteness Spread, definiteness projects from a definite genitive onto the full noun phrase (Barker 1995). Thus, each head noun here would be interpreted as definite. In Old Avestan, this pattern was less visible due to the smaller dataset. But in Old Persian, nouns in article-like constructions are predominantly definite. This pattern nicely supports the proposal that the article-like element (homophonous with the relative pronoun) is functioning as a marker of definiteness.

Still, another question persists: What should we make of the last example, (4.16), repeated as (4.27)? Does it also involve definiteness? Here, the constituent [*tayam škauϑim*] bears accusative case marking as the object of the verb *jan-* 'to kill'. It is, in a sense, similar to (4.15): the head noun is a substantivized adjective in both cases.

(4.27) haya taviya [tayam škauϑim] nai janti
REL.NOM strong.NOM REL.ACC weak.ACC NEG slay.PRES.3SG
'He who is strong does not kill the weak' (DSe 39)

Regardless of one's preferred theory of the substantivization of adjectives (simple type-shifting from $\langle e, t\rangle$ to $e$, null nominal head (Borer and Roy 2010), ellipsis (Günther 2015), etc.), in the Old Persian contexts these examples have a definite reading.[8] Specifically in (4.27), the substantivized adjective has a generic sense, so an indefinite reading is not possible. Therefore, although the evidence is not concrete, (4.27) does also seem to follow the pattern seen in the other article-like instances: definiteness of the whole description.

There is one last observation about the article-like data to be made. Interestingly, the subject in (4.27) is also a construction ambiguous between a free relative with an omitted copula and an article-like construction:

(4.28) a. [haya taviya]$_{\text{DP-NOM}}$ 'the strong'

b. [haya taviya (asti)]$_{\text{CP}}$ '(he) who is strong.'

This reminds us of one of the cases of article-like free relatives in Old Avestan mentioned in §2.51, repeated below:

(4.29) frauuaxšiiā aŋhəuš mainiiū paouruiiē yaiiå̊
proclaim.PRES.FUT.1SG existence.GEN spirit.ACC.DU prime.LOC REL.GEN.DU
spaniiå̊ ūitī mrauuaṯ̰ **[yəm aŋrəm]**
more prosperous.NOM thus address.PRES.SBJV.3SG REL.ACC harmful.ACC

[8] It is worth mentioning that Borer and Roy (2010)'s analysis of substantivized adjectives implies that such cases cannot be only indefinite: either in a language these substantivized adjectives are either solely definite because of the existence of a null *pro*, or can be definite or indefinite because in fact we are dealing with a different lexical item with an N category, only homophonous with their adjectival counterparts.

> ‘I shall proclaim the two spirits in the primal of one’s existence, of whom the more prosperous one shall address **the harmful one**.’ (Y 45.2)

In the Old Avestan case, too, the object *yəm aŋgrəm* is unambiguously article-like, while the subject is just a substantivized adjective (*spaniiå̊* ‘the more prosperous one’). There, it was discussed that contrastive focus leading to discourse prominence might be the reason why such articles occur.

If such logic holds and extends to formal parallelism, then the Old Avestan example might entice us to take the ambiguous subject in the Old Persian case as an article-like construction too, as article-like free relatives are also a case of substantivization on a par with null substantivization of an adjective (as in the case of the Old Avestan example). However, in the absence of further data, this seems to be more of a stipulation.

#### 4.1.3.2 Article-like construction and ezafe construction

In §2.3.3.2, I have given an analysis of the diachrony of the article-like construction and how it is different from the diachrony of the ezafe construction. However, the Old Persian cases open up a different possibility that involves an intricate relationship between the article-like construction and the ezafe construction.

One important contribution of Kent 1944 is that it shows Old Persian did not have a definite article used across the board. He investigates cases where we would expect a definite article and shows that in these contexts, a bare noun is canonically used. These are contexts where an already introduced discourse referent is mentioned, descriptions involving uniqueness (such as *kāram Pārsam utā Mādam* ‘the Persian and Median army’), and before titles (such as *θātiy Dārayavauš xšāyaθiya* ‘said Darius the King’). In his discussion of definiteness, however, he turns to some uses of the relative pronoun in contexts where we would expect definiteness. He makes an interesting observation: often, the first occurrence of a proper noun with a (genitive or adjectival) modifier does not involve a relative

pronoun, but later occurrences do:

(4.30) a. I martiya maguš āha Gaumāta nāma
one man.NOM magus.NOM COP.PST.3SG Gaumāta.NOM name.LOC
'There was one man, magus, Gaumāta by name' (DB 1.36)

b. Gaumāta haya maguš
Gaumāta.NOM REL.NOM magus.NOM
'Magus Gaumāta/ Gaumāta the magus' (DB 1.46, 64, 65, 70, a.o.)

Interestingly, almost all such cases are where the relative clause in later occurrences is either an instance of the ezafe construction, or ambiguous between a relative clause and the ezafe construction. While Kent does not conclude that such instances indicate definiteness marking, his characterization of these cases is that these are also *article-like*. Elsewhere in his paper, Kent also implies that the emergence of the ezafe construction represents an intermediary stage in the diachronic development of the article-like construction from a postnominal relative clause: he cites (4.20) and (4.21) to show a transition from the relative pronoun use (in 4.21) to an articular use (in 4.20), and implies that this is the process that eventually leads to the article function of the relative pronoun when it appears to the left of the noun (in 4.13–4.16).

The discussion in §2.3.3.2 shows that such an analysis is not easily tenable: the article-like construction cannot have originated in the ezafe construction. However, there is another way of interpreting the data that Kent explores. In his investigation of the ezafe construction in Iranian languages and its diachrony, Haig (2011a) draws on the discussion by Kent. Without siding with Kent in assuming that ezafe is an intermediary stage between fully postnominal relativization and the article-like construction, Haig argues that what we actually see in the ezafe construction is not a nominal linker – rather, ezafe involves an appositive construction. While he does not explain this proposal in great depth, his proposal is indeed noteworthy, especially considering the results of the work in hand. To see how his proposal works, we have to examine certain cases in more depth: cases that

are ambiguous between an ezafe construction and a postnominal relative clause, which also resemble article-like constructions.[9] These cases involve, descriptively speaking, a postnominal relative clause with an omitted copula. To see how it is possible for a postnominal relative clause to resemble both the ezafe and the article-like constructions, look at example (4.31):

(4.31) [Gaumāta haya maguš] adinā Kambūjiyam utā
Gaumāta.NOM REL.NOM magus.NOM deprive.PST.3SG Cambyses.ACC CONJ
Pārsam utā Mādam
Persia.ACC CONJ Māda.ACC
'Gaumāta the magus drove Cambyses of Persia as well as of Media.' (DB 4.46–47)

At first glance, an example such as (4.31) seems to be an unproblematic case of a construction ambiguous between an ezafe construction and a postnominal relative clause with an omitted copula (similar to 4.22):

(4.32) a. [Gaumāta haya maguš]$_{\text{DP-NOM}}$: 'the magus Gaumāta'

b. Gaumāta [haya maguš (āha)]$_{\text{CP}}$: 'Gaumāta, who was a magus.'

In this specific case, one can adopt an ezafe analysis with more confidence, because the description *Gaumāta-* REL *magu-* already exists as a fully fledged ezafe construction bearing accusative case marking:

(4.33) adam [Gaumātam tayam magum] avājanam
me.NOM Gaumāta.ACC REL.ACC magus.ACC slay.PST.3SG
'I slew the magus Gaumāta.' (DB 4.46–47)

Now, look at example (4.34): here, since the relative clause is extraposed, it is difficult to imagine that it is ambiguous between a relative clause and an ezafe-like construction, as, canonically, in ezafe constructions the relative clause (or its reduced, non-clausal counterpart) immediately follows the noun.

[9] Such cases are also listed by Kent (1953) as instances of the relative pronoun functioning as an article determiner (however, Kent (1944) admits that these cases are ambiguous and he has made a rather arbitrary choice to categorize such examples as involving an article).

(4.34) adam [Bṛdiya] ami [haya Kurauš puça]
me.NOM Smerdis.NOM COP.PRES.1SG REL.NOM Cyrus.GEN son.NOM
'I am Smerdis, who is Cyrus's son.' (DB 4.9)

However, it seems that Kent's interpretation of the relative clause (4.34) is along the lines of 'the son of Cyrus' as an appositive to *Bṛdiya* 'Smerdis'. In this sense, the relative pronoun is actually similar to the cases in (4.13)–(4.16), as a definite article. Going back to (4.31), we can also interpret *Gaumāta haya maguš* as 'Gaumāta the magus', which is how Schmitt (1991) has translated this phrase. Yet, crucially, we do not need to do so. While the existence of article-like cases in (4.13)–(4.16) show us that the relative pronoun can have definite article-like uses, we have no concrete reason to assume that in cases such as (4.31) and (4.34) the relative pronoun is only acting as an article. Unlike the cases in (4.13)–(4.16), the case marking on the relative pronoun and the predicate is nominative, leaving open the possibility of merely having a postnominal relative clause with an omitted copula.

The possibility of having nominal apposition introduced by the article-like relative pronoun, however, relates to the ezafe construction. Note that the only way to identify a true appositive [REL NOM/ADJ] string is to find it in non-nominative cases: only in such cases do we eliminate the possibility of an omitted copula. As appositives agree with their modified noun in case and number, if we find a non-nominative noun bearing case Ψ followed by $[\text{REL NOM/ADJ}]_{\Psi}$, we can safely assume the relative pronoun has an article-like use and [REL NOM/ADJ] is a nominal appositive. But such a case would be indistinguishable from an ezafe construction: the case in (4.33) is, indeed, such a string. We can now entertain two parses of the (superficially) relative clause in (4.33):

(4.35) a. [Gaumātam tayam magum] ⇝ $[\text{NOM EZ}_{\text{LINKER}}\ \text{ADJ}]$: 'the magus Gaumāta'

b. [Gaumātam tayam magum] ⇝ $[\text{NOM } [\text{DEF ADJ}]_{\text{APP}}]$: 'Gaumāta the magus'

Again, in this case we do not have any grounds to prefer one of these parses over the other. But this raises the main question that Haig wants to answer: what if what we as-

sume to be the ezafe construction (at least in Old Persian) is merely an appositive, and the (originally) relative pronoun is a definite article rather than a nominal linker? This is the hypothesis that Haig wants to entertain: he mentions cases such as (4.16) to show that the relative pronoun was indeed used as a nominalizer. Unlike Kent (1944), however, Haig does not postulate a temporal order on the emergence of the article-like and ezafe constructions, he merely says that as the relative pronoun was able to act as a determiner or nominalizer (in the article-like cases), ezafe construction should also be seen as a similar, "loosely" appositive structure. [10]

This proposal is interesting and the data mostly support it. In the absence of more data or a better formal understanding of the ezafe construction in Old, Middle, and New Iranian languages both synchronically and diachronically, both the nominal linker origin (as discussed in §2.3.3.2) and the appositive proposals are of merit. Interestingly, the Old Persian data show a pattern that might contribute to this debate: in all but one cases where an appositive/ezafe reading is forced (due to non-nominative case marking), the appositive/reduced relative clause (the string [REL N/ADJ]) is adjacent to the noun and not extraposed. The only exception can be found in AsHa, an inscription attributed to Arsames:

(4.36) hauv [dahyāum Pārsam] manā farābara [tayām
DEM.NOM land.ACC Persia.ACC me.DAT grant.PST.3SG REL.ACC
ukārām uvaspām]
with good people.ACC with good horses.ACC
'He bestowed on me the land Persia, with good people with good horses.' (AsHa 9)

As we see, the noun *dahyāum Pārsam* and its appositive/modifier *tayām ukārām uvaspām*

[10] One of Haig's observations is that in most of these ezafe-like cases, the head noun has a definite sense. Therefore, the relative clause cannot be restrictive. However, he does not imply that these are cases of non-restrictive relative clauses (*contra* how his arguments are characterized in Samvelian 2018); rather, his mentioning of genuine article-like cases show that what he calls an appositive is indeed a DP-appositive and not a non-restrictive relative clause. Regardless, Haig's observation about the definiteness of the head is not entirely accurate: while some head nouns in these cases are proper nouns, a bare non-specific noun can also be modified as such, as seen in (4.19).

are disjoint. As the relative pronoun and the adjectives all have accusative marking, we cannot take this as an instance of a postnominal relative clause. This is the only such example where we see extraposition in appositive/ezafe constructions, and even this example is not entirely valid: as Schmitt (2009, p. 8) has mentioned, this inscription is not authentic and dates back to the post-Achaemenid period. Therefore, its syntax is not quite reliable, as the author was imitating the syntax of early Achaemenid inscriptions.

Relative clauses that are ambiguous between an ezafe/appositive, construction and a postnominal reading (which are those with nominative case marking), however, do not show this pattern. As seen in (4.34), such relative clauses can easily be extraposed to the right and be disjoint from the noun they modify (regardless of how they modify it). It is true that these instances are ambiguous: it might as well be the case that whenever such a structure involves extraposition, it is not appositive. And the same can be said for a genuine ezafe construction.

It seems that the choice here relies on which modifier we assume is more likely to appear disjoint from its modifiee. If one construction is less likely to be extraposed, then it makes sense to interpret the data that way: this is how we can explain why there is not one case of an obligatory ezafe/appositive construction with extraposition. This is not an easy task: we have no way of isolating the genuine ezafe cases and seeing how they surface, and other appositives can appear anywhere in the sentence (as we are dealing with a discourse-configurational language). While appositives cross-linguistically appear *in situ* and adjacent to their noun, nominal modifiers in Old Persian also tend to appear continuously. Further corpus studies in Old Iranian and other Indo-European languages might help us distinguish between the two: meanwhile, whatever our theory of the diachrony of ezafe is, we have to be able to explain the structural continuity pattern of the obligatory ezafe/appositive cases in Old Persian.

### 4.1.4 Correlatives

We saw that *in situ* free relatives in Old Persian were quite different from their Old Avestan counterparts: they were almost always copular (and therefore nominative), and there was no overt internal nominal head in Old Persian free relatives. It seems reasonable to expect that Old Persian correlatives would broadly conform to the same patterns. However, Old Persian correlatives appear to be more productive, and are broadly comparable to their Old Avestan counterparts. Among the 31 attested examples of correlative constructions in Old Persian – where a correlative parse is certain –, 20 are non-copular. The range of predicates in these non-copular correlatives is, nonetheless, limited: 11 of these verbs derive from the verbal root *kar-* 'to do' (such as (4.38)), and of the remaining 9, five are formed from the root *θah-* 'to say' (such as (4.39)). In addition, there are 10 cases of free relatives within correlative constructions that bear accusative marking internally (such as (4.38)); however, no free relative in the corpus bears internal case marking in a case other than nominative or accusative. Still, the distribution of predicates in correlative constructions is relatively more varied than what we find in Old Persian free relatives.

(4.37) [[taya=šām hacā=ma aθanhya xšapa=vā
REL.NOM=DEM.DAT.PL of=me.ABL say.PASS.PST.3SG night.INST=DISJ
raucapati=vā] [ava akunavayantā]
in day=DISJ DEM.NOM do.PST.PASS.3SG
'What was said to them by me, either by night or by daylight, that used to be done.' (DB 1.19)

(4.38) [[taya kunavāhi] [ava=tai Auramazdā ucāram
REL.ACC do.PRES.SBJV.2SG DEM.ACC=you.DAT Auramazdā.NOM successful.ACC
kunautu]]
do.PRES.IMPER.3SG
'What you shall do, may Auramazdā make that successful for you.' (DB 4.75)

(4.39) [[haya ima hadiš vaināti taya manā kr̥̊tam]
REL.NOM DEM.ACC palace.ACC see.PRES.SBJV.2SG REL.NOM me.GEN do.PTCP.NOM
[visahyā frašam θadayāti]]
all.GEN excellent.NOM appear.PRES.SBJV.3SG

'Who shall see this palace that is my doing, to all (of them) it shall appear excellent.' (DSj 5)

It seems that free relatives in a correlative construction are more conservative than those that are *in situ*. But we can already see, from the limited range of the predicates and the absence of an overt head noun in these correlatives, that they were less productive than the Old Avestan correlatives (and *in situ* free relatives for this matter).

Moreover, there is another type of data in the Old Persian corpus that stand out because of the way they disrupt or blur the otherwise regular patterns of correlatives. In these cases, the structures diverge from the Old Avestan patterns in ways that showcase the beginnings of structural or functional shifts in how relative constructions were used in Old Persian.

The first of such cases involves extraction outside the relative clause. The instances of such extraction are found in two sentences in DNb, an early inscription, which are repeated in the later Xerxes inscription XPl:

(4.40) [[martiya taya pari martiyam θāti] [ava mām
man.NOM REL.ACC against man.ACC say.PRES.3SG DEM.NOM me.ACC
vr̥navatai]]
convince.PRES.3SG
'What a man says against another man, that does not convince me.' (DNb 22, XPl 24)

(4.41) [[martiya taya kunauti yadivā ābarati anu
man.NOM REL.ACC do.PRES.3SG DISJ perform.PRES.3SG according to
taumanīšāi] [avanā xšnuta bavāmi]]
powers.INST DEM.INST satisfied.NOM COP.PRES.SBJV.1SG
'What a man does or brings about according to (his) powers, by that I shall be satisfied.' (DNb 24, XPl 27)

In both (4.40) and (4.41), we have a correlative construction (with an *ava-* resumptive pronoun), but the subject of the relative clause appears to the left of the relative clause

outside the phrasal boundary of the free relative. Note that it is not possible to assume the relative clause is modifying *martiya* 'man' in either of the cases: the relative pronoun, *taya*, bears neuter case marking (and not masculine *haya*).[11] It seems that here, we are dealing with a case of movement outside the relative clause as shown in (4.42) (with the assumption that this movement is to focalize *martiya*, giving rise to a FocP). Such movements are, however, cross-linguistically banned as relative and adjunct clauses are considered to be strong islands (Ross 1967, Huang 1982, a.o.)

(4.42) a. [man [what <man> ... said]$_{CP}$]$_{FocP}$

b. [man [what <man> ... did]$_{CP}$]$_{FocP}$

To the best of my knowledge, the earliest recognition of this pattern is due to Hale (1988), who characterizes it (in a footnote) as "topicalization around the relative pronoun", a construction with parallels in Ṛgvedic Sanskrit and Hittite. Hale suggests that Old Persian, although otherwise syntactically innovative, is the only Old Iranian language preserving this older construction. In Ṛgveda, as Hale (1987b) has shown, sometimes a single constituent from inside the relative clause can be topicalized to the left of a relative pronoun. While some of Hale's examples seem to be postnominal relative clauses, the following is indeed a free relative (part of a correlative construction):

(4.43) ádevena mánasā yó riṣaṇyáti
ungodly.INST thought.INST REL.NOM harm.PRES.3SG
'Who by ungodly intent, does harm...' RV 2.23.12 (Hale 1987b, p. 44)

The same topicalization can also be found in *wh*-interrogatives, where a single con-

[11] Even if we entertain a possibility that *taya*, in all four cases, is a scribal error and *haya* is the intended form, the correlative structure would not allow this possibility, as the resumptive pronoun is a neuter form (in the only other instance where a correlative clause denoted an animate discourse referent (DB 2.23), the resumptive pronoun has the form *hauv-* rather than *ava-*). Moreover, such assumption would mean that the verbs of the relative clause, which are transitive, would not have any object.

stituent can appear before the interrogative pronoun *ka-*. Hale, who argues the relative and interrogative pronouns in Ṛgveda should occupy the COMP position, explains the movement in (4.43) as resulting from topicalization, where a constituent is fronted into a left-peripheral TOP position immediately preceding COMP.[12]

We can adopt a similar explanation for the Old Persian cases (but we have to note that under my proposed analysis of free relatives, this position cannot be SPEC,CP, as it is already occupied by the relative pronoun and the internal head noun; so a more left-peripheral landing position is needed). However, we still have to explain why such island violations can even take place in these language. Moreover, in Old Persian, these movements are limited to correlative constructions (and only in two instances of correlative constructions within the same inscription). Therefore, a topicalization strategy that can operate across the board would probably be overgenerating. Also, as such extractions cannot be found in the existing cases of *in situ* free relatives, the absence of a various range of data once again hinders us from exploring this phenomenon in much depth. Yet, this lack of variety in form and source makes one wonder how productive such extractions were, and whether in this case we are dealing with a genuine case of island violation: these two cases might as well be two fossilized formulaic sayings, remnant from the Old Indo-Iranian period.

This being said, this phenomenon is not unique to Old Iranian: in Norwegian, too, the subject of a free relative can be moved outside the relative clause (Engdahl 1997, Hogoboom 2003):

(4.44) Denne kunstneren$_i$ kjøper jeg [hva enn $t_i$ produserer]
this artist buy I what ever produces
'I buy whatever this artist produces.' (Hogoboom 2003, p. 78)

[12] Hale also provides evidence from Hittite which shows a similar structural pattern. Hittite *ever*-relative clauses always have a sentence-initial relative pronoun. Maximalizing correlatives, however, always have a clause-internal relative pronoun: one single constituent (either the internal head or another constituent) must be topicalized before the relative pronoun. Since this movement is obligatory in Hittite, it seems to me that it should be treated differently from, at least, Old Avestan, where such movement does not appear to be part of the canonical syntax of relativization.

As the empirical study of this phenomenon by Hogoboom (2003) has shown, this type of extraction is subject to several constraints by the lexical semantics of the matrix verb, the internal verb of the free relative, and the referential properties of the free relative subject itself. Specifically, Hogoboom argues that extraction is possible when the matrix verb can be interpreted as selecting either the FR as a whole or its extracted subject metonymically, such as interpreting *I read this author* as *I read whatever this author writes.* Moreover, the verb of the free relative must be of a "create-type," denoting that what the free relative denotes is a product of the subject, and the subject must be an agent whose identity is closely associated with creative output: for instance, an artist, author, or composer. These semantic dependencies suggest that apparent extraction is parasitic on interpretive strategies that treat the subject of the free relative and what the free relative denotes as interchangeable in certain contexts.

Interestingly, Hogoboom discusses the possibility that these constructions may not involve syntactic extraction at all: instead, a *pro* may fill the subject position of the free relative while the matrix clause's object undergoes topicalization. In other words, what looks like the extracted subject of the free relative is, in fact, the object of the matrix clause. However, Hogoboom concludes that this proposal cannot easily extend to all such cases in Norwegian.

For the Old Persian cases, we cannot readily adopt Hogoboom's line of argumentation, simply because the free relative in a correlative construction has an independent syntactic life on its own, so the type of semantic argument-sharing seen in the Norwegian cases would lack the necessary syntactic configuration. From a purely semantic perspective, however, (4.40) and (4.41) are similar to the Norwegian case: In the context of (4.40), both what a man says against another man and the man who says it himself can (or cannot) convince the king. In (4.41), the king may be satisfied by what a man accomplishes, and the man himself. So, we might be dealing with a purely semantic realization of the Norwegian phenomenon here.

Even if this is not the case, looking at these data from a semantic-pragmatic perspective may still prove useful, especially when we consider the context in which (4.40) and (4.41) appear: before these two sentences, the text of DNb 16 says *martiya haya hantaxšatai anudim hankr̥tahyā avaϑā paribarāmi* 'the man who cooperates, I reward him according to his cooperative deed.' Given this context, the question under discussion in (4.40) and (4.41) seems not to be the actions, sayings, or deeds of men; rather, it is the men (the subordinates). And the topicalized constituent is indeed *martiya* 'man'. In other words, what is topicalized distinguishes the question under discussion from other available discourse referents. Such discourse prominence factors might be what permits the apparent island violations (and would be in line with what Hale (1987b) proposes for the R̥gvedic examples).

Relatedly, another interesting observation about correlatives in Old Persian is that in Old Persian, we can have more (and heavier) elements preceding the relative clause. In Old Avestan, the only elements that could precede the relative clause in a correlative construction were light conjunctive particles such as *aṯ*. Such particles aside, the relative clause in Old Avestan correlatives has always been at the leftmost edge of the sentence. In Old Persian, heavier (and more contentful) adverbials can do so, and a correlative can even be embedded in a CP-taking complementizer such as *mātaya* 'lest':

(4.45) vašnā Auramazdāha [[taya amaniyai kunavāni]
help.INST Auramazdā.GEN REL.ACC think.PST.SBJV.1SG do.PRES.SBJV.1SG
[ava=mai visam ucāram āha]]
DEM.NOM=me.DAT all successful.NOM COP.PST.3SG
'With the help of Auramazdā, what I thought I would do, that was all successful for me.' (DSl 3)

(4.46) mātaya [[haya aparam imām dipim patipr̥sāti]
lest REL.NOM hereafter DEM.ACC inscription.ACC read.PRES.SBJV.3SG
[avahyā paru ϑadayāti taya manā kr̥tam]
DEM.GEN much.NOM seem.PRES.SBJV.3SG REL.NOM me.DAT do.PTCP.NOM
'(Lest) who will read this inscription hereafter, to him what has been done by me

should seem much.' (DB 4.48)

Note that these cases are different from (4.40)–(4.41), in that the sentence-initial element is not topicalized from inside the relative clause. In both (4.45) and (4.46), the scope of the sentence-initial expression seems to be the whole sentence (or, at least, the matrix clause): in (4.45), the success of what the king thought he will do has taken place with the help of the deity, and not the thinking of the king about what he wants to do. Similarly, the prohibitive in (4.46) applies to how the king's deeds would seem to the readers, not to the reading of the inscription by them. As a result, we cannot take (4.45) and (4.46) as involving extraction out of the relative clause. Rather, it seems that the syntactic position of the relative clause has changed. It should, however, be noted that the sentence-initial expressions in these cases might be peculiar independently of their occurrence in a correlative construction: as for (4.45), Hale (1988) has shown that *vašnā Auramazdāha* often appears in unexpected positions: for instance, before the conjunction *utā* (but taking scope over the sentence that comes after the conjunction), before an already topicalized element, and often sentence-initially such that the standard 'second position' of enclitics effectively becomes third position. To explain such data, Hale treats *vašnā Auramazdāha* as a parenthetical, as parentheticals in Old Persian often occur sentence-initially and outside the structure of the sentence.

Interestingly, in languages such as Hindi where the correlative construction is base-generated, elements can precede the relative clause:

(4.47) kal [[jo vahaaN khaRii hai] [raam us laRkii-se mil-egaa]
tomorrow REL there standing is Ram that girl-with meet-FUT
'Tomorrow Ram will meet the girl who is standing there.' Hindi (Lipták 2009, p. 2)

Could we assume that unlike Old Avestan, Old Persian correlatives are base-generated somewhere within the CP domain and not in the left periphery? Note that this might also

be a useful assumption in capturing the data in (4.40) and (4.41), as this means that the canonical topic position is no longer occupied by the relative clause. However, I believe the best argument for base-generation of correlatives within the CP domain comes from the availability of multi-headed correlatives (which Hindi has), and we do not have any evidence of this construction in Old Persian. There are ways to rescue (4.45) and (4.46) and maintain the assumption that correlatives are topicalized free relatives: for instance, we can postulate an elaborate left-periphery and assign distinct topic positions to the higher adverbials and the relative clause. In the absence of more data, however, I only use the existence of examples (4.45) and (4.46) to provide further evidence that the correlative construction in Old Persian has diverged from its Old Avestan counterpart.

### 4.1.5 Generalizing relative clauses

Old Persian does have a Free Choice / Negative Polarity Item *kaš=ci-*, built upon the interrogative pronoun and a focus marker (see Briceño Villalobos 2022 for an overview of its functions, also see Mitrović (forthcoming) who shows that *cit*-based indefinites also die out in Old Persian); however, we do not find any generalizing relative clause in the corpus (neither in free relatives nor in postnominal relative clauses). There is one sentence in the corpus that scholars have taken to be a kind of a generalizing relative clause:

(4.48) naiy āha martiya naiy Pārsa naiy Māda naiy amāxam
NEG COP.PST.3SG man.NOM NEG Persian.NOM NEG Median.NOM NEG our.GEN
taumāyā kaš=ci [haya avam Gaumātam tayam magum
family.GEN INTER=PRTCL REL.NOM DEM.ACC Gaumāta.ACC REL.ACC magus.ACC
xšaçam dītam caxriya]
kingdom.ACC deprived.ACC do.PST.OPT.3SG
'There was no man, neither a Persian nor a Mede nor anyone of our family, who might have been able to deprive that Gaumāta the magus of the kingship.' (DB 1.48–50)[13]

[13]The exact interpretation of *dātam caxriya* is subject to debates among the scholars of Old Persian; I have followed Kent (1953, p. 120) and Schmitt's translation here. For an overview of the debates, see Filippone 2015. This issue does not have any bearing on the analysis of the relative clause.

Probably due to the optative verb in the relative clause in (4.48), Skjaervø (2009, p. 150) cites (4.48) as the only instance of a "conditional relative clauses" in Old Iranian. His interpretation of the syntax of the text is that *kaš=ci* is the head of the relative clause. Building on the semantic implication of such proposal, Briceño Villalobos (2022) argues that the syntax here is different than what is often assumed: he argues that the relative clause is modifying *martiya*, implying that *kaš=ci* is somehow part of the relative pronoun (cf. *-ever* in English *whoever*), and such relative clause is a free choice indefinite relative clause.

Briceño Villalobos provides four arguments for his proposal. First, he argues that the *naiy Pārsa naiy Māda naiy amāxam taumāyā* should be an appositive description modifying *martiya*. Next, he compares (4.48) to the SUBTRIGGING phenomenon in English (Dayal 1997): Free Choice Items are infelicitous in episodic contexts, unless their nominal is modified by a relative clause:

(4.49) Yesterday, Amir watched any movie *(that the Picturehouse was screening).

Briceño Villalobos concludes that the Free Choice Item *kaš=ci* is licensed in the episodic context in (4.48) thanks to the relative clause. Third, he compares *kaš=ci haya* to Middle Persian *ēč kē* relative pronoun (meaning 'whoever'), formed upon the Negative Polarity Item *ēč* and the relative pronoun *kē*. His last arguments comes from the translated versions of this inscription in Achaemenid Babylonian, where the word for 'man' seems to be a Negative Polarity Item.

To me, it is not clear whether Briceño Villalobos wants to take the relative clause as modifying *martiya* (and therefore a postnominal relative clause), or as a free relative where *kašci haya* is equivalent to the English *whoever*. He only makes it clear that he is arguing against two other interpretations: one, that *kašci* is modified by the possessive *amāxam taumāyā* and the relative clause is only [*martiya* ...[*haya* ...]]; two, that *kašci* is the head of the relative clause.

However, none of Briceño Villalobos's arguments seem conclusive enough to adopt either of the possible structural interpretations entailed by his analysis, and therefore assume that Old Persian had a grammaticalized generalizing relative marker such as *kašci haya* – his first argument still holds if we assume that *kašci* is either the noun being modified by *amāxam taumāyā* (meaning 'no one from my family'), or even itself coordinated with the other appositives (meaning 'no Persian, no Median, no (person) from my family, no one'). His second argument only tells us that a Free Choice Item can be licensed in this context, not that it must. The comparison with Middle Persian seems misleading: a relative clause introduced by *ēč kē* in Middle Persian is in fact externally headed by *ēč* – the NPI *ēč* and the relative pronoun *kē* are not fused together in any way (for instance, no such relative clause in Middle Persian has another external head based on the evidence in this work). His comparison with the Babylonian version of the inscription is compelling, but since any of these syntactic analyses lead to the same semantic interpretations (or very similar ones), such comparisons do not necessarily constitute a robust argument: languages (especially when from different language families) have vastly different means of conveying such generalizing semantics.

To these counterarguments we can also add the insights from Old Avestan: as shown earlier, in generalizing relative clauses in Old Avestan a generalizing expression would appear inside the relative clause (externally-headed or free), not preceding it. We would probably expect a similar pattern in Old Persian. Considering all these, it seems more plausible to me to take (4.48) as a simple postnominal relative clause, either modifying *martiya* or *kašci*. Whichever the external head may be, we can conclude that (4.48) is not an instance of a grammaticalized generalizing relative clause in Old Persian.

There is, however, another candidate for a generalizing relative clause construction in Old Persian. In six passages of the Old Persian corpus (four unique cases), the second person pronoun *tuvām* is followed by a morpheme *kā* (most probably from the interrogative root), and the relative pronoun *haya*:

(4.50) tuvam kā xšāyaϑiya haya aparam āhi
you.NOM *kā* king.NOM REL.NOM hereafter COP.PRES.2SG
'You, whoever shall be king hereafter ...' (DB 4.37, 68, 87)

(4.51) tuvam kā haya aparam imām dipim patiprs̥āhi
you.NOM *kā* REL.NOM hereafter DEM.ACC inscription.ACC examine.PRES.SBJV.2SG
'You, whoever shall read this inscription hereafter ...' (DB 4.41)

(4.52) tuvam kā haya aparam imām dipim pres.vaināhi
you.NOM *kā* REL.NOM hereafter DEM.ACC inscription.ACC see.PRES.SBJV.2SG
'You, whosoever shall look at this inscription hereafter ...' (DB 4.70)

(4.53) tuvam kā haya aparam yadi maniyāhi
you.NOM *kā* REL.NOM hereafter when think.PRES.SBJV.2SG
'You, whoever (is here) hereafter, when you shall think ...' (XPh 46)

Once again, regardless of how we interpret (4.50)–(4.53), it is important to note that all but one of these examples derive from a single inscription. Given the already limited size of the corpus, this lack of source diversity imposes a significant constraint on our analysis. Even more concerning is the morphological obscurity of the form *kā*: it also does not appear elsewhere in the corpus, and Old Persian scholars have long disagreed on how to interpret it. A very good discussion of these controversies can be found in Briceño Villalobos 2022. As to its form, it has usually been taken to be an instrumental form of the interrogative stem (e.g. by Kent (1953), Schmitt (2014), a.o.). But what does this form do? It seems that at least since Gray (1902), this morpheme was regarded to be some sort of generalizing and domain-widening particle. Its precise identity, however, is unclear. Briceño Villalobos argues against some earlier proposals that take *kā* to be a focus particle, as in this case we would expect it to take part in the formation of Free Choice Items (such as what *-ci* and *-cīt̃* do in, respectively, Old Persian *kašci* and Old Avestan *ka- -cīt̃*). Schmitt (2014, p. 198) proposes that this form has a locative sense to it, meaning 'wherever', but Briceño Villalobos refutes this, claiming that in early Indo-European languages, instrumental-based indefinite adverbs function as Negative Polarity Items and not Free Choice Items (but see footnote 14 for an argument in favour of this

assumption).

Instead, Briceño Villalobos proposes that *kā* is the nominative singular of the Old Persian interrogative stem *ka-*, functioning as part of a Free Choice indefinite relative construction when combined with the relative pronoun *haya*, as in *tuvam kā haya* 'you, whoever you are.' He argues that this expression is best analyzed as an indefinite relative clause that encodes non-specificity and alternativity, especially in modal contexts such as those marked by the subjunctive mood (as seen in (4.50)–(4.53)). This structure, he notes, parallels both Indo-Iranian formations (e.g., Vedic *yaḥ kaś cid*) and Semitic patterns (e.g., Akkadian *mannu ša*, Aramaic *mn zy*). He suggests that the word order *tuvam kā haya* (contrasting with the Old Iranian counterparts such as Old Avestan *ya- ... ka- -cīt* and *ya- ... ci- -cā*, where the generalizing element follows the relative pronoun) may reflect Semitic influence in Achaemenid scribal practices. He further connects this construction to the Achaemenid Elamite *akkaya*, and to Middle Persian *kē* and *kē-iz*, arguing that these later forms derive from an inherited Indo-Iranian relative *kaiia* rather than from the traditionally assumed genitive *kahya*.

His proposal amounts to assuming that *kā haya* is a similar construction to the English *whoever*, where *kā* has the same function as the English *-ever* has.[14] This proposal allows him to explain why in (4.50) a nominal can occur before the relative pronoun: he compares it to internally-headed *ever*-relative clauses in English (as seen in (4.54), repeated from 4.50). In all other cases, *kā* and *haya* are immediately adjacent, which provides further motivation for assuming that they are somehow fused or are part of the same constituent (a constituent that can sometimes include an internal noun):

(4.54) tuvam kā xšāyaϑiya haya aparam āhi
you.NOM *ever* king.NOM REL.NOM hereafter COP.PRES.2SG

[14] One counterargument against Briceño Villalobos (2022)'s proposal comes from the English case: *ever* is not a Free Choice Item in English, it is a Negative Polarity Item. While the compositional semantics of *whoever* is not fully clear (if we do not adopt a syncategorematic approach to it), its existence shows that a Negative Polarity Item may well be part of a Free Choice relative clause. Therefore, an instrumental analysis of *kā* would be tenable.

'You, whoever shall be king hereafter ...' (DB 4.37, 68, 87)

Briceño Villalobos's proposal is indeed compelling, but there are still some questions that his analysis should be able to answer. The first is what exactly the function and semantics of *kā* is, and how its contribution to the formation of the alleged *kā haya*-based generalizing relative clauses comes about. It seems to me that assuming it is an alternative-inducing focus particle (along the lines of what Hinz 1975 and Back 1992 have proposed) is useful for understanding the compositional semantics of this construction. This proposal becomes even more compelling when we recall that *kā* comes from an interrogative root, and interrogatives have long been known to introduce alternatives.

Moreover, it is not clear why such relative clauses should only be used in such a formulaic fashion after the pronominal *tuvam*: there is a chance that such distribution is not merely a coincidence and *tuvam* is, in fact, part of this construction. The stark difference between the Old Avestan generalizing relative clauses and this construction is surprising, even if we accept Briceño Villalobos's explanation that the relative pronoun follows *kā* due to Semitic influences. Specifically, in the case of (4.50), the Old Avestan patterns (together with the existence of free relatives in Old Persian, albeit without an overt head) suggest that we would expect the following configuration where the nominal head is internal:

(4.55) * tuvam haya kā xšāyaϑiya aparam āhi
you.NOM REL.NOM *ever* king.NOM hereafter COP.PRES.2SG

Once again, we must acknowledge that the variety of forms in the data from (4.50)–(4.53) is simply too limited: six datapoints might constitute a promising starting point, were it not for the fact that all six follow a formulaic pattern.

### 4.1.6 Interim conclusion

Now that we have a relatively clear picture of the patterns in Old Persian, we can situate Old Persian relativization strategies within a broader Old Iranian picture (anchored to-

wards our in-depth study of Old Avestan). It seems that the underlying structural descriptions given for Old Avestan more or less hold for Old Persian, but with certain constraints and a different degree of productivity. Free relatives can only have covert internal heads, which means that the structural description given for Old Avestan would overgenerate for the Old Persian data. Old Persian free relatives are also mostly copular, an indicator of lower productivity (and a tendency towards substantivizing uses of the pronoun in free relatives): while this is not probably a grammatical constraint (as counterexamples exist), it might reflect a change in progress. On the other hand, the article-like use of the relative pronoun, although essentially the same as in Old Avestan, seems to have become more productive (in line with the existence of article-like uses in Northern Kurdish, see below). Correlatives, except for not having an overt internal head, have not changed that much in their internal syntax from Old Avestan: they are even closer to the Old Avestan data than Old Persian free relatives. However, they seem to be occupying a different syntactic position in the broader clausal syntax – probably a position lower in or even outside the left periphery. Generalizing relative clauses also seem to disappear, though this might only be due to the limitations of the corpus.

From a diachronic perspective, the Old Persian data illustrate how the relativization patterns of Old Iranian (attested more comprehensively in the more archaic Old Avestan) begin to evolve into those seen in the Middle Iranian languages, particularly Western Middle Iranian. *In situ* free relatives which are productive and varied in their Old Avestan attestations almost entirely disappear in Western Middle Iranian languages. At the same time, the correlative construction remains productive in at least one Western New Iranian language, Zazaki (Paul 2009, p. 575). The fact that free relatives become more constrained in Old Persian (mostly copular, and only with covert internal heads) while correlatives retain their broader Old Iranian productivity, provides a plausible diachronic bridge to these developments in later Western Iranian. Furthermore, as noted by Haig (2011a), Northern Kurdish (a Western New Iranian language) possesses a productive sub-

stantivizer or article-like construction derived from the relative pronoun (mentioned in 2.55), which aligns well with the increased productivity of article-like uses of the relative pronoun already observable in Old Persian. This suggests a continuity of structural innovation along the Western Iranian trajectory, from Old Persian to its modern descendants.

## 4.2 Young Avestan

Young Avestan is another Old Iranian language and, besides Old Avestan, the language of the Zoroastrian sacred corpus, the Avesta. The parts of Avesta written in Young Avestan are later texts (none of them are attributed to the prophet Zarathuštra), the earliest of which may date from the sixth century BC. Young Avestan is distinct from Old Avestan in time, geography, and linguistic features – therefore, it is not the direct diachronic continuation of Old Avestan, rather a different dialectal variation from it (Martínez and de Vaan 2014, pp. 5–10). Young Avestan is generally associated with Eastern Iran (ancient Central Asia, e.g. around ancient Bactria/Sogdia), several centuries after the Old Avestan texts were composed, but the extent to which the attested language reflects a contemporaneously spoken vernacular, rather than a liturgical variety preserved within priestly transmission, is uncertain.

The Young Avesta corpus is extensive, encompassing liturgical texts and myths composed in Young Avestan. It includes the Yasna (excluding the Old Avestan sections), the Visperad, the Vendidad, 21 Yašts (hymnic praises of various divinities), shorter prayers of the Khorda Avesta, and a few other fragments. The study in this chapter is based on a sample of four texts with new and more methodologically-robust editions, namely Yašt 10: Mihr Yašt (Gershevitch 1959), Yašt 13: Frawardin Yašt (Malandra 2018), and Yasna 9–11: Hōm Yašt (Josephson 1997, Pirart 2004). The Yasna and Yašts are often assumed to be older than most other Young Avestan texts, and seem to constitute a more homogeneous linguistic class compared to the other Young Avestan texts.

Alongside many phonological differences, Young Avestan, in comparison with Old Avestan, shows a marked decline in the use of the aorist and perfect, and adjectives display pronominal inflection. Moreover, some linguistic features of Young Avestan more closely resemble those of Old Persian than of Old Avestan (such as the extension of the ablative of *a*-stems and the emergence of the pronominal stem *di*) (Skjaervø 2007). As we will see, this pattern also holds for relative clauses.

In Young Avestan, the postnominal relativization strategy appears to be used more broadly than Old Avestan, and there are fewer instances of non-postnominal relative clauses. Among the 542 relative clauses in our sample, only 46 can be clearly identified as non-postnominal. This count excludes cases where the relative clause could be interpreted as an ezafe construction, is ambiguous between ezafe and the article-like construction, or is ambiguous between a free relative and a postnominal relative clause whose head noun occurs in the previous verse (these ambiguous forms will be discussed later). Among the 46 remaining instances, several are repetitions (e.g., the free relative/article-like string in (4.57) occurs four times in the corpus) or part of a consecutive formulaic passage (e.g., six article-like clauses appear in Yt 19.71 with only minimal variation; see example (4.66)). As the following discussion will show, the productivity and diversity of non-postnominal relative clauses have been visibly reduced in our sample. Moreover, Young Avestan developed an indeclinable relative pronoun, *yaṯ*, which appears exclusively in postnominal relative clauses and, more notably, in the ezafe construction. Thus, even the morphological innovations of the language point toward a systematic expansion of postnominal relativization.

### 4.2.1 Free relatives

There are few cases of strings that we can confidently parse as a free relative:[15]

[15]In the glossing of Young Avestan examples, all non-present stems have been glossed as PST.

(4.56) mā gąm vaēnōiṯ aṣibiia [yō
PROH COW.ACC see.PRES.OPT.3SG eye.INST.DU REL.NOM
aēnaŋhaiti nō manō] [yō
use violence.PRES.SBJV.3SG us.GEN mind.ACC REL.NOM
aēnaŋhaiti nō kəhrpəm]
use violence.PRES.SBJV.3SG us.GEN body.ACC

'May he not see the cow with (his) two eyes, he who uses violence against our minds, he who uses violence against our bodies.' (Y 9.29)

(4.57) nōiṯ xšnāuuaiiaeiti ahurəm mazdąm ... [yō mazdąm
NEG appease.PRES.3SG Ahura.ACC wise.ACC ... REL.NOM wise.ACC
tarō.maniiete]
despise.PRES.3SG

'He who despises the Wise one ... does not appease the Wise Ahura.' (Yt 10.139)

(4.58) mā buiiama šōiϑrō.iricō mā nmānō.iricō ... māδa
PROH COP.OPT.1PL settlement-leaving.NOM PROH house-leaving.NOM ... PROH
[yaṯ nō uγra.bāzāuš niuuānāṯ parō ṯbišiianbiiō]
REL.NOM us.DAT strong-armed.NOM protect.PRES.SBJV.3SG from enemies.DAT

'Let us not be those who leave the settlements, or house ..., or (those who leave) what the strong-armed shall guard for us from the enemies.' (Yt 10.75)

In all of the four free relatives above, the internal case marking (as assigned to the relative pronoun by the predicate of the relative clause) is nominative. Also, none of them appears to have an overt nominal head. The free relatives in (4.56) and (4.57) also observe the matching requirement: the nominative free relative is also the subject of the relative clause. Interestingly, none of the free relatives are copular.

Note that an example such as (4.59) exists, which can be parsed both as a head-internal free relative and as one without an overt head:

(4.59) nmānəm daδāhi bərəziṃitəm [yasə=ϑβā ...
house.ACC grant.PRES.2SG high pillared.ACC REL.NOM=you.ACC ...
yazaite barō.zaoϑrō aṣauua]
sacrifice.PRES.3SG libation-offering.NOM righteous.NOM.SG

'You give a high pillared house to which righteous, libation-offering man who sacrifices to you.' (Yt 10.30)

The descriptions *barō.zaoθrō aṣ̌auua* 'libation offering righteous' can be the internal head of the relative clause; however, similar to the Old Persian cases, it does not need to: *aṣ̌auua* can simply be an appositive, yielding a meaning such as 'to one who sacrifices to you, being righteous and libation-offering'. As there is no certain case of a head-internal free relative in the corpus, we cannot be sure that this structure even existed in Young Avestan (according to our sample).

The example in (4.58) is quite interesting: the free relative, internally, seems to be a straightforward case of a free relative. As the relative pronoun is *yaṯ*, it is headed by a covert expression meaning 'thing.' However, within the matrix clause, there is no predicate that takes the free relative as an argument or adjunct. Then, what is the function of the free relative? It seems that it is the object of an elided *irica-* 'leaver', a verbal noun from the root *raēk* 'to leave'. In his commentary on this verse, Gershevitch (1959) says that here, *buiiāma taṯ.iricō* 'let us be that.leaving' is supplied, where the demonstrative *taṯ* is what the relative clause refers to:

(4.60) māδa ⟨buiiāma taṯ.iricō⟩ yaṯ nō uγra.bāʿāuš niuuānāṯ parō ṯbiṣ̌iianβiiō
⟨may we⟩ not ⟨become abandoning that⟩ which the strong-armed shall guard for us.

Gershevitch points out that his supplied *taṯ* is, as it often is, implied in the relative pronoun. His intuition and this remark are all accurate with regard to what we formally would expect from the string in (4.58): *buiiāma* and *iricō* are elided (licensed by the occurrence of the verbal predicate in the verse), and interpreting the relative clause as a free relative would satisfy the traditional philological expectation that relative clauses, which are by default postnominal, require a head; an issue that Gershevitch tried to address by supplying a *taṯ*.

There are also a number of free relatives with case mismatch, meaning that the internal case marking of the free relative does not align with the case that the matrix clause as-

signs to it. As mentioned in §2.4, instances of case mismatch are common in Old Avestan too, and even constitute the majority of free relatives. Similar to Old Avestan, the free relative always keeps its integrity: it always has nominative case, the case assigned by the predicate of the free relative (recall that in Old Avestan, too, in most instances of case mismatch the free relative has nominative case marking internally). But the function of the free relatives in the main clause always is an oblique, which requires external dative case marking. All of these cases appear in Yt 10 (Mihr Yašt).

(4.61) a. āsu.aspīm daδāiti miθrō yō
having fast horses.ACC.PL give.PRES.3SG Miθra.NOM REL.NOM
vouru.gaoiiaoitiš [yōi miθrəm nōiṯ̰ aiβi.družiṇti]
having wide pastures.NOM REL.NOM.PL contract.ACC NEG break.PRES.3PL
'Miθra who is the lord of wide pastures grants possession of fast horses to those who do not break the contract.' (Yt 10.3)

b. razištəm paṇtąm daδāiti ātarš mazdå̊ ahurahe
straightest.ACC path.ACC give.PRES.3SG fire.NOM wise.GEN Ahura.GEN
[yōi miθrəm nōiṯ̰ aiβi.družiṇti]
REL.NOM.PL contract.ACC NEG break.PRES.3PL
'Fire of the Wise Ahura grants the straightest path to those who do not break the contract.' (Yt 10.3)

c. spəṇtå̊ frauuašiiō daδāiti āsnąm frazaiṇtīm
beneficent.NOM.PL Fravašis.NOM give.PRES.3SG noble.ACC progeny.ACC
[yōi miθrəm nōiṯ̰ aiβi.družiṇti]
REL.NOM.PL contract.ACC NEG break.PRES.3PL
'The beneficent Fravašis grant the noble progeny to those who do not break the contract.' (Yt 10.3)[16]

(4.62) nmānəm daδāhi bərəziṃitəm [yasə=θβā ...
house.ACC grant.PRES.2SG high pillared.ACC REL.NOM=you.ACC ...
yazaite barō.zaoθrō aṣauua]
sacrifice.PRES.3SG libation-offering.NOM righteous.NOM.SG
'You give a high pillared house to which righteous, libation-offering man who

[16] According to Gershevitch (1959, p. 157), *daδāiti* in this verse is in 3SG instead of 3PL under the influence of two preceding occurrences of *daδāiti*.

sacrifices to you.' (Yt 10.30)

In all cases in (4.61)–(4.62), we are dealing with a free relative internally having nominative case, but externally requiring dative case: the free relative is the recipient (and, therefore, indirect object) of the verb *dā-* 'to give'.

The pattern that most instances of case mismatch take place when the external case is dative is interesting. However, in our current sample of the corpus, all examples are found in Yt 10 (Mihr Yašt), and three instances, those in (4.61a)–(4.61c), actually occur continuously within one verse. This makes us wonder about whether this has been a productive pattern. Moreover, one can assume that the phonological similarity of the dative endings *-ōi* (in diphthongal stems, for instance) to the ending in *yōi* might have also played a role in the emergence of cases in (4.61) during the course of the oral transmission of the Young Avestan text.

Lastly, to our count of free relatives we have to add instances that are ambiguous between an article-like construction in nominative and a free relative, such as the one in (4.63):

(4.63) fratərəsəṇta vīspe mainiiauua daēuua [yaē=cā
fear.PST.3PL all.NOM.PL spiritual.NOM.PL gods.NOM REL.NOM.PL=CONJ
varəniia druuaṇtō]
of Varən.NOM.PL possessed by Lie.NOM.PL
'All supernatural evil gods recoil in fear, and concupiscent owners of falsehood.'
(Yt 10.99, similar construction in 10.68, 10.97 and 10.134)

The translation in (4.57) represents a free relative interpretation of this example, but it could as well be an article-like construction headed by nominative forms *varəniia druuaṇtō* – it is not possible to adjudicate between these two options here, but there are indeed cases where an article-like parse is the only interpretation possible.

#### 4.2.1.1 Article-like

There are 9 cases in our Young Avestan sample where we can confidently analyze a string as an article-like construction (in addition to around 16 cases where the string is ambiguous between a free relative and a free relative with an omitted copula, such as (4.57) and (4.67) discussed later in the section). Eight of these appear in Yt 19 (Zamyād Yašt) and one appears in Y 9 (Hōm Yašt), repeated in Yt 19 too.

(4.64) yąm ... fraca kərəṇtaṯ aŋrō mańiiuš aoi [yąm
REL.ACC ... forth make.PST.3SG evil.NOM spirit.NOM against REL.ACC
astuuaitīm gaēθąm] mahrkāi aṣahe gaēθanąm
corporeal.ACC world.ACC destruction.DAT truth.GEN creatures.GEN
'(Dahaka) which the Evil Spirit brought forth against the corporeal world for the destruction of the creatures of truth.' (Yt 19.37, Y 9.8)

(4.65) yaṯ upaŋhacaṯ [yim yimәm xšaētәm
REL.NOM accompany.PST.3SG REL.ACC Yima.ACC shining.ACC
huuąθβәm]
having good horses.ACC
'(The glory) which accompanied the shining Yima of good horses.' (Yt 19.31)

(4.66) yaṯ upaŋhacaṯ kauuaēm kauuātәm ...
REL.NOM accompany.PST.3SG Kauui.ACC Kauuāta.ACC ...
'(Glory) which accompanied Kauui Kauuāta ..'

a. yim=ca kauuaēm aipi.vohum ...
REL.ACC=CONJ Kauui.ACC Aipi.Vohu.ACC ...
'and the Kauui Aipi.Vohu ...'

b. yim=ca kauuaēm usaδanәm ...
REL.ACC=CONJ Kauui.ACC Usaδan.ACC ...
'and the Kauui Usaδan ...'

c. yim=ca kauuaēm aršnәm ...
REL.ACC=CONJ Kauui.ACC Aršan.ACC ...
'and the Kauui Aršan ...'

d. yim=ca kauuaēm pisinәm ...
REL.ACC=CONJ Kauui.ACC Pisina.ACC ...

‘and the Kauui Pisina ...’

e. yim=ca kauuaēm biiaršānəm ...
REL.ACC=CONJ Kauui.ACC Biiaršān.ACC ...
‘and the Kauui Biiaršān ...’

f. yim=ca kauuaēm siiāuuaršānəm
REL.ACC=CONJ Kauui.ACC Siiāuuaršān.ACC
‘and the Kauui Siiāuuaršān.’ (Yt 19.71)

Starting with (4.64), we again observe the article-like construction used to describe one member of a two-membered set: in the Zoroastrian cosmology, there are two worlds: a physical world, and a metaphysical world. In (4.64), where both worlds are mentioned, one is described by an article-like construction (while the other one is not). This reminds us of the Old Persian example in (4.16) and the Old Avestan example in (2.51): this Young Avestan example, once again, shows that we have to treat the pragmatic use of this construction as involving contrastive focus.

Other examples are, however, rather different. In (4.65), the article-like construction consists of the relative pronoun, the proper noun *Yima*, and two adjectives modifying *Yima*. In its occurrence in Yt 19, three verses later in the text, the same description appears in a string ambiguous between a free relative and an article-like construction:

(4.67) fraēštō [yō yimō xšaētō huuąϑβō]
in motion.NOM REL.NOM Yima.NOM shining.NOM having good horses.NOM
‘The shining Yima of good horses was driven off.’ (Yt 19.34)

The description *huuąϑβa-* ‘having good horses’ only occurs in these two sentences in Yt 19. The proper noun *Yima* appears elsewhere modified by *xšaēta-* ‘shining’, but without any relative pronoun. Therefore, we cannot assume that epithets of Yima (*xšaēta-* and *huuąϑβa-*) were fossilized in an article-like construction.

Example (4.65) is similar to the examples in (4.66) in involving a proper noun in an article-like construction. (4.66) is within a verse that comprises six minimally different

instances of an article-like construction.[17] As these examples show, an article-like construction in Young Avestan can easily involve a proper noun which is already definite (Elbourne 2013). This corroborates the discussion in §4.1.3.1: it seems that the article has a rather pragmatic function or enriched meaning beyond assigning definiteness to noun phrases. This pragmatic function or enriched meaning can manifest itself in contrastive focus, or some sort of discourse saliency.[18]

Before concluding this subsection, we shall take a look at some instances of the ezafe construction to re-examine the hypothesis that the origin of the ezafe construction was, in fact, the article-like construction. The instances of a genuine ezafe construction (i.e. non-nominative cases where a copular reading and, consequently, a postnominal relative clause analysis is not possible) in the corpus are common, but some of them are more interesting for our purposes. We will start with a string ambiguous between the three constructions (article-like, relative clause, ezafe) in (4.68), then see a presumably ezafe-like construction in (4.69), and then two instances where an article-like reading is salient in (4.70) and (4.71):

(4.68) hō$_{i}$ [yō haomahe maδō]$_{i}$ aṣ̌a
DEM.NOM REL.NOM Haoma.GEN intoxication.NOM Truth.INST
hacaite
be accompanied.PRES.3SG
'Haoma's intoxication is accompanied by Truth.' (Y 10.8)

(4.69) yō janaṯ̰ gaṇdarəβəm$_{i}$ [yim zairi.pāšnəm]$_{i}$
REL.NOM slay.PST.3SG Gaṇdarəβa.ACC REL.ACC having yellow heel.ACC
'(Kərəsāspa) who slew the yellow-heeled Gaṇdarəβa.' (Yt 19.40)

(4.70) dim$_{i}$ daδąm ... mąm=ciṯ̰ [yim Ahurəm mazdąm]$_{i}$
DEM.ACC make.PST.1SG ... me.ACC=PRTCL REL.ACC Ahura.ACC wise.ACC
'I made him ... (such) as myself, the Wise Ahura' (Yt 10.1)[19]

[17] Also note that interestingly, the matrix clause also contains a similar description, *kauuaēm kauuātəm*, without a relative pronoun.

[18] Note that we do not see the substantivizing use of the article-like construction in the examples in hand.

[19] Elsewhere in the corpus, *Ahura- mazdā-* with the modifier *daδuuå̊* 'creator' occurs in a string ambiguous between a free relative and an article-like construction: *yō daδuuå̊ ahurō mazdå̊* (REL.NOM creator.NOM

(4.71) mairīm$_{i}$ baṇdaiiaṯ [yim tūirīm fraŋrasiiānəm]$_{i}$
scoundrel.ACC bind.PST.3SG REL.ACC Turian.ACC Fraŋrasyan.ACC
'He bound the scoundrel the Turian Fraŋrasyan.' (Y 11.7)

The first example, (4.68), is in fact ambiguous between three parses: a postnominal relative clauses – headed by *hō* – with an omitted copula (roughly translated to 'that which is the intoxication of Haoma'), an ezafe-construction (roughly translated to 'the intoxication of Haoma'), and an appositive article-like construction (translated to 'that, the intoxication of Haoma'). While we cannot really adjudicate among these three options in this case, (4.68) is a good representative of what kind of strings can be ambiguous between the article-like construction, the ezafe construction, and possibly a postnominal relative clause.

None of the other examples can be parsed as a genuine postnominal relative clause, as the relative pronoun and the (seeming) predicate in all of them bear accusative case marking. However, there is a case to be made for an ezafe parse of (4.69): the relative clause only contains an adjectival description (the epithet), while in the other cases the relative clause also contains a noun. As the ezafe is a linker between a noun and its adjectival or genitive modifier, the string in (4.69) looks more likely to be a genuine ezafe construction. If so, we can understand this ezafe construction in two senses: one, it is possible that by the stage of the language represented in Yt 10, the ezafe and article-like uses had already diverged: (4.69) was a fully fledged ezafe, and (4.70)–(4.71) were instances of the appositive article-like construction. This scenario presupposes that the origin of the ezafe construction was the appositive article-like construction, as proposed by Haig (2011a). Alternatively, the other possibility is that there was a distinction in origin between the ezafe and the article-like use of the relative pronoun. This assumption presupposes that the origin of ezafe was the grammaticalization of the relative pronoun

Ahura.NOM wise.NOM) 'The creator Wise Ahura / The wise Ahura who was creator' (Yt 10.50, Yt 13.83, Yt 19.6). If we adopt an article-like interpretation here, this construction is similar to (4.70) but with two adjectives modifying the noun phrase instead of only one.

as a nominal linker (in line with of what we assumed in §2.3.3.2).

Be that as it may, we also have to note that in (4.69), the relative clause immediately follows the modified noun, while in the other examples the relative clause is disjoint from the modified noun. Recall from §4.1.3.2 that in Old Persian, all cases where an appositive article-like/ezafe parse was forced (i.e. where the case marking was not nominative), all (genuine) examples involved a (seeming) relative clause adjacent to the modified noun. The extraposition that we see in (4.70)–(4.71) provides a further argument for the claim made at the end of §4.1.3.2: distinguishing between an ezafe parse (as a linker) versus an appositive parse relies on which of these are more common with the extraposition of the modifier. Recall that in the case of Old Persian, the only disjoint and extraposed instances of a modifier were those with nominative case marking and therefore there was no obligation to parse them as appositive article-like or ezafe; we could simply take them as postnominal relative clauses. Yet, the Young Avestan examples in (4.70)–(4.71) are not in nominative: they are genuine ezafe/article-like appositive cases, yet disjoint.

Perhaps the fact that (4.69) is the only directly adjacent case is, now, an indication that this is indeed different from (4.70)–(4.71): it might not be coincidental that the only directly adjacent example in our sample is also the one where an ezafe parse is more likely because of the existence of only one adjectival modifier and no nominal in the relative clause. If this logic holds, it means that in an ezafe construction – which is where we do not have a noun inside the (seeming) relative clause, but only a modifier – the modifier is always directly adjacent to the noun that is modified. In this case, we would expect the following scenario in a comprehensive study of the corpus of Young Avestan: all strings similar to an appositive article-like/ezafe construction that only contain one adjectival or genitive modifier should be adjacent and immediately following the modified noun, while cases involving a noun inside the (seeming) relative clause could be disjoint or directly adjacent. The first group would be the ezafe construction, the second one would be the appositive article-like construction. While the data in hand do not allow such a general-

ization, the data are consistent with it if further investigation provides more evidence for this generalization.[20]

#### 4.2.1.2 Verse-initial relatives: ambiguity between free relatives and postnominal relative clauses

One stylistic feature of the Young Avestan texts is that they tend to begin verses (or, in some cases, verse-quarters in the middle of the verse when there is a change in discourse) with a relative clause, modifying a discourse referent that is somehow salient in the discourse: in many cases, this discourse referent is the divine or mythological entity that the book is dedicated to.[21] By nature, such relative clauses are often disjoint from the noun they modify, in the sense that the modified noun (=the salient discourse referent) has been mentioned in a previous verse. For instance, observe the beginning of four consecutive verses in Zamyād Yašt as summarized in (4.72):

(4.72)

| | |
|---|---|
| Yt 19.30 | $x^{v}$arənō$_{i}$ yazamaide |
| | we worship the Glory ... |
| Yt 19.31 | yat$_{i}$ upaŋhacaṯ̃ Yima$_{j}$ |
| | (The Glory) which accompanied Yima ... |
| Yt 19.32 | yō$_{j}$ uzbaraṯ̃ haca daēuuaēibiiō uiie ištišca |
| | (Yima) who brought up from the evil gods prosperity ... |
| Yt 19.33 | yeŋhe$_{j}$ xšθraāδa nōiṯ̃ aotəm |
| | (Yima) under whose reign there was no frost ... |

As we see in (4.72), Yt 19.30 introduces the discourse Referent "Glory". In the next verse, a relative clause refers to "Glory", and itself introduces a new discourse referent *Yima*. In the next two verses, *Yima* is modified by relative clauses. In such sequences, the

[20] It is worth mentioning that (4.70) has been taken as an appositional phrase by Jügel (2017, p. 558).

[21] This construction also exists in the Old Avestan corpus, but is much less common. Additionally, as free relatives and postnominal relatives are both common and productive in Old Avestan, it is not easy to distinguish between these structural descriptions for the Old Avestan cases.

content of the preceding verse is irrelevant; a new verse can often refer back to a discourse referent introduced several verses earlier (such as Yt 19.33 referring to *Yima* introduced in Yt 19.31).

In many cases, a verse-initial relative clause can be interpreted in one of two ways: either as a postnominal relative clause modifying an explicit noun, or as a free relative functioning independently. Given the frequency of such constructions, interpreting them as free relatives would lead to a substantial increase in the number of free relatives identified in the corpus. For instance, we can interpret the relative clauses in (4.72) in two ways:

(4.73)

| | |
|---|---|
| Yt 19.30 | $x^{v}$arənō$_{i}$ yazamaide |
| | we worship the Glory ... |
| Yt 19.31 | yat$_{i}$ upaŋhacaṯ Yima$_{j}$ |
| | **Postnominal**: (The Glory) which accompanied Yima ... |
| | **Free relative**: That which accompanied Yima ... |
| Yt 19.32 | yō$_{j}$ uzbaraṯ haca daēuuaēibiiō uiie ištišca |
| | **Postnominal**: (Yima) who brought up from the evil gods prosperity ... |
| | **Free relative**: He who brought up from the evil gods prosperity ... |
| Yt 19.33 | yeŋhe$_{j}$ xšaϑraāδa nōiṯ aotəm |
| | **Postnominal**: (Yima) under whose reign there was no frost ... |
| | **Free relative**: He under whose reign there was no frost ... |

In adopting a free relative analysis of these instances we would, however, have to note that such free relatives were not typical argument-position free relatives (as there is no matrix clause). They would be appositives to the discourse referent. Which analysis is, then, more likely?

In this style of Young Avestan liturgical texts, nominal and adjectival appositive descriptions that modify or refer to a salient discourse referent often appear at the start of the

verse:

(4.74) aṣaonąm vaŋhuīš sūrå̊ spəṇtå̊ frauuaṣaiiō
righteous.GEN.PL good.ACC.PL strong.ACC.PL beneficent.ACC.PL Fravašis.ACC.PL
yazamaide ərədrå̊ taxmå̊ aojaŋuhaitīš
worship.PRES.1PL faithful.ACC.PL brave.ACC.PL powerful.ACC.PL
'We worship the good, strong, beneficent Frawṛtis of the righteous – faithful, brave, powerful.' (Yt 13.32)[22]

(4.75) miθrəm vouru.gaoiiaoitīm yazamaide ... | kamərəδō.janəm
Miθra.ACC having wide pastures.ACC worship.PRES.1PL ... | head-smasher.ACC
daēuuanąm akatarəm ... miθrō.drująm mašiiānąm
evil gods.GEN punisher.ACC ... contract breaking.GEN.PL men.GEN
'We worship Miθra of wide pastures ... | the head-smasher of evil gods, punisher of contract-breaking men ...' (Yt 10.25–26)

In (4.74), the discourse referent *frauuaṣiia-* 'Fravašis' is in the same verse, and in the second quarter-verse of the verse there are several adjectives in nominative as appositives to it. In (4.75), on the other hand, the discourse referent is mentioned in Yt 10.25 (which itself contains many appositives for Miθra). Then, in the following verse, there are more adjectives in apposition to the previously mentioned discourse referent. As free relatives have the same distribution as noun phrases, the existence of these cases shows us that a free relative interpretation of the verse-initial relative clauses is possible.[23]

However, among verse-initial relative clauses in our corpus, there is not a single instance that can be analyzed as an appositive article-like/ezafe construction, despite the fact that

[22]Throughout this Yašt (the Frawardin Yašt), the word *frauuaṣaiiō* in this frequently repeated phrase must be understood as accusative, though the morphological form is nominative. I have used the correct accusative case marking in the glosses to represent actual case assignment, but this practice does not represent the morphological makeup of the words.

[23]Note that all appositives, as expected, agree with their modified noun in case and number regardless of how far they are from it: all the adjectives in (4.75) have accusative case marking, following Miθrəm in the previous verse (which is the object of the verb *yaz-* 'to praise', thus bearing accusative case marking). This case marking pattern shows syntactic integration of appositives with their head noun regardless of how local they are. Therefore, if we take verse-initial relative clauses as free relatives, they would show case mismatch: in (4.72), the discourse referent *Yima* is accusative (in Yt 19.31), but the relative clauses modifying it are internally nominative (Yt 19.32) and genitive (Yt 19.33). Yet, free relatives often violate case matching requirements in Old Iranian languages. Therefore, case mismatch cannot serve as a distinguishing factor in this context.

this construction is otherwise both attested and relatively common in the language. Since this appositive construction is likely to inherently be a free relative, I take this absence as negative evidence against analyzing verse-initial relative clauses as free relatives.

As with many conclusions drawn from the Young Avestan corpus, it is possible that this pattern reflects a stylistic feature of the text; perhaps in ordinary speech, it was uncommon to refer back to a discourse referent introduced much earlier. However, even stylistic features are ultimately rooted in natural speech and the colloquial use of the language. If the underlying source of these verse-initial relative clauses were a free relative construction, we would expect to find unique traces of free relatives (or closely related constructions), such as the availability of an internal head or article-like constructions, across the many occurrences of such clauses in the corpus. Since we do not, it is most prudent not to analyze these verse-initial relative clauses as free relatives.

### 4.2.2 Correlatives

Our survey of the Old Persian corpus showed that in Old Persian, correlative structures were employed with a higher degree of productivity than free relatives. This, however, does not appear to be the case in our Young Avestan sample: similar to free relatives in this language, correlatives are few in number, and do not show much variation. There are three cases of a correlative construction in Frawardin Yašt:

(4.76) āaṯ [yō nā hīš hubərətå̊ barāṯ
PRTCL REL.NOM man.NOM DEM.ACC.PL well-treated.ACC.PL bear.PRES.SBJV.3SG
juua aṣaonąm frauuaṣaiiō sāsta daiṅhəuš hamō.xṣ̌aϑrō]
alive.NOM righteous.GEN.PL Fravašis.ACC ruler.NOM country.NOM all-ruling.NOM
[hō aŋhāiti zazuštəmō]
DEM.NOM become.PRES.SBJV.3SG most successful.NOM
'And then, which man will treat them well, the Fravašis of the righteous, while he is living an all-ruling ruler of the country, he will become most successful.'
(Yt 13.18)

(4.77) āaṯ [yō nā hīš frāiiazāite gaomata
PRTCL REL.NOM man.NOM DEM.ACC.PL worship.PRES.3SG having milk.INST
zasta vastrauuata aṣa.nāsa nəmaŋha] [ahmāi
hand.INST clothes.INST Truth-attaining.INST reverence.INST DEM.DAT
āfrīnəṇti]
bless.PRES.3PL
'And then, which man will worship them with hand(s) holding milk (and) clothes, with Truth-attaining reverence, him they bless.' (Yt 13.51)

(4.78) āaṯ [yå̊s=ca å̊ŋhąm niuuānəṇte] [tå āpəm
PRTCL REL.NOM.PL=CONJ DEM.GEN.PL conquer.PRES.3PL DEM.NOM.PL water.ACC
parāzəṇti]
bring away.PRES.3PL
'And then, (those of them) who are victorious, they bring away the water.' (Yt 13.68)

These correlatives are not different from the patterns we have seen before: the free relatives in (4.76) and (4.77) are both internally headed by *nar-* 'man' (immediately following the relative pronoun), the one in (4.78) does not have an overt head. In all of them, the demonstrative resumptive pronoun is clause-initial, there is no movement outside the relative clause, and the interpretation of all three is maximalizing. However, in our sample, we find only three instances of a correlative construction, all occurring within a single text of the Young Avestan corpus. The extent to which the correlative strategy was productive remains then unclear. If our sample is a reasonably representative one, it was not particularly widespread.

Before concluding this chapter, let us also consider two interesting cases involving generalizing free relatives. It is, in fact, appropriate to discuss them here, as one of these cases is also our fourth instance of the correlative construction:

(4.79) [[**yō** ciš=ca ahmi nmāne **yō** aŋ́he vīsi
REL.NOM INTER=CONJ DEM.LOC house.LOC REL.NOM DEM.LOC village.LOC
**yō** ahmi zantuuō **yō** aŋ́he daŋ́uuō aēnaŋ́hå̊
REL.NOM DEM.LOC district.LOC REL.NOM DEM.LOC land.LOC violent.NOM

asti maṣiiō] [gəuruuaiia hē pāδauue zāuuarə]]
COP.PRES.3SG man.NOM take.PRES.IMPER.2SG DEM.GEN foot.ABL.DU strength.ACC
'Whoever in this house, in this village, in this district, in this land is a criminal man, take the speed from his two feet.' (Y 9.28)

The example in (4.79) is not morphologically complex, but the syntax is not straightforward. The translation given in (4.79) is that of Josephson – Pirart's translation is vastly different:

(4.80) 'If there is in this house, if there is in this town, if there is in this district, if there is in this country, a mortal whose ritual is marked by violence, take the strength of his feet.' (Y 9.28 à la Pirart 2004, p. 86)[24]

The difference in translations points to the heart of the first syntactic complexity of (4.79): how are we to understand the relative clauses? What we have are three relative clauses with the relative pronoun in nominative, a copular verb, and a nominative expression. One way to understand these relative clauses is to take *aēnaŋ̊hā maṣiiō* 'violent man' as the internal head of the relative clauses with some sort of ellipsis: 'whichever violent man exists in the house, in the village etc.' – moreover, the fact that the copular form *asti* is often used in an existential (and not predicative) construction (Skjaervø 2009, p. 134) supports this interpretation. In this case, then, we have to assume that in three out of the four of these relative clauses, the internal head and the part of the verb phrase have been elided.

Be that as it may, (4.79) is also interesting in that the demonstrative resumptive *hē* is singular, despite the fact that it resumes discourse referents from four different relative clauses. The key to understand this, I believe, is the generalizing expression *ciš=ca*. Recall from our discussion in §3.3.4.2 that what a Free Choice Item in a generalizing relative clause does is to invoke alternatives, pre-exhaustify them, and exhaustify the pre-

[24] "S'il ya dans cette maison, s'il ya dans ce bourg, s'il ya dans ce district, s'il ya dans ce pays, un mortel dont le rituel est empreint de violence, prends la force de ses pieds."

exhaustified alternatives – the Free Choice Item is, then, semantically an existential quantifier, enriched pragmatically by its ability to exhaustify alternatives (Chierchia 2013). In this regard, (4.79) is remarkable: the alternatives that *ciš=ca* invokes are asserted (and not implied):

(4.81) $\text{ALT}_{4.79}$: $\diamond(\{\text{person}_{in-house}, \text{person}_{in-village}, \text{person}_{in-district}, \text{person}_{in-land}\}$ such that that person is a criminal man, take speed from his two feet)

Once we do the calculations for the first clause, the same way that was explained in §3.3.4.2, we get to the following post-double exhaustification interpretation of the sentence:

(4.82) $O(\text{ALT}_{4.79}{}^{\text{Pre-Exh}}) \rightsquigarrow$

$$\diamond(\text{person}_{in-house}) \wedge \diamond(\text{person}_{in-village}) \wedge \diamond(\text{person}_{in-district}) \wedge \diamond(\text{person}_{in-land})$$

$$\wedge\neg \diamond (\text{person}_{in-house} \wedge \text{person}_{in-village} \wedge \text{person}_{in-district} \wedge \text{person}_{in-land})$$

The representation in (4.82) essentially gives us an exclusive meaning: only one of the conjuncts is permissible under the Free Choice reading.[25] This goes back to Chierchia's idea that Free Choice Items, essentially, are existential quantifiers at their core (an assumption that helps maintain their affinity with Negative Polarity Items). The universal reading and interpretation are secondary and the result of interaction with other elements in the sentence (for instance, the universal sense of this example might come from a covert generic operator or the semantic contribution of the imperative). Such assumption explains the construction in (4.79) very well: if the Free Choice Item *ciš=ca* takes scope over the relative clause, it is only picking out one of the permissible alternatives (while maintaining that each of them is permissible). This is why the resumptive pro-

[25] It is worth mentioning that there is an inclusion relation here in play: the house is in the town, which is in the district, which is in the land. I do not think, however, that this affects the semantics due to the existence of the modal operator $\diamond$.

noun can be singular: it is co-referent with what the doubly-exhaustified relative clause refers to. Under other accounts of Free Choice exhaustification, different explanations are possible. But regardless of the explanation one prefers, it seems that without a theory of what the semantic contribution of *ciš=ca* is, the correlative construction in (4.79) cannot be properly analyzed.

Besides (4.79), a proper example of a correlative as well as a generalizing relative clauses, there is one last example in our sample that looks similar to a generalizing relative clause (if it is actually a relative clause, as its internal structure is extremely difficult to parse):

(4.83) yahmāi nōiṯ̃ cahmāi naēmanąm karana pairi.vaēnōiϑe
REL.DAT NEG INTERR.DAT halves.GEN.PL border.NOM.DU see.PRES.PASS.3DU
'The two borders of the sides (halves) are not visible to anyone.' (Yt 13.3)

As there is no material in the preceding quarter-verse of the verse, we do not have a choice but to take the relative clause in (4.83) as a free relative. As *cahmāi* agrees with case with the relative pronoun, it should somehow be related to it (in the same way that other generalizing expressions always agreed with the relative pronoun in case). But the combination of a free relative (or any relative clause for this matter) and a *ca-* morpheme is a unique construction across all the data that I have examined (note that in Old Avestan, the generalizing expression always consisted of an interrogative-based morpheme as well as another morpheme). It seems that *ya- ca-* in this relative clause is functioning as a Negative Polarity Item. I have not seen Negative Polarity Item uses of *ca*-interrogatives in my Young Avestan sample, and it is not clear to me why such combination would yield a polarity reading – moreover, the absence of a focus particle such as *ciṯ̃* or the conjunction particle makes this example even more curious. In the absence of further data, I am more inclined to take (4.83) as involving some scribal or even grammatical mistake, rather than an unusual (or innovative) instance of generalizing relative clauses.

## 4.3 Conclusion

Young Avestan, at least as represented in our sample, again shows less productivity and variability in non-postnominal relativization than Old Avestan. Free relatives are not numerous, and our certain instances do not have an overt head, but they are not all copular (unlike in Old Persian). They can also be ambiguous with an article-like construction, of which there are also certain instances, but again with less variability than the Old Persian cases (six out of our nine certainly article-like examples were minimally different and within one verse). The rise of the use of ezafe, however, makes it likely that some instances of the ezafe construction might be an article-like construction. While instances of correlatives (both with and without an overt head) also exist in our sample, all of them appear within one text (Frawardin Yašt).

As our sample only consisted of texts in Yašt and Yasna, which represent an older stage of the language, a more comprehensive study of the Young Avestan texts might reveal other properties of free relatives within Young Avestan. However, it appears that, similar to Old Persian *in situ* free relatives and to a lesser extent correlative are structures that become less productive, while the article-like construction persists, likely merging with the ezafe construction. Our structural descriptions for Old Avestan remain relatively robust when applied to the Young Avestan corpus, but the central question that remains is how productive these strategies truly were in Young Avestan (considering how few and unvaried datapoints we have). Many of the discussions in this section have concluded with this open question, one that we may never be able to fully answer.

# Chapter 5

# Conclusion and Outlook

## 5.1 Conclusion

The inquiry in this thesis began with an observation about the form of relative clauses in Old Avestan: some relative clauses were externally-headed and postnominal, while others were not. An investigation into this formal distinction in Chapter 1 revealed a deeper difference than surface-level word order variation. Using formal diagnostics, I showed that these non-postnominal, non-externally-headed relative clauses in Old Avestan are not variants of their externally-headed counterparts. A comparison with similar cross-linguistic patterns indicated that these relative clauses can be classified as free relatives (headless, as well as head-internal) and correlatives, types of relative clauses well attested in the world's languages.

Then, in Chapter 2, I addressed the theoretical consequences of this classification. First, I argued that although free relatives are often assumed to be interrogative-based, the Old Avestan data show that the typology should be expanded to include non-interrogative-based free relatives as well, as attested in Old Avestan, Ancient Greek, and Sanskrit. The motivation for this proposal is that in Old Avestan (and in these other languages), embedded interrogatives are introduced by the same pronoun as free relatives, a hallmark

of free relatives cross-linguistically. Given that free relatives across languages tend to be maximalizing and receive a definite or universal interpretation, I then examined whether this generalization holds for Old Avestan free relatives too. Although the interpretation of many examples remains uncertain due to limited contextual evidence, I showed that in some cases a definite reading is clearly obligatory, whereas there are no instances where a non-definite reading is required.

In the rest of Chapter 2, I developed an analysis of the Old Avestan free relatives that attributes their definite interpretation to their syntactic configuration. Building on previous work by Jacobson (1995) and Caponigro (2003), I proposed that the relative pronoun in Old Avestan free relatives is itself the source of definiteness when it appears in the determiner position of an overt or covert internal head. This determiner phrase is base-generated in argument position, which results in a type mismatch. As a result, it moves to the specifier of the CP, resulting in the specific configuration of free relatives being introduced by a relative pronoun. I showed that this analysis can also explain the diachronic path leading to the emergence of the article-like use of the relative pronoun in Old Avestan, and other diachronic implications of this proposal were also explored in Chapter 4. Moreover, I provided data from Georgian *rom*-relatives, which are minimally different from free relatives in not having a pronominal as the relativizer, and which are also not necessarily maximalizing. I argued that this provides evidence for attributing the definiteness of free relatives to their relative pronouns.

Two other properties of free relatives were also discussed in Chapter 2: matching effects and correlativization. I showed that case mismatches in Old Avestan occur frequently. In some instances, they are resolved by case syncretism, but in many cases they remain unresolved, typically with the relative clause retaining its internal case marking, similar to German free relatives. I argued that, as shown by Himmelreich (2017), both matching and case mismatch reflect general, language-specific mechanisms of case assignment. Therefore, an analysis of free relatives such as mine, which leaves this issue underspecified, is

preferable. As for correlatives, I discussed the complex cross-linguistic spectrum of correlative constructions: in some languages, the relative clause is tightly integrated into the syntax of the main clause, whereas in others, the initial relative clause appears to function more as a discourse-level phenomenon. While the available data do not allow us to make a definitive determination about the status of correlatives in Old Avestan, the evidence points toward a discourse-based analysis, whereby Old Avestan correlatives are best understood as left-dislocated free relatives.

In Chapter 3, I investigated generalizing relative clauses in Old Avestan, which include both free relatives and postnominal relative clauses. We saw that in free relatives, the generalizing expression is *ci- -cā*, while in postnominal relative clauses it is *ka- -cīt*. The main puzzle addressed in Chapter 3 was how these two morphologically distinct expressions compositionally give rise to a generalizing meaning. I first showed that *ci-* in Old Avestan functions as a Negative Polarity Item, while *ka- -cīt*, outside of relative clauses, behaves as a Free Choice Item. I adopted an alternative-based analysis of generalizing relative clauses (as proposed by Dayal 1995, 1997, von Fintel 2000) and aimed to show that *ci- -cā* contributes the same semantics to the relative clause as *ka- -cīt*. To support this, I argued that the conjunction *-cā* turns the Negative Polarity Item *ci-* into a Free Choice Item. The central result of the chapter was that if we adopt an alternative-based account of generalizing relative clauses, the final alternatives generated by both *ci- -cā* and *ka- -cīt* have the same form (despite the difference in the generalizing expression), making them suitable inputs to these fine-grained analyses. However, due to the limited data available in the Old Avestan corpus, I did not pursue a more detailed semantic analysis.

I then turned to the other Old Iranian languages, Old Persian and Young Avestan, in Chapter 4. Despite the fact that neither of these languages is a direct descendant of Old Avestan, we saw that they preserved a more restricted version of the Old Avestan patterns (possibly because their ancestors had similar free relative strategies to Old Avestan). In Old Persian, we saw that free relatives were mostly copular, and no free relative in our

corpus has an overt internal head. Young Avestan had few free relatives, also without an overt head, but more non-copular ones than Old Persian. Article-like uses, however, seem to have been equally or more productive in both (even more so if we assume that *ezafe* is a type of article-like construction). This also holds for correlatives in both languages, but we also showed that Old Persian correlatives seem to have a different syntactic position than Old Avestan correlatives. On the other hand, Young Avestan correlatives only appeared within one Yašt, raising questions about their productivity. None of these languages had generalizing free relatives (at least in the same fashion as Old Avestan), an observation in line with the reduction in the number of *-cā* and *-ciṯ*-based indefinites in both corpora as observed by Mitrović (forthcoming).

## 5.2 Looking ahead

The findings of this thesis are relevant to further synchronic studies of Old Iranian languages, as well as to typological and theoretical research on free relatives and the diachrony of Iranian languages. In what follows, I highlight two specific diachronic questions for which this thesis can lay the groundwork.

The first puzzle is the RELATIVE–INTERROGATIVE PUZZLE, as labelled by Bhatt (2000), who observed that in many languages the relative and interrogative pronouns share the same form. In none of the Indo-Iranian languages we have examined was this the case: all three have a *k*-based interrogative pronoun and a *ya-*/*haya*-based relative pronoun. This situation changes in Middle and New Iranian languages: the *k*-based pronoun begins to take over the relativizing function of the *y*-based pronoun, while the latter becomes mostly restricted to the ezafe construction (and definite marking in Northern Kurdish). In all Modern Iranian languages (to the best of my knowledge), the relative pronoun shares its form with the interrogative pronoun.[1]

[1]Interestingly, this pattern does not extend uniformly to the ezafe morphology: in some Iranian languages, ezafe markers preserve an etymological connection to the older relative series. The reason for this

In her study on the emergence of interrogatives as relative pronouns in Indo-European languages, Auderset (2020) explains this change in Indo-Iranian languages as resulting from contact with Slavic.[2] However, there also appear to be intra-linguistic triggers for this change. Recall that our analysis of free relatives assumed a trivalently homophonous *ya-*: the same morpheme could function as a property linker (in postnominal relative clauses), as a property linker/definite marker (in free relatives), and as a definite marker (in the article-like construction, possibly with pragmatic enrichment). This is evidently a complex paradigm and costly to acquire. Such a system is liable to change during language acquisition, and a plausible way to resolve this is an interrogative taking over the property linker functions, a shift that cross-linguistic evidence shows is a common use of interrogatives. The former relative morpheme would then retain its definite marker function (as in Northern Kurdish; see example (2.55) in §2.3.3.2) and its nominal linker use, the latter as a by-product of earlier diachronic change. The significance of nominal linkers becomes clearer when we consider that many Iranian languages changed from synthetic to analytic (with loss of case marking), so other ways of marking dependencies were likely to survive.

The second puzzle is the FREE RELATIVE PUZZLE. Aside from Old Iranian languages, the only two other languages that have non-interrogative-based free relatives are Sanskrit and Ancient Greek. Yet, Modern Greek has interrogative-based free relatives, while Hindi (which is the descendant of Sanskrit) has no *in-situ* free relatives at all; it only has correlatives (where the relative pronoun is non-interrogative-based). The same situation seems to hold for Iranian languages. Free relatives in Middle and New Iranian languages (if found) are all interrogative-based (a fact relevant to the previous puzzle too), and mostly found only in correlative constructions (the information about these languages is based on descriptions in Windfuhr 2009):

is beyond the scope of the present study.

[2] In other Indo-European languages, headed interrogative-based relative clauses are also a later development, but their emergence is explained by the prior existence of interrogative-based correlatives (Truswell

| Language | Type | Free relatives | Relative Pronoun |
|---|---|---|---|
| Pahlavi/Parthian | Middle, West | rare instances | *ka-* |
| Classical Persian | New, West | rare instances | *ka-* |
| Zazaki | New, West | correlatives | *ka-* |
| Sogdian | Middle, East | ✓ | *ka-* |
| Khotanese | Middle, East | rare instances | *ka-* |
| Ossetic | New, East | correlatives | *ka-* |

Table 5.1: Free relatives in Middle and New Iranian languages

The consistency of this diachronic change is surprising and raises the question of whether some type of directionality (or drift) is at work, whereby non-interrogative-based *in-situ* free relatives are inherently unstable and one of their properties is bound to change. Perhaps relatedly, we also have seen that Old Persian correlatives have been relatively more conservative compared to Old Persian free relatives. While I do not yet have a hypothesis for this puzzle, resolving the previous puzzle, along with a thorough comparison of non-interrogative-based and interrogative-based free relatives coupled with a study of embedded interrogatives, may provide the key to its solution.

2019).

# Appendix A

# Free relatives in Lexical Functional Grammar

We have seen that generative syntactic frameworks (such as Minimalism) have often struggled to account for free relatives, due to their dual nominal and clausal nature. Cases like this, where natural language phenomena resist straightforward representation within a certain theoretical architecture, invite deeper reflection: is the difficulty due to limitations in the current framework, which can be refined and expanded, or does it stem from more fundamental assumptions of the framework about how language must be represented? The latter possibility suggests that the architecture itself presupposes core assumptions that may be incompatible with the data.

The analysis of free relatives presented in §2.3 adopts the first view, assuming that their nominal properties (and thus distribution) can be handled at the syntax-semantics interface, while syntax is responsible for their clausal properties. This appendix explores the second approach by implementing the same analysis within a constraint-based syntactic framework with a parallel architecture: Lexical Functional Grammar.

## A.1 Overview of Lexical Functional Grammar

Lexical Functional Grammar (LFG) was first developed by Joan Bresnan and Ronald Kaplan as an attempt to model natural language in both psychologically and computationally plausible terms (Bresnan and Kaplan 1982). While LFG positioned itself as a generative grammar in the sense of Chomsky (1957, 1965), that is, as a theory of native speakers' tacit knowledge of language abstracted away from processing constraints, it rejected transformational rules and the derivational architecture characteristic of mainstream generative grammar. The roots of this framework can be traced back to Bresnan 1978, a paper that questions the psychological reality of transformations and of derivational grammar more broadly. In that paper, Bresnan argues for a lexical interpretive theory that reduces the role of transformations and instead expands the lexicon and the semantic component.[1]

LFG is a **lexicalist** framework, meaning the lexicon is responsible for encoding relational properties of expressions. For instance, passivization is explained as lexical change. It is also **functional**, in the sense that functional categories (such as subject and object) are part of the core syntax (and not dependent on and derived from the configuration of expressions).

To cash out these assumptions, LFG uses a **parallel architecture**: it models language within distinct yet simultaneously present grammatical structures. The two main such structures are **c-structure** and **f-structure**. Structure building is the implementation of LFG as a **constraint-based** system: each representation is essentially a set of constraints which can be either true or false. The well-formedness of a linguistic expression depends on the satisfaction of these constraints.

C-structure, standing for constituent structure, is a tree that encodes the surface configuration of the sentence. The tree is built based on phrase structure rules; the meta-

[1] It is worth noting that this paper appeared in the same year as Bresnan's co-authored work on free relatives (Bresnan and Grimshaw 1978).

language of phrase structure rules is regular expressions enriched via optionality (parentheses), disjunction ("|" between members of a set), negation, Kleene star (zero or more occurrences), and Kleene plus (one or more occurrences). Phrase structure rules are language-specific.

The c-structure models dominance and precedence relations, constituency and syntactic categories. However, unlike a tree in derivational grammars, it is subject to fewer constraints. For instance, it can be a ternary branching graph. It is, however, subject to an important principle that arises from the lexicalist nature of the framework:

(A.1) **Lexical Integrity Principle**

The terminal nodes of c-structures are morphologically complete words. Syntax cannot refer to the internal structure of morphologically complete words.

The second representational level, f(unctional)-structure, is where abstract grammatical relations (such as agreement, dependencies, control, etc.) are encoded. It is formally modelled as a set of attribute–value pairs, where the value can be a symbol (binary such as +/- or categorical such as NOMINATIVE), the semantic form of the expression (in single quotes), a set, or another f-structure. Essentially, every syntactic relation other than linearization, categorial status, and dominance is modelled within the f-structure. A well-formed f-structure should satisfy three conditions: Uniqueness, Completeness, and Coherence.

(A.2) a. **Uniqueness Constraint on F-structures**

Each attribute has exactly one value.

b. **Completeness Constraint on F-structures**

Each argument in the PRED value of an f-structure (the locus of lexical information) should be present in the f-structure.

c. **Coherence Constraint on F-structures**

No extra argument that is not listed in the PRED value of an f-structure should be present in that f-structure.

The c-structure and f-structure are mapped via the projection function $\phi$ using annotated phrase structure rules (it can also be implemented without phrase structure rules). The mapping is governed by general mapping principles, but while the principles themselves are general, their language-specific instantiations determine how the mapping unfolds in each language (Bresnan 2001). Phrase structure rules are annotated by the following formal symbols (adopted from Asudeh and Toivonen 2010); $*$ stands for a c-structure variable, and $\hat{*}$ stands for the mother node of a c-structure variable.

(A.3) a. $\downarrow \equiv \phi(*)$

i.e., 'the f-structure of the current c-structure node' or 'my f-structure'

b. $\uparrow \equiv \phi(\hat{*})$

i.e., 'the f-structure of the node that immediately dominates the current c-structure node' or 'my mother's f-structure'

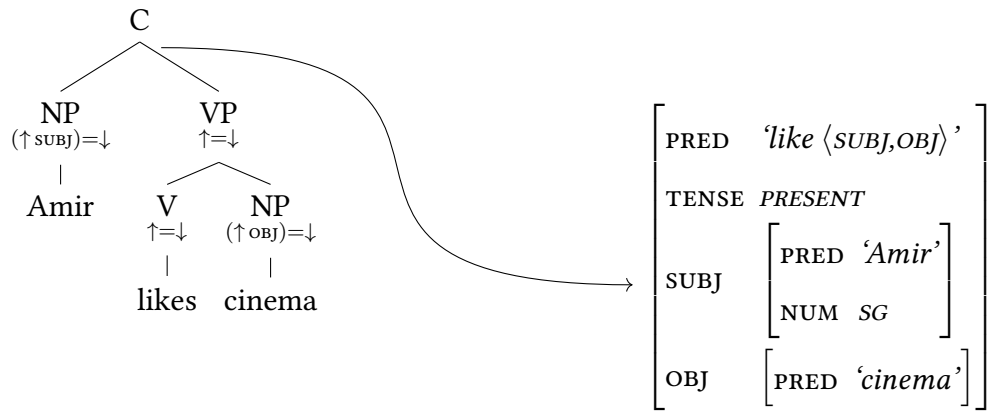
To see how these work, let us look at how LFG models the simple sentence in (A.4). The phrase structure rules in (A.5) build the c-structure in (A.6) (without intermediary X' levels, which are standard in the framework), which is mapped to its corresponding f-structure via the annotation on the non-terminal nodes.

(A.4) Amir likes cinema.

(A.5)

| | | | |
|---|---|---|---|
| S $\rightarrow$ | NP | VP | |
| | $(\uparrow \textsc{subj}) = \downarrow$ | $\uparrow = \downarrow$ | |
| VP $\rightarrow$ | V | NP | |
| | $\uparrow = \downarrow$ | $(\uparrow \textsc{obj}) = \downarrow$ | |

(A.6)




The PRED attribute in the f-structure is of special status. It identifies the lexical predicate of a phrase and encodes its argument structure. Consequently, it determines other properties of a clause, such as grammatical functions, subcategorization requirements, and the mapping between syntactic and semantic roles.

Finally, relative clauses in LFG are modelled under the broader notion of Unbounded Dependencies, which also include topicalization and constituent questions. Unbounded dependencies are modelled using FUNCTIONAL UNCERTAINTY rather than transformational movement. Instead of positing copies or traces, LFG represents the dependency between a displaced element and its grammatical function through equations that include paths of unspecified length within the f-structure. This is done using the *functional uncertainty* mechanism (Kaplan and Zaenen 1989), which draws on the notion of arbitrary levels of embeddings. For instance, if we assume that the interrogative pronoun in constituent questions is assigned the grammatical function FOCUS, the phrase structure rule in (A.8) captures the data in (A.7) (adopted from Belyaev 2023):

(A.7) a. Who does John like –?

b. Who does John think Mary likes –?

c. Who does John believe David thinks Mary likes –?

(A.8) $\text{CP} \rightarrow$ NP: $(\uparrow \textsc{foc}) = \downarrow$; C': $\uparrow = \downarrow$; $(\uparrow \textsc{comp}^* \{\textsc{obj} \mid \textsc{obj}_\theta \mid \textsc{obl}\}) = \downarrow$

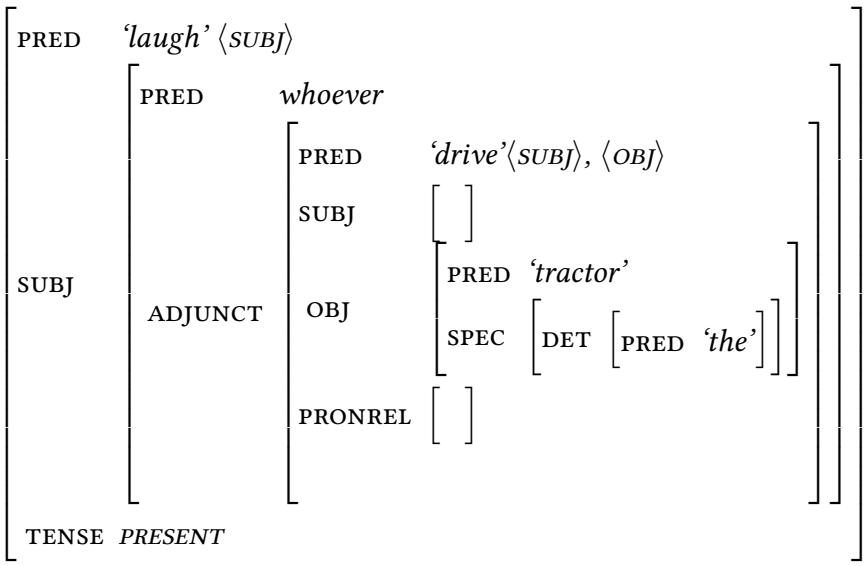
The phrase structure rules in (A.8) also show how unbounded dependencies make use of structure-sharing in f-structure, where a grammatical function within the clause, such as subject or object, shares its f-structure with an information-structure grammatical function. Structure-sharing is encoded via FUNCTIONAL UNCERTAINTY PATHS in the f-structure, depicted as curved lines connecting corresponding f-structures.

For a thorough overview of Lexical Functional Grammar, see Asudeh and Toivonen 2010, Falk 2001, as well as the Oxford Reference Guide to Lexical Functional Grammar (Dalrymple et al. 2019) and the Handbook of Lexical Functional Grammar (Dalrymple 2023).

## A.2 Free relatives in LFG

Free relatives have not received the attention they deserve within the LFG tradition. Butt et al. (1999) followed the HEAD analysis of free relatives (Bresnan and Grimshaw 1978) (as it avoids stipulating phonologically null elements, one of the pillars of LFG) and give the following f-structure for '*Whoever is driving the tractor is laughing*':

(A.9)




In this f-structure, the relative pronoun has a double role. It both functions as the head of the free relative (which is itself, as a whole, the subject of the verb 'to laugh'), and as the grammatical function of the gap inside the relative clause, here the subject of the verb 'to drive.' The nominal nature of free relatives is captured here by representing the relative pronoun as the head of the relative clause.

There are, however, two competing accounts of correlatives within LFG, as Hindi/Urdu and Ossetic correlatives have been studied by, respectively, Butt et al. (2007) (henceforth BKR) and Belyaev and Haug (2014) (henceforth BH). Given that the internal structure of correlatives resembles that of free relatives, I will review them here.

BKR is the pioneering work in the treatment of correlatives within LFG. Building on previous analyses of Hindi correlatives (Srivastav 1991, Bhatt 2003), they treat the relative clause with demonstrative correlate as a DP with an f-structure analogous to free relatives. Unlike previous analyses, they do not treat the relative clause as an adjunct of the demonstrative, rather as occupying SPEC.[2] Crucial to our purposes is that they follow Srivastav 1991 and Bhatt 1997 in assuming that correlatives correspond to free relatives

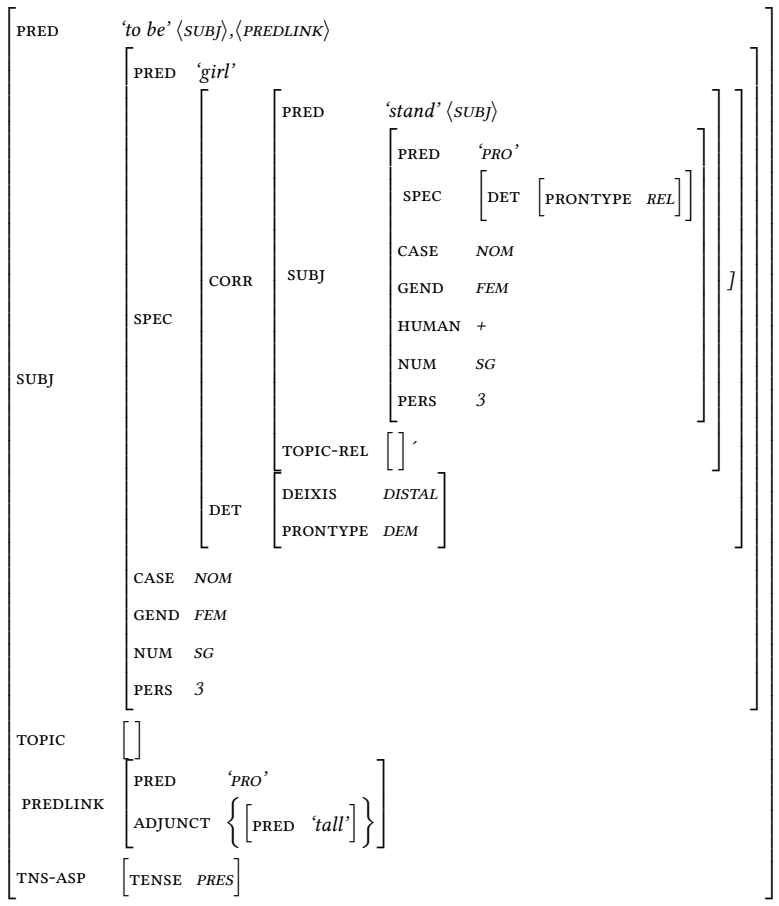
[2]They argue for this analysis based on three empirical observations from Hindi/Urdu: relative clauses in correlatives cannot be stacked; they function as quantifiers; and they are in complementary distribution with other SPEC material. When the relative clause is discontinuous from the demonstrative, it is assumed to be topicalized as a discourse element.

in European languages. This implies that whatever internal structure they assume for the relative clause is one of the ways free relatives can be modelled within LFG. Externally, then, they take this free relative to be the specifier of the resumptive DP.

Their implementation of this analysis within LFG is of a case in which the head noun appears inside the matrix clause (one of the configurations of correlatives in Hindi):

(A.10) [**jo** khaRii hai] [**vo laRkii** lambi hai]
which stand-PERF.F.SG be.PRES.3SG that girl.F.SG.NOM tall.F.SG be.PRES.3SG
'Who is standing, that girl is tall.'

(A.11)




Looking at the proposed f-structure, a number of peculiarities stand out which require explanation. Some of these concern the structure of the correlative construction as a

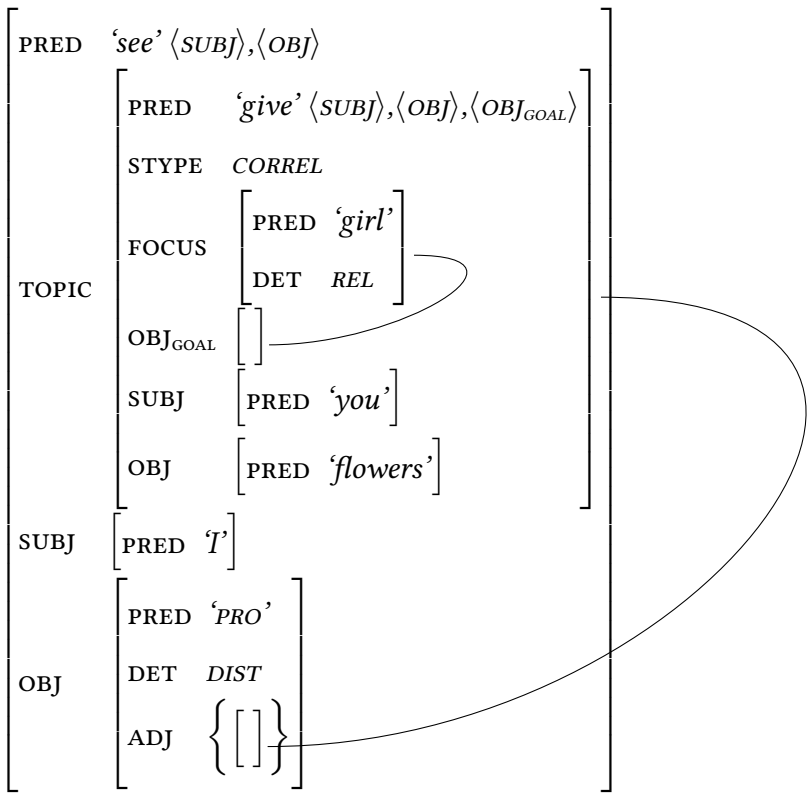
whole.[3] In terms of the internal structure of the relative clause, the relative pronoun acts as the specifier of a null head (the PRO subject). This suggestion needs motivation, as this is not the ordinary function of a relative pronoun. The relative pronoun normally either is the specifier of a contentful head, or is itself the head, in the case of free relatives. Consequently, it is not clear why in the case of the above example we cannot provide the PRED of the subject via the relative pronoun. Doing this would be parallel to how free relative clauses take their PRED from the relative pronoun. This is also in line with BKR's attempt to take correlatives as the equivalent of English free relative clauses. Finally, while this analysis captures the relationship between the relative clause and the demonstrative correlate, not much has been said about the internal structure of the relative clause. For instance, it is not immediately clear how BKR's analysis would account for cases where the head noun appears only inside the relative clause, such as the Old Avestan patterns.

Belyaev and Haug (2014) focus mainly on the semantics of correlatives in Ossetic, in which the DP in the relative clause and the DP in the matrix clause can be partially coreferential, and demonstrate that there can be two separate referents which are anaphorically related (similar to Old Avestan, as seen in §2.5.3). BH adopt the same syntactic analysis as Bhatt 2003 in which the fronted relative clause is a TOPIC f-structure (which is structurally the specifier of the matrix clause) structure-shared with the ADJ feature of the correlate's f-structure. Their proposed analysis of the following sentence is as follows:

(A.12) [didinʒ̂-ətɜ sə čəžg-ɜn ba-lɜvar kot:-aj], [wəj fet:-on]
flower-PL what girl.DAT PV-present do.PST.2SG that[GEN] see.PFV-PST.1SG
'I saw the girl which you gave flowers to.'

[3] For instance, taking the demonstrative resumptive pronoun as the determiner of the head noun suggests that two elements can exist in the position of the specifier of the DP, which is an empirical assumption about the distribution of specifier elements and needs to be justified.

(A.13)




Here we see that the fronted clause, which is the relative clause which contains the head noun, is the TOPIC. Again here we see the relative pronoun treated as the determiner of the head noun. As their main discussion about the semantics of correlativization and partial coreferentiality, they do not further discuss the internal structure of the relative clause.

## A.3 The LFG analysis of Old Avestan free relatives

To cash out the insights discussed in §2.3.3, I posit that the f-structure of the relative clause in a correlative construction should receive its main PRED value from the head noun (covert or overt). The rest of the clause will be an ADJ to this PRED, as we see in ordinary relative clauses (and in the parallel existing analysis of free relatives, cf. the f-

structure given for the English free relative in (A.9)). In line with previous accounts (BKR and BH), the relative pronoun contributes to a position inside the specifier function of the head noun. The SPEC position of a noun is normally used in the analysis of articles and quantifiers (Dalrymple et al. 2019, p. 83).

The clausal nature of the free relative will be represented at the c-structure, while the proposed f-structure would have a nominal nature due to its nominal PRED. To implement the mapping between a clausal c-structure and a nominal f-structure, I propose a @FRHEAD template for the head noun which is inside the free relative clause. Templates are a named set of equations that define a functional structure, used to represent linguistic generalizations (Dalrymple et al. 2004).

(A.14) $\text{@FRHEAD} \equiv \quad (\text{ADJ}\in \uparrow) = \downarrow$

The specific phrase structure rules that give rise to this mapping are outlined in (A.15). Some other facts about the syntax of Old Avestan are presupposed in these rules. Most importantly, the second position in Old Avestan (as in some other ancient Indo-European languages) is reserved for clitics, which either appear in or are adjoined to C (Lowe 2014a), while relative (and interrogative) pronouns occupy SPEC,CP.

(A.15)

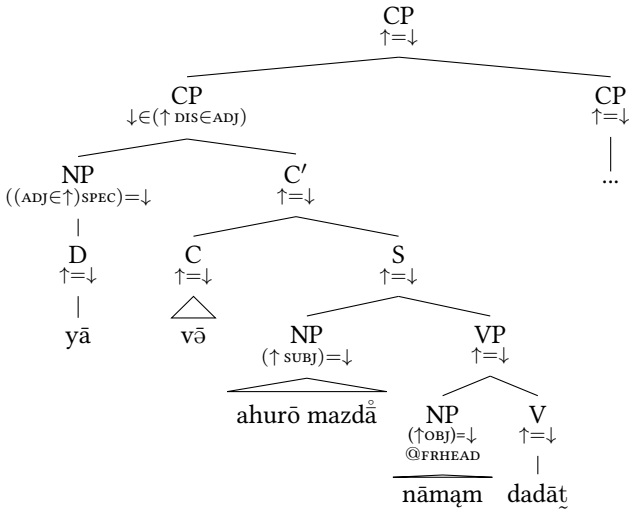
| | | | |
|---|---|---|---|
| CP → | CP | CP | |
| | $(\downarrow \in (\uparrow \text{DIS} \in \text{ADJ}))$ | $\uparrow = \downarrow$ | |
| CP → | NP | C′ | |
| | $((\text{ADJ} \in \uparrow)\text{SPEC}) = \downarrow$ | $\uparrow = \downarrow$ | |
| | $(\uparrow \text{RELPRO}) = \downarrow$ | | |
| C′ → | C | S | |
| | $\uparrow = \downarrow$ | $\uparrow = \downarrow$ | |
| S → | NP*, | VP | ... |
| | $(\uparrow \text{GF}) = \downarrow$ | $\uparrow = \downarrow$ | |
| | $(@\text{FRHEAD})$ | | |
| VP → | NP | V | |
| | $(\uparrow \text{GF}) = \downarrow$ | $\uparrow = \downarrow$ | |
| | $(@\text{FRHEAD})$ | | |

This template uses an $(\text{ADJ} \in \uparrow) = \downarrow$ constraint to assign this NP as the head of the relative clause. It states that the NP to which this template applies functions as the head of the f-structure which contains the ADJ in which the mother of the NP appears. The same constraint has been used by Baker and Nordlinger (2008) to account for the mixed categoriality of N-Adj compounds in Gunwinyguan languages, which are adjectival at c-structure but nominal at f-structure. When an adjective has an incorporated nominal, the inside-out function application $(\text{ADJ} \in \uparrow) = \downarrow$ ensures that the nominal itself constructs the PRED for the superordinate f-structure. Another category mismatch of this sort discussed in the LFG literature might be category mismatches caused by displacement, as explained in Kaplan and Bresnan 1982, cited in Dalrymple et al. 2019, pp. 131-133.

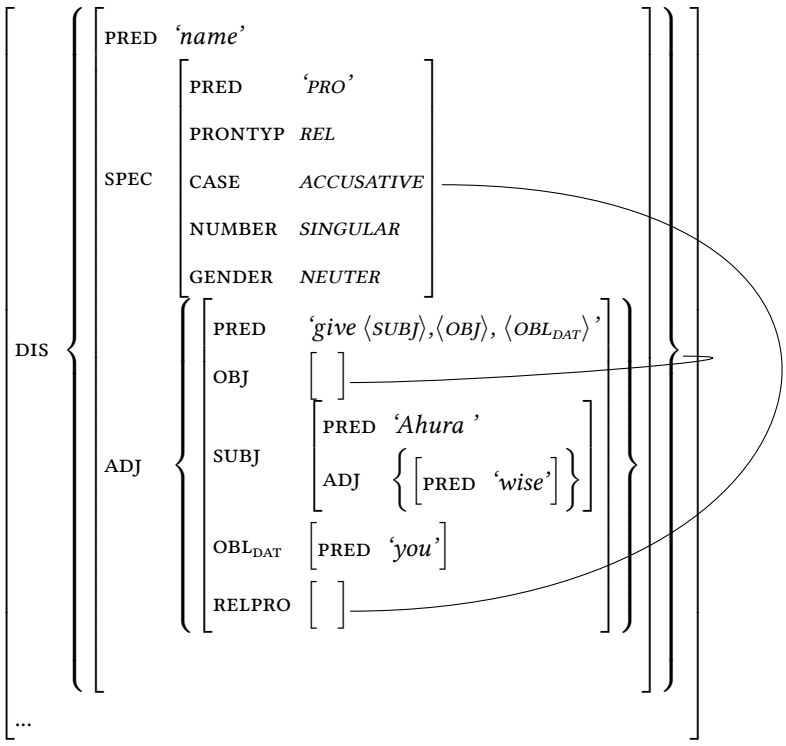
This mapping gives rise to the following c-structure and f-structure for the free relative in (A.16), without considering the fact that it appears within a correlative construction and without encoding the interclausal relationship in correlatives:

(A.16) [[**yā** və ... ahurō mazdå̊ **nāmąm** dadāṯ̰] …
REL.ACC you.DAT … Ahura.NOM wise.NOM name.ACC give.PRES.3SG …
'The names which wise Ahura ... gave you ... (we praise you with them).' (Y 38.4)

(A.17)




(A.18)



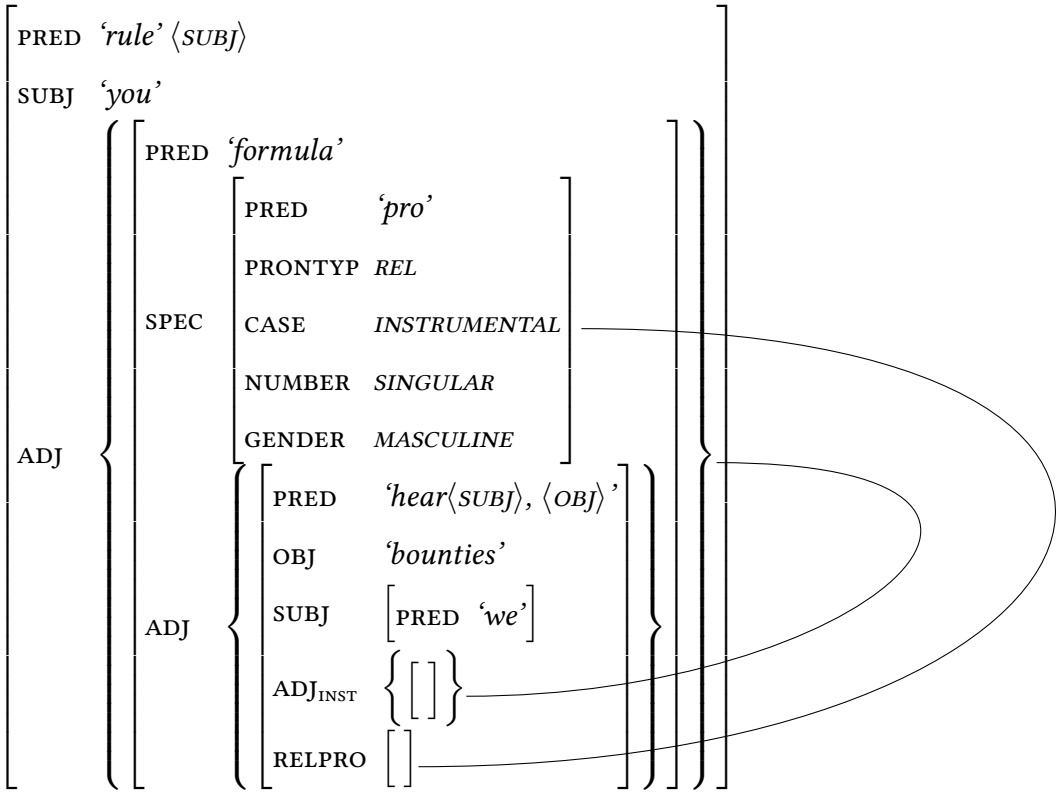

The annotated c-structure produces the f-structure in the following way. Starting from the rightmost terminal node at the c-structure, *dadāṯ̰* 'gave' projects up to the CP node,

which builds the ADJ f-structure inside a DIS f-structure (standing for dislocated, as the free relative is a dislocated element within the correlative construction); the PRED for the ADJ is provided by *dadāt̰* 'gave.' The NP *nāmam* 'name' then will occupy its grammatical function inside this clause, here the OBJ. The @FRHEAD template provides the PRED of the DIS.

Another example can be seen in (A.20), the f-structure for (A.19). As (A.19) is a free relative in argument position, the f-structure corresponds to the matrix clause. Note that the c-structure of the free relative would remain a CP.

(A.19) xšaiiā=cā **yā** və̄ **mąθrā** srəuuīmā
rule.PRES.IMPER.2SG=CONJ REL.INST you.GEN formula.INST hear.AOR.OPT.1PL
rādå̊
bounty.ACC
'And rule with a formula with which we might hear (of) your bounties.' (Y 28.7)

(A.20)




Here, the relative clause has the relativized noun, *'formula,'* as its PRED (representing its

nominal category) while the rest of the clause is its adjunct.

Correlatives and the article-like construction can also be modelled within this framework (for an implementation, see Dashti 2022). Crucially, the availability of multiple levels of representation in LFG allows for a more economical analysis of free relatives. That said, important questions remain; most notably, how case matching should be captured. Addressing this issue requires further cross-linguistic LFG analyses of free relatives, as the Old Avestan data alone are insufficient to ground a broader generalization. At the core of the current proposal is the mapping between a clausal c-structure and a nominal f-structure, instantiated by the template @FRHEAD. The fact that this template has already been employed in the LFG literature to account for phenomena unrelated to free relatives supports the claim that the present analysis is not ad hoc. Rather, the parallel architecture of free relatives allows for fundamental mismatches within syntax, and has the tools to capture them.

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