A GENERAL THEORY OF CORRELATIVITY

A Dissertation

Presented to the Faculty of the Graduate School

of Cornell University

in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

by

Yexin Qu

August 2025

A GENERAL THEORY OF CORRELATIVITY

Yexin Qu, Ph.D.

Cornell University 2025

This dissertation develops a comprehensive theory of correlative constructions in ancient Indo-European languages, challenging the traditional view that correlatives are a subtype of relative clauses. Focusing on Vedic Sanskrit, Old and Young Avestan, Old Persian, Hittite, and Homeric Greek, the study presents both synchronic and diachronic analyses to illuminate the syntactic behavior and historical evolution of correlativity.

Synchronic analysis reveals that correlative constructions in these languages exhibit significant structural differences from modern correlatives (e.g., in Hindi), particularly in terms of headedness, clause position, and syntactic integration. Using formal syntactic frameworks, the dissertation argues that Vedic correlatives are base-generated in the left periphery of the host clause and display a range of headedness types, including internally headed, externally headed, double-headed, free, and split-headed variants. These findings contest the prevailing typology that assumes correlatives must be internally headed.

The diachronic portion of the dissertation reconstructs correlative constructions in Proto-Indo-European by tracing the grammaticalization paths across early attested Indo-European branches. It is proposed that the evolution from raised headed (cor)relatives to embedded relative clauses involved morphological reanalysis to the precursor of the izafe construction ("prezafe") Stage II, i.e. nominal relative clauses with case attraction.

Ultimately, the dissertation redefines the role of correlatives in syntactic theory by demonstrating their independence from standard relativization strategies. It introduces a multidimensional classification framework based on the relative-correlative distinc-

tion, headedness, and linear order. This work contributes to our understanding of clause structure, the typology of relativization, and the historical syntax of Indo-European languages.

BIOGRAPHICAL SKETCH

Yexin Qu was born in Qiqihar, Heilongjiang, China on June 30th, 1988. He earned a Bachelor of Science degree in Information and Computing Science from Heilongjiang University in 2011, and enrolled at University of Rochester in 2013 to pursue further studies. After receiving his first Doctor of Philosophy degree in Mathematics in 2018, he joined Cornell University to continue research in Linguistics, where he obtained a second Doctor of Philosophy in August 2025.

Mātre pretre gurubhyaś ca

ACKNOWLEDGEMENTS

Ubi sunt anni, Hebe, ubi umbrae iuventi! Time is fleeting, and I never seem to sense it the way it truly moves. I can still see myself seven years ago as if it were yesterday, saying I will accomplish it, and now I have.

prá yó vípraḥ kariṣyā́mī́ty ā́ha

cakr̥vā́ṃsaṃ nā́ma nūnáṃ vivakmi

I am profoundly indebted to my committee Professor Michael Weiss, Professor John Whitman, Professor Dorit Abusch, Professor Mats Rooth, and Professor Mark Hale, not only for their guidance on my dissertation, but also for forging me into the scholar I am today. Words fail. words fail.

I am also deeply grateful to the staff and faculty of the Cornell Linguistics department for their unmaivering support. I am especially thankful to Professor Alan Nussbaum, to Professor Miloje Despič in my Q paper committee, to Professor Draga Zec in my A paper committee, and to Jenny Tindall, who always provides exactly the guidance I need.

I would like to express my heartfelt appreciation to Professor Douglas Ravenel, the advisor during my mathematics Ph.D. at the University of Rochester, without whose support I would not be where I am today. I am also thankful to Professor Jeffrey Runner, who opened my eyes to the possibility of pursuing linguistics and helped me along the way.

I am also thankful to my colleagues at Cornell University, to Yao Zhang, a near-sibling whose friendship predates my time here by almost a decade; to my academic sibling Jasmim Drigo with whom I have published together and will continue publishing; to my cohort Frances Sobolak, Kaelyn Lamp, Zahra Alzebaidi; to the Indo-European reading group members Ryan Windhearn, Andrew Merritt, Hana Aghababian, Nicole Dreier, Zander Lynch, Evan Colby, Eric Blum; and to my other linguistics colleagues

Carol-Rose Little, Mia Windhearn, Ekarina Winarto, Mary Moroney, Andrea Hummel, Dan Burgdorf, Brynhildur Stefánsdóttir MacDonald, Hitomi Minamida, Eszter Otott-Kovacs, Lingzi Zhuang, Francesco Burroni, Sireemas Maspong, Kevin Kwong, Nielson Hul, Jing Gao, Mia Gong, Rachel Vogel, Chloe Kwon, Nianpo Su, Young-Hoon Kim, Burak Oney, John Starr, Evelyn Fettes, Youngdong Cho, Lisa Zhao, Qi Han, some of whom I have been fortunate to call friends even before my time at Cornell.

Last but not least, I thank my mother and my partner, my armor and my shield, my fortress when I seek shelter and comfort, and my amulet when I march on.

CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

1.1 What is correlativity?

Correlativity, as its name suggests, concerns the relationship between two constituents. In English, correlativity can be found, for example, in the comparative correlative in "the X-er... the Y-er" structure, where both X and Y are adjectives:

(1) The more you eat, the less you want. (Culicover and Jackendoff 1999: 545)

The relationship between the two comparative adjectives is the degree, where the adjective 'more' in the first clause sets up the degree, and the adjective 'less' in the second clause picks up the degree.

In this dissertation, however, correlativity is used in a narrower sense, i.e. the correlative construction where the correlative is a clause and it modifies a correlate in the following host clause.

The following example demonstrates a correlative construction in Vedic Sanskrit:

(2) [yéna gácchathaḥ sukṛ́taḥ duroṇám]$_i$
REL.INS.SG go.PRES.2DU good-doer.GEN.SG home.ACC.SG

téna$_i$ narā vartíḥ asmábhyam yātam (RV 1.117.02cd)
DEM.INS.SG man.VOC.DU course.ACC.SG us.DAT go.IMP.2DU

"By which (chariot) you go to the home of the good ritual performer, by that, o men, travel your course to us."[1]

[1] All the Vedic examples are quoted according to the metrically restored *Pāda* text, rather than

In this example, the correlative is the entire clause introduced by the relative pronoun *yéna*, and it is modifying the correlate demonstrative *téna*, which is only one word in this example. In other words, the former CP, as a whole, is not coindexed with the whole latter sentence, but rather only one word in it. This suggests that the two clauses which form the correlative construction are not parallel. Instead, there is a hierarchical structure:

$[_{\text{CorCP}}\ \text{CP}\ ]_i \quad [[_{\text{CP}} \ldots \text{XP}_i \ldots]]$

1.2 What is the significance of correlativity?

The correlative construction as defined in the previous section is important and interesting in many respects. This dissertation chooses to focus on two questions, namely the synchronic syntactic features of correlative clauses and the diachronic changes undergone by them in the Indo-European family. The synchronic analysis focuses on three well-attested branches of Indo-European with rich corpora, namely, Indo-Iranian, Anatolian, and Greek. Although these languages are dead, the syntactic analysis is still *synchronic* relative to their time, and hence any methods applied to modern languages can be applied to them—except of course the consultation of native-speaker judgments. The diachronic analysis has two goals, which are opposite in terms of the direction of time: the first one is to reconstruct the correlative construction in the proto-language based on the analysis of attested Old Indo-European languages, and the other one aims to answer the question how the productive correlative construction is gradually replaced by relative clauses in later stages of most European Indo-European languages.

in the Saṃhitā text, which means all the forms are in their underlying form before the sandhi rules apply. The underlying forms are given to make glossing more perspicuous. All English translations of the Rig Veda texts are from Jamison and Brereton (2014) unless otherwise noted. Classical Sanskrit texts are also given with sandhi undone.

1.2.1 Syntactic significance

These correlative relationships can be categorized as instances of the phenomenon known as Merge, which is fundamental to understanding how two elements combine into another phrasal unit. The concept of Merge has been extensively studied since Chomsky (1995), but the majority of the scholarship has focused on Merge at the word level, not at the sentential level.

In order to explore Merge involving a CP, this dissertation chooses relative and correlative clauses as the point of departure. Relative and correlative clauses are not the only strategy for clauses to Merge with other constituents, but they do demonstrate particular interesting features that other strategies do not have. Compared with the subordinate clause, which is a very common Merge strategy involving a CP cross-linguistically and which is structurally unambiguous, the structure of the correlative clause is more intriguing. Here is an example of an English object subordinate clause:

(3) Bill explained [$_{CP}$ why he came late to the meeting].

In this example, the verb 'explained' and the subordinated 'why'-clause Merge into a verbal phrase [$_{VP}$ V CP], which is not mechanically different from Merge at word level.

Relative clauses demonstrate both Merge and Move (or External Merge and Internal Merge):

(4) a. A [$_{NP}$ man [$_{RelCP}$who has friends]] is not a failure.

b. A man$_i$ is not a failure [$_{CP}$ who has friends]$_i$.

Example (4a) shows the unmarked word order in English where relative clauses are

postnominal and can be analyzed with Merge, whereas example (4b) has its relative clause extraposed and not adjacent to the noun it modifies, and hence Move is involved.

The hierarchical structure for the correlative construction, however, is different from the subordinate clause and the relative clause, and hence more interesting in that the correlative clause does not have to be linearly adjacent to the correlate which it modifies. Different analyses have been proposed for different languages. For example, Bhatt (2003) argued that the simple correlative clauses in Hindi are Moved to the Adjunct of IP but the Multi-Headed correlative clauses are base generated there, while the traditional analyses for old Indo-European languages such as Klein (1985) and Hettrich (1988) suggest that the relationship between the two clauses is loose and can be bi-clausal. This raises the question of how the correlates access their correlative clauses if the correlative clauses are not generated in their adjacent position, especially in the languages where the base generating position is further from the correlates.

Relative clauses are the typical example of recursion. In English, a relative clause can always be embedded into another if it modifies a constituent in the outer relative clause. Correlative clauses, however, demonstrate recursion in a more constrained way: the correlative clauses can be stacked to modify the same correlate as in the following Vedic example:

(5) yáḥ śakráḥ mr̥kṣáḥ áśvyaḥ
REL.NOM.SG able.one.NOM.SG curry.comb[?].NOM.SG equine.NOM.SG

yáḥ vā kī́jaḥ hiraṇyáyaḥ
REL.NOM.SG or stake/spur[?].NOM.SG golden.NOM.SG

sáḥ ūrvásya rejayati ápāvr̥tim
DEM.NOM.SG closure.GEN.SG shake.PRES.CAUS.3SG closure.ACC.SG

índraḥ gávyasya vr̥trahā́ (RV 8.66.3)
Indra.NOM bovine.GEN.SG Vr̥tra-smiter.NOM.SG

"The able one, who is a horse's curry comb [?] or who is a golden stake [?],
he sets the opening of the cattle-pen to shaking—Indra the Vr̥tra-smasher."

This example has two correlative clauses introduced by the relative pronoun *yáḥ* and they both modify the correlate demonstrative *sáḥ*, who is Indra.

Contrarily, correlative clauses have been rarely attested in the nested or the crossover configuration, namely, the structure where one correlate of one correlative construction is in the correlative clause of another correlative construction:[2]

Nested: $[_{\text{CorCP}}\ [_{\text{CorCP}}\ \text{CP}\ ]_i \ldots \text{XP}_i \ldots\ ]_j \ldots \text{YP}_j \ldots$

(6) *[$_{\text{CorCP}}$ [which book $_{\text{CorCP}}$ which man I know]$_i$ that man$_i$ wrote]$_j$, that book$_j$ was published.

Crossover: $[_{\text{CorCP}}\ \text{CP}\ ]_i \ldots [_{\text{CorCP}}\ \text{XP}_i\ ]_j \ldots \text{YP}_j \ldots$

(7) *[$_{\text{CorCP}}$ which man I know]$_i$ [$_{\text{CorCP}}$ which book that man$_i$ wrote]$_j$ … that book$_j$ was published.

These two strategies are not available to generate a possible recursive structure, which makes the correlative construction particular as a Merge strategy for clauses.

1.2.2 Indo-European significance

This dissertation focuses mainly on correlative constructions of following Old Indo-European branches: Indo-Iranian, Anatolian, and Greek. In particular, I will examine

[2]There may be some candidate for the crossover correlative, cf. Melchert and Hoffner (2008: 427 §30.61)

the evidence of (1) the Rig Veda (the oldest Indic text), (2) Old and Young Avestan and Old Persian, the extant Old Iranian languages, (3) Hittite and (4) Homeric Greek, the earliest corpus of Ancient Greek with abundant correlative and relative clauses. These three branches of the Indo-European languages have correlative constructions and are richly attested in ancient and extensive corpora. In addition to the massiveness of the dataset of these languages, I also choose to focus on the Indo-European family because of the richness of the morphology. The correlative clauses in these languages are introduced by a relative pronoun from one of the three stems, namely *$(h_x)\underset{\frown}{i}o$-, *$k^wo$-, or **so/to*-, and the correlates may have a demonstrative pronoun formed from a variety of different stems. All these pronominal forms have explicit case marking, which makes the judgment of headedness unambiguous for most cases. Indo-European languages also display syntactic diversity, in regard to word order and Headedness. Among all these languages, Vedic demonstrates the greatest complexity of possible combinations of all syntactic features (except for some features that are not observed, as far as I know, in any member of the Indo-European language family at any period, such as the prenominal relative clause, cf. Chapter 1). These factors make these three branches of Indo-European languages excellent case studies for examining correlativity from each of their own synchronic perspectives.

The diachronic study of the correlative construction in these languages can be pursued in two directions. On one hand, since the correlative structure is firmly attested in many branches, it may be possible to reconstruct the correlative clauses in the proto-language. On the other hand, analyzing these ancient languages, which show various stages on a grammaticalization pathway, may also answer the question of how and why the predominant correlative clauses were replaced by relative clauses in most modern languages.

In previous literature such as Hettrich (1988) and Hock (1989), the reconstruction of the (cor)relative construction has focused on morphology, discussing if either *(h$_x$)i̯o-* or **k^{w}o-* was the stem for relative pronouns, while the syntactic structure and the diachronic changes of the correlative construction have not been extensively studied until recent years. For example, Ram-Prasad (2022) analyzes the structure of the correlative construction and proposes an explanation of the emergence of postnominal embedded relative clauses based on reanalysis. This dissertation aims to study the reconstruction and analysis by examining the Headedness and syntactic constraints of the clauses.

The (cor)relative clause combines with the host clause by a modifying relationship, and the coindexed item(s), whether overt or covert, link(s) the two sentences. Terminologies such as pivot and head have been used for the studies of relative clauses. To be consistent with properties discovered in the old Indo-European data, this dissertation uses the concept head and the coindexing relationship to study the (cor)relative construction. In the previous literature on relative clauses, mostly in modern languages, Headedness has been crucial in the categorization of the hierarchical structure. Unfortunately, the analyses with only one head in relative clauses are not compatible with the properties of correlative constructions in old Indo-European languages. Cinque (2020) double head analysis for relative clauses, however, can be translated and applied to the old Indo-European correlatives. For detailed summary and discussion, cf. Section 2.4.

1.3 Dissertation Structure

The structure of the dissertation is as follows:

Chapter 2 uses Vedic Sanskrit as a model language to demonstrate how the (cor)relative construction in old Indo-European languages is typologically and syntac-

tically different from that in the well-studied modern languages such as English and Hindi. The linear order, types of headedness, and semantic functions of both correlative clauses and relative clauses show that the correlative clause should not be classified as a subtype of relative clauses, but rather, relative clauses and correlative clauses are two separate strategies for relativization. The syntactic analysis of Vedic correlative clauses shows that Vedic correlative clauses are generated in the left periphery of the host clause. The semantic survey of the correlative clause provides an explanation of why certain structures were never attested in the Vedic corpus.

Chapter 3 explores the correlative construction in the old Iranian languages, namely Old Avestan, Young Avestan, and Old Persian, and examines the "izafe" construction. I propose a possible explanation for the emergence of embedded relative clauses: languages that feature both the izafe construction with case attraction and head fronting before the relative pronoun (such as Old Persian) may reanalyze this structure in a way that leads to the development of postnominal embedded relative clauses.

Chapter 4 discusses Hittite, and Chapter 5 focuses on Homeric Greek and shows the existence of the precursor of the Iranian izafe structure can also be found in other branches than Indo-Iranian, and can be reconstructed for the Proto-Indo-European.

CHAPTER 2

VEDIC

2.1 Introduction

Correlative constructions are pervasive in the Indo-European languages, especially in the Indic languages.[1] The typical construction consists of two clauses: a preposed clause introduced by a relative pronoun and a host clause which contains a "correlate", usually a demonstrative, coindexed with the relative clause. Example (8) from Modern Hindi illustrates this pattern

(8) [jo sale-par hai]$_i$ Maya us$_i$ Cd-ko khari:d-egi: (Bhatt, 2003)
REL sale-on COP.PRES Maya.F DEM CD-ACC buy-FUT.F
"Maya will buy the CD that is on sale."
(Lit. 'What is on sale, Maya will buy that CD.')

This construction is also very common in Old Indo-European languages like Vedic:

(9) vā́yo [yé te sahasríṇaḥ
Vāyu.VOC REL.NOM.PL 2SG.GEN.ENCL thousand-folded.NOM.PL

ráthāsaḥ]$_i$ tébhiḥ$_i$ ā́ gahi (RV 2.41.1ab)
chariot.NOM.PL DEM.INS.PL here come.IMP.2SG
"O Vāyu, the chariots in thousands that are yours—with them come here, you with your teams, for soma-drinking."

Different terms have been used to refer to these clauses, such as relative/correlative clauses (e.g. Klein, 2018), relative/main clauses (e.g. Hettrich, 1988:

[1] In this dissertation, the term "Indic" is used to refer to the languages in the Indic branch of the Indo-Iranian languages. To avoid any confusion with the modern languages spoken in India, the term "Indo-Aryan" specifically denote the modern languages within this branch.

Relativsatz/Hauptsatz) , correlative/main clauses (e.g. Bhatt, 2003), relative/correlate clauses (Motter, 2023). In this dissertation, the clause introduced by the relative pronoun is called the correlative clause following Bhatt (2003). The term "relative clause" will not be used to refer to the "preposed" clause in the correlative construction, because this dissertation argues the correlative clause is not a subtype of relative clause (cf. Section 2.4.7). Motter (2023) in his description of the Hittite construction uses the term "correlate clause" instead of main clause to refer to the clause which contains the correlate, because that clause does not have to be the main clause. Similar constructions are also attested in Vedic (cf. Section 2.6.1.1). Hence the term "main clause" is not used in this dissertation. Instead the term "host clause" is used, following Pankau (2018), because it "hosts" the correlate. A similar issue also occurs in the description of relative constructions since a relative clause can modify a nominal phrase which is not in the main clause. In the relative construction, the terms relative/host clauses are used, since the host clause hosts NP which the relative clause modifies.

The correlative construction in Modern Indo-Aryan languages has been examined under the framework of formal syntax and semantics: de Vries (2005) provides a typological study of relative constructions, including correlatives. Bhatt (1997), Bhatt (2003) and Dayal (1996) have worked on the correlative construction in Modern Hindi. Davison (2009a) and Davison (2009b) compare the structure of Hindi and Sanskrit.

Previous literature also discuss the relativization of Vedic relativization from different aspects. Gonda (1954) delves into the issue of relativization in the Rig Veda, examining it from the perspective of the original character of the relative pronoun. Hettrich (1988) offers the most extensive analysis of the subject, with a focus on the complete spectrum of clause types introduced by the relative pronoun and its derivatives in the Rig Veda. Klein (2018) discussed the ordering of clauses and the semantic reading of Vedic

relativization. This chapter applies a formal syntactic/semantic analysis of correlative construction to the Vedic data.

The goals of the chapter are the following:

1 To analyze the status of correlative constructions in the classification of all strategies of relativization by examining the types and usages of Vedic relativization.

2 To analyze the syntactic structure of the Vedic correlative construction.

The rest of the chapter is organized as follows. Section 2.2 introduces the corpus used for this chapter, namely the Rig Veda, and also provides statistics on all the sentences where relative pronouns are attested. Section 2.3 through Section 2.5 examine three different dimensions for classifying relativization strategies: Section 2.3 discusses the linear order of the (cor)relative clause and the host clause; Section 2.4 claims that Vedic relativization needs a double-headed analysis (i.e. both the (cor)relative clause and the host clause have an underlying head, cf. Cinque 2020), and divides (cor)relative clauses based on the combination of the headedness of both the (cor)relative clause and the host clause; Section 2.5 focuses on the semantics of (cor)relative clauses. Section 2.6 discusses the structure of Vedic correlative clauses under the framework of generative syntax. I argue that Vedic correlative clauses, unlike those in Modern Hindi, are base generated.

The main results of this chapter are listed below:

1 The correlative clause is not a subtype of the relative clause (as suggested by de Vries, 2005), but a twin of the relative clause.

2 The Vedic correlative clause is base generated, not moved (as in Modern Hindi).

3 Vedic correlatives have both the internal heads and correlate R-expressions in the host clauses, which are analogous to "external heads" of the correlative clauses, cf. Sections 2.3 and 2.6:

4 The Vedic correlative clause is in the left periphery, not adjoined to IP (as in Modern Hindi).

2.2 Data

The corpus that this chapter is based on is the Rig Veda. The Rig Veda is the oldest text in Sanskrit. The content of the Rig Veda is religious hymns dedicated to the various deities of the early Indian pantheon. The language used in the Rig Veda is Vedic (or Vedic Sanskrit), which is the oldest known Indic language and later developed into Classical Sanskrit. The Rig Veda was composed largely in the greater Punjab region from the early to mid-second millennium BCE.[2]

The Rig Veda is made up of 10 books (*maṇḍala* 'circle') and 1,028 hymns (*sūkta* 'well-spoken (speech)'). Each hymn is formed by a number of verses (*ṛ̥c*), ranging from 1 to 58 (the 'Rig' part in the name of the text Rig Veda comes from the word *ṛ̥c*). One verse (*ṛ̥c*) may have 2 to 8, but most commonly 4 *pāda*. A *pāda* is a like a hemistich that consists of 8 to 12 syllables, based on the meter. There are 10,552 verses (*ṛ̥c*) and 39,831 *pāda* in the Rig Veda in total.

According to Oliver Hellwig's parsed corpus, "pada-and-analysis", the relative pronominal root *ya-* ranks as the fourth most common lemma in the Rig Veda, with 3023 occurrences (after the second person pronoun, the first personal pronoun, and the demonstrative *tát*). In the Rig Veda, there are 833 hymns, 2,885 *ṛ̥c* and 3,533 *pāda* with

[2]See Jamison and Brereton (2020: 2-3).

the relative pronouns appearing. At the *pāda* level, there are only 102 cases where there are more than one relative pronouns, and at the *r̥c* level there are 561 cases. These cases with multiple relative pronouns are interesting because they may show how relative pronouns behave in more complicated structures.

All occurrences of relative pronouns in the Rig Veda were collected with the assistence of Kevin Ryan's "Rig-Veda parallel editions search", which is based on Lubotsky (1997). The numbers of occurrences of each declined surface form are shown in Table 1:

Num.	Singular			Dual		Plural		
Gd.	m.	n.	f.	m.	n. & f.	m.	n.	f.
Nom.	yáḥ: 1037	yát: 1328[a]	yā́[b]	yā́[b] yaú: 8	yé: 447		yā́[b] yā́ni: 26	yā́ḥ: 88
Acc.	yám: 267 yáṃ-yam: 5	yát-yat: 1	yā́m: 14			yā́n: 12		
Ins.	yéna: 97 yénā: 21		yáyā: 25	yā́bhyām: 1		yébhiḥ: 28		yā́bhiḥ: 84
Dat.	yásmai: 23		yásyai*: 0			yébhyaḥ: 3		yā́bhyaḥ: 2
Abl.	yásmāt: 6		yásyāḥ: 8					
Gen.	yásya: 207			yáyoḥ: 14		yéṣām: 22		yā́sām: 5
Loc.	yásmin: 51		yásyām: 2	yóḥ: 1		yéṣu: 16		yā́su: 12

Table 1: Paradigm of the Vedic Relative Pronoun *ya-*

a. 1328 is the number of occurrences of *yát* in all functions, namely the relative pronoun, the complementizer for adjunct clauses, and the complementizer for content clauses.

b. The total number of the occurrences of the surface form *yā́* is 158, which is the sum of the occurrences of *yā́* as feminine singular nominative, masculine dual nomative/accusative (alternative to *yaú*), and neuter plural nominative/accusative (alternative to *yā́ni*).

This chapter offers a more detailed breakdown of the ambiguous forms into the following charts:

	masculine	neuter	feminine
Nom.	yáḥ: 1037	yát: 197[a]	yā́: 74
Acc.	yám: 267 yáṃ-yam: 5	yát: 102[a] yát-yat: 1	yā́m: 14
Ins.	yéna: 64[b] yénā: 12	yéna: 31[b] yénā: 9	yáyā: 25 yā́: 1[c]
Dat.	yásmai: 23	yásmai*	yásyai*
Abl.	yásmāt: 5	yásmāt: 1	yásyāḥ*
Gen.	yásya: 205	yásya: 2	yásyāḥ: 8
Loc.	yásmin: 43	yásmin: 8	yásyām: 2

Table 2: Paradigm of the Vedic Relative Pronoun *ya-* in Singular

a. Among the 1328 occurrences of *yát* in total, 950 of them are complementizers of adjunct clauses such as temporal, conditional, causal, and purpose clauses. Among the 950 compelemtizers, there are two examples (RV 8.72.6a, RV 8.72.18a) where *yát* means 'when' but introduces a relative clause that modifies *nu*, 'now'. There are 33 *yát*-introduced content clauses, which is a subtype of the relative clause. There are also 44 examples that are ambiguous.

b. The gender of *yéna* in RV 6.49.15c and RV 8.7.18a is ambiguous.

c. Both Jamison and Brereton (2014) and Geldner (1951) followed Oldenberg (1909: 343) and took the *yā́* in RV 5.45.6b as an instrumental form, parallel to *yáyā* in *pāda* c and d.

	masculine	neuter	feminine
Nom.	yā́: 31 yaú: 7	yé*	yé: 4
Acc.	yā́: 2 yaú: 1	yé*	yé*
Ins.	yā́bhyām*	yā́bhyām*	yā́bhyām*
Dat.	yā́bhyām: 1	yā́bhyām*	yā́bhyām*
Abl.	yā́bhyām*	yā́bhyām*	yā́bhyām*
Gen.	yáyoḥ: 10	yáyoḥ*	yáyoḥ: 2
Loc.	yáyoḥ:1 yóḥ: 1	yáyoḥ*	yáyoḥ: 1

Table 3: Paradigm of the Vedic Relative Pronoun *ya-* in Dual

	masculine	neuter	feminine
Nom.	yé: 443	yā́: 30[a] yā́ni: 8	yā́ḥ: 73[b]
Acc.	yā́n: 11[c]	yā́: 19[a] yā́ni: 18	yā́ḥ: 14
Ins.	yébhiḥ: 22	yébhiḥ: 6	yā́bhiḥ: 84
Dat.	yébhyaḥ: 3	yébhyaḥ*	yā́bhyaḥ: 1
Abl.	yébhyaḥ*	yébhyaḥ*	yā́bhyaḥ: 1
Gen.	yéṣām: 22	yéṣām*	yā́sām: 5
Loc.	yéṣu: 12	yéṣu: 4	yā́su: 12

Table 4: Paradigm of the Vedic Relative Pronoun *ya-* in Plural

a. In RV 10.23.2a, the neuter plural relative pronoun *yā́* is ambigous between the nominative and accusative case.

b. In RV 5.33.2c, *yā́ḥ* is ambiguous. Lubotsky (1997) takes it as a relative pronoun. Both Jamison and Brereton (2014) and Geldner (1951) take it as the verb *yā-* "to drive".

c. In RV 1.121.12a, *yā́n* is ambiguous. Lubotsky (1997) takes it as the masculine plural accusative relative pronoun. Under this analysis, the occurrences should be 12, but Jamison and Brereton (2014) take it as the present active participle of *yā-*. In RV 2.38.3a, *yā́n* is the present active participle of *yā-*. Jamison's commentary (I.100-191, V,

1-25-23) and Lubotsky (p.c.) mentioned that the *yā́ḥ* in RV 5.33.2c and the *yā́n* in RV 1.121.12a are ambiguous.

There are also a few other forms that are related to *ya-* and functions as relative pronouns: *yaké* 'which' (masc. pl. Nom. diminutive): 1, *yatamáḥ* "whichever (of many ones)" (masc. sg. Nom.): 2, and *yatarát* "which one between the two" (neut. sg. Nom.): 1.

2.3 The Dichotomy of Relative vs. Correlative

In previous literature of relativization, correlative clauses are usually considered as a subtype of relative clauses, for example, de Vries (2005) divides relativizations into four types:

- postnominal relative clauses
- prenominal relative clauses
- circumnominal relative clauses
- correlative clauses.

Of these types De Vries claims that circumnominal relative clauses and correlative clauses must be the internally headed.[3]

In De Vries's classification of relativization, two factors play the main roles, namely:

1. linear order in relation to the NP which the clause modifies

[3]There are different conventions to refer to different headedness. De Vries (2005) uses terms such as "head-internal", but this dissertation will use terms such as "internally headed", etc.

2. headedness

The linear order in relation to the NP which the clause modifies subdivides relative clauses into three subtypes, and correlative clauses are listed together with the subtypes of relative clauses. This suggests the correlative clauses are not at the same level in the hierarchy of De Vries's classification of relativization. But taking the linear order in relation to the NP which the clause modifies as a classification factor has the following two problems. First, besides the linear order in relation to the NP which the clause modifies, relative clauses also show diversity in terms of the linear order in relation to the host clauses, i.e., besides prenominal and postnominal relative clauses, relative clauses can also be either preposed, which means the relative clause precedes the host clause,[4] or postposed,[5] meaning the relative clause follows the host clause. The type of a relative clause is sensitive to both the linear order in relation to the modified NP and the linear order in relation to the host clause, so I will simply call this factor "linear order".

Second, using the linear order in relation to the NP which the clause modifies as a classification factor is "unfair" to the correlative clauses, because the linear order involved in the correlative construction is at the clausal level, not in relation to the modified NP. Hence, the linear order in relation to the modified NP cannot be a legitimate classifying feature for correlative clauses, and linear order, both the one in relation to the modified NP and the one in relation to the host clause, can only be used to subclassify relative clauses.

Another issue in De Vries's classification relates to headedness. First, De Vries's

[4]In other literature correlative clauses are analyzed as preposed relative clauses, but this dissertation takes them as two different types of relativization.

[5]Postposed relative clauses are referred to as "right-extraposed" relative clauses, especially in the studies of English relative clauses. In this dissertation, the term "postposed relative clause" is used in contrast to the counterpart term "preposed relative clause".

classification ignored the headednesses of the prenominal and postnominal relative clauses in their syntactic structures. Although the distinction between externally headed and internally headed postnominal relative clauses is not commonly found in Modern languages, if it is found at all, it is a crucial in the classification of Vedic relative clauses, cf. Section 2.3.3.1.

De Vries suggests that correlative clauses can only be internally headed, but as I will show in Section 2.4, the Vedic data suggest that the correlative clauses have all the possible headednesses, just like relative clauses. In other words, the correlative construction may have a correlate R-expression in the host clause (hence external to the correlative clause), and the correlative clause does not show an internal head itself. In Section 2.4, an across-the-board double-headed underlying structure will be argued for. Both the correlate R-expressions and the internal heads can be either overt or covert on the surface, which provides four possibilities of surface headedness, namely, externally headed (or correlate R-expression only for correlative clauses), internally headed, double headed, and free. If we regroup the four types of relativization recognized by De Vries as relative clauses (prenominal, postnominal, circumnominal) and correlative clauses, then headedness is a feature to subclassify both of them, rather than a feature that distinguishes them. This suggests that correlative clauses should not be a subtype under internally-headed relativization as shown above.

Since, as I have argued, neither the linear order in relation to the modified NP nor headedness can put correlative clauses in a lower position in the hierarchy of the classification of relativization, the dichotomy of relative clauses and correlative clauses must be a factor to classify relativization. In other words, relative vs. correlative is another dimension to classify relativization besides headedness, and linear order is a subclassification factor of only the relative clauses. The "correlativity" of the bi-clausal construc-

tion is independent of its linear order and its headedness, but is not a byproduct of them. According to this 2-dimensional classification (with linear order subdividing the relative clauses), we can expect all the following types of relativization in theory.

	relative clause		correlative clause
externally headed	externally headed prenominal RC	externally headed postnominal RC	correlative clause with correlate R-expressions
	externally headed preposed RC	externally headed postposed RC	
internally headed	internally headed prenominal RC	internally headed postnominal RC	internally headed correlative clause
	internally headed preposed RC	internally headed postposed RC	
double headed	double headed prenominal RC	double headed postnominal RC	double headed correlative clause
	double headed preposed RC	double headed postposed RC	
free	free prenominal RC	free postnominal RC	free correlative clause
	free preposed RC	free postposed RC	

Table 5: All theoretically possible types of relativization

Some types such as internally headed postnominal RC in Table 5 may seem impossible. A detailed explanation will be provided in Section 2.4. A short take-away is that the linear order in relation to the modified head NP is defined by the linear order of the relative clause in relation to the overt head NP after syntactic movement.

Besides relative vs. correlative, headedness, and linear order, which are the factors that influence the linear order and the syntactic structure of relativization, the semantic reading of relativization is another dimension for categorizing relativization, which will be discussed in Section 2.5.

The following two Sections 2.3 and 2.4, will illustrate the full range of relativizations predicted by the above schema that are attested in the Rig-Vedic corpus. Section 2.3 will

focus on the relative vs. correlative contrast and Section 2.4 will examine all possible types of headedness that are attested in the Rig Veda.

2.3.1 Modern Indo-Aryan vs. Vedic

In sections 2.3.2 through 2.3.4 I will examine the relative vs. correlative distinction in the Vedic corpus. I will also examine all possible types of relative clauses in terms of the linear order.

I frame the discussion in the following sections with reference to the important work of Bhatt (2003) who discussed the relative vs. correlative distinction in the modern Indo-Aryan languages. In these languages Bhatt recognized the following subtypes of relativization:

1. English-type Relative Clauses
2. Non-Finite Relative Clauses
3. Correlative clauses

Bhatt's classification of Modern Indo-Aryan relativization puts the correlatives at the same level as relative clauses, both the English-type and the non-finite ones. But the Modern Indo-Aryan types of relativization do not find precise analogues in the Vedic corpus. First, the English-type relative clauses has two subtypes: postnominal relative clauses (which are embedded in the host clauses) and postposed relative clauses. In Vedic, the postposed type is well attested, but postnominal relative clauses, together with all types of embedded relative clauses, are highly restricted, mainly occurring as verbless nominal clauses which I will call the "prezafe"-type (cf. Section 2.3.3.2 for

more details). Beside these two types, Vedic also has preposed relative clauses, a type that is not found in Modern Indo-Aryan languages (nor in English, hence it is not an English-type relative clause). Second, Bhatt's non-finite relative clauses are comparable to the participial structures in Vedic. This dissertation will not consider them as relative clauses because they do not have CP projections, and therefore they are not clausal structures.[6] Third, Vedic correlatives show more diversity in terms of headedness in comparison to the Modern Indo-Aryan languages.

The following chart shows the correspondence between the types of relative and correlative clauses in MIA and Vedic.

<table>
<tr><td colspan="2">Modern Indo-Aryan</td><td colspan="2">Vedic</td></tr>
<tr><td rowspan="2">English-type</td><td>postposed relative clause</td><td colspan="2">postposed relative clause</td></tr>
<tr><td>postnominal relative clause</td><td>postnominal“prezafe”</td><td rowspan="2">“prezafe”</td></tr>
<tr><td colspan="2">None</td><td>other embedded “prezafe”</td></tr>
<tr><td colspan="2">None</td><td colspan="2">preposed relative clauses</td></tr>
<tr><td colspan="2">Non-finite relative clause</td><td colspan="2">None</td></tr>
<tr><td colspan="2">correlative clauses</td><td colspan="2">correlative clauses</td></tr>
</table>

Table 6: Modern Indo-Aryan vs. Vedic

In sections 2.3.2 through 2.3.4, I will discuss the postposed relative clause, the

[6]In Modern Hindi non-finite Relative clauses can be based on a participle or on an adjectival form. Here is an example with a perfective participial:

(1) mɛ̃-ne [vo [$_{\text{RelCP}}$ pi:la: par. gaya:] phu:l] utha: liya:
I-ERG DEM yellow fall go-PFV flower lift take-PFV
"I picked up the flower that had become yellow."

In Vedic Sanskrit, participles can also modify a nominal phrase, which function similarly to the Modern Indo-Aryan participial in the example above, but this structure is not a relative clause since it does not have a CP projection:

(2) ā́ bhándamāne uṣásau úpāke (RV 3.4.6a)
here be.joyful.PMP dawn.NOM.DU joined-together.NOM.DU
"Becoming joyful here, Dawn and Night are close by" [Absolute.]

Here the participle phrase *ā́ bhándamāne* "being joyful here" is modifying *uṣásau* "Dawn and Night" (lit. two Dawns).

"prezafe"-type relative clauses, preposed relative clauses, and the correlative clauses respectively.

2.3.2 Postposed Relative Clauses

Modern Indo-Aryan languages have postnominal relative clauses, which Bhatt (2003) calls the "English-type" relative clauses in Bhatt (2003), since they are comparable to the regular kinds of relative clauses occurring in English. The following configuration and example demonstrates the structure of postnominal relative clauses:

$[_{DP}\ NP_i\ [\ RelCP]_i]$

(10) $[_{DP}$ vo $[_{NP}$ kita:b $[_{CP}$ jo sale-par hai]]] achchhi: hai
DEM book REL sale-on COP.PRES good.F COP.PRES
"That book which is on sale is good."

This common type of relative clauses in Modern Indo-European languages is rare in Vedic, which will be discussed in detail in Section 2.3.3

Postnominal relative clauses, however, are not the only English relative construction, since English relative clauses can be postposed, for example:

(11) No man$_i$ is a failure [who has friends]$_i$.

In Modern Hindi, this structure is also possible:

(12) $[_{DP}$ vo $[_{NP}$ kita:b]] achchhi: hai $[_{CP}$ jo sale-par hai]
DEM book.F good.F COP.PRES REL sale-on COP.PRES
"That book is good which is on sale."

The configuration of such examples is:

$[_{\text{HostCP}} \cdots \text{NP}_i \cdots [\text{RelCP}]_i]$

Constructions like this can also be found in the Rig Veda:

(13) imā́m agne śaráṇim mīmṛṣaḥ
this.ACC.SG.F Agni.VOC.SG breach.ACC.SG forget.AOR.CAUS.2SG
naḥ
1PL.GEN.ENCL

imám ádhvānam [yám ágāma dūrā́t]
this.ACC.SG.M way.ACC.SG REL.ACC.SG come.AOR.1PL distance.ABL.SG
(RV 1.31.16ab)

"This (ritual) breach of ours, Agni—make it forgotten; make us forget this way which we have come on from afar."

Here the relative clause *yám ágāma dūrā́t* "which we have come on from afar" is modifying the head noun *ádhvānam* 'way', but the head noun *ádhvānam* 'way' is the last word in the host clause, which makes it ambiguous between a postnominal relative clause and a postposed relative clause. [7]

[7] Hettrich (1988: 608) suggests that there is no embedded relative clause: „[E]s liegt aber keine Einbeziehung des RS in den HS vor... Vielmehr kann man die hierher gehörenden Belege weitgehend an die beiden Stellungstypen RS-HS und HS-RS anschließen. Die Verteilung der HS-Bestandteile um den RS ist nämlich derart, daß auf der einen Seite die wesentlichen Konstituenten des HS stehen, die auch allein einen syntaktisch kompletten Satz ergäben, während auf die andere Seite des RS syntaktisch entbehrliche Elemente plaziert sind, die teilweise ohne den RS sogar überhaupt nicht stehen könnten." "But there is no inclusion of the relative clause in the host clause... Rather, the attestations belonging here can largely be linked to the two position types relative-host and host-relative. The distribution of the host clause components around the relative clause is such that on one side there are the essential constituents of the host clause, which alone would result in a syntactically complete sentence, while on the other side of the relative clause are the syntactically unnecessary elements, some of which couldn't even make sense at all without the relative clause."

Hock (1989: 111-112) followed by Davison (2009a) further explained a collection of embedded relative clauses with Hettrich's argument, or analyzed them as a result of stylistic movement, cf. Section 2.3.3.3.

If all structures like example (13) where the head noun is the last word in the host clause are analyzed as postposed relative clauses, not postnominal relative clauses, then the only candidate for postnominal relative clauses is what I will call the "prezafe"-type (Hale, p.c.).

2.3.3 The "prezafe"-type

2.3.3.1 Postnominal: linear order vs. tree structure

Table 6 takes the Vedic "prezafe"-type as the counterpart to the Modern Hindi postnominal relative clauses. Before I define the prezafe-type in Vedic, I will delve into the concept of postnominal relative clause in two different aspects: the linear order and the syntactic tree structure.

As the name suggests, a postnominal relative clause is a relative clause which immediately follows the NP that it modifies, hence its linear word order should be NP RelPn C'. There are, however three different underlying syntactic structures that can surface with this linear order. The first syntactic structure that can surface with this linear order is that the relative clause is adjoined to the NP which it modifies, as suggested in the configuration: $[_{NP}\ NP_i\ [_{CP}\ RelPn\ C']_i]$ This configuration applies for English relative clauses with the matching analysis (cf. Section 2.4). This structure is the structure for the postnominal relative clause *per se*, and it is only instantiated in the Vedic corpus by the relatively rare prezafe-type, which I will discuss in detail in Section 2.3.3.2

The second structure that surfaces with the linear order NP RelPn C' is the postposed relative clause whose head noun is the last word in the host clause coincidentally, as in example (14).

(14) ná mr̥̀ṣā śrāntám yát ávanti devā́ḥ (RV
not in.vain labor.NOM.SG REL.ACC.SG help.PRES.3PL god.NOM.PL
1.179.3a)

"Not in vain is the labor that the gods help."

In example (14), the relative clause *yát ávanti devā́ḥ* "that the gods help" is modifying *śrāntám* 'labor', but the *śrāntám* can be analyzed as the last word of the host clause *ná mr̥̀ṣā śrāntám* "not in vain is the labor", and the status of the relative clause is ambiguous because it can be either a postnominal relative clause, or a postposed relative clause. The underlying structure of the postposed relative clause analysis is [*ná mr̥̀ṣā śrāntám*$_i$] [*yát ávanti devā́ḥ*]$_i$. This provides the second syntactic tree structure will can surface as NP RelPn C', namely:

[$_{CP}$ ⋯ NP$_i$] [$_{CP}$ RelPn C']$_i$

Sentences with this linear order are ambiguous, cf. footnote 7.

The third situation where the lexical head precedes the relative pronoun is realized by movement:

(15) índraḥ [yáḥ śúṣṇam aśúṣam ní
Indra.NOM REL.NOM.SG Śuṣṇa.ACC.SG insatiable.ACC.SG down
ā́vr̥̀ṇak]
wretch.IMPF.3SG

marútvantam sakhyāya havāmahe (RV
Marut-accompanied.ACC.SG partnership.DAT.SG call.PRES.1PL
1.101.2cd)

"Indra, who wrenched down insatiable Śuṣṇa —

the one accompanied by the Maruts do we call upon for partnership."

In this example, the lexical head *índraḥ* 'Indra' precedes the relative pronoun *yáḥ*.

The syntactic bracketing of this type is as follows:

$[_{\text{TopP}}$ NP_i $[_{\text{CP}}$ RelPn $\cdots$ t_i $\cdots]\ ]$

In the configuration above, the head noun *índraḥ* moved to the [Spec, TopP]. At the clausal level, the whole TopP, namely *pāda* a, could be considered as the correlative clause, i.e., the head noun is still in the correlative clause, and the whole correlative clause precedes the host clause in *pāda* b.

In summary, the linear configuration NP RelPn C' may have three different structures: the postnominal relative clause, the postposed relative clause whose head noun happens to be a last word in the host clause, and the internally headed relative clause whose head has moved in front of the relative pronoun. Only the first one is the real postnominal relative clause, and this type is extremely rare in the Rig Veda.

2.3.3.2 What is "prezafe"?

The term "prezafe" in this dissertation denotes the precursor of the izafe structure. The izafe construction is typically found in the Iranian languages. In the narrow sense it is made up of an NP followed by an uninflected particle followed by a modifier [NP pt Modifier], with pt as an uninflectable particle or clitic. Here is a Young Avestan izafe example:

(16) puθrəm yaṯ̃ pourušaspahe (Yt. 5.18)
son.ACC.SG YAT Pourušaspa.GEN.SG
"the son of Pourušaspa"

In example (16), the particle *yaṯ̃* is uniflectable but it uncontroversially derives from the relative pronoun *ya-* (cognate with Ved. *yá-*) and hence the izafe construction orig-

inates in the reinterpretation of a relative clause. Meyer (2015) suggested the pathway from relative clause to izafe had the following three stages:

- Stage I: Verbless nominal relative clauses
- Stage II: Verbless nominal relative clauses with case attraction
- Stage III: Narrow sense izafe

Verbless nominal relative clauses, i.e. prezafe stage I, may take any non verbal form as its predicate. They are also found in other Indo-European languages, and they behave differently from the other types of relative clauses: Qu (2023) shows that Greek verbless nominal relative clauses are appositional, while nominal relative clauses with a verb, namely the copula, are restrictive; Among the extremely rare cases of Vedic embedded relative clauses, most are the verbless nominal relative clauses (Mark Hale p.c., Jamison, 2022); similarly, most, if not all, postnominal relative clauses in Hittite are also verbless nominal relative clauses (Craig Melchert p.c.). This agreement among these old Indo-European languages suggests that verbless nominal relative clauses may have already departed from the other types of relative clauses in the proto language. This dissertation uses the term prezafe[8] to refer to Stage I of Meyer's scenario and the verbless nominal relative clauses in other branches.

Here is an example of a Vedic prezafe-type relative clause which is not postposed. In Vedic, the prezafe-type relative clauses are always in Stage I, hence the relative pronouns are always in the nominative case. These prezafe-type relative clauses are almost the only clausal structure that can be embedded.

[8]Jamison (2022) uses the term "proto-proto-izafe" to refer to this structure in Vedic. In Jamison's commentary (1-25-23), the term "pseudo-izafe" is also used.

(17) pári dhā́māni$_i$ [yā́ni te]$_i$
PV domain.ACC.PL REL.NOM.PL 2SG.GEN.ENCL

tvám soma asi viśvátaḥ
2SG.NOM Soma.VOC.SG surround.PRES.2SG entirely

pávamāna ṛtúbhiḥ kave (RV 9.66.3)
self-purifying.VOC.SG ◦according.to.the.ritual poet.VOC.SG

"The domains that are yours, Soma, you surround entirely according to the ritual sequences, o self-purifying poet."

Example (17) has a verbless nominal relative clause (prezafe-type) *yā́ni te* "that are yours", which modifies the immediately-preceding noun phrase *dhā́māni* 'domains'. The whole structure is between the preverb *pári* and the main verb *asi*, which together means "you surround", and that means the whole structure is embedded in the host clause.

In contrast to the narrow sense izafe structure of the Iranian languages, the prezafe-type relative clause does not have to be adjacent to the NP it modifies:

(18) vívasvantam$_i$ huve [yáḥ pitā́
Vívasvantam.ACC.SG call.PRES.MID.1SG REL.NOM.SG father.NOM.SG
te]$_i$
2SG.GEN.ENCL

asmín yajñé barhíṣi ā́ niṣádya (RV
DEM.LOC.SG sacrifice.LOC.SG ritual.grass.LOC.SG on sit.down.ABSOL
10.14.5cd)

"I call upon Vivasvant, who is your father—once having sat down at this sacrifice, on this ritual grass here."

lit. ··Vivasvant do I call, who is your father..."

Example (18) has a verbless nominal relative clause (prezafe-type) *yáḥ pitā́ te* "who is your father", which modifies the proper noun *vívasvantam*. The whole *pāda* d *asmín yajñé barhíṣi ā́ niṣádya* "once having sat down at this sacrifice, on this ritual grass here" is an absolute construction, meaning that the absolute verbal form niṣádya 'having sat down' does not introduce a new sentence, but functions as a temporal modifier to the previous host clause. This shows that the prezafe clause is not postposed out of the host-clause, if the absolute construction is analyzed as an adjunct of the host clause. In this example the prezafe clause is separated from the lexical head noun *vívasvantam* by the verb *huve* "I call".

The prezafe-type relative clause can also be embedded in positions that precedes the modified NP. Here is an example with a prenominal prezafe-type relative clause:

(19) ārā́t śátrum ápa bādhasva dūrám
distance.ABL rival.ACC.SG away drive.IMP.MID.2SG far.away.ACC.SG

[ugráḥ yáḥ śámbaḥ]$_i$ puruhūta
mighty.NOM.SG REL.NOM.SG śamba-pole.NOM.SG much-invoked.VOC.SG
téna$_i$ (RV 10.42.7ab)
DEM.INS.SG

"Thrust the rival far away into the distance with that mighty śamba-pole of yours, o you who are much invoked."

This example has a prezafe-type relative clause *ugráḥ yáḥ śámbaḥ*, "which is the might śamba-pole", with the adjective *ugráḥ* 'mighty' moved in front of the relative pronoun. The prezafe-type relative clause immediately precedes the head pronoun *téna* "with that" in the host clause, since the vocative *puruhūta* "o you who are much invoked" can be ignored in the syntactic structure. This example is not a correlative construction, because correlative clauses are never embedded.

Another interesting example is in RV 7.91.1ab:

(20) kuvít aṅgá [námasā yé vr̥dhā́saḥ]$_i$
Q surely reverence.INS.SG REL.NOM.PL one.who.grow.strong.NOM.PL

purā́ devā́ḥ$_i$ anavadyā́saḥ ā́san (RV 7.91.1ab)
previously god.NOM.PL fautless.NOM.PL exist.IMPF.3PL

"Surely the faultless gods, who (now) grow strong through reverence, existed previously?"

This example has a prezafe-type relative clause *námasā yé vr̥dhā́saḥ*, literally "who are the ones that grow strong through reverence", with the noun phrase *námasā* "through reverence" moved in front of the relative pronoun. The prezafe-type relative clause and the modified NP *devā́ḥ* 'gods' are separated by the word *purā́* 'previously', hence it is not an immediate prenominal relative clause.

Unlike the Iranian izafe. construction, the prezafe-type relative clause does not have to modify an overt lexical head noun, but can be a free relative clause itself, as in the following example:

(21) asmā́su tát marutaḥ [yát ca
1PL.LOC DEM.ACC.SG Marut.VOC.PL REL.ACC.SG and
duṣṭáram]
difficult.to.surpass.ACC.SG

didhr̥tá [yát ca duṣṭáram] (RV 1.139.8fg)
fix.IMP.2PL REL.ACC.SG and difficult.to.surpass.ACC.SG

"[O] Maruts, fix that firm in us as well as (brilliance) difficult to surpass—and what is difficult to surpass."

In example (21), the host clause ends with the verb *didhr̥tá* 'fix!' The relative clause *yát ca duṣṭáram* "which is difficult to surpass" occurred twice in this example. The second time (in *pāda* g) can be ignored since is echoing the first occurrence, but the first

occurrence (in *pāda* f) is more interesting because it is embedded in the host clause. The clitic *ca* 'and' conjoins *tat* and the relative clause. It has arrived in its position by prosodic flip from a position above the relative clause (Hale, 2007: 204-209), hence the relative clause consists of only the relative pronoun *yát* and the nominal predicate *duṣṭáram* "difficult to surpass". Hence the relative clause is a prezafe structure.

The interpretation of the head of this relative clause is debated. The Jamison and Brereton's (2014:312) translation takes it as a free relative clause, but Geldner (1951: 194) and Klein (1985) suggest that the relative clause is modifying the pronoun *tát* 'that' in the host clause. Section 2.6.1.2 discusses the interpretation of this example in detail, in favor of the free relative clause interpretation.

All these examples above show that the prezafe-type relative clauses can be embedded in any position in the host clause. Such freedom for linear order is not found in other types of relativization, but is found in nouns and adjectives, which suggests that the prezafe-type relative clauses behave more like a long nominal phrase than a clausal structure.

2.3.3.3 Non-prezafe type

Hock (1989) collected examples of what he alleged to be embedded clauses introduced by *ya-* forms which are not of the prezafe-type. Some of the examples can be interpreted differently, e.g.

(22) asmábhyam tát dhattana yát vaḥ
1PL.DAT DEM.ACC.SG establish.IMP.2PL REL.ACC.SG 2PL.ACC.ENCL
ī́mahe
implore.PRES.1PL

rā́dhaḥ viśvā́yu saúbhagam (RV
generosity.ACC.SG whole.lifetime.ACC.SG good.fortune.ACC.SG
5.53.13cd)

"Establish for us what we implore you for: generosity through our whole lifetime and good fortune."

This example can be analyzed as a postposed relative clause with nominal appositions in *pāda* d, namely *rā́dhaḥ viśvā́yu saúbhagam*, "generosity through our whole lifetime and good fortune".

There are also examples of embedded clauses introduced by words that are derived from the root *yá-*, but these are adjunct clauses, not relative clauses.

(23) ā́ ghā gamat yádi śrávat
here indeed come.SUBJ.3SG when hear.SUBJ.3SG

sahasríṇībhiḥ ūtíbhiḥ
thousand.fold.INS.PL help.INS.PL

vā́jebhiḥ úpa naḥ hávam (RV 1.30.8)
prize.INS.PL to 1PL.GEN.ENCL call.ACC.SG

"Surely he will come—when he will hear it—with his thousandfold forms of help, with the victory prizes, to our call."

Example (23) has an embedded *yádi*-clause, which is not a relative clause *per se*, but an adjunct clause meaning "when..." A similar example is found in RV 10.61.25.

As discussed in Table 1 note a, the word *yát* can also function as a complementizer for adjunct clauses. Example of such embedded *yát*-clauses are also attested in the Rig Veda:

(24) tám ā́ nūnám vr̥jánam anyáthā cit
DEM.ACC.SG here now community.ACC.SG at.another.time even

śū́raḥ yát śakra ví dúraḥ gr̥ṇīṣé
champion.NOM.SG when able.one.VOC.SG apart door.ACC.PL sing.PRES.1SG
(RV 6.35.5ab)

"This community here and now do I sing, as (I did) also at another time, when as champion, able one, you (opened) wide the doors."

There is another example of an embedded *yát*-adjunct clause in RV 9.102.2, but these examples are not embedded *relative* clauses.

But there remain some embedded relative clause examples which cannot be explained away.

(25) ásmai vayám yát vāvā́na tát
3SG.DAT 1PL.NOM REL.ACC.SG desire.PERF.3SG DEM.ACC.SG
viviṣmaḥ
work.PRES.1PL

índrāya yáḥ naḥ pradívaḥ ápaḥ
Indra.DAT REL.NOM.SG 1PL.DAT.ENCL of.old.ABL labor.ACC.SG
kár (RV 6.23.5ab)
make.INJ.3SG

"It is for him that we toil at what he holds dear—for Indra, who has performed labor for us from of old."

Such examples are few in the Rig Veda, but are found in RV 1.78.4b, 2.11.3a, 2.11.3c, 2.13.3a, 9.97.51c, 10.30.9b. Thus it appears that the embedded non-prezafe postnominal relative type was a possibility rarely exploited in the Rig Veda.

2.3.4 Correlative clauses

2.3.4.1 Correlate

The correlative construction consists of two crucial parts: a correlative clause that preceeds the host clause, and a coindexed correlate in the host clause. The configuration is as follows:

[$_{\text{CorCP}}$ ... Rel-XP$_i$ ...] [... Dem-XP$_i$ ...]

In the configuration, Rel-XP$_i$ is formed by a relative pronoun, with or without an overt lexical head, and Dem-XP$_i$ is formed by a pronoun (usually a demonstrative), with or without an overt lexical head. The combination of the (c)overtness of the lexical heads provides different headedness of the correlative construction and will be discussed in section 2.4. This section will focus on the pronominal stems that can be used as a correlate pronoun.

Hettrich (1988: 569-573) listed the various pronouns may fill the role of the correlate. The most frequent stem to form the correlative construction is the *sá/tá-* stem 'that'.

(26) [yéna gácchathaḥ sukr̥̊to duroṇáṃ]$_i$
REL.INS.SG go.PRES.2DU good-doer.GEN.SG home.ACC.SG

téna$_i$ narā vartír asmábhya yātam (RV 1.117.02cd)
DEM.INS.SG man.VOC.DU course.ACC.SG us.DAT go.IMP.2DU

"By which (chariot) you go to the home of the good ritual performer, by that, o men, travel your course to us."

In example (26), the correlative pronoun *téna*, "by that" is the masculine singular instrumental form of the *sá/tá-* root.

Besides the *sá/tá-* root, the *ayám/idám* pronouns 'this' can also function as the correlate:

(27) yám te śyenáḥ cā́rum avṛ̊kám
REL.ACC.SG 2SG.DAT.ENCL falcon.NOM.SG cherished.ACC wolfless.ACC
padā́ ā́ ábharat
foot.INS to bring.AOR.3SG

aruṇám mānám ándhasaḥ
reddish.ACC housing.ACC herb.GEN

enā́ váyaḥ ví tāri ā́yuḥ
DEM.INS.SG vitality.NOM.SG PV prolong.AOR.MID.3SG life.ACC.SG
jīváse
live.INF.DAT

enā́ jāgāra bandhútā (RV 10.144.05)
DEM.INS.SG wake.PERF.3SG kinship.NOM.SG

"Whom the falcon brought here for you with his foot, the cherished one who keeps the wolf away, who is the ruddy housing of the stalk—

by him is vitality, is lifetime lengthened for living; through him does our family tie stay vigilant."

Other pronominal stems that can function as correlates are as follows. Pronouns: *a-* 'this (enclitic, the root for *asya* 'of this', etc.)', *eṣá/etá-* 'this', *syá/tyá-* 'that', *ka-cit* 'whatever'[9]; pronominal adverbs: *átra* 'here', *tátra* 'there', *átas* 'from here', *tátas* 'from there', *táthā* 'in that way'; pronominal adjectives: *víśva-* 'all', *sárva-* 'all', *anyá-* 'other', *katará-* 'which of the two (interrogative)'.

[9]This is only attested once in RV 1.87.2b, in the instrumental singular form *kéna cit* "along whatever (path)".

2.3.4.2 Simple Correlatives

As discussed in section 2.3.4.1, the basic configuration of Simple Correlatives is:

[$_{\text{CorCP}}$ ... Rel-XP$_i$ ...] [... Dem-XP$_i$ ...]

If in each correlative clause, there is only one relativized element Rel-XP, then it is a simple correlative construction. This is the most common type in languages with correlatives. Example (8) from Modern Hindi is repeated here as example (28):

(28) [jo sale-par hai]$_i$ Maya us$_i$ Cd-ko khari:d-egi:
REL sale-on COP.PRES Maya.F DEM CD-ACC buy-FUT.F
"Maya will buy the CD that is on sale." (Lit. "What is on sale, Maya will buy that CD.")

This type of correlatives also occurs in the Rig Veda, example (26) repeated here as example (29):

(29) [yéna gácchathaḥ sukr̥to duroṇáṃ]$_i$
REL.INS.SG go.PRES.2DU good-doer.GEN.SG home.ACC.SG

téna$_i$ narā vartír asmábhyam yātam (RV
DEM.INS.SG man.VOC.DU course.ACC.SG us.DAT go.IMP.2DU
1.117.02cd)

"By which (chariot) you go to the home of the good ritual performer, by that, o men, travel your course to us."

If there is more than one correlative clause but there is only one relativized element in each one of them, each one of them should be considered as a simply correlative.

(30) yáḥ pr̥thivím vyáthamānām ádr̥ṃhat
REL.NOM.SG earth.ACC.SG waver.PMP.ACC.SG tear.IMPF.3SG

yáḥ párvatān prákupitān áramṇāt
REL.NOM.SG mountain.ACC.PL quake.PPP.ACC.PL settle.IMPF.3SG

yáḥ antárikṣam vimamé várīyaḥ
REL.NOM.SG midspace.ACC.SG measure.INJ.3SG wide.COMP

yáḥ dyā́m ástabhnāt sá janāsaḥ
REL.NOM.SG heaven.ACC.SG prop.IMPF.3SG DEM people.VOC.PL
índraḥ (RV 2.12.2)
Indra.NOM

"Who made firm the wavering earth, who settled the quaking mountains,

who gave the midspace wider measure, who propped up the heaven – he, o peoples, is Indra."

In example 30, the four correlative clauses are all coindexed with the correlate *sá*, but in each correlative clause, there is only one relativized element (*yaḥ*), hence there are four simple correlative clauses.

2.3.4.3 Multi-headed Correlatives

If a correlative clause has more than one relativized element, then it is a Multi-headed correlative. The following configuration shows a correlative construction with two heads:

$[_{\text{CorCP}} \cdots \text{Rel-XP}_i \cdots \text{Rel-YP}_j \cdots] [\cdots \text{Dem-XP}_i \cdots \text{Dem-YP}_j \cdots]$

Such examples can be found in Modern Hindi:

(31) [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
"Whoever wanted to do what, he did it.'

For x, y s.t. x wanted to y, x did y.

Lit. "Who wanted to what, s/he did that."

Hock (1989) cites an example of multi-headed correlative in later Sanskrit from *Hitopadeśa*:

(32) [yaḥ$_i$ svabhavaḥ hi yasya$_j$ syāt]
REL.NOM.SG nature.NOM.SG PT REL.GEN.SG be.OPT.3SG

tasya$_j$ asau$_i$ duratikramaḥ (Hit. 3.60)
DEM.GEN.SG DEM.NOM difficult.to.overcome.NOM.SG

"[Who$_j$ has what$_i$ nature], that$_i$ is difficult for him$_j$ to overcome."

lit. "What$_i$ nature is of who$_j$, that$_i$ is difficult for him$_j$ to overcome."

Such examples are not found in the Rig Veda, but Hock (1989) cites an example with a similar structure from a later Vedic prose text, the Jaiminīya-Brāhmaṇa.

(33) yatare$_i$ naḥ yatarān$_j$ yājayiṣyanti
REL.NOM.PL 1PL.GEN.ENCL REL.ACC.PL become.sacrificer.FUT.3PL
te$_i$ hāsyante (JB 3.187)
DEM.NOM.PL leave.behind.FUT.MID.3PL
"Who$_i$ of us will be sacrificers for whom$_j$ (the others), they$_i$ will be left behind."

This example has two heads in the correlative clause *yatare*, "which ones" and *yatarān* "the others" but only one head in the host clause, *te*, coindexed with *yatare*. The structure of this example is also semantically different from example (31) and (32). In example (31) and (32) the two heads are independent, namely the NP indexed as *i* has no restriction on the NP indexed as *j*. In example (33), the two heads in the correlative clause *yatare* and *yatarān* have the same stem *yatara-* "which one of the two", and in this example they mean "which ones (of us)... the others (of us)". The index *i* of the former relative pronoun *yatare* ranges in a subset *I* of "us", $i \in I \subset [\![\text{us}]\!]$, and the index *j* of the latter relative pronoun *yatarān* ranges in the subset *J* of "us", which is the complement set of *I*, $j \in J = [\![\text{us}]\!] \setminus I$, hence *i* and *j* are not independent.

2.4 Headedness

According to De Vries's (2005) categorization, relative clauses—apart from correlative clauses—are organized into prenominal relative clauses, postnominal relative clauses, and internally headed relative clauses. This categorization is established on the basis of the relative position of the head noun and the relative clause. Both prenominal and postnominal relative clauses have the head noun positioned outside the relative clause, making them externally headed. This suggests that the concept of headedness only applies to relative clauses, not to correlative clauses, which are traditionally considered to be only internally headed. In this section I argue that in Vedic correlative constructions can have a correlate syntactic item which is analogous to an "external head" of a relative clause based on case assignment, and further that correlative constructions have as much diversity of headedness as relative clauses. To avoid confusion, I will not call it the external head of a correlative clause, but an "correlate R-expression".

Before showing the Vedic data, the definition of headness needs to be clarified, since its meaning differs in the fields of typology and syntax. The traditional typological definition of an internally headed relative clause is a relative clause whose relativized element stays *in situ*. Here is an example from Japanese:

(34) Junya=wa [Ayaka-ga ringo-o mui-ta -no]-o tabe-ta.
Junya=TOP Ayaka-NOM apple-ACC peel-PAST-NO-ACC eat-PAST
(Erlewine and Gould, 2016)

"Junya ate the apple that Ayaka peeled"

(Lit. "Junya ate [that Ayaka peeled apples].")

Prenominal and postnominal relative clauses are considered not to have internal heads since their lexical heads are on the edge of the relative clause on the surface.

Here is a prenominal relative clause example in Japanese, the English translation of which employs a post nominal relative clause:

the English translation is a post nominal relative clause:

(35) Junya=wa [[Ayaka-ga mui-ta] ringo]-o tabe-ta.
Junya=TOP Ayaka-NOM peel-PAST apple-ACC eat-PAST
(Erlewine and Gould, 2016)

"Junya ate the apples that Ayaka peeled."

In syntactic literature of the English postnominal relative clauses, however, there have been four major analyses about the underlying position of the lexical head: the Head External Analysis (cf. Chomsky, 1982: 11), the Raising Analysis (cf. Schachter 1973, Vergnaud 1974, Kayne 1994:86-92, Bianchi 2000, de Vries 2002:83-86), the Promotion Analysis (cf. Schachter 1973, Vergnaud 1974, Bhatt 2002, Henderson 2007, Heycock 2014)[10], and the Matching Analysis (cf. Lees 1961, Chomsky 1965, Sauerland 1998, Citko 2001, Aoun and hui Audrey Li 2003:99, Cinque 2015, Pankau 2018). I will modified the English translation of the Japanese relative clause above as "the apple that Ayaka peeled" to demonstrate the differences of these three analyses.

The Head External Analysis suggests that the lexical head is base generated outside of the relative clause, the relative pronoun 'which' moves to the left periphery and it is coindexed with the head noun 'apples'.

[10]The Raising Analysis and the Promotion Analysis are considered as one type under each of the two label by other scholars. This dissertation follows Pankau (2018), which separates them as two distinct types.

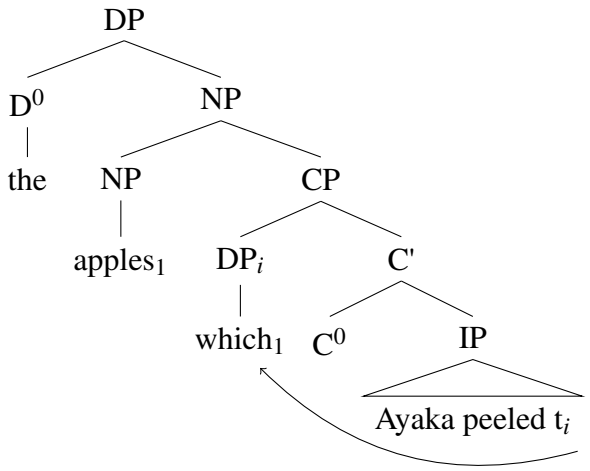

Figure 1: The Head External Analysis

Under the Head External Analysis, the lexical head ‘apples’ is an external to the relative clause, hence it is an external head.

In the Raising Analysis two movements are involved. First, the relativized element “which apples” is generated in the relative clause and moved to the left periphery, and then the lexical head noun ‘apples’ moved again above the relative pronoun.

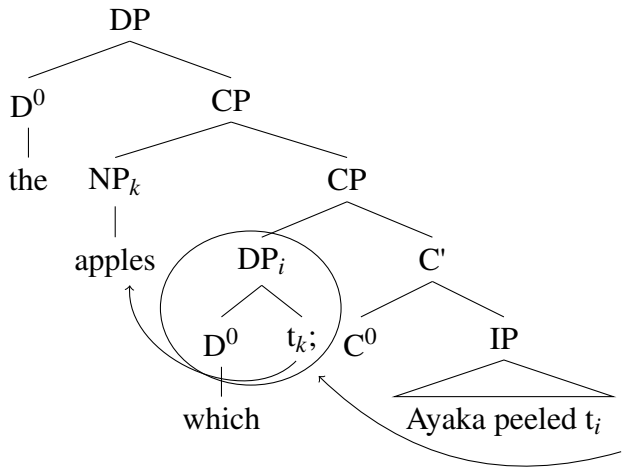

Figure 2: The Raising Analysis

Under the Raising Analysis the lexical head ‘apples’ is generated in the relative

clause. Even though it moved twice its final landing site is still within the relative clause. Hence it is an internal head.

The Promotion Analysis is very similar to the Raising Analysis. The relativized element "which apples" is still generated in the relative clause and it moves to the left periphery of the clause, but then the lexical head 'apples' moves to the host clause instead of a position in the left periphery.

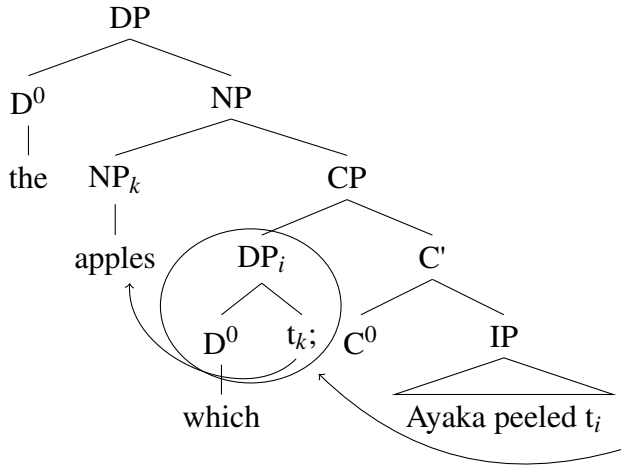

Figure 3: The Promotion Analysis

According to the Promotion Analysis the lexical head ultimately lands in the host clause. Its generated position is internal, but its surface position is external.

The Matching Analysis has been proposed in a number of slightly variant versions by different scholars. The following tree illustrates the version in which the head noun and the relativized element contain an identical NP and relativized NP is elided.

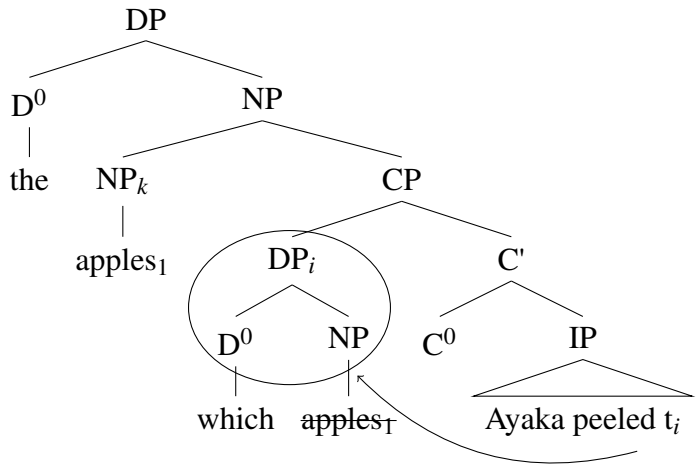

Figure 4: The Matching Analysis

As we see from the above discussion of an English postnominal relative clause, the question of headedness of the lexical head (i.e. whether the head is internal, external or present in both clauses at the underlying level) can be answered differently depending on the syntactic analysis adopted. In the Head External Analysis and the Matching Analysis, the head in English postnominal relative clauses is external, while in the Raising Analysis and the Promotion Analysis, the head is internal. In order to study the headedness of Vedic (cor)relative clauses, a rigid definition of headedness must be provided.

In this dissertation, the definition of external head and internal head for a relative clause depends on where the head is generated. If the head is generated in the host clause, it is an external head (or a correlate R-expression); if it is generated in the relative clause, it is an internal head. The crucial criterion to determine where the head is generated is case assignment: a head is external if the case is assigned by the host clause, and it is internal if the case is assigned by the (cor)relative clause.

This criterion works uncontroversially in most cases, except for the Raising/Promotion Analysis of a postnominal relative clause. In the configuration

$[[_{\text{SpecCP/NP}}\ \text{NP}_i]\ [_{\text{RelCP}}\ [_{\text{DP}}\ \text{RelPn}\ \text{t}_i]_j\ [_{\text{C'}}\ \cdots\ \text{t}_j\ \cdots]]$

the relativized element $[_{\text{DP}}\ \text{RelPn}\ \text{t}_i]$ is assigned case in the relative clause, but when NP raises to the left periphery of the relative clause, it may get its case assigned by the host clause. Nevertheless it is still an internal head at the underlying level. But since postnominal relative clauses are highly restricted in Vedic, the issue of case reassignment will not fatally undermine this criterion.

For postposed relative clauses the Raising/Promotion Analyses could be made to work: the lexical head moves to the left periphery of the host clause, and the rest of the relative clause shifts to the right. But this account implies that postposed relative clauses are underlyingly postnominal relative clauses, which is incompatible with the scarcity of Vedic postnominal relative clauses.

This dissertation argues the lexical head in the host clause of both relative and correlative clauses is base generated, not moved, hence it is "external" to the (cor)relative clause. The Vedic data in Section 2.4.2 to Section 2.4.6 show that the existence of an overt lexical head in the host clause and existence of an overt lexical head in the relative clause are independent, suggesting that both the host clause and the (cor)relative clause have a lexical head of their own, and the combination of the (c)overtness of each head creates the diversity of headedness of Vedic relative clauses. This double-headed analysis in the underlying structure is compatible with Cinque's (2020) theory.

This way of classification of headedness can be transferred to correlative clause: If the head is generated in the correlative clause, it is an internal head; if it is generated in the host clause, it is a correlate R-expression, which can be analogous to an "external head"—not in the traditional sense in syntax based on the linear order, but based on case assignment, i.e. a lexical head of which the case is assigned by the host clause, hence

"external" to the correlative clause. Vedic data show that the correlative constructions share all the headedness with the relative constructions (cf. Section 2.4.2 to Section 2.4.6).

2.4.1 Headedness and the position of the relative pronoun

By the definition of postnominal relative clauses, the lexical head must precede everything in the relative clause, including the relative pronoun if there is any. Hence the linear word order should be:

[$_{NP}$ NP [$_{CP}$ RelPn C']]

This structure is only instantiated in the Vedic corpus by the relatively rare prezafe-type.

In Vedic the relative pronoun can also precede the head noun:

(36) yám ī gárbham ṛtāvṛ́dhaḥ dṛśé
REL.ACC.SG PT embryo.ACC.SG truth-strengthened.NOM.PL see.INF.DAT
cā́rum ájījanan (RV 9.102.06ab)
lovely.ACC.SG to.be.born.AOR.CAUS
"The embryo that those strong through truth have begotten as lovely to see."

The unaccented particle *ī* is an enclitic which as a special clitic arrives at this surface position by syntactic and prosodic movement. Therefore it does not really separate the phrase *yám gárbham* lit. 'which embryo', hence the relative pronoun *yám* immediately precedes the head noun *gárbham* 'embryo'.

In Vedic relative clauses can also be "internally headed":

(37) tvé tát naḥ suvédam
2SG.LOC DEM.NOM.SG 1PL.DAT.ENCL easy.to.find.NOM.SG.N
usríyam vásu yám tvám hinóṣi
reddish.NOM.SG good.NOM.SG REL.ACC.SG 2SG.NOM drive.PRES.2SG
mártyam (RV 8.4.16cd)
mortal.ACC.SG
"In you is that ruddy good [=cattle] easy to find for us (and for) the mortal whom you urge on."

In the *yám*-clause, the head noun *mártyam* 'mortal' is inside the relative clause, but the relative pronoun *yám* raises.

Example (15), (36) and (37) shows three different types of linear order of the relative pronoun and the lexical head, namely head immediately preceding relative pronoun, head immediately following relative pronoun, and head distally following relative pronoun. The differences between the linear orders can be explained by the headedness of these structures in section 2.4.

2.4.2 External headedness

If a relative construction only shows an overt head in the host clause, but not in the relative clause, then the relative clause is an externally headed.

(38) tám u stuhi índram yáḥ ha
DEM.ACC.SG and praise.IMP.2SG Indra.ACC.SG REL.NOM.SG indeed
sátvā
true.one.NOM.SG

yáḥ śū́raḥ maghávā yáḥ
REL.NOM.SG champion.NOM.SG benefactor.NOM.SG REL.NOM.SG
ratheṣṭhā́ḥ (RV 1.173.5ab)
chariot-standing.NOM.SG

"Praise this Indra, who is the 'real thing,' who is a champion, who is a benefactor, standing upon his chariot."

In *pāda* a and b, there are three relative clauses introduced by the relative pronoun *yáḥ*, which is in the nominative case, while the lexical head *índram* 'Indra' is in the accusative case, assigned by the verb stuhi 'praise!' in the host clause. The case mismatching suggests that all these three examples are externally headed relative clauses.

Similarly, a possible configuration for a correlative construction is that it only shows one overt lexical head, as the correlate R-expression in the host clause, but not as an internal head in the correlative clause, and this structure is analogous to the externally headed relative construction.

(39) yáḥ tā́ cakā́ra sá kúha svit índraḥ (RV 6.21.4a)
REL.NOM.SG DEM.ACC.PL do.PERF.3SG DEM where then Indra.NOM

"He who did these things, where then is he—this "Indra"?"

This example consists of the correlative clause *yáḥ tā́ cakā́ra* "who did these", and the host clause *sá kúha svit índraḥ* "where then is this Indra". The correlate *sá* is coindexed with the correlative clause, and the lexical head *índraḥ* 'Indra' is in the host clause. Although the lexical head *índraḥ* is in the nominative case and the relative pronoun *yáḥ* is also nominative, there is no way for the lexical head to be generated in the correlative clause and end up in this position in the host clause, hence the lexical head is external to the correlative clause.

Correlative clauses are not considered to have external heads by the traditional definition. But if example (39) is rephrased as a relative clause in English: "Where is Indra, who did these things?" Indra is clearly the lexical head of this English relative clause.

This linear order is also found in the Modern Hindi example (8), repeated here as example (40):

(40) [jo sale-par hai]$_i$ Maya us$_i$ Cd-ko khari:d-egi:
REL sale-on COP.PRES Maya.F DEM CD-ACC buy-FUT.F
"Maya will buy the CD that is on sale." (Lit. "What is on sale, Maya will buy that CD.")

According to Bhatt (2003), Modern Hindi correlative clauses are moved from their base generated position and the underlying structure is *Maya us$_i$ Cd-ko* [*jo sale-par hai*]$_i$ *khari:d-egi:*. We cannot therefore be certain that the lexical head *Cd* 'CD' is external since it can also be raised from the *jo sale-par hai* clause. But as I will demonstrate in Section 2.6 Vedic correlative clauses are base generated and not moved, and therefore the analysis suggested for the Hindi example cannot be applied to the Vedic example (39). In order to void confusion, this dissertation uses the term correlate R-expression instead of external heads of correlative clauses, but I will compare the structures of externally headed relative clauses and correlative constructions with correlate R expressions throughout this dissertation to demonstrate the systematic parallel between these two configurations.

2.4.3 Internal headedness

2.4.3.1 Japanese-Type

The Japanese-type internally headed relative clauses refer to the type in which the internal head is *in situ* such as example (34) in section 2.4. The lexical head is both linearly and underlyingly internal. Examples with both linear and underlying internal

headedness can also be found in Vedic. The difference between Vedic and Japanese is that there is no relative pronoun in Japanese but there is a relative pronoun in Vedic internally headed relative clause. This is a counterexample to De Vries's (2005) universal (k): "Relative pronouns and resumptive pronouns cannot be used in circumnominal relative constructions." Example (37) is repeated here as example (41):

(41) tvé tát naḥ suvédam
2SG.LOC DEM.NOM.SG 1PL.DAT.ENCL easy.to.find.NOM.SG.N
usríyam vásu
reddish.NOM.SG good.NOM.SG

[yám tvám hinóṣi mártyam$_i$]$_i$ (RV 8.4.16cd)
REL.ACC.SG 2SG.NOM drive.PRES.2SG mortal.ACC.SG

"In you is that ruddy good [=cattle] easy to find for us (and for) the mortal whom you urge on."

Example (41) requires a more detailed structural analysis to determine whether the relative pronoun *yám* and the head noun *mártyam* are really separated. First, it is very common for a complex NP to be separated in Vedic, as shown by the very first sentence of the Rig Veda:

(42) agním īḷe puróhitam (RV 1.1.1a)
Agni.ACC invoke.PRES.1SG fore.placed.ACC.SG
"Agni do I invoke—the one placed to the fore..."

Here the adjective *puróhitam* "placed to the fore", which modifies the head noun Agni is separated.

Second, we can rule out a potential alternative analysis in which the the *yám*-clause has been moved in from of the head noun *mártyam* 'mortal':

[$_{XP}$ [$_{CP}$ yám tvám hinóṣi]$_i$ [$_{DP}$ [$_{NP}$ mártyam] t$_i$]]

In order for such a movement to be possible, an XP would be required to provide a specifier as landing site for the relative clause. But there is no evidence for such a structure in Vedic. And even if one could support the existence of such an XP, such a configuration would suggest that the head noun *mártyam* is not in the relative clause, then it must be in the host clause, and get case in the host clause. But the host clause is a nominal sentence where accusative case cannot be assigned hence it cannot be in the configuration above.

In both Jamison and Brereton's (2014) translation as above and Elizarenkova's (1972) translation «У тебя есть для нас это легкодоступное богатство от коров. Для смертного, которое ты поощряешь.» ("You have this easy-to-find wealth from cows for us. For the mortal whom you encourage"), the relative clause can be coindexed with a dropped pronoun in dative case in the host clause, whether the relative is adjoined to the dropped pronoun, or coindexed with it (as will be discussed later in this section):

[$_{DP}$ pro-Dat.sg [$_{CP}$ yám tvám hinóṣi mártyam]]

[$_{CP}$ $\cdots$ pro$_i$-Dat.sg] [$_{CP}$ yám tvám hinóṣi mártyam]$_i$[11]

Vedic also has internally headed correlative clauses where the internal lexical head stays *in situ*:

(43) [yā́n rāyé mártān$_i$ súṣūdaḥ agne]$_i$
REL.ACC.PL wealth.DAT.SG mortal.ACC.PL sweeten.SUBJ.2SG Agni.VOC

té$_i$ syāma maghávānaḥ vayám ca (RV 1.073.08ab)
DEM.NOM.PL be.OPT.1PL patron.NOM.PL 1P.NOM and

[11]Geldner (1951) took *yám*-clause in *pāda* d as an 'if'-clause: „Bei dir ist dieser Rinderreichtum für uns leicht zu bekommen, wenn du einen Sterblichen aneiferst." "With you, this bovine wealth is easy-to-find for us if you urge on a mortal." But *yám* is never used as a complementizer like *yát*.

"Might we—we and our patrons—be those mortals whom you will sweeten for wealth, o Agni."

In this example, the correlative clause *yā́n rāyé mártān súṣūdaḥ agne* "which mortals you will sweeten for wealth" and the correlate *té* 'those' are coindexed. The lexical head *mártān* 'mortals' has the accusative case assigned by the verb *súṣūdaḥ* "you will sweeten" in the correlative clause, and the host clause requires a nominative case. This suggests the lexical head is internal to the correlative clause. In addition to the case assignment, the lexical head is in the middle of the correlative clause, which makes it impossible for the head to be external.

2.4.3.2 Moved internal head

In the Japanese-type internally headed (cor)relative clauses, the relative pronoun moves to the left periphery but the internal head is left *in situ*. There are also examples where the lexical head is adjacent to the relative pronoun. Here is an example of a relative clause with a moved internal head:

(44) ayám agne tvé ápi
DEM.NOM.SG Agni.VOC.SG 2SG.LOC here

yám yajñám cakr̥mā́ vayám (RV 2.5.8cd)
REL.ACC.SG sacrifice.ACC.SG do.PERF.1PL 1PL.NOM

"this, o Agni, (should be) here in you—the sacrifice which we have performed."

In example (44), the *yám*-clause has the internal head *yajñám* 'sacrifice' adjacent to its right. An alternative analysis of the word order is the relative pronoun and the lexical head do not move together, but end up in adjacent positions by coincidence, which is

also possible since scrambling is common in Vedic. Hence the surface word order of the relative clause is: [RelPn O V S] which shows scrambling hence the lexical head *yajñám* 'sacrifice' cannot be *in situ*.

The internal head of a correlative clause may also be adjacent to the right of the relative pronoun.

(45) yám sómam indra pr̥thivī́dyā́vā
REL.ACC.SG soma.ACC.SG Indra.VOC heaven.and.earth.NOM.DU

gárbham ná mātā́ bibhr̥táḥ tvāyā́
embryo.ACC.SG like mother.NOM.SG bear.PRES.3DU love.for.you.INS.SG

tám te hinvanti tám u
DEM.ACC.SG 2sg.DAT.ENCL impel.PRES.3PL DEM.ACC.SG PRT
te mr̥janti
2SG.DAT.ENCL groom.PRES.3PL

adhvaryávaḥ vr̥ṣabha pā́tavái u (RV 3.46.5)
Adhvaryu.NOM.PL bull.VOC.SG drink.INF.DAT PRT

"The soma that Heaven and Earth bear, like a mother an embryo, with longing for you, Indra,

that do the Adhvaryus impel to you, that do they groom, o bull, for you to drink."

The *yám*-clause in the first two *pāda* is coindexed with the two correlate demonstrative *tám* in *pāda* c, hence this is a correlative construction. The word order in the *yám*-clause is [RelPn DO S V IO] if the vocative *indra* "o Indra" and the comparison *gárbham ná mātā́* "like a mother (bears) an embryo" are removed. By a similar argument made to example (44), the lexical *sómam* 'soma' is not *in situ*.

2.4.3.3 The "raised head"

Section 2.4 discussed the ambiguity of the definition of headedness. If the Raising Analysis is applied to an English postnominal relative clause, then the lexical head is linearly external, since there is no internally headed relative clause in English, but syntactically the lexical head is raised from inside the relative clause which makes it an underlying internal head. This dissertation defines headedness according to syntax, hence the lexical head in a (cor)relative clause with the linear order [NP [$_{CP}$ Rel C']] is considered as an (underlyingly) internal head. This type of lexical head is called "raised head" in this dissertation.

Here is an example of a raised headed correlative clause:

(46) sómam yám brahmā́ṇaḥ vidúḥ
soma.ACC.SG REL.ACC.SG formulator.NOM.PL know.PERF.3PL

ná tásya aśnāti káḥ caná (RV 10.85.3cd)
not DEM.GEN.SG comsume.PRES.3SG anyone at.all

"But the Soma that the formulators know—no one at all consumes that."

In this example, *sómam* is linearly external to the correlative clause since it precedes the relative pronoun *yám*. It is underlyingly internal to the correlative clause since it is in the accusative case assigned by the verb *vidúḥ* "they know" in the correlative clause. The correlate demonstrative *tásya* is in the genitive case assigned by the verb *aśnāti* "(no one) consumes" in the host clause, which does not match with the case of the lexical head *sómam*. In Chapter 5 I will show that in Greek the lexical head that is in front of the relative clause matches with the case which the host clause assigns, showing a totally different configuration from the structure of this Vedic example.

Unlike English postnominal relative clauses, in which the relative pronoun must

follow the lexical head immediately,[12], Vedic (cor)relative clauses can front almost any constituent. The following two examples are a relative clause and a correlative clause with fronted constituents other than the lexical heads.

(47) [yám agne pr̥tsú mártyam
REL.ACC.SG Agni.VOC battle.LOC.PL mortal.ACC.SG

ávāḥ] [vā́jeṣu yám junā́ḥ]
help.SUBJ.2SG prize.LOC.PL REL.ACC.SG spur.SUBJ.2SG

sá yántā śáśvatīḥ íṣaḥ (RV 1.27.7)
DEM hold.fast.PART unfailing.ACC.PL refreshment.ACC.PL

"The mortal whom you will help in battles, o Agni, whom you will spur on to the prizes,

he will hold fast to unfailing refreshments."

There are two *yám*-clauses coindexed with the correlate *sá* in the host clause, hence this is a correlative construction. In the second correlative clause *vā́jeṣu yám junā́ḥ*, the locative NP *vā́jeṣu* "in the prizes" has been fronted before the relative pronoun, but it is not the lexical head. In fact, the lexical head of the second clause is *mártyam* 'mortal', which is in the first relative clause *yám agne pr̥tsú mártyam vāḥ*.

Here is an extreme case where one of the coordinated nominals is fronted:

(48) ná sá jīyate marutaḥ ná hanyate
NEG DEM conquer.PRES.MID.3SG Marut.VOC.PL NEG smite.PRES.MID.3SG

ná sredhati ná vyathate ná riṣyati
NEG fail.PRES.3SG NEG waver.PRES.MID.3SG NEG be.harmed.PRES.3SG

ná asya rā́yaḥ úpa dasyanti ná ūtáyaḥ
NEG DEM.GEN.SG wealth.NOM.PL PV exhaust.PRES.3PL NEG help.NOM.PL

[12]Except for the pied-piping cases such as "The strange man [upon seeing whom] Mary called the police." (Horvath, 2006: 600)

[$_{CP}$ ṛ̥ṣim vā yám rā́jānam vā súṣūdatha] (RV
seer.ACC.SG or REL.ACC.SG king.ACC.SG or sweeten.PERF.SUBJ.2PL
5.54.7)

"He is not conquered, o Maruts, nor is he slain, nor does he fail, nor waver, nor suffer harm,

nor do his riches give out, nor his help—the seer or the king whom you will "sweeten."

The *yám*-clause in *pāda* d is modifying the pronoun *sá* 'he' (*pāda* a) and *asya* 'his' (*pāda* c). The relativized element in the relative clause is a coordinated structure *ṛ̥ṣim vā... rā́jānam vā* "either a seer or a king", but the first coordinated element *ṛ̥ṣim* "the seer" is fronted before the relative pronoun, with the enclitic *vā* attached to it, and the second coordinated element *rā́jānam vā* is left *in situ*. The two elements coordinated by the *vā... vā* "either... or" construction are structurally symmetric, which suggests that a fronted lexical head and an *in-situ* lexical head have no structural distinction. Therefore, the movement of an internal head above the relative pronoun is optional in Vedic. The landing site of the fronted constituents can be analyzed by positing a Topic projection above the relative pronoun in the left periphery, following Hale (2007: 197). The configurations are as follows:

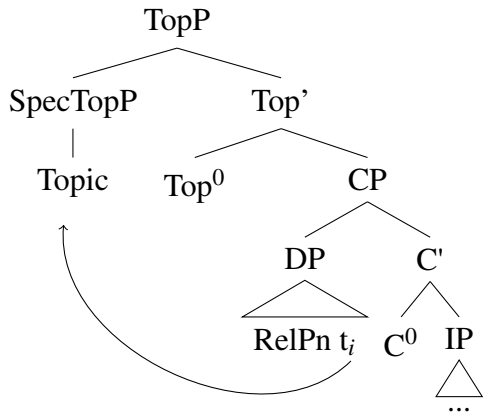

Figure 5:

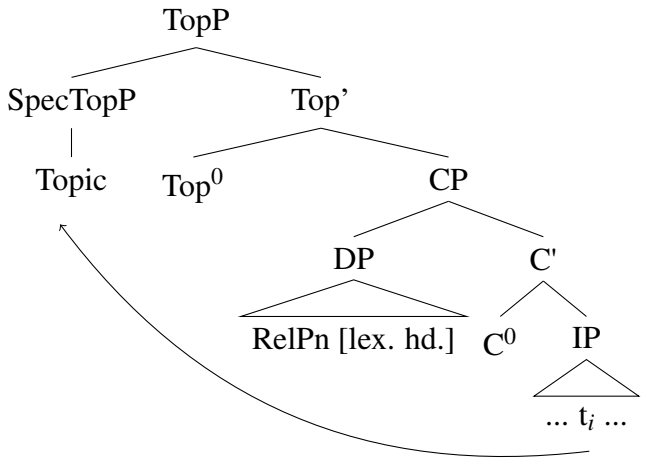

Figure 6:

Both of the two configurations involve topicalization of a constituent, since the case of the fronted head is never matching the host clause in Vedic. The only difference is that in the configuration on top, it is the relativized lexical head that is topicalized; while in the configuration on the bottom, some other constituent is topicalized, and the lexical head may or may not have moved with the relative pronoun. This topicalization analysis suggests that the raised headed (cor)relative clauses in Vedic are different from the English postnominal relative clauses, no matter which analysis is chosen for the English clause.

If the lexical head is topicalized, the linear order demonstrates external headedness and the case of the head is matching with the relative pronoun, instead of being assigned from the host clause. This is the same as the *attractio inversa* "inverted attraction" phenomena in Latin and Greek:

(49) [urbem quam statuo] vestra est. (Virgil, Aeneid 1.573)
city.ACC.SG REL.ACC.SG build.PRES.1SG 2PL.POSS cop.pres.3sg

"The city which I built is yours."[13]

(50) νῆες ὅσαι πρῶται εἰρύαται ἄγχι θαλάσσης

ἕλκωμεν... (Homer, Il. 14.75-6)

nē̃es hósai prō̃tai eirúatai aŋkhi
ship.NOM.PL REL.NOM.PL foremost.NOM.PL draw.PERF.MID.3PL near
thalássēs | helkōmen...
sea.GEN.SG draw.PRES.SUBJ.1PL

"Let us drag down the ships that are drawn up in the first line hard by the sea."

2.4.4 Free

If neither the (cor)relative clause nor the host clause has an overt lexical head, then it is a headless/free relative clause. Example (21) is repeated here again as example (51)

(51) didhr̥tá yát ca duṣṭáram (RV01.139.08g)
hold.firm.IMP.2PL REL.ACC.SG.N and difficult.to.pass
"...and fix what is difficult to surpass firm..."

No matter what syntactic position the whole free relative clause takes in the host clause, the case of the relative pronoun is always assigned in the relative clause:

(52) yā́sat rāyā́ sarátham yám
drive.AOR.SUBJ.3SG wealth.INS.SG co-chariotedly REL.ACC.SG
junā́si (RV 1.71.6d)
speed.Pres.2sg
"He whom you speed will drive in the same chariot with Wealth."

In example (52), the whole *yám*-clause is the subject of the host clause, but the

[13]The translations of Latin and Greek are from the Loeb Classics Library.

relative pronoun is in the accusative case, assigned by the verb *junā́si* "you speed" in the relative clause, since it is the object in the relative clause.

2.4.5 Double headedness

Section 2.4.2 showed the existence of external heads (or correlate R-expressions) in Vedic relativization strategies. The external head does not have to be adjacent to the (cor)relative clause, and even if the (cor)relative clauses which modify the external head/correlate R-expression are deleted, the host clause is still grammatical. This shows that the external head/correlate R-expression is independent of the (cor)relative clause. Section 2.4.3 demonstrated that the internal head can be *in situ*, moved together with the relative pronoun, or even moved higher to the Topic projection. The internal head moves within the scope of the (cor)relative clause and the host clause does not influence the internal head, hence the internal head is also independent from the host clause.

Section 2.4.4 showed that the (c)overtness of one of the external or internal lexical head—with the correlate R-expression as the external lexical head of the correlative constructions—cannot predict the (c)overtness of the other one. In free relative clauses, there is neither an external nor an internal head. If there are cases where both the internal and external lexical head show up together, they clearly show the existence of both the internal and external lexical heads, and also show that they are independent from each other.

Such examples are rare but still exist in English:

(53) He suggested to the defendant the commission of a crime, [which crime was to be consummated by the concurrent act of. . .] (People v. Acritelli, 57 Misc.

574, 110 N.Y.S. 430, N.Y. Gen. Sess. 1908)

In example(53), the word *crime* occurs twice, the first occurrence is outside the *which*-clause, hence it is external, and the second time it is in the relative clause, hence it is internal.

Japanese also has this type of relative clause:

(54) Junya=wa [$_{\text{DHRC}}$ Ayaka-ga ringo-o mui-ta] sono-ringo-o tabe-ta
Junya=TOP Ayaka-NOM apple-ACC peel-PAST that-apple-ACC eat-PAST
"Junya ate those apples that Ayaka peeled."

Lit. "Junya ate those apples that Ayaka peeled apples."

Such examples of double headed relative clauses and correlative clauses are also attested in other old Indo-European languages, Drigo and Qu (2025) discussed double headed relative clauses and correlative clauses in Sabellic. Such examples are also found in Vedic. Here is an example of double headed relative clause:

(55) tigmájambhāya táruṇāya rā́jate
sharp.fanged.DAT.SG young.DAT.SG rule.ap.dat.sg

práyaḥ gāyasi agnáye
joy.ACC.SG sing.PRES.2SG Agni.DAT

yáḥ piṃśáte sūnṛ́tābhiḥ suvī́ryam
REL.NOM.SG decorate.PRES.3SG glorious.gift.INS.PL good.heroness.ACC.SG

agníḥ ghṛtébhiḥ ā́hutaḥ (RV 8.19.22)
Agni.NOM ghee.INS.PL libate.PPP.NOM.SG

"To the sharp-fanged one, the ruler of tender age—to Agni do you sing delight, Agni who adorns his mass of heroes with his liberal gifts, when he is bepoured with ghee."

In example (55), in the host clause (*pāda* a and b), *agnáye* "to Agni" is the external head. It is in the dative case since it is the indirect object in the host clause. The relative clause (*pāda* c and d) is modifying Agni, and the internal head *agníḥ* 'Agni' is overt and *in situ*. This clearly shows that there are two lexical heads.

Here is an example of double headed correlative clause:

(56) yấḥ ấpaḥ divyấḥ utá vā srávanti
REL.NOM.PL water.NOM.PL heavenly.NOM.PL and or flow.PRES.3PL

khanítrimāḥ utá vā yấḥ svayaṃjấḥ
found.by.digging.NOM.PL and or REL.NOM.PL self.originated.NOM.PL

samudrárthāḥ yấḥ śúcayaḥ pāvakấḥ
aiming.for.the.sea.NOM.PL REL.NOM.PL clear.NOM.PL pure.NOM.PL

tấḥ ấpaḥ devíḥ ihá mấm avantu
DEM.NOM.PL water.NOM.PL goddess.NOM.PL here 1SG.ACC help.IMP.3SG
(RV 7.49.2)

"The heavenly waters, or those that flow, or are found by digging, or arise by themselves,
those, clear and pure, whose goal is the sea—let those waters, goddesses, help me here."

Example (56) has three *yấḥ*-clauses, but the lexical head *ấpaḥ* only appears in the first one. These three correlative clauses are different in terms of their lexical head: The first one has an internally head *ấpaḥ* 'waters' which is also in the host clause, and the three predicates, namely *divyấḥ* 'heavenly', *srávanti* 'flow', and *khanítrimāḥ* "found by digging", are coordinated by the ... *utá vā* ... *utá vā* ... structure. This clause can be interpreted as "the waters which are heavenly, or flow, or are found by digging". The second one does not have an overt internal head. The meaning must be provided from

the first clause: "(the waters) which arise by themselves". The third clause has two lexical heads *śúcayaḥ* 'clear' and *pāvakā́ḥ* 'pure', but they are not the same as the lexical head *ā́paḥ* in the host clause, this type will be discussed in detail in section 2.4.6. This clause can be interpreted as "the clear and pure (waters) which are aiming for the sea." In all the three *yā́ḥ*-clauses, five different types of waters are mentioned. The internal head *ā́paḥ* in the first correlative clause is referred to the first three types, the other two types mentioned in the last two correlative clauses with the lexical head provided from the first correlative clause, and the host clause has a correlate R-expression *ā́paḥ* identical to the internal head, and this correlate R-expression associates all the five types of waters in the preceding correlative clauses. The morohological identity and the semantic correferential relation between the R-expression and the internal head clearly shows that the R-expression is functioning as an external lexical head of the whole correlative construction. The other noun *devī́ḥ* 'goddesses' is an apposition of the external lexical head.

2.4.6 "Split-headedness"

Hettrich (1988: 533) suggested that the item in the host clause which is coindexed with the correlative clause can be either only the correlate pronoun, or a correlate pronoun plus a noun. (Wenn der RS seinen Nukleus enthält und dem HS vorausgeht, besteht die Möglichkeit, den RS im HS nicht nur durch ein Korrelativum allein, sondern auch durch ein Korrelativum und ein hinzutretendes Nomen wieder aufzunehmen.) When a noun is coindexed with the correlative clause, there are three possibilities: First, if there is no overt lexical head in the correlative clause, then the structure is externally headed; second, if there is an identical lexical head in the correlative clause, then the structure is double headed; but if the lexical head of the correlative clause is not identical to the

lexical head of the host clause, it is a third type, which will be called "split-headed" type in this dissertation. For example:

(57) yáḥ mártyaḥ śíśīte áti aktúbhiḥ
REL.NOM.SG mortal.NOM.SG sharpen.PRES.MID.3SG PV night.INS.PL

mā naḥ sá ripúḥ īśata (RV 1.36.16cd)
NEG 1PL.GEN DEM treacherous.NOM.SG rule.INJ.3SG

"The mortal who sharpens himself throughout the nights, let that cheat not be master of us."

In example (57), the *yáḥ*-clause is coindexed with the demonstrative *sá* in the main clause, just like any other typical *yáḥ... sá* structure. But in the host clause, *sá* is also modifying the noun *ripúḥ* 'the treacherous one' as a demonstrative, since they are adjacent and all of their φ-features agree. Therefore, the *yáḥ*-clause is not only coindexed with the correlate demonstrative, but the phrase *sá ripúḥ*. This suggests that the correlative clause and the host clause may have two diffferent lexical head nouns which are related not by identity, but by coindexation.

The mismatched lexical heads in the correlative clause and the host clause are both nouns in example (57), but they can also be a pronoun and a noun:

(58) yā́n vaḥ náraḥ devayántaḥ
REL.ACC.PL 2PL.GEN.ENCL man.NOM.PL god-seeking.NOM.PL
nimimyúḥ
fix.down.PERF.3PL

vánaspate svádhitiḥ vā tatákṣa
forest.lord.VOC axe.NOM.SG or fashion.PERF.3SG

té devā́saḥ sváravaḥ tasthivā́ṃsaḥ
DEM.NOM.PL god(like).NOM.PL sacrificial.post.NOM.PL stand.PAP.NOM.PL

prajā́vat asmé didhiṣantu
consisting.of.offspring.ACC.SG 1PL.LOC place.DESID.IMP.3PL
rátnam (RV 3.8.6)
treasure.ACC.SG

"Those of you whom the god-seeking men have fixed down, or, Lord of the Forest, whom the axe has fashioned,

let those god(like) sacrificial posts, standing there, be disposed to place a treasure consisting of offspring in us."

The lexical head of the correlative clause is an enclitic *vaḥ* 'of you'. This hymn is dedicated to the sacrificial post(s) and hence 'you' here means the sacrificial post, which testifies that the *yā́n*-clause is coindexed with the lexical head *sváravaḥ* "sacrificial posts" in the host clause. The correlate demonstrative *té* is in the host clause, showing that this is a correlative construction.

This so-called 'split headedness' is also possible for relative clauses:

(59) yáḥ naḥ dā́saḥ ā́ryaḥ vā puruṣṭuta
REL.NOM.SG 1PL.ACC.ENCL Dāsa Ārya or much.praised.VOC.SG

ádevaḥ indra yudháye cíketati
godless.NOM.SG Indra.VOC.SG fight.INF think.SUBJ.3SG

asmā́bhiḥ te suṣáhāḥ santu śátravaḥ
1PL.INS 2SG.DAT.ENCL easy.to.conquer.NOM.PL be.IMP.3PL rival.NOM.PL

tváyā vayám tā́n vanuyāma saṃgamé (RV 10.38.3)
2SG.INS 1PL.NOM DEM.ACC.PL win.OPT.1PL clash.loc.sg

"Whatever godless one, Dāsa or Ārya, will have in view to fight us, o much-praised Indra—

let those rivals be easy to conquer for you along with us. With you may we vanquish them in the clash"

In the *yáḥ*-clause, the lexical head is *dā́saḥ ā́ryaḥ vā* "Dāsa or Ārya", which is coindexed with the lexical head *śátravaḥ* 'rivals' in the host clause in *pāda* c. There is no correlate demonstrative in the host clause, so this example is classified as a relative construction. Although there is a demonstrative *tā́n* in *pāda* d, but the case (accusative) does not match that of the lexical head *śátravaḥ* (nominative), and there are two different main verbs in the clauses in *pāda* c and d, hence *pāda* d is a separate clause, and the demonstrative *tā́n* 'them' is an anaphoric pronoun, not a correlate pronoun.

Split head relative clauses can also be postposed:

(60) ámandat mā marutaḥ stómaḥ átra
exhilarate.IMPF.3PL 1SG.ACC.ENCL Marut.VOC.PL praise.NOM.PL here

yát me naraḥ śrútyam
REL.NOM.SG 1SG.DAT.ENCL man.VOC.PL worthy.to.be.heard.ACC.SG
bráhma cakrá (RV 1.165.11ab)
formulation.ACC.SG make.PERF.2SG

"The praise song here has exhilarated me, o Maruts, the formulation worthy to be heard that you created for me, o men—"

Hettrich (1988: 535) takes the lexical head *stómaḥ* 'praise' in the host clause to be coindexed with the lexical head *śrútyam bráhma* "the formulation worthy to be heard" in the relative clause.

Comparing to the previous four types of headedness, the split head type seems to be bizarre in the sense that the two lexical heads are not identical, but this is not limited to Vedic. de Vries (2005) pointed out that the universal such that "[t]he relative gap of a postnominal relative clause cannot be filled by a lexical NP" does not apply to appositive constructions, with the following Dutch example:

(61) *De avonden*, welk boek van Reve veel gelezen wordt, is herdrukt.
De avonden, which book of Reve much read is, has.been reprinted
"*De avonden* [the evenings], which book by Reve is read by many people, has been reprinted."

In this example, the proper noun *De avonden* "*The Evenings* (book title)" is the external head, and *boek van Reve* "book of Reve" is the internal head. These two heads are not lexically identical.

Coindexation between the non-identical lexical heads in the (cor)relative clause and the host clause seems to be less intuitive than the coindexation between two identical lexical heads as in the double headed (cor)relative clauses. The following example shows that coindexation between lexically non-indentical heads is logical.

(62) yā́ vaḥ bheṣajā́ marutaḥ
REL.NOM.PL 2PL.GEN.ENCL remedy.NOM.PL Marut.VOC.PL
śúcīni
gleaming.NOM.PL

yā́ śáṃtamā vr̥ṣaṇaḥ yā́
REL.NOM.PL most.wholesome.NOM.PL bullish.VOC.PL REL.NOM.PL
mayobhú
joy.NOM.PL

yā́ni mánuḥ ávr̥ṇīta pitā́ naḥ
REL.NOM.PL Manu.NOM.SG choose.IMPF.3SG father.NOM.SG 1PL.GEN.ENCL

tā́ śám ca yóḥ ca rudrásya
DEM.ACC.PL luck.NOM.SG and lifetime.NOM.SG and Rudra.GEN
vaśmi (RV 2.33.13)
want.PRES.1SG

"Your gleaming remedies, o bullish Maruts, which bring best luck, which are joy itself,

which our father Manu chose—those of Rudra's do I want as luck and lifetime."

In this whole construction, there are four correlative clauses (one *yā́*-clause in *pāda* a, two *yā́*-clauses in *pāda* b, and one *yā́ni*-clause in *pāda* c) that are coindexed with the correlate demonstrative tā́. Hettrich (1988: 647) takes the noun phrases in the first two correlative clauses, *vaḥ bheṣajā́* "your remedies" and *śáṃtamā* 'most wholesome' which Jamison and Brereton (2014) translates as "(the ones that) bring best luck", as the lexical heads of the first two correlative clauses respectively. These two clauses each form an internally headed correlative construction with the host clause. In the structure *yā́ vaḥ bheṣajā́ ... tā́*, *vaḥ bheṣajā́* is coindexed with the correlate demonstrative *tā́*; in the structure *yā́ śáṃtamā ... tā́*, *śáṃtamā* is also coindexed with the correlate demonstrative *tā́*.

Coindexation is an equivalence relation, hence it is transitive. This can be shown with the following English binding example:

(63) (a) Joseph$_i$ said he$_i$ does not trust himself$_i$.

(b) *Joseph$_i$ said Sarah does not trust himself$_i$.

In example (63a), the proper noun *Joseph* and the reflexive pronoun *himself* are coindexed by transitivity: *Joseph* and *he* are coindexed, *he* and *himself* are also coindexed, hence *Joseph* and *himself* are coindexed. If 'he' is replaced by a non-coindexed word *Sarah* as in (63b), the coindexation of *Joseph* and *himself* is not possible.

To return to example (62), by the transitivity of coindexation, the two lexical heads of the first two correlative clause, *vaḥ bheṣajā́* and *śáṃtamā*, must be coindexed. This shows the coindexation of lexically non-identical noun phrases are allowed in Vedic correlative constructions, thus there is no need to argue against the coindexations of non identical heads in the (cor)relative clause and the host clause.

2.4.6.1 Word order

Section 2.4.3 showed that the internal head can be *in situ*, right after the relative pronoun, or topicalized to the position before the relative pronoun. These three possible positions are also possible for the (cor)relative clauses of the split head constructions:

Example (15) is repeated here as example (64)

(64) índraḥ [yáḥ śúṣṇam aśúṣam ní
Indra.NOM REL.NOM.SG Śuṣṇa.ACC.SG insatiable.ACC.SG down
ā́vr̥ṇak]
wretch.IMPF.3SG

marútvantam sakhyāya havāmahe (RV
Marut-accompanied.ACC.SG partnership.DAT.SG call.PRES.1PL
1.101.2cd)

"Indra, who wrenched down insatiable Śuṣṇa —

the one accompanied by the Maruts do we call upon for partnership."

The internal head *índraḥ* 'Indra' is different from the correlate R-expression *marút-vantam* "the one accompanied by the Maruts", hence this is a split head relative construction. The internal head is before the relative pronoun. Similar to the internally headed relative clause, the internal head of this example is also topicalized.

The relative clause in example (60) is repeated as example (65) here

(65) ámandat mā marutaḥ stómaḥ átra
exhilarate.IMPF.3PL 1SG.ACC.ENCL Marut.VOC.PL praise.NOM.PL here

yát me naraḥ śrútyam
REL.NOM.SG 1SG.DAT.ENCL man.VOC.PL worthy.to.be.heard.ACC.SG
bráhma cakrá
formulation.ACC.SG make.PERF.2SG

"The praise song here has exhilarated me, o Maruts, the formulation worthy to be heard that you created for me, o men—"

In this example, *me* is an enclitic and *naraḥ* is a vocative noun. The internal head *śrútyam bráhma* is right after the relative pronoun if *me* and *naraḥ* are ignored.

Besides the examples above, split head relative clauses can also have their internal heads *in situ*:

(66) sá gha vīráḥ ná riṣyati
DEM indeed hero.NOM.SG NEG be.harmed.PRES.3SG

yám índraḥ bráhmaṇaḥ pátiḥ
REL.ACC.SG Indra.NOM.SG sacred.formulation.GEN.SG lord.NOM.SG

sómaḥ hinóti mártyam (RV 1.18.4)
Soma.NOM.SG urge.PRES.3SG mortal.ACC.SG

"That hero is certainly not harmed whom Indra, whom the Lord of the Sacred Formulation,

whom Soma urges on—(though he is) mortal."[14]

The internal head *mártyam* 'mortal' is not adjacent to the relative pronoun, but *in situ*.

Comparing these example to the internally headed examples, it can be concluded that the position of the internal head, whether *in situ*, raised with the relative pronoun, or topicalized, does not make a syntactic difference, and it is irrelevant to the overtness of the external head or correlate R-expression. This observation strengthens the claim that the internal and external lexical heads are independent.

[14]Jamison and Brereton (2014) translates *mártyam* as "(though he is) mortal", a concessive nominal clause. Hettrich (1988) took *mártyam* 'mortal' as the internal head based on Geldner's (1951) translation: „Der Mann kommt wahrlich nicht zu Schaden, welchen Sterblichen Indra, Brahmaṇaspati, Soma antreiben."

2.4.7 Interim summary

In the following table, all possible Vedic configurations for relativization are shown.

	external head/correlate R-expression			internal head
correlative	±			±
relative	prenominal	postnominal		±
		immediate	postposed	
	0	±	±	

Table 7: Vedic relativization configuration

In Table 7 ± means that the head can be either overt or covert, 0 in the entry of prenominal relative clause means it does not exist.

The only type that is not attested in the Vedic corpus is the prenominal relative clause.

To study headedness in more detail, relative clauses and correlative clauses should be considered separately. The following chart shows all the combination of (c)overt external and internal head in the relative clause and the host clause, and what type of relative clause on the surface each combination provides. I will use the toy example sentences “the (sweet) apple is red” and “the (sweet) apple is big” to illustrate the types, with the first sentence relativized:

host clause \ relative clause	covert head	overt head
covert head	headless "[which is red] is big."	internally headed "[which **apple** is red] is big."
overt head	externally headed "The **apple** [which is red] is big."	double headed "The **apple** [which **apple** is red] is big."
		split headed "The **apple** [which **sweet (one)** is red] is big."

Table 8: Headedness of Vedic relative clauses

The following chart shows all the combination of (c)overt correlate R-expression and internal head in the correlative clause and the host clause, and what type of correlative clause on the surface each combination provides:

host clause \ correlative clause	covert head	overt head
covert head	headless "[which is red,] that is big."	internally headed "[which **apple** is red,] that is big."
overt head	correlate R-expression "[which is red,] that **apple** is big."	double headed "[which **apple** is red,] that **apple** is big."
		split headed [which **sweet (one)** is red,] that **apple** is big."

Table 9: Headedness of Vedic correlative clauses

In Vedic, all of the types in the two tables above are attested.

2.5 Restrictive vs. Appositive

Dayal (1995) showed that the word order of appositive relative clauses are not as free as restrictive relative clauses in modern Indo-Aryan languages. Here is a modern Hindi example.

(67) a. *[jo khaRi: hai] anu lambi: hai
REL standing COP.PRES Anu tall COP.PRES

b. *anu lambi: hai [jo khaRi: hai]
Anu tall COP.PRES REL standing COP.PRES

c. anu [jo khaRi: hai] lambi: hai
Anu REL standing COP.PRES tall COP.PRES

"Anu, who is standing, is tall."

No such restriction is found in Vedic, which means appositive relative clauses can be in the same configuration as the restrictive relative clauses:

2.5.1 Appositive relative clause

Vedic appositive relative clauses may exhibit all the possible headednesses that are seen in restrictive relative clauses. The following example is an externally headed appositive relative clause:

(68) huvé vaḥ sudyótmānam
call.PRES.MID.1SG 2PL.ENCL one.of.good.brilliance.ACC.SG
suvṛ̊ktím
well̊-twisted.ACC.SG

viśā́m agním átithim suprayásam
clan.GEN.PL Agni.ACC guest.ACC.SG receiving.good.offering.ACC.SG

mitráḥ iva yáḥ didhiṣā́yyaḥ bhū́t
envoy.NOM.SG like REL.NOM.SG desirable.to.install.NOM.SG become.INJ.3SG

devā́ḥ ā́deve jáne jātávedāḥ (RV 2.4.1)
god.NOM.PL god-directed.LOC.SG people.LOC.SG Jātavades.NOM

"I call for you upon the one of good brilliance, on Agni, the guest of the clans, who receives well-twisted (hymns), who receives very pleasurable offerings, who, like an envoy, has become desirable to install as god among the god-directed people, as Jātavedas."

In example (68) the head noun is *agním*, 'Agni' the god in the accusative case assigned by the verb *huvé* "I call". The relative clause in *pāda* c and d is introduced by *yáḥ*, which is in the nominative case. The relative clause is modifying *agním*, and it is an appositive relative clause because *agním* is a proper name belonging to a unique god, and it is externally headed due to the mismatch of cases between the lexical head and the relative pronoun.

Besides proper names first and second person pronouns can also be the head of the appositional relative clauses:

(69) yáḥ imé ródasī ubhé
REL.NOM.SG DEM.ACC.DU world-half.ACC.DU both.ACC.DU

ahám índram átuṣṭavam (RV 3.53.12ab)
1SG.NOM Indra.ACC praise.PLUPERF.1SG

"I who have praised both these two world-halves here and Indra,"

Since Vedic finite verbs in main clauses are unaccented,[15] the verb *átuṣṭavam* 'I have praised', which is accented, must be in the relative clause, hence it is internally headed.

[15]Unless the finite verb in the main clause is in the *pāda*-initial position, or emphasized by emphatic markers such as *hí*, or contrastive with another verb. cf. Macdonell (1910: 105-106).

Appositional relative clauses can also be headed by a clitic pronoun:

(70) yám tvā dyā́vāpr̥thivī́ yám tvā
REL.ACC.SG 2SG.ACC Heaven-Earth.NOM.DU REL.ACC.SG 2SG.ACC
ā́paḥ
water.NOM.PL

tváṣṭā yám tvā sujánimā jajā́na
Tvaṣṭar.VOC REL.ACC.SG 2SG.ACC good.begetter.NOM.SG beget.PERF.3SG
(RV 10.2.7ab)

"You whom Heaven and Earth, you whom the waters, you whom Tvaṣṭar, the good begetter, has begotten."

In this example there are three relative clauses starting with *yám tvā* "you whom" but literally "which you" with the clitic form of the accusative second person singular pronoun *tvā*.

2.5.2 Appositive correlative clauses

Vedic correlative clauses can also be appositional:

(71) yáḥ śakráḥ mr̥kṣáḥ áśvyaḥ
REL.NOM.SG able.one.NOM.SG curry.comb[?].NOM.SG equine.NOM.SG

yáḥ vā kī́jaḥ hiraṇyáyaḥ
REL.NOM.SG or stake/spur[?].NOM.SG golden.NOM.SG

sáḥ ūrvásya rejayati ápāvr̥tim
DEM.NOM.SG closure.GEN.SG shake.PRES.CAUS.3SG closure.ACC.SG

índraḥ gávyasya vr̥trahā́ (RV 8.66.3)
Indra.NOM bovine.GEN.SG Vr̥tra-smiter.NOM.SG

"The able one, who is a horse's curry comb [?] or who is a golden stake [?],
he sets the opening of the cattle-pen to shaking—Indra the Vr̥tra-smasher."

In example (71), the two relative clauses in *pāda* a and b are coindexed with the correlate demonstrative *sáḥ* in *pāda* c, hence it is a correlative construction, and the correlate R-expression *índraḥ ... vr̥trahā́* "Indra the Vr̥tra-smasher" in *pāda* d, hence it is appositional.

Vedic appositional correlative clauses can also be internally headed:

(72) yám devā́saḥ ájanayanta agním
REL.ACC.SG god.NOM.PL beget.IMPF.3PL Agni.ACC

yásmin ā́ ájuhavuḥ bhúvanāni víśvā
REL.LOC.SG to libate.PERF.3PL being.NOM.PL all.NOM.PL.N

sáḥ arcíṣā pr̥thivī́m dyā́m utá imā́m
DEM.NOM.SG flame.INS.SG earth.ACC.SG Heaven.ACC.SG and this.ACC.SG

r̥jūyámānaḥ atapat mahitvā́ (RV 10.88.9)
straighten.up.PMP.NOM.SG heat.IMPF greatness.INS.SG

"The fire [/Agni] whom the gods begot, in whom all beings poured oblations, aiming straight, he heated earth and this heaven with his flame in his greatness."

In example (72), the proper noun *agním* 'Agni' is the internal head in the first *yám*-relative clause in *pāda* a, and it is coindexed with the correlate demonstrative *sáḥ* in *pāda* c, hence this is an internally headed appositional correlative clause.

The examples in this section show that Vedic relative and correlative clauses make no syntactic distinction between the restrictive and appositional relativizations, with the exception of the prezafe-type discussed in section 2.3.3, which are postnominal appositional relative clauses and should be considered as their own kind. This fact suggests that

restrictive vs. appositional, and relative vs. correlative, are two independent dimensions for relativization in Vedic.

The previous sections have shown that both relative and correlative clauses do not have any difference in terms of headedness, or behave differently in restrictive and appositive readings, as has already been observed by Hock (1990: 612-613). Hence, the only difference between relative and correlative clause is where they are generated. This question will be discussed in the next section.

2.6 Syntactic Analysis

Bhatt (2003) argued that in the modern Indo-Aryan languages a simple correlative clause is generated in the adjunct position of the XP it is modifying and moved out, while a multi-headed correlative is generated in the adjunct to the IP. The main evidence that simple correlative constructions in Modern Hindi are generated in the adjunct position of DemXP and moved out to the adjunct position of IP are as follows:

(a) Island effects

(b) Co-ordinated constituency fronting

(c) Variable binding

In the Rig Veda there are no examples of multi-headed correlative, only relatives and simple correlatives. This section argues that Vedic correlatives are base generated in the left periphery.

2.6.1 Lack of Locality Effect

2.6.1.1 Island effects

Bhatt (2003) argued that overt movement out of a relative clause is not allowed, thus, the correlative clause and its associated demonstrative phrase cannot be separated by islands:

$$*[\text{Correlative-CP}]_i\ [_{IP} \cdots [_{NP}\ \text{NP}\ [_{RC} \cdots\ \text{Dem-XP}_i \cdots\ ]] \cdots\ ]$$

For example:

(73) *[jo vahã: rah-ta: hai]$_i$ mujh-ko [vo kaha:ni: [$_{RC}$ jo Arundhati-ne
REL there stay-HAB COP.PRES 1SG.DAT that story.F REL Arundhati-ERG
us-ke-baare-mẽ likh-i:]] pasand hai
DEM-about write-PFV.F like COP.PRES
"*Who lives there, I like the story that Arundhati wrote about that boy."

But Vedic correlative clauses do not show any island effects. In the Rig Veda there is no example showing correlative clauses can be coindexed with a demonstrative in another relative or correlative clause, but there is an example showing that a correlative clause can be coindexed with a correlate demonstrative in an adjunct island:

(74) ví yé bhrā́jante súmakhāsaḥ ṛṣṭíbhiḥ
PV REL.NOM.PL shine.PRES.3PL good.fighter.NOM.PL spear.INS.PL

pracyāváyantaḥ ácyutā cit ójasā]$_i$
move.AP.NOM.PL unmovable.ACC.PL even power.INS.SG

manojúvaḥ yát marutaḥ (pro)$_i$ ráthesu ā́
mind-swift.ACC.PL when Marut.VOC.PL chariot.LOC.PL to

vr̥ṣavrātāsaḥ pr̥ṣatīḥ áyugdhvam (RV 1.85.4)
bullish.troop.ACC.PL speckled.ACC.PL yoke.IMPF.2PL

"Those good battlers who flash out with their spears, stirring forth even the unstirrable by their power—

When, o Maruts, in a bullish troop you have yoked the mind-swift dappled mares to your chariots."

In example (74), the *yé*-relative clause in *pāda* a and b is referring to the Maruts. *Pāda* c and d is a *yát*-clause, where *yát* is functioning as a complementizer, meaning 'when' here, hence it is an adjunct clause. In this adjunct clause, the verb is in second person plural, hence the subject is a dropped second person plural pronoun, which is denoted by the *pro* in the sentence, and from the vocative *marutaḥ* "o Maruts", the dropped subject can be identified as the Maruts, where is coindexed with the preceeding relative clause.

If the relative clause were generated in the host clause and moved out, it would violate the Adjunct Island since the host clause itself is an adjunct clause. This supports that Vedic correlative clauses are based generated.

Motter (2023) argued that correlative clauses in Hittite are paratactic, which by default lack locality effects. Motter's argument that Hittite correlative clauses lack of locality effects can be further supported by the analysis of the following example, which shares a similar structure to the Vedic one in example (74):

(75) [kāšma=wa MUŠEN.ḪI.A kue *ANA* EN=*YA* uppaḫḫun]$_i$
PRT=QUOT birds REL to lord=my send.PRET.1SG
nu=wa=za [mān EN=*YA* apē MUŠEN.ḪI.A$_i$ malāši]
CONN=QUOT=REFL if lord=my those birds approve.PRET.2SG
nu=wa=mu EN=*YA* EGIR-pa ḫatrāu
CONN=QUOT=1SG.ENCL lord=my back write.IMP.2SG
(AT 125 5–9 New Hittite. Hoffner, 2009: 373)

"The birds which I have sent there to My Lord, if you My Lord approved of those birds, may My Lord write back to me."

In example (75), the correlative construction is double headed since MUŠEN.ḪI.A 'birds' show up twice: the first time as the internal head in the correlative clause, and the second time as the correlate R-expression in the host clause, but the host clause itself is an adjunct clause introduced by the complementizer *man* 'if', which creates an adjunct island.

2.6.1.2 Coordination

Bhatt (2003) argued that Modern Hindi does not allow one of the coordinated relative clauses to be extracted:

(76) Rahul [jo kita:b Saira-ne likh-i:]$_1$ vo$_1$ aur [jo cartoon Shyam-ne
Rahul REL book Saira-ERG write DEM and REL cartoon Shvam-ERG
bana:-ya:]$_2$ vo$_2$ a:jkal paRh raha: hai
make DEM nowadays read PROG COP
"Nowadays, Rahul is reading the book that Saira wrote and the cartoon that Shyam made." (Lit. "Nowadays, Rahul is reading [[which book that Saira wrote] that (book)] and [[which cartoon that Shyam made] that (cartoon)].")

(77) ?[jo kita:b Saira-ne likh-i:]$_1$ Rahul a:jkal t_1 vo$_1$ aur [jo cartoon
REL book Saira-ERG write Rahul nowadays DEM and REL cartoon
Shyam-ne bana:-ya:]$_2$ vo$_2$ paRh raha: hai
Shvam-ERG make DEM read PROG COP
"?[which book that Saira wrote]$_1$, nowadays, Rahul is reading [t_1 that (book)]$_1$ and [[which cartoon that Shyam made] that (cartoon)]."

(78) *[jo cartoon Shyam-ne bana:-ya:]$_2$ Rahul a:jkal [jo kita:b Saira-ne
REL cartoon Shvam-ERG make Rahul nowadays REL book Saira-ERG
likh-i:]$_1$ vo$_1$ aur t_2 vo$_2$ paRh raha: hai
write DEM and DEM read PROG COP

"*[which cartoon that Shyam made]2, nowadays, Rahul is reading [[which book that Saira wrote] that (book)] and [t2 that (cartoon)]."

Example (76) to (78) show that Modern Hindi does not favor moving only one of the coordinated relative clauses. But in Vedic such structures exist:

(79) [yát vaḥ citrám yugé-yuge
REL.ACC.SG.N 2PL.GEN.ENCL glittering.ACC.SG every.generation.LOC.SG

návyam ghóṣāt ámartyam]$_i$
new.ACC.SG sound.SUBJ.3SG immortal.ACC.SG

asmā́su tát$_i$ marutaḥ [yát ca
1PL.LOC DEM.ACC.SG Marut.VOC.PL REL.NOM.SG.N and
duṣṭáram]$_j$
difficult.to.surpass.Nom.sg

didhṛtá yát ca duṣṭáram (RV
hold.firm.IMP.2PL REL.NOM.SG.N and difficult.to.surpass.NOM.SG
1.139.8defg)

"What glittering, immortal (deed) of yours shall sound anew in every generation, o Maruts, fix that firm in us as well as (brilliance) difficult to surpass — and what is difficult to surpass."

In example (79) there are two objects of the verb *didhṛtá* 'fix', namely *tát* 'that' and *yát ca duṣṭáram* "what is difficult to surpass". Jamison's Rigveda Translation Commentary (2023-1-25) takes *pāda* f as containing an "X and which Y" (*tát ⋯ yác ca*) construction, with two different referents: *tát* is specified by the correlative clauses in *pāda* d and e, and the referent of the *yát*-clause(s) in *pāda* f (and echoed by *pāda* g) is a supplied *dyumnám* 'brilliance' from the context (*dyumnā́ni* in *pāda* b) and also comparing the phrase *dyumnáṃ dadhiṣva duṣṭáram* in RV 3.37.10b.

This interpretation of the example suggests that the correlative clause and the prezafe-type relative clause can be coordinated. If both clauses are underlyingly relative clauses and the correlative clause is preposed out of the host clause, this will be a violation of Coordinate Structure Constraint (Ross, 1967) that in a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct. Therefore, the correlative clause is not moved but base generated.

2.6.1.3 Variable binding

Binding Condition C suggests that correlatives are moved in Modern Hindi, since the following configuration is not allowed:

$$*[_{\text{CorCP}} \cdots \text{Name}_j \cdots]_i \; [\text{Pron}_j \; [t_i \; \text{Dem-XP}_i] \cdots]$$

(80) [jo lar.ki: Sita-ko$_j$ pyaar kar-ti: hai]$_i$ [us-ne$_{k/*j}$ us-ko$_i$ Thukraa di-yaa]
REL girl Sita-ACC love do-HAB.F is DEM-ERG DEM-ACC reject give-PFV
"She$_j$ rejected the girl who loves Sita$_{k/*j}$."

But in Vedic, a name in a correlative clause is allowed to be coindexed with a pronoun in the host clause:

(81) yásmāt índrāt bṛhatáḥ kím caná īm ṛté
REL.ABL.SG Indra.ABL lofty.ABL.SG nothing.ACC.SG PT without

víśvāni asmin sámbhṛtā ádhi vīryā̀ (RV
all.NOM.PL DEM.LOC.SG gather.PPP.NOM.PL PV manliness.NOM.PL
2.16.2ab)

"Lofty Indra, without whom there is nothing, in him all facets of a hero are gathered."

In example (81), the Name *índrāt (... ṛté)* '(without) Indra' in the *yásmāt*-clause is coindexed with the correlate demonstrative pronoun *asmin*. Binding Condition C will not be violated if the correlative clause is base generated.

The discussions above show that Vedic correlative clauses are base generated and not moved.

2.6.2 Correlative clauses are outside C'

Bhatt (2003) analyzes the landing site of the Hindi correlative clauses as the adjunct of IP. Section 2.6.1 showed that Vedic correlative clauses are not moved from the adjunct position of the correlate, and this section will show that it is higher than C'.

The correlative clause in example (74), repeated here as example (82) is clearly not in the adjunct position of the IP, since the correlative clause introduced by *yé* precedes the complementizer *yát* of the host clause, and also the word *manojúvaḥ* 'mind-swift ones' which is fronted to the Topic projection by the process discussed in Section 2.4.3.3.

(82) [$_{\text{CorCP}}$ ví yé bhrā́jante súmakhāsaḥ ṛṣṭíbhiḥ
PV REL.NOM.PL shine.PRES.3PL good.fighter.NOM.PL spear.INS.PL

pracyāváyantaḥ ácyutā cit ójasā]$_i$
move.AP.NOM.PL unmovable.ACC.PL even power.INS.SG

[$_{\text{TopP}}$ manojúvaḥ [$_{\text{C'}}$ yát marutaḥ (pro)$_i$ ráthesu ā́
mind-swift.ACC.PL when Marut.VOC.PL chariot.LOC.PL to

vṛ́ṣavrātāsaḥ pṛ́ṣatīḥ áyugdhvam]] (RV 1.85.4)
bullish.troop.ACC.PL speckled.ACC.PL yoke.IMPF.2PL

"Those good battlers who flash out with their spears, stirring forth even the unstirrable by their power—

When, o Maruts, in a bullish troop you have yoked the mind-swift dappled mares to your chariots."

The correlative clauses whose correlate is in a wh-question also show that they are in a higher position then IP since these correlative clauses precede the wh-word in the host clause.

(83) [$_{CorCP}$ yásya chāyā́ amr̥̊tam]$_i$ [$_{CorCP}$ yásya
REL.GEN.SG shadow.NOM.SG immortal.NOM.SG REL.GEN.SG
mr̥̊tyúḥ]$_i$
death.NOM.SG

[$_{CP}$ [kásmai devā́ya]$_i$ [$_{C'}$ havíṣā vidhema]] (RV
which.DAT.SG god.DAT.SG oblation.INS.SG homage.OPT.1PL
10.121.2cd)

"whose shadow is immortality, whose shadow is death— Who is the god to whom we should do homage with our oblation?"

In example (83) there are two correlative clauses, both of which are coindexed with the wh-phrase *kásmai deā́ya* "to which god". This example can be translated into English with stacked relative clauses as "To which god, whose shadow is immortality, whose shadow is death, should we do homage with our oblation?" The two correlative clauses precede the wh-phrase in [Spec, CP], showing that they are in positions higher than the IP.

There are also correlative clauses whose correlative is in a wh-question but the correlate is not the wh-phrase.

(84) [$_{CorCP}$ amī́ yé devā́ḥ sthána
that.one.NOM.PL REL.NOM.PL god.NOM.PL Cop.PRES.3PL

triṣú ā́ rocané diváḥ]$_i$
three.LOC.PL in luminous.realm.LOC.PL heaven.GEN.SG

[$_{CP}$ kát=vaḥ$_i$ r̥tám] [$_{CP}$ kát an-r̥tám]
what.NOM.SG=2PL.GEN truth.NOM.SG what.NOM.SG un-truth.NOM.SG

[$_{CP}$ kvà pratnā́=vaḥ ā́hutiḥ] (RV 1.105.5abcd)
where age-old.NOM.SG=2PL.GEN offering.NOM.SG

"You gods, who are yonder in the three luminous realms of heaven -

what is truth for you, what is untruth? Where is the age-old offering for you?"

Example (84) has one correlative clause and three wh-questions. The correlative clause has its correlate as the pronominal enclitic *vaḥ* "(of) you" in the first *kát*-clause, but *vaḥ* should be supplied in the second *kát*-clause as *kát=vaḥ an-r̥tám* "what is untruth (for you)?" In the *kvá*-clause the pronominal enclitic *vaḥ* shows again. For the purpose of examining the position of the correlative clause, the first *kát*-clause suffices to show that the correlative clause is higher than the IP.

More interestingly, the following example shows that the correlative clause can be even higher than the constituent fronted before the wh-phrase:

(85) [$_{CorCP}$ yáḥ tā́ cakā́ra]$_i$ [$_{TopP}$ sá$_i$ [$_{CP}$ kúha svit
REL.NOM.SG these do.PERF.3S DEM.NOM.SG where EMPH
índraḥ]] (RV 6.21.4a)
Indra.NOM
"He who did these things, where then is he—this 'Indra'?"

In this example, the correlate demonstrative pronoun *sá* precedes the wh-phrase *kúha* 'where', hence it should be in the TopP projection, and the *yáḥ*-clause has to be higher:

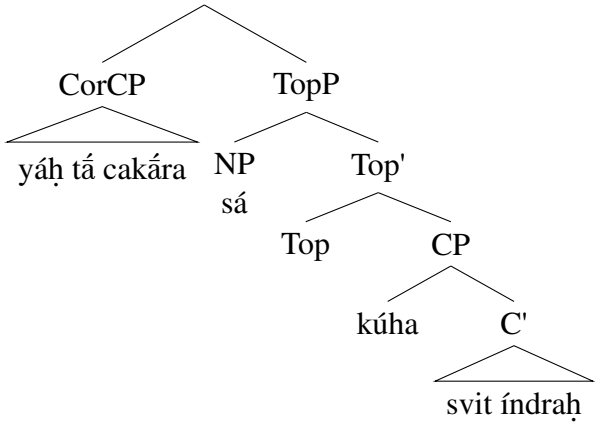

Figure 7:

The majority of correlative clauses have their correlates in declarative sentences. It can still be shown that they are in a position higher than the IP by examining that position of the clitics. Hale (2007) argues that Vedic clitic fronting is triggered by both syntax and phonology. Pronominal clitics first undergo head movement, namely, moving to the C head, out of the IP (assuming they move to C), then the clitics undergo a prosodic flip if they are not hosted.

(86) ayám=me deváḥ savitấ tát
this.NOM.SG=1SG.DAT god.NOM.SG Savitar.NOM.SG that.ACC.SG
āha (RV 10.27.18c. Hale, 2007: 210)
say.PERF.3SG
"This god Savitar here says this to me."

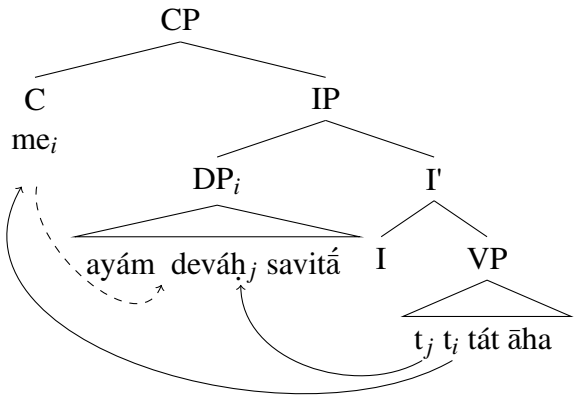

Figure 8:

The solid arrows in the tree show two syntactic movements: the DP subject *ayám deváḥ savitā́* "this god Savitar" moves to [Spec, IP], and the pronominal clitic *me* moves to a position above IP, assumed to be C. Since *me* is too high and there is no host to its left, it must flip after *ayám*, as shown by the dashed arrow. Although it is only assumed that the landing site of the pronominal clitic is C, in order to get this word order, it must be higher than IP.

Now consider the following correlative clause example with a pronominal clitic in the host clause:

(87) [$_{\text{CorCP}}$ yé yájatrāḥ]$_i$ [$_{\text{CorCP}}$ yé
REL.NOM.PL sacrifice.deserving.NOM.PL REL.NOM.PL
ī́ḍyāḥ]$_i$
to.be.invoked.NOM.PL

té$_i$=te pibantu jihváyā (RV 1.14.8ab)
DEM.NOM.PL=2SG.GEN drink.IMP.3PL tongue.INS.SG

"Those who deserve the sacrifice, who are to be invoked, let them drink with your tongue."

This example has two correlative clauses coindexed with the correlate demonstrative

té in the host clause. There are two possible structures for the host clause. First, the correlate demonstrative is fronted to the TopP projection like in example (85), then when the pronominal clitic *te* is moved to C, it can be hosted by the demonstrative. This analysis shows that the correlative clauses are above the TopP.

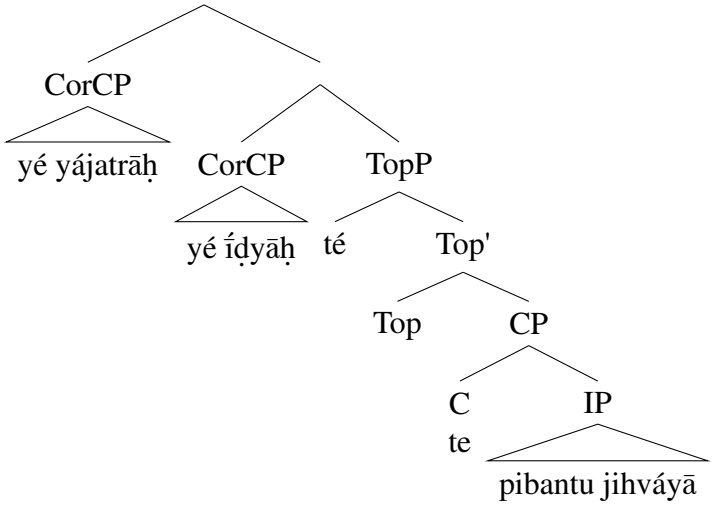

Figure 9:

The other possibility is that the correlate demonstrative pronoun *té* is in the IP. This requires the pronominal clitic to flip. Suppose the correlative clauses are in the adjunct position of IP, when the clitic flips, the relative pronoun *yé* will be its host, but this is not the case.

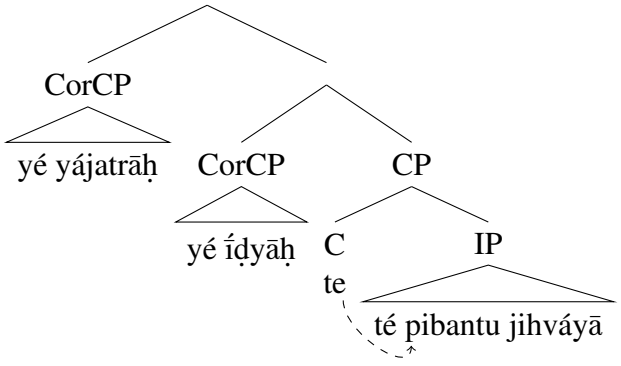

Figure 10:

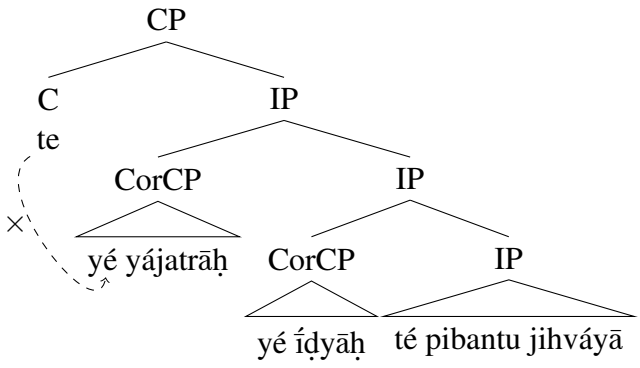

Figure 11:

Now it is shown that the Vedic correlative clauses are generated above CP. The remaining question is where they are exactly generated. Are they in the left periphery or are they paratactic?

2.6.3 Vedic is not paratactic

This section shows that Vedic correlatives are not paratactic, i.e., separate clauses that relate at the level of discourse instead of syntax. Vedic correlative clauses, like all the other subordinate clauses, have their finite verbs accented, whereas the finite verbs in the main clause are not accented.[16]

(88) dvíḥ yát páñca bíbhrataḥ dhāséḥ ánnā (RV 1.122.13b)
two when five bring. come.PRES.3PL food.ACC.PL
when the twice five [=fingers?] come, bringing foods.

(89) júṣṭaḥ hí dūtáḥ ási
delightful.NOM.SG for messenger.NOM.SG COP.PRES.2SG
havyavā́hanaḥ
oblation-conveyor.NOM.SG

[16]Macdonell (1910: 105-106) listed a few exceptions

ágne rathī́ḥ adhvarā́ṇām (RV 1.44.2ab)
Agni.VOC charioteer.NOM.SG ceremony.GEN.PL

"For you are the delightful messenger, conveyor of oblations, o Agni, charioteer of the ceremonies.."

Correlative clauses have their verbs accented just as the verbs in relative clauses and any other subordinated clauses, hence I would argue that correlative clauses in Vedic are not paratactic.

2.6.4 Semantics of Vedic Correlatives

As I have argued that in Vedic correlative clauses are base generated in the left periphery and relative clauses are not adjacent to the lexical head in the host clause except for the rarely attested prezafe type, the lexical head in the host clause is indeed external to the (cor)relative clause. The lexical head in the (cor)relative clause, whether *in situ* or moved to the left periphery, is internal to the correlative clause, based on the case marking strategies.

Sauerland (1998: 67) compares the syntactic and semantic structures of the Matching and the Raising Analyses:

the [$_{\text{head}}$ picture of John$_i$] λx he$_i$ likes [x] (Matching)

the λx everybody$_i$ likes [x, [$_{\text{head}}$ picture of himself$_i$]] (Raising)

In Sauerland's version of Matching Analysis the head is external, and in the raising analysis the head is internal and moved, leaving a trace in the relative clause. Similar arguments can be made for Vedic correlatives. For simplicity, I will denote the IP in a

correlative clause as a function $P(x)$ where the relativized NP is its argument. If the head is overt it is denoted as NP, and if it is covert it is denoted by x, which will be bound by the relative pronoun.

If the internal head in the correlative clause is covert and the correlate R-expression in the host clause is overt, the Matching Analysis will apply:

ex-NP, $\lambda x \quad P(x)$ (Matching)

The semantics of the correlative clause is simply $\lambda x.P(x)$, as in Heim and Kratzer (1998). And when the internal head in the correlative clause is overt, within the double headed framework by Cinque (2020), there should not be a different analysis for the correlative clauses with overt internal head:

ex-NP, $\lambda x.\text{NP}(x) \quad [\![P(t)]\!]^x$ (Matching, but Raising the internal head)

Since the correlative clause and the correlate R-expression are not linearly adjacent, it is natural to analyze them as linked anaphorically.

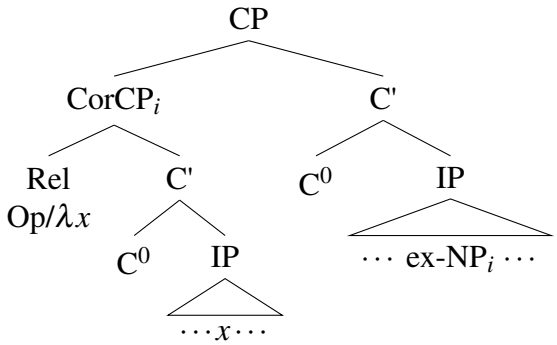

Figure 12:

The correlative clause has type $\langle e,t \rangle$, which is the same as a noun phrase. Since noun phrases can be linked by a pronoun anaphorically, a correlative clause can be analyzed the same way.

In a simple sentence with an indefinite NP and a following sentence with a pronoun referring to it, such as:

(90) A donkey came and it went away.

A DRS (discourse representation structure) can be set up by the first clause as

$$[x : \text{donkey}(x), \text{came}(x)]$$

and the second clause "it went away" will have the pronoun pick up x in the DRS, hence:

$$[x : \text{donkey}(x), \text{came}(x), \text{went.away}(x)]$$

If the host clause has a covert head, for simplicity, I will denote the IP of the host clause as a function Q where the correlate is its argument at some level. Therefore the whole construction will be $\lambda x.P(x), [\![Q(\text{dem})]\!]^x$, or $\lambda x.NP(x)\&P(x), [\![Q(\text{dem})]\!]^x$, depending on whether the internal head is overt or not. The correlative clauses set up the DRS as $[x : P(x)]$ if the internal head is covert, and as $[x : NP(x), P(x)]$ if the internal head is overt, and when the correlate demonstrative pronoun in the host clause picks up x, the DRS's update to $[x : P(x), Q(x)]$ and $[x : NP(x), P(x), Q(x)]$ respectively.

Finally, if the host clause has an overt head, which may or may not be the same as the overt NP in the correlative clause (double headed and split headed, respectively), I will denote the IP of the host clause as $NP(x)\&Q(x)$. Table 10 shows the semantics of the correlative constructions with all five types of headedness.

host \ correlative	covert head $[x : P(x)]$	overt head $[x : NP_{in}(x), P(x)]$
covert head $[x : Q(x)]$	free $[x : P(x), Q(x)]$	internally headed $[x : NP_{in}(x), P(x), Q(x)]$
overt head $[x : NP_{ex}(x), Q(x)]$	externally headed $[x : NP_{ex}(x), P(x), Q(x)]$	double headed: $NP_{in} = NP_{ex}$ $\left[x : NP_{in/ex}(x), P(x), Q(x)\right]$ split headed: $NP_{in} \neq NP_{ex}$ $[x : NP_{in}(x), NP_{ex}(x), P(x), Q(x)]$

Table 10: DRS of correlative constructions with all types of headedness

2.7 Conclusion

In this chapter I have argued that the correlative construction is not a subtype of the relative clause by a typological survey of the Rig Vedic corpus with regard to the linear orders, headednesses, and semantic readings. The fact that Vedic correlative constructions display the same diverse features as relative clauses in terms of the three features above argues against the previous idea that the correlative is a subtype of internally-headed relative clause.

I have argued that Vedic correlative clauses are base generated and not moved based on a syntactic analysis.

The diversity of headednesses of Vedic correlative constructions supports a double head analysis for Vedic relativization in general. Instead of claiming that either the Raising or the Matching Analysis applies to the correlative construction on the clausal level, I have suggested a new perspective based on headedness: the Matching Analysis applies to the external head/correlate R-expression and the Raising Analysis, to the internal head.

On basis of the base generation analysis of the correlative clauses and the double

head analysis for relativization, I have further demonstrated that the correlative clauses are base generated in the left periphery, by claiming that the external head/correlate R-expression also raises to the left periphery of the host clause.

CHAPTER 3

IRANIAN

3.1 Introduction

Among the branches of the IE family, Iranian is the closest to Indic. The two branches together with the modern Nursitani languages are unanimously thought to represent descendants of Proto-Indo-Iranian, an intermediate node in the family tree of IE. The oldest attested Iranian languages are Avestan and Old Persian.

Avestan is the language of the Avesta, which is the most ancient corpus of Iranian religious texts, the sacred texts of the Zoroastrian religion. Avestan comes in two chronologically distinct versions. Old Avestan is the language of the core of the Yasna of the Zoroastrian text (Y. 28 - 34, 43 - 51, and 53). These are the *Gāthas* (hymns) traditionally attributed to Zarathustra, the founder of the Zoroastrian religion. There are also a few other texts in Old Avestan such as the *Yasna Haptaŋhāiti* (Y. 35-41). The Old Avestan corpus is generally thought to date to the middle of the 2nd millennium BCE, though the dating is not very secure or precise.[1] The remainder of the Zoroastrian texts were composed in Young Avestan, which is not a direct descendant of Old Avestan. Its earliest parts date perhaps to the middle of the 1st millenium BCE, although some compositions are likely to be much younger. The extant texts of each part of the collection go back to the source manuscripts that date from the 11th-12th centuries, written in a script modified from Pahlavi to write the Avestan texts.

The syntax of Avestan relative clauses has been studied by many scholars. For example, Caland (1891) provided a detailed syntactic discussion of Avestan relative

[1] Cf. Kellens (1987)

clauses, drawing parallels and finding differences from other Indo-European languages; Reichelt (1909) also discussed Avestan relative clauses by comparing them to other Indo-European languages, explored the sources of the relative pronouns, and pointed out the perculiarities of the verbless relative clauses, which are called the "prezafe" type relative clauses in the previous chapter, and developed into true izafe constructions. Seiler (1960) disscussed Indo-European relative clauses in general and Part II of the book was dedicated to the analysis of relative constructions in Avestan. He extended his analysis to include comparative insights into other Indo-European languages, highlighting both shared features and unique developments. In terms of generative syntax, however, Avestan (cor)relative clauses are understudied. The only works known to me addressing the issue of relative clauses in a broadly defined generative framework are Dashti (2022) and Dashti (2025), analyzing the correlatives in Old Avestan within the framework of Lexical-Functional Grammar (LFG).

Old Persian is the language of the Achaemenid dynasty inscriptions, which are the oldest directly preserved Old Iranian texts, beginning in the 5th century BCE and continuing until the collapse of the Achaemenid Empire. The Old Persian script is written in a cuneiform that imitates the signs of the Ancient Middle East cuneiforms, but it is a new creation. The script is in between a syllabary and an abugida. It has the features of a syllabary system since all signs for consonants note a consonant plus a vowel, and it has the features of an abugida system in the sense that most signs for consonants have an inherent ⟨a⟩ and they write a sign for a vowel other than ⟨a⟩ when denoting a consonant plus a non ⟨a⟩ vowel, unless they have a separate sign for the ⟨CV⟩ structure. The interpretation of Old Persian writing system played a crucial role in the determination of the forms of the Old Persian relative pronoun, which will be discussed in section (3.3.1).

Old Persian has been rarely studied under the framework of generative syntax. Hale

(1988) examined the word order of Old Persian, especially the issue of verb-finality. Relative clauses have been analyzed descriptively in detail, e.g. Kent (1953), Adiego Lajara (2000), but have not been studied under the framework of generative terms at all.

3.2 Avestan

3.2.1 Relative Pronouns

The Avestan relative pronouns are also derived from the Indo-European *$h_x i̯o$- stem like Vedic Sanskrit. The paradigm of the Old Avestan relative pronouns are as follows:[2]

Num.	Singular			Dual	Plural		
Gd.	m.	n.	f.	m.	m.	n.	f.
Nom.	yə (yas°)[a]	hiiaṯ	yā	yā	yōi (yaē°)	yā	yå̊
Acc.	yəm yim		yąm		yəṇg[b] (yąs°)	yā	(yå̊s°)
Ins.	yā				yāiš		
Dat.	yahmāi				yaē^{i}biiō (yaē^{i}biias°)		
Abl.							
Gen.	yehiiā yeẋiiā°			yaiiå	yaēšąm		
Loc.	yahmī				yaēšū		yāhū

Table 11: Paradigm of the Old Avestan Relative Pronoun *ya/yā-*

a. The forms with the ° symbol in parentheses are used when hosting clitics.

b. There is also a form *yəṇgs*° when the clitic *=tu* 'you' is attached to it.

The paradigm of the Young Avestan relative pronouns are in the following table

[2]Table 11 and 12 are according to Hoffmann and Forssman (1996: 145-146)

Num.	Singular			Dual		Plural		
Gd.	m.	n.	f.	m./n?	f.	m.	n.	f.
Nom.	yō (yas°)	yaṯ	yā	yā	yōi	yōi (yaē°)	yā	
Acc.	yim	yaṯ	yąm			yą	yā	
Dat.	yahmāi					yaēibiiō		yābiiō
Abl.	yahmāṯ		yeńjhāṯ[a]			yābiiō		
Gen.	yeńjhe		yeńjhå	yaiiå		yaēšąm		yåŋhąm
Loc.	yahmi[b]		yeńjhe					yāhu[c]

Table 12: Paradigm of the Young Avestan Relative Pronoun *ya/yā-*

a. There is a form with the postposition *ā*: *yeńjhāδa*

b. There is a form with the postposition *ā*: *yahmiia*

c. There is a form with the postposition *ā*: *yāhuua*

3.2.2 Relatives vs. Correlatives

Both Old and Young Avestan have relative clauses and correlative clauses. The possibilities for headedness for the Avestan (cor)relative clauses are not as diverse as those in Vedic. Furthermore, the distribution of headedness of Avestan relative clauses is different from that of Avestan correlative clauses, showing that relative clauses and correlative clauses are not variants of each other.

3.2.2.1 Postposed relative clauses

Dashti (2022) argued that Old Avestan relative clauses are postnominal (which is referred to as postposed in this dissertation), and there are three types of relative clauses: postnominal, free relative clauses, and internally headed (example 91, (93), and 95):

(91) iθā āt̰ yazamaidē ahurəm mazdą̊m$_i$ [$_{RC}$ yə̄
in.this.way then praise.PRES.1PL Ahura.ACC Mazda.ACC REL.NOM.SG
gą̊m=cā aš̰əm=cā dāt̰]$_i$ (Y 37.1; OAv. Dashti 2022)
cow.ACC=and truth.ACC=and create.AOR.3SG

"Herewith we worship Mazdā Ahura, who created the cow and truth, ..."[3]

This example has the head noun *ahurəm mazdą̊m* 'Ahura Mazda' in the accusative case, which is assigned by the verb *yazamaidē* 'we praise' in the host clause, and the relative pronoun *yə̄* is in the nominative case, which is assigned by the verb *dāt̰* 'created' in the relative clause. The case mismatch shows that the head noun is in the host clause, hence this example is also externally-headed.

Such examples are also found in Young Avestan:

(92) staomi maēγəm=ca vārəm=ca yā
praise.PRES.1SG cloud.ACC.SG=and rain.ACC.SG=and REL.NOM.DU
tē kəhrpəm vaxšaiiatō baršnuš paiti
2SG.GEN body.ACC.SG grow.CAUS.PRES.3DU top.ACC.PL on
gairiną̊m (Y.10.3; YAv.)
mountain.GEN.PL

"I praise the fog and the rain, who make your body grow on the tops of the mountains."[4].

This example has the antecedent as the coordinated noun phrases *maēγəm=ca vārəm=ca* "the fog and the rain" in the accusative case. The relative pronoun *yā* is in the nominative case, which is assigned by the verb *vaxš̰aiiatō* "make you grow" in the relative clause.[5] The case mismatch shows that this is also an example of externally-headed relative clause.

[3]All Old Avestan translations are from Humbach and Ichaporia (1994) unless noted otherwise. Different scholars follow different romanization conventions. For consistency, I will unify the transcription of all proper names in the translation without explicitly indicating it. The examples used by Dashti (2022) often quote only the relevant parts of the original text, namely the (cor)relative clauses, while this dissertation cites the full relevant passages when referring to Dashti's examples.

[4]All the Young Avestan translations are from Skjærvø (2007)

[5]Technically the relative pronoun *yā* is ambiguous because the dual does not distinguish the

The relative clauses in both examples follow the head noun, and they also follow the whole host clause, which makes them ambiguous between postnominal relative clauses and postposed relative clauses. Section 3.2.3 will show that Avestan relative clauses can indeed be postnominal, which is different from Vedic.

The relative clauses in the examples above have overt head nouns, but Avestan also has free relative clauses which do not have overt head nouns, like the following example:

(93) aiiå̊ maniuuå̊ varatā [$_{RC}$ yə̄
Dem.GEN.DU spirit.GEN.DU choose.AOR.INJ.3SG REL.NOM.SG
drəguuå̊] acištā vərəziiō aṣ̌əm mainiuuš
deceitful.NOM.SG worst.ACC.PL work.INF truth.ACC.SG spirit.NOM.SG
spə̄ništō [$_{RC}$ yə̄ xraožd̰ištə̄ṇg asənō
holy.SUPERL.NOM.SG REL.NOM.SG firmest.ACC.PL stone.ACC.PL
vastē] [$_{RC}$ yaē=cā xṣ̌naoṣ̌ən
dress.PRES.MID.3SG REL.NOM.PL=and satisfy.AOR.3PL
ahurəm haiθiiāiš śiiaoθanāiš fraorə̰t mazdą̇m] (Y 30.5; Dashti 2022)
Ahura.ACC true.INS.PL deed.ins.pl gladly Mazda.ACC
"Of these two spirits the deceitful one chooses to do the worst things, but the most holy spirit, clothed in the hardest stones, (chooses) truth, (as do those) who, with true actions, devotedly gratify Mazda Ahura."

This example is complicated in many aspects: the verb *varatā* 'chooses' is shared by two sentences: *varatā* [$_{RC}$ *yə̄ drəguuå̊*] *acištā vərəziiō* "the deceitful one *chooses* doing the worst things", and *varatā* ⋯ *aṣ̌əm mainiuuš spə̄ništō* "the most holy Spirit *chose* Right." The second clause has two relative clauses following it. The *yə̄*-clause is modifying the head noun *mainiuuš spə̄ništō* "the holiest Spirit", and the second *yaē*-clause is the free relative clause. Dashti (2022) analyzed this clause as a subject of the second clause conjoined with *mainiuuš spə̄ništō* "the holiest Spirit." (and hence the conjoiner =*cā* 'and'). This structure is similar to the "X *ya- ca* Y" structure in Vedic, which is not surprising:

nominative and accusative case, but from the context it is obvious that *yā* is nominative in this example.

(94) á naḥ ṛté śiśīhi víśvam
PV 1.PL.ACC.ENCL truth.LOC.SG sharpen.IMP.2SG every.ACC.SG
ṛtvíjam
priest.ACC.SG

suśáṃsaḥ [RC yáḥ ca dákṣate] (RV
well-praising.NOM.SG REL.NOM.SG and be.skillful.PRES.3SG
7.16.6cd)

"Sharpen us—every priest—upon the truth, and also him who, praising well, is skillful.."

In example (94), the clitic pronoun *naḥ* 'us' and the relative clause *suśáṃsaḥ yáḥ ca dákṣate* literally "the well-praising one who is skillful" are conjoined by the conjoiner *ca* 'and'.

According to Dashti (2022), there are also internally headed relative clauses in Old Avestan:

(95) [RC hiaṯ mižd̥əm zaraϑuštrō magauuaibiō cōišt
REL.ACC prize.ACC Zarathustra.NOM sacrificer.DAT.PL assign.AOR.3SG
parā] garō d̥əmānē ahurō mazdå jasaṯ
before song.GEN.SG house.LOC.SG Ahura.NOM Mazda.NOM come.INJ.3SG
paouruiiō tā və vohū manaŋhā
primal.NOM.SG DEM 2PL.DAT good.INS.SG thought.INS.SG
aṣ̌āicā sauuāiš cāuuīšī
life-giving.DAT.SG? strength.INS.PL assign.AOR.PASS.1SG
(OAv. Y 51.15; OAv.)

"In the house of song, Ahura Mazda, the Primal one, comes to the faithful offerers (with) the prize that Zarathushtra promised them. Therefore I commit myself to you, and to truth, with good thought on account of (your) benefactions."

Dashti (2022) took this example as a relative because there is no correlate in the host clause. But Dashti's supposed relative clause would be situated in the left periphery just like a correlative. The other types of relative clauses do not have to be clause-initial,

and are externally headed when there is an overt head, while correlatives must precede the host clauses, and are internally headed when there is an overt head (cf. Section 3.2.2.3). These facts suggest that example (95) may be analyzed as a correlative clause except that there is no overt correlate. This example is an outlier and it is difficult to conclusively decide whether it is a relative or a correlative clause.

Caland (1891: §56) discussed a few postposed relative clauses that can also be analyzed as postnominal relative clauses. The following example has a very complicated and interesting structure.

(96) aṯ=cīṯ ahmāi$_i$ mazdā aṣ̌ā aŋhaitī
then=EMPH 3.SG.DAT Mazda.VOC truth.INS.SG COP.PRES.SUBJ.3SG

[$_{RC}$ yąm hōi$_i$ xṣ̌aϑrā vohu=cā cōišt
REL.ACC.SG.F 3.SG.DAT power.INS.SG good.INS.SG=and assign.AOR.3SG
manaŋhā
thought.INS.SG

[$_{RC}$ yə̄ nā aṣ̌ōiš aojaŋhā
REL.NOM.SG.M man.NOM.SG reward.GEN.SG strength.INS.SG
varədaiiaētā
increase.OPT.MID.3SG

[$_{RC}$ yąm nazdištąm gaēϑąm$_j$ drəguuå̊
REL.ACC.SG.F nearest.ACC.SG property.INS.SG deceitful.NOM.SG
baxṣ̌aitī]]$_i$]$_{j/k}$ (Y.50.3; OAv.)
have.a.share.OPT.3SG

"For she (the good vision), indeed, whom one has promised with good thinking to him during the rule of truth and good thinking, she shall belong to that person who would strengthen, with the power of such a reward, his nearest fellow creature, whom the deceitful one shall (otherwise) appropriate."[6]

In this example there are three relative clauses following the host clause: two *yąm*-clauses and one *yə̄*-clause. The feminine relative pronoun *yąm* does not have any overt

[6]Insler (1975: 99).

head in the host clause, but in the last *yąm*-clause there is a noun phrase *nazdištąm gaēθąm* "the nearest property" (Insler translated as "the nearest fellow creature"), which is also feminine and can serve as the internal head. The masculine relative pronoun *yə̄* has a head *nā* 'man' in the clause it introduces, and it is also coindexed with two pronouns outside its clause: *ahmāi* "to him" in the host clause, and *hōi* "to him" in the first *yąm*-clause.

In example (96) I bracketed the three relative clauses as nested relative clauses, which is not unheard of in Avestan (for more simple and clear example, see section 3.2.3). Now I analyze these three clauses one by one.

The first *yąm*-clause does not have a feminine noun phrase or pronoun in the host clause coindexed with it, hence a covert lexical head must be supplied. Since the subject of the host clause is dropped, the supplied noun phrase would serve as the subject of the host clause, namely, the item that "shall be to him" (*aŋhaitī*). Insler's (1975) translation supplied a different NP subject of the host clause, "good vision", from the context, which is also modified by the outermost *yąm*-clause. Following Insler's (1975) interpretation I labeled *k* as another possible index for the outermost *yąm*-clause. Syntactically, since "the good vision" is not overt in any clause of the whole construction, the outermost *yąm*-clause is a free relative clause.

Humbach and Ichaporia's (1994) translation took it as modifying the "nearest property", which is in the last *yąm*-clause, and if these three clauses are nested, this noun phrase can also be the internal head of the outermost *yąm*-clause.[7] Following Humbach and Ichaporia's translation I labeled the outermost *yąm*-clause as *j*, coindexed

[7]Humbach and Ichaporia (1994) translated this verse as follows: "Through truth, O Mazda, the neighboring possession(s) shall belong to the man who could increase them by the strength of a reward, (the possessions) which have been assigned to him with power and good thought and which the deceitful one must (therefore) give up."

with "nearest property". Insler's and Humbach and Ichaporia's translations differ by the headedness of the outermost *yąm*-clause, but they both agreed that this clause is the subject of the host clause.

The second relative clause headed by *yə̄* has an internal head *nā* 'man', and there are two pronouns coindexed with it. It is natural for the pronoun *hōi* to be the head of the *yə̄*-clause since they are in the same *yąm*-clause and the *yə̄*-clause is just right extraposed. The pronoun *ahmāi*, however, is worthy of more discussion. In the previous chapter for Vedic I argued that correlative clauses are base generated in the left periphery and they are a different type of clausal structure from the relative clause, namely, correlative clauses are not preposed relative clauses. In the Rig Veda, there is no clear example to show that right extraposed relative clauses are generated as the adjunct of their head and then moved to the right of the host clause, which is a totally different process from the correlative clause. But this Old Avestan example may show that right extraposed relative clauses should be interpreted as generated in the host clause and then moved, rather than base generated on the right edge or paratactic. To demonstrate this, I will simplify example (96) as the following one:

(97) ahmāi$_i$ aŋhaitī [$_{RC}$ yąm hōi$_i$ cōišt
3.SG.DAT COP.PRES.SUBJ.3SG REL.ACC.SG.F 3.SG.DAT assign.AOR.3SG
[$_{RC}$ yə̄ nā varədaiiaētā gaēθąm]]
REL.NOM.SG.M man.NOM.SG increase.OPT.MID.3SG property.INS.SG
"... (the good vision/neighboring possessions) shall belong to the person who would strengthen them (the nearest fellow creature/the neighboring possessions)... whom one has promised to him."

If the *yąm*-clause is base generated in the host clause, then it should be an adjunct of the dropped pronoun, and it should also be syntactically reconstructed in a higher position of *ahmāi* as in the following configuration:

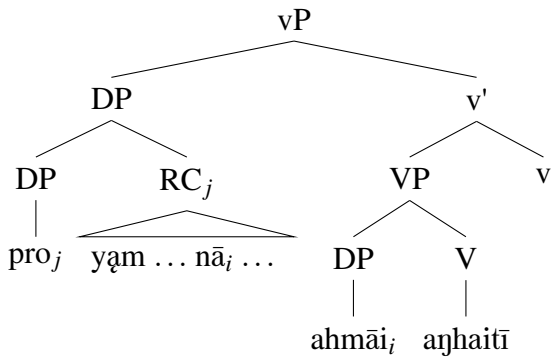

Figure 13:

This coindexation is as natural as the following English sentence with a comparable structure:

(98) The photo [$_{\text{RC}}$ that I took for Lisa$_i$] was successfully sent to her$_i$.

Contrarily if the right extraposed relative clauses are not indeed extraposed but base generated on the right or even paratactic, then the pronoun *ahmāi* in the host clause, and even *hōi* in the first *yąm*-clause, linearly precede the *yə̄*-clause and of course its internal head *nā* "the man". But by this analysis it is difficult for the pronouns to be coindexed just as in the following English sentences:

(99) I took a photo for her$_i$. It was successfully sent to Lisa$_{*i}$/the lady$_{*i}$.

The innermost *yąm*-clause is clearly internally headed by the noun phrase *nazdištąm gaēθąm* "the nearest property". Under Insler's interpretation, these three relative clauses can be considered as nested and no binding condition is violated. Humbach's translation, however, faces challenges under the assumption that these relative clauses are nested,

since the outermost *yąm*-clause is a free relative clause whose covert head is coindexed with a noun which its relative pronoun c-commands, as in the following simplified configuration:

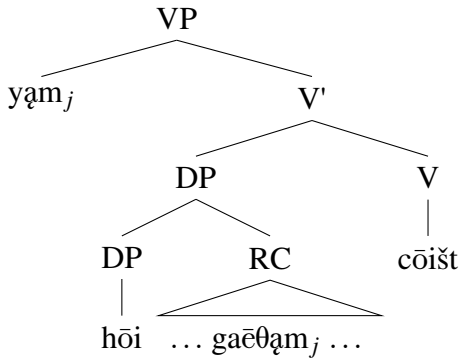

Figure 14:

But such a coindexation is not possible just like the following English example:

(100) *He saw [$_{RC}$ what$_i$ was sent to Lisa [$_{RC}$ for whom I took the picture$_i$]].

This very complicated example shows that Old Avestan relative clauses can be internally headed, and relative clauses are indeed right extraposed, not base generated on the right edge of the host clause nor paratactic.

3.2.2.2 Prezafe/izafe-type

Avestan demonstrates various examples of the prezafe-type relative clauses, since all the three different stages of izafe can be found in the Avestan data. Reichelt (1909: 370, §749) discussed the development of these prezafe-type nominal relative clauses: Originally the case of both the relative pronoun and the nominal predicate could only

be in the nominative; later, in Gathic Avestan, agreement is attested also for accusative and instrumental cases, in Young Avestan, all cases participate, and the neuter forms *hiiaṯ* and *yaṯ* are used for the disyllabic forms of the relative pronoun. While Reichelt described the replacement as affecting disyllabic relative pronouns, evidence shows that it also applies to monosyllabic relative pronouns.

Meyer (2015) categorized the syntactic change into three stages. Examples of stage I, where both the relative pronoun and the monimal predicate are in the nominative case while the antecedent is not in the nominative case, have been attested in both Old and Young Avestan:

(101) maṯ vå padāiš yā frasrūtā īžaiiå
with 2PL.ACC footstep.INS.PL REL.NOM.PL famous.NOM.PL Iža.GEN
pairijasāi (Y. 50.8; OAv. Meyer, 2015)
walk-around.SUBJ.1SG
"with the footsteps, which (are) famous (as those) of Iža, I shall walk around you."[8]

(102) miθrəm ... yō nōiṯ kahmāi aiβi.draoxδō
Mithra.ACC REL.NOM.SG NEG INDEF.DAT.SG PV.to.be.deceived.NOM.SG
(Yt. 10.17; YAv. Meyer, 2015)

"Mithra..., who (is) not to be deceived by anyone.'

In example (101), the head noun *padāiš* "with the footsteps" is in the instrumental case, but the relative pronoun *yā* is in the nominative case, assigned by the IP in the relative clause. In example (102), the head noun *miθrəm* 'Mithra' is in the accusative case, and the relative pronoun *yō* is also in the nominative case, assigned by the IP in the relative clause. These two examples do not show case attraction, and hence they are

[8]The translations for example (101) and (102) are from Meyer (2015), since Humbach and Ichaporia's (1994) and Skjærvø's (2007) translations are not literal and do not directly show the relative clausal structures.

just verbless nominal relative clauses.

Case attraction, however, is also attested in both old and young Avestan:

(103) tāiš šiiaoθanāiš yāiš vahištāiš (Y.35.4; OAv. Meyer, 2015)
DEM.INS.PL deed.INS.PL REL.INS.PL best.INS.PL
"Through these best actions..."

(104) miθrəm yim vouro.gaoiiaotīm
Mithra.ACC.SG REL.ACC.SG wide-pastured.ACC.SG
(Yt. 10.1; YAv. Meyer, 2015)

"Mithra who provides wide grazing grounds."

In example (103), the head noun *šiiaoθanāiš* "with the deeds" is in the instrumental case, and the relative pronoun *yāiš* is also in the instrumental case. The relative pronoun is the subject of the relative clause, so in theory, it should be in the nominative case, and this shows that case attraction happens in this example. Similarly, in example (104), the head noun *miθrəm* 'Mithra' is in the accusative case, and the relative pronoun *yim* is also in the accusative case but not in the expected nominative case, hence its case is also attracted to its head noun.

Meyer (2015) also showed that in Young Avestan, the relative pronoun *yaṯ* is grammaticalized as a particle:

(105) puθrəm yaṯ pourušaspahe (Yt. 5.18; YAv. Meyer, 2015)
son.ACC.SG YAT Pourušaspa.GEN.SG
"the son of Pourushâspa."

In this example, the head noun *puθrəm* is a masculine noun, but the particle *yaṯ* was the neuter relative pronoun. This shows that the φ-features of the relative pronoun *yaṯ* is already bleached and it is grammaticalized as a particle.

3.2.2.3 Correlative clauses

Dashti (2022) argued that Old Avestan correlative clauses can be either internally headed or free. Example (106) demonstrates the internally headed correlative clause in Old Avestan:

(106) [$_{\text{CorCP}}$ yā vō vaŋuhīš ahurō mazdå̊
REL.ACC.PL 2PL.DAT best.VOC.PL Ahura.NOM Mazda.NOM
nāmą̊m dadāṯ]$_i$ tāiš$_i$ vå̊ yazamaidē ⋯ (Y
name.ACC.PL give.INJ.3SG DEM.INS.PL 2PL.DAT praise.PRES.1PL
38.4; OAv.)

"The names which Ahura Mazda, o best ones, gave you, with them we praise you..."[9]

This example is an internally headed correlative, the head noun *nāmą̊m* 'names' is in the *yā*-correlative clause. The accusative case agrees with the relative pronoun *yā* and it is assgined by the verb *dadāṯ* 'gave' in the correlative clause. The correlative clause is coindexed with the correlate demonstrative *tāiš* in the host clause and the case of the correlate demonstrative is instrumental. This clearly shows that this example is internally headed.

Such examples are also found in Young Avestan:

(107) yå̊ nō hə̇nti gāϑå̊ harəθrauuaitīš=ca
REL.NOM.PL 1PL.GEN COP.3PL song.NOM.PL guardian.NOM.PL=and
pāθrauuaitīšca mainiiuš.xvarəθå̊s=ca
protector.NOM.PL=and food.in.the.world.of,thought.NOM.PL=and

yå̊ nō hə̇nti urune uuaēm
REL.NOM.PL 1PL.GEN COP.3PL breath-soul.DAT.SG both.NOM.SG
xvarəθəmca vastrəmca
food.NOM.SG=and clothing.NOM.SG

[9]My own translation.

tå̊ nō hə̇nti gāθå̊ harəθrauuaitīš=ca
DEM.NOM.PL 1PL.GEN COP.3PL song.NOM.PL guardian.NOM.PL=and
pāθrauuaitīš=ca mainiiuš.xvarəθå̊s=ca
protector.NOM.PL=and food.in.the.world.of,thought.NOM.PL=and

tå̊ nō hə̇nti urune uuaēm
DEM.NOM.PL 1PL.GEN COP.3PL breath-soul.DAT.SG both.NOM.SG
xvarəθəm=ca vastrəm=ca
food.NOM.SG=and clothing.NOM.SG

tå̊ nō buiiąn humiždå̊
DEM.NOM.PL 1PL.GEN become.OPT.3PL good.reward.NOM.PL
aš.miždå̊ aṧō.miždå̊ parō.asnāi aŋuhe
great.reward.NOM.PL reward.of.Order.NOM.PL future.DAT.SG life.DAT.SG
pasca astas=ca baoδaŋhas=ca vīuruuīštīm (Y.55.2;
after bone.GEN.SG=and conscience.GEN.SG=and separation.ACC.SG
YAv.)

"The songs which are our guardians and protectors and food in the world of thought, which are for our breath-soul both food and clothing, those songs are for us the guardians and protectors and food in the world of thought, those are for our breath-soul both food and clothing. May they bring us good rewards, great rewards, the reward of Order, for tomorrow's new existence, after the wrenching apart of bone and conscience!"

This example has two *yå̊* clauses, the head noun *gāθå̊* 'songs' is in the first *yå̊*-clause, and it is clearly internal, since the head noun is linearly in the middle of the clause and not moved with the relative pronoun *yå̊.* The two correlative clauses are coindexed with the following host clause, where the correlate demonstrative *tå̊* appears three times.

The other type of correlative clause in terms of headedness in Old Avestan is the free correlative clause, as demonstrated below:

(108) [$_{\text{CorCP}}$ yə aṧāunē vahištō]$_i$ xvaētū vā aṯ̃ vā
REL.NOM.SG truthful.DAT.SG best.NOM.SG family.INS.SG or PT or
vərəzənniiō airiiamnā vā ahurā vīdąs
same.community.NOM.SG tribe.INS.SG or Ahura.VOC.SG see.PTCP.NOM.SG

vā θβaxšaŋhā gauuōi aṯ huuō$_i$ aṣahiiā aŋhaṯ
or zeal.INS.SG cow.DAT.SG PT DEM.NOM.SG truth.GEN.SG COP.SUBJ.3SG
vaŋhəuš=cā vāstrē manaŋhō (Y.33.3; OAv.)
good.GEN.SG=and pasture.LOC.SG thought.GEN.SG
"The person who is best to the truthful one, by family, being a member of the same community, by tribe, O Ahura, or by caring zealously for the cow, that person will be in the pasture of truth and good thought."

This example does not have any overt heads. There is only the relative pronoun *yə* in the correlative clause and the correlate demonstrative *huuō* in the host clause, hence it is a free correlative clause.

Such free correlative clauses are also attested in Young Avestan:

(109) yō aēšuua mazdaiiasnaēšuua
REL.NOM.SG this.LOC.PL sacrificing.to.Mazda.LOC.SG
mazdaiiasnō aojanō aṣahe
sacrificer.to.Mazda.NOM.SG declare.MP.NOM.SG Order.GEN.SG
rāθma jīštaiiamnō yāθβa
bringing.together.INS.SG victory.seeking.PMP sorcery.INS.SG
gaēθå̊ aṣahe mərəγəṇte auui tū
living.being.ACC.PL Order.GEN.SG destroy.PRES.MID.3SG to PT
dim disiiata (Y.8.3; YAv.)
DEM.ACC.SG point.IMP.2PL
"Whoever declares he too sacrifices to Ahura Mazda among these who sacrifice to Ahura Mazda, (but actually) while *seeking victory(?) with a *composition of Order destroys by sorcery the living beings of Order, point him out, ..."

This example also does not have an overt head. The relative pronoun *yō* in the correlative clause and the correlate pronominal *dim* in the host clause are coindexed, hence this is a free correlative clause.

3.2.3 Stacking and Nesting

3.2.3.1 Relative clause

Stacked relative clauses are common, Yasna. 1. 1 has a relative construction with four stacked relative clauses.

(110) ahurahe mazdå̊ ... [$_{CP}$ yō nō daδa]
Ahura.GEN Mazda.GEN REL.NOM.SG 1PL.ACC make.PERF.3SG
[$_{CP}$ yō tataṣ̌a] [$_{CP}$ yō
REL.NOM.SG fashion.PERF.3SG REL.NOM.SG
tuϑruiie] [$_{CP}$ yō mainiiuš spəṇtōtəmō]
feed.PERF.3SG REL.NOM.SG spirit.NOM.SG bounteous.SUPERL.NOM.SG
(Y.1.1; YAv.)

"... to/of Ahura... who has set us in (our) place, who has fashioned us, who has *structured us, who is the most 'Life-giving' Spirit."

An Avestan relative clause can be nested in another relative clause, just like in Vedic. The following example is a nested relative clause in Old Avestan:

(111) [$_{CP}$ yə̄ hudå, [$_{CP}$ yōi həṇti]] (Y.45.6;
REL.NOM.SG munificent.NOM.SG REL.NOM.PL COP.PRES.3PL
OAv.)

"who is munificent to those who exist."

The izafe structure relative clauses are also found nested in other relative clauses. The following example shows that a Young Avestan true izafe structure nested in another relative clause:

(112) yōi həṇti yasniiā=ca
REL.NOM.PL COP.3PL sacrifice-worthy.NOM.PL=and
vahmiiā=ca aṣ̌āṯ haca yaṯ vahištāṯ (Y.
praise-worthy.NOM.PL=and Order.ABL.SG with REL.NOM.SG best.ABL.SG

1.19; YAv.)

"who are worthy of sacrifice and hymns according to the best Order."

3.2.3.2 Correlative clause

Correlative clauses in Avestan can also be stacked just like in Vedic:

(113) [$_{CP}$ yā frasā āuuīšiiā]$_i$ [$_{CP}$ yā vā
REL.NOM.DU punishment.INS.SG openly? REL.NOM.DU or
pərəsāitē taiiā]$_i$
ask..PRES.MID.3DU in.secret

[$_{CP}$ yə vā kasəuš aēnaŋhō ā mazištąm
REL.NOM.SG or small.GEN.SG misdeed.GEN.SG PV great.SUPERL.ACC.SG
aiiamaitē būjəm]$_i$
take.over.PRES.MID.3SG punishment?

tā$_i$ caṣmāṇg ϑβisrā hārō aibī aṣā
DEM eye.GEN.SG bright.INS.SG watching.over.NOM.SG through truth.INS.SG
aibī vaēnahī vīspā (Y. 31.13; OAv.)
PV see.PRES.2SG all

"Which two people ask for punishment openly, or in secret, or which one demands the greatest punishment for a minor crime, you see them all watching with the bright (ray) of your eye through truth."[10]

Although no correlative construction is attested as a nested structure in another correlative clause, relative clauses can be nested in correlative clauses. The following example has four stacked relative clauses nested in a correlative clause:

(114) [$_{CorRelCP}$ yō janaṯ ažīm$_j$ sruuarəm
REL.NOM.SG smite.INJ.3SG dragon.ACC.SG horned.ACC.SG

[10]My own translation.

[$_{RelCP}$ yim aspō.garəm. nərə.garəm]$_j$
REL.ACC.SG horse-devouring.ACC.SG men-devouring.ACC.SG

[$_{RelCP}$ yim vīšauuaṇtəm zairitəm]$_j$
REL.ACC.SG poisonous.ACC.SG green.ACC.SG

[$_{RelCP}$ yim upairi vīš araoδaṯ̃
REL.ACC.SG over poison.NOM.SG grow.IMPF.3SG

ārštiiō.barəza zairitəm]$_j$
spear-lengthed.NOM.SG green.ACC.SG

[$_{RelCP}$ yim upairi kərəsāspō aiiaŋha pitūm
REL.ACC.SG over Keresaspa.NOM metal.pot.INS.SG food.ACC.SG
pacata
cook.INJ.MID.3SG

ā rapiϑβinəm zruuānəm]$_j$]$_i$
at mid.day.ACC.SG time.ACC.SG

tafsaṯ̃=ca hō$_j$ mairiiō xvīsaṯ̃=ca
be.hot.INJ.3SG=and DEM.NOM.SG deadly.NOM.SG sweat.INJ.3SG

frąš aiiaŋhō frasparaṯ̃
forward metal.ABL.SG spring.out.INJ.3SG

yaeśiianṭīm āpəm parå̊ŋhāṯ̃
boiling.ACC.SG water.ACC.SG dash.out.INJ.3SG

parąš tarštō apatacaṯ̃ naire.manå̊ kərəsāspō$_i$ (Y.
away afright run.away.Impf.3sg manly.minded.NOM.SG Keresaspa.NOM
9.11; YAv.)

"He who smote the horny dragon swallowing men, and swallowing horses, poisonous, and green of color over which, as thick as thumbs are, greenish poison flowed aside, on whose back once Keresaspa cooked his meat in iron cauldron at the noonday meal; and the deadly, scorched, upstarted, and springing off, dashed out the water as it boiled. Headlong fled affrighted manly-minded Keresaspa.."

3.2.3.3 Comparison with Vedic

Chapter 1 shows that Vedic (cor)relative clauses have all types of headedness. Avestan, on the other hands, demonstrates a more constrained distribution of headedness. The following chart demonstrates the difference between them.

Headedness		number of overt heads	Vedic		Avestan	
			Relative	Correlative	Relative	Correlative
free		0	✓	✓	✓	✓
externally headed/ correlate R-expression		1	✓	✓	✓	
internally headed	Japanese-style		✓	✓	?	✓
	raised headed		✓	✓		
double headed		2	✓	✓		?
split headed			✓	✓		

Table 13: Headedness distribution is Vedic and Avestan

This chart shows the difference between Vedic and Avestan. In Vedic all types of headedness are attested in both relative and correlative clauses. In Avestan, the distribution depends on the number of overt heads. Avestan may have at most one overt head since no examples like the Vedic double headed or split headed (cor)relative clauses are attested. If there is no overt head, both relative and correlative clauses are attested in Avestan. If there is one overt head, it shows up in the preceding clause, whether it is a correlative clause or a host clause for the relative clause. This complementary distribution suggests that Avestan correlative clauses are not preposed relative clauses since otherwise the overt head should show up always in host clauses or in (cor)relative clauses.

There are two question marks in the chart. The one in Avestan Japanese-style internally headed relative clause is example (95), which is difficult to classify, the other one for Avestan double headed correlative clause is example (114), which is not exactly the same as the double headed correlative clauses in Vedic: first, it is a multiheaded correl-

ative clause, which is not attested in the Rig Veda, second, the double headedness may be a result of nesting.

3.2.4 Syntactic analysis

3.2.4.1 Island effects

Similar to Vedic, Avestan relative clauses may have an adjunct clause as the host clause of the correlative construction:

(115) taṯ$_i$=ϑβā pərəsā ərəš.mōi vaocā
DEM.ACC.SG.N=2SG.DAT ask.PRES.1S truly=1SG.DAT say.AOR.IMP.2SG
ahurā [$_{CP}$ [$_{CorCP}$ yā frauuaxšiiā]$_j$ yezī tā$_j$ aϑā
Ahura.VOC REL.ACC.PL say.PRES.1SG whether DEM.NOM.PL verily
haiϑiiā]$_i$ (Y 44.6; OAv.)
truth.NOM.PL
"This I ask you, O Ahura, tell me truly: if what I am about to proclaim is really true."

This example shows that Avestan correlative clauses are not moved from inside the host clause, since *yezī* 'whether' forms a wh-island. In addition, this example shows that Avestan correlative clauses are not paratactic because the *yā*-clause is between the main clause and the subordinated clause yezī-clause.

In this construction, the *taṯ* ⋯ *yezī* structure serves as the object shared by both ϑβā *pərəsā* "I ask you" and *ərəš.mōi vaocā* "tell me truly". For simplicity, the following tree omits the *ərəš.mōi vaocā*-clause.[11]

[11] Adopting Marantz's (1993) theory that indirect objects are introduced by an Applicative head, I analyze the Avestan indirect object ϑβā 'you' accordingly. Other approaches to the double object construction do not affect my analysis of the correlative construction.

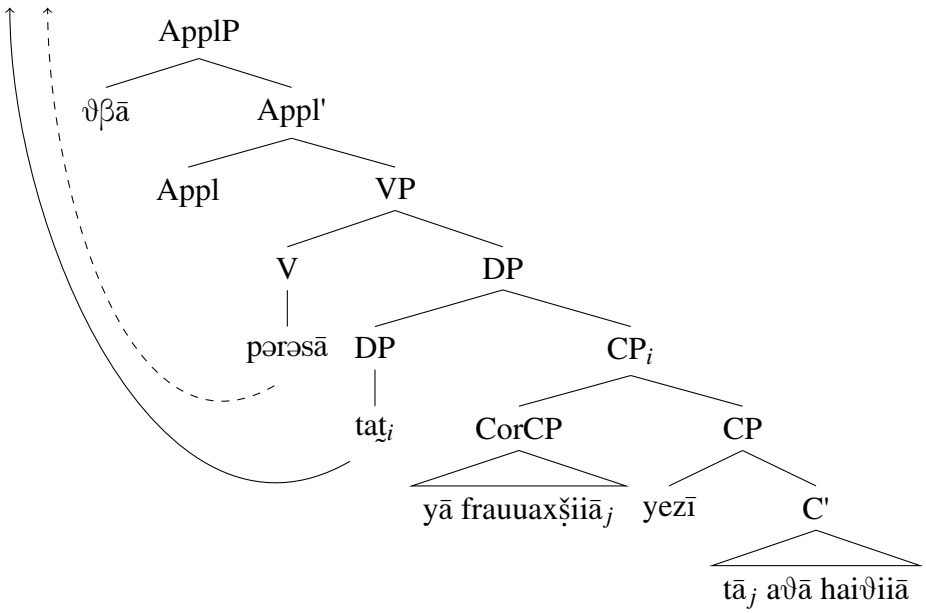

Figure 15:

The solid arrow suggests that the demonstrative pronoun *tat* moves to a higher position, probably [Spec, CP] of the main clause, hence it is the first word of the whole construction. The dashed arrow suggests that the verb *pərəsā* "I ask" moves to v, but later movement such as moving to the rightward branched T (following Windhearn, 2020) is not shown. These movements will not change the syntactic analysis of the whole structure.

If we assume that the correlative clause were paratactic, it would not be paratactic to the *yezī*-subordinate clause but rather the *tat*-main clause, resulting in the following word order:

[$_{\text{CorCP}}$ yā frauuaxšiiā]$_j$ [$_{\text{CP}}$ tat$_i$=ðβā pərəsā ərəš.mōi vaocā ahurā [$_{\text{CP}}$ yezī tā$_j$ aðā haiðiiā]$_i$]

but such a structure is not attested. Instead, the *yā*-correlative clause is positioned between the *tat*-main clause and the *yezī*-subordinate clause. If the correlative clause were

indeed paratactic, then the *yezī*-clause would be an independent clause rather than subordinate to the *taṯ*-main clause.

3.2.4.2 Multi-headed correlative

Example (114), repeated here as example (116) can also be analyzed as a multi-headed correlative:

(116) [$_{\text{CorRelCP}}$ yō janaṯ ažīm$_j$ sruuarəm
REL.NOM.SG smite.INJ.3SG dragon.ACC.SG horned.ACC.SG

[$_{\text{RelCP}}$ yim aspō.garəm. nərə.garəm]$_j$
REL.ACC.SG horse-devouring.ACC.SG men-devouring.ACC.SG

[$_{\text{RelCP}}$ yim vīšauuaṇtəm zairitəm]$_j$
REL.ACC.SG poisonous.ACC.SG green.ACC.SG

[$_{\text{RelCP}}$ yim upairi vīš araoδaṯ
REL.ACC.SG over poison.NOM.SG grow.IMPF.3SG

ārštiiō.barəza zairitəm]$_j$
spear-lengthed.NOM.SG green.ACC.SG

[$_{\text{RelCP}}$ yim upairi kərəsāspō aiiaŋha pitūm
REL.ACC.SG over Keresaspa.NOM metal.pot.INS.SG food.ACC.SG
pacata
cook.INJ.MID.3SG

ā rapiϑβinəm zruuānəm]$_j$]$_i$
at mid.day.ACC.SG time.ACC.SG

tafsaṯ=ca hō$_j$ mairiiō xvīsaṯ=ca
be.hot.INJ.3SG=and DEM.NOM.SG deadly.NOM.SG sweat.INJ.3SG

frąš aiiaŋhō frasaraṯ
forward metal.ABL.SG spring.out.INJ.3SG

yaeśiianṭīm āpəm parå̊ŋhāṯ̰
boiling.ACC.SG water.ACC.SG dash.out.INJ.3SG

parąš tarštō apatacaṯ̰ naire.manå̊ kərəsāspō$_i$ (Y. 9.11; YAv.)
away afright run.away.Impf.3sg manly.minded.NOM.SG Keresaspa.NOM

"He who smote the horny dragon swallowing men, and swallowing horses, poisonous, and green of color over which, as thick as thumbs are, greenish poison flowed aside, on whose back once Keresaspa cooked his meat in iron cauldron at the noonday meal; and the deadly, scorched, upstarted, and springing off, dashed out the water as it boiled. Headlong fled affrighted manly-minded Keresaspa.."

This example has one correlative clause (with four stacked relative clauses nested inside) and two host clauses. The first host clause *tafsaṯ̰=ca hō$_j$ [$_{CP}$ yō mairiiō]$_j$ [$_{CP}$ yō xvīsaṯ̰ca]$_j$ frąš aiianŋhō frasparaṯ* "the deadly, scorched, upstarted, and springing off, dashed out the water as it boiled" has a demonstrative *hō* and it refers to the dragon, which is coindexed with the nested *yim*-clauses; the second host clause *parąš tarštō apatacaṯ̰ naire.manå̊ kərəsāspō* "Headlong fled affrighted manly-minded Keresaspa" does not have a correlate demonstrative but it has the proper name *kərəsāspō* 'Keresaspa' coindexed with the *yō* in the correlative clause. This suggests that the correlative clause has two heads that are "picked up" by the latter host clauses, namely *yō*, and *ažīm yim* ⋯. The following simplified sentence demonstrates the relation more clearly:

(117) [$_{\text{CorRelCP}}$ yō$_i$ janaṯ̰ ažīm$_j$ [$_{CP}$ yim
REL.NOM.SG smite.IMPF.3SG dragon.ACC.SG REL.ACC.SG
aspō.garəm nərə.garəm]$_j$] tafsaṯ̰
horse-devouring.ACC.SG men-devouring.ACC.SG be.hot.PRES.3SG
hō$_j$ apatacaṯ̰ naire.manå̊ kərəsāspō$_i$
DEM.NOM.SG run.away.IMPF.3SG manly.minded.NOM.SG Keresaspa.NOM
"Which one$_i$ smote which horse-devouring man-devouring dragon$_j$, that$_j$ (dragon) became hot, (and) brave Keresaspa$_i$ ran away."

3.2.5 Interim summary

The discussion above suggests that the Avestan relative and correlative clauses are not as diverse as those in Vedic in terms of headedness. When there is an overt head, relative clauses tend to be externally headed, while correlative clauses are internally headed. This dichotomy further supports the argument that correlative clauses are not "preposed" relative clauses, but rather its own type of relativization.

The Avestan correlative clauses are also base generated in the left periphery of the host clause, which is the same as Vedic. At this point, it can be hypothesized that such a base generated structure existed in Proto-Indo-Iranian. Although both Avestan and Vedic have stacked correlative clause, Young Avestan also has a peculiar structure with relative clauses nested in a correlative clause, which demonstrates a more complicated syntactic structure than Vedic.

The izafe construction is more grammaticalized in Avestan than in Vedic, especially the narrow sense izafe, i.e. Stage III, like example (104) repeated here as example (118):

(118) miθrəm yim vouro.gaoiiaotīm
Mithra.ACC.SG REL.ACC.SG wide-pastured.ACC.SG
(Yt. 10.1; YAv. Meyer, 2015)

"Mithra who provides wide grazing grounds."

In other words, Vedic only has prezafe stage I but Old Avestan has stage II and Young Avestan has stage III, which is the true izafe construction in the narrow sense. So far, it can only be concluded that Proto-Indo-Iranian has prezafe stage I, which can be further supported in the next section on Old Persian. The situation in Proto-Indo-European needs evidence from other branches and will be discussed in the later chapters.

3.3 Old Persian

3.3.1 Relative pronouns

The Old Persian *haya/taya-* relative pronouns are not derived directly from the the Proto-Indo-European *$h_{x}\underset{\frown}{i}o$- relative pronominal stem. Kent (1953: 68, §198) analyzes these forms as a combination of the demonstrative stem **so/to-* and the relatıve stem *$h_{x}\underset{\frown}{i}o$-, and suggests the Old Persian cuneiforms should be interpreted as *hya/tya-*, rather than *haya/taya-*.

Risch (1954) agrees with Kent's (1953) etymologies of these pronouns as **so/to-* followed by *$h_{x}\underset{\frown}{i}o$-, but disagrees with the *hya/tya-* interpretation of these pronouns. Risch points out that there are two problems with the form *tya-*. First, the Old Persian writing system would render the syllable *tya* with three symbols: t^{a}-*i*-y^{a}, but this relative pronoun is only written with two symbols: t^{a}-y^{a}. Second, Old Persian phonology does not permit the consonant cluster *ty-* since IIr. **ty* > OP. *šiy*, cf. Vedic *satyá-* 'true' but Old Persian *hašiya-* id. This dissertation interprets the relative pronominal stems as *haya/taya-* instead.[12]

The paradigm of the attested forms of the *haya/taya-* pronouns and number of occurrences according to Kent (1953) are in the following table.

[12]Brust (2018) has another theory supporting the *haya/taya-* interpretation but from other point of view. Brust takes *taya* as resulting from a remodeling of the demonstrative on the basis of the stem *tai- found in the plural (gen. pl. *taišām* etc.)

	Singular			Dual	Plural		
Gd.	m.	f.	n.	m.	m.	f.	n.
Nom.	haya: 142[a]	hayā: 1 haya: 1[b]	taya: 56	tayā: 1?[c]	tayaiy: 29 taya: 1[d]	tayā: 7 tayaiy: 1	tayā: 1
Acc.	tayam: 2	tayām: 2 taya: 3[e]	taya: 31		tayaiy: ?	tayā: 4	tayā: 4
Ins.			tayanā: 1				
Gen.	haya: 1[e]					tayaišām: 2	

Table 14: Paradigm of the Old Persian Relative Pronoun *haya/taya-*

a. The occurrences of the relative pronouns include the form where clitics were attached to them, for example, the 142 occurrences of *haya* include 1 *haya=šām*, 1 *haya=šaiy*, and 1 *haya=va*.

b. The character ⟨*a*⟩ for length marking is sometimes omitted, causing the 1 occurrence of *haya* for *hayā*.

c. DSf 14 has the dual form *tayā* ambiguous between a relative pronoun and a demonstrative pronoun.

d. The word-final characters ⟨*iy*^{a}⟩ are sometimes omitted after an a-inherit consonant, causing the 1 occurrence of *taya* for *tayā*.

e. Kent (1953) took *haya* for genitive singular masculine (whose real form is not attested) and *taya* for accusative singular feminine *tayām* as mistakes.

Besides the *haya/taya-* relative pronouns above, there are also a relative pronoun *yaciy* 'which', from the *$h_{x}\underset{\frown}{i}o$- stem generalized by the enclitic =*ciy*. It is attested 1 time as the nominative singular neuter form and 2 times as the accusative singular neuter form. There are also complementizers derived from the *$h_{x}\underset{\frown}{i}o$- stem: *yātā* "until, unto", *yaϑā* "as, when, after", *yadā-* 'where', *yadiy* "if, when", *yaniy* "where, whereon", *yāvā* "as long as".

3.3.2 Correlative vs. Relative constructions

3.3.2.1 Correlative clauses

Old Persian has both relative clauses and correlative clauses. The following example is a correlative:

(119) [$_{CorCP}$ taya=šām hacāma aϑahya xšapa=vā
REL.NOM.SG=3PL.ENCL by.me said night.ACC.SG=OR
rauca-pati=vā]$_i$ ava$_i$ akunavayantā (DB 1.19-20)
day.ACC.SG-POSTP=OR DEM.ACC.SG do.OPT.3PL
"What was said unto them by me either by night or by day, that they used to do."[13]

The demonstrative in example (119) is *ava*. Other demonstratives can also be the correlate in Old Persian correlative constructions:

(120) [$_{CorCP}$ kāra Pārsa]$_i$ haya v^{i}ϑā-patiy hacā
army.NOM.SG Persian.NOM.SG REL.NOM.SG palace.INS.SG-POSTP from
Yadāyā frataram]$_i$ hauv$_i$ hacāma hamiçiya
Anshan.ABL.SG previously DEM.NOM.SG from.me rebellious.NOM.SG
abava abiy avam Vahyazdātam ašiyava
become.IMPF.3SG to that Vahyazdata.ACC set.forth.IMPF.3SG
"Thereupon the Persian army which (was) in the palace, (having come) from Anshan previously - it became rebellious from me, went over to that Vahyazdata."

Example (120) has the deictic pronoun *hauv* as the correlate in the host clause.

[13] All the English translations of the Old Persian inscriptions are from Kent (1953).

3.3.2.2 Relative clauses

The situation for Old Persian relative clauses is more interesting than the Vedic ones. The following example is a right extraposed relative clause:

(121) hauv dahyāum Pārsam$_i$ manā frābara, [$_{RelCP}$ taya
3SG.NOM country.ACC Persia.ACC 1SG.GEN bestow.IMPF.3SG REL
ukāram uvaspam]$_i$ (AsH 8-10)
with.good.people.ACC.SG with.good.horses.ACC.SG
He bestowed on me the land Persia, with good people, with good horses.

The *taya*-clause is modifying the head noun *Pārsam* 'Persia', which is not immediately adjacent to the relative clause. This example has the same structure as the right-extraposed relative clauses in Vedic. But relative clauses in Old Persian have fewer constraints on word order than Vedic. Vedic postnominal relative clauses are very rare, Old Persian, however, has more postnominal relative clauses.

(122) avadā hauv Fravartiš$_i$ [$_{CP}$ haya Mādaiy xšāyaϑiya
there this Fraortiš REL.NOM.SG Media.LOC.SG king.NOM.SG
agaubatā]$_i$ āiš hadā kārā patiš mām
call.IMPF.MED.3SG come.IMPF.3SG with army.SG.INS against 1SG.ACC
hamaranam cartanaiy (DB II 66-67)
battle.ACC.SG make.INF
"[T]here this Phraortes who called himself king in Media came with an army against me to join battle."

Example (122) has a postnominal relative clause introduced by *haya*. This relative clause has a verb *agaubatā* "he called himeself" and hence it is not a prezafe-type relative clause. It modifies the head noun *Fravartiš* 'Fraortiš' and precedes the verb *āiš* 'came' in the main clause, so it is a real postnominal embedded relative clause.

Prezafe clauses are quite common in the Old Persian corpus, for example, the famous *Gaumata* sentence:

(123) naiy āha martiya naiy Pārša naiy Māda
NEG COP.IMPF.3SG man.NOM.SG NEG Persian.NOM.SG NEG Mede.NOM.SG
naiy amāxam taumāyā kašciy [haya avam Gaumātam
NEG 1PL.GEN family.GEN.SG anyone REL.NOM.SG that GaumataACC.SG
[tayam magum] xšaçam dītam
REL.ACC.SG Magian.ACC.SG kingdom.ACC.SG take.PPP.ACC.SG
caxriyā]
make.PERF.OPT.3SG
"There was not a man, neither a Persian nor a Mede nor anyone of our family, who could make that Gaumata the Magian deprived of the kingdom."

In example (123), there is a prezafe clause *tayam magum* "who is the Magian/the Magian" nested in a relative *haya*-clause. The fact that the prezafe structure can be embedded in a relative clause shows that the structure is more like Hindi than like Vedic, in the sense that Old Persian relative clause are more similar to modern Indo-European language, and less similar to Vedic and Hittite, where embedding is extremely rare, except for the prezafe structure in the main clause. Beyond embedding, case attraction also applied to this *tayam*-prezafe clause. The head noun *avam Gaumātam* "that Gautama" is the object of the *haya*-clause, and is in the accusative case. *taya- magu-*, as a nominal clause, should have both the relative pronoun and the nominal predicate in the nominative case: **haya maguš*, but instead both the relative pronoun and the nominal predicate are in the accusative case, agreeing with the head noun. This shows that prezafe Stage II is already attested in Old Persian.

3.3.3 Headedness

3.3.3.1 Relative clauses

Relative clauses are externally headed when they are right-extraposed.

(124) pasāva hauv kāra$_i$ ašiyava [tayam
thereupon DEM.NOM.SG army.NOM.SG set.forth.IMPF.3SG REL.NOM.ACC
Vahyazdāta frāišya abiy Vivānam
Vahyazdata.NOM.SG sent.forth.PERF.3SG against Vivana.ACC.SG
hamaranam cartanay]$_i$ (DB 3.59-60)
battle.ACC.SG make.INF
"Thereupon the army marched off, which Vahyazdata had sent forth against Vivana to join battle."

In this example, the head noun *kāra* 'army' is the subject of the host clause and is in the nominative case. It is also the object of the *tayam*-relative clause. The case mismatch of the head noun and the relative pronoun shows that this example is an externally headed relative clause.

Similar arguments can be made for embedded relative clauses such as example (122) and (123). For the prezafe structures where case attraction happened like *Gaumātam* [*tayam magum*] "Gaumata, which is the Magian", or simply "Gaumata, the Magian" in example (123), the CP layer of the prezafe structures with case attraction may have already been lost, hence it is impossible for the head to be internal.

Internally headed relative clauses and double headed relative clauses are not attested in the Old Persian corpus, but free relative clauses are attested.

(125) ima taya manā kartam (DB 1.27)
this REL.NOM.SG 1SG.GEN do.PP
"This is what was done by me."

These features show that Old Persian relative clauses are very similar to so-called "English-type" relative clauses.

3.3.3.2 Correlative clauses

Old Persian correlative clauses can be internally headed, though the heads could be fronted before the relative pronouns, hence they became linearly externally headed.

(126) [$_{CorC}$ kāra Pārsa utā Māda haya upā
army.NOM.SG Persian.NOM.SG and Median.NOM.SG REL.NOM.SG with
mām āha]$_i$ hauv$_i$ kamnam āha
1SG.ACC COP.PAST.3SG DEM.NOM.SG small.NOM.SG COP.PAST.3SG
"The Persian and Median army which was with me, this was a small (force)."
(DB 2.18-9; raised headed)

The head noun phrase *kāra Pārsa utā Māda* "the Persian and Median army" is the subject of the correlative clause but it is fronted before the relative pronoun *haya*. It is syntactically internal to the correlative clause but linearly external.

The head of a correlative clauses, like the Vedic ones, can be a personal pronoun:

(127) tuvam kā haya aparam imām dipim
2sg.Nom GNRL Rel.Nom.sg hereafter this.Acc.sg inscription.Acc.sg
vaināhy tayam adam niyapaišam imai=vā patikarā
see.Subj.2s Rel.Acc.sg 1sg.Nom engrave.Aor.1sg these=or sculpture.Acc.pl
mātya vikanāhy yāvā utava āhy
Neg destroy.subj.2sg as.long.as well-strengthed.Nom.sg Cop.Subj.2sg
avaϑāša=tā paribarā (DB 4. 70-72)
thenceforward=them.Encl protect.Imp.2sg
"Thou who shalt hereafter behold this inscription which I have inscribed, or these sculptures, do thou not destroy them, (but) thence onward protect them, as long as thou shalt be in good strength!"

The *haya*-clause is modifying the head pronoun *tuvam* 'you'. This example is taken as a correlative construction, and the pronoun *tuvam* is taken as the fronted internal head of the correlative clause, since imperative sentences usually drop their pronominal

subjects. In theory, however, this example could be a relative clause, with *tuvam* as the external head of the *haya*-relative clause and the subject of the main clause. The fact that personal pronouns can be the head of (cor)relative clauses will not be undermined in either analysis.

Correlative clauses can also be free:

(128) taya=šām hacāma aϑahya ava
REL.NOM.SG=3PL.ENCL by.me say/IMPF.PASS.3SG DEM.ACC.SG
akunava (DNa 20-21)
do.impf.3pl
"what was said to them by me, that they did."

This example is a typical free correlative construction with a quantificational reading. The relative pronoun is in the nominative case which is assigned by the correlative clause so it is clearly internally headed.

3.3.4 Stacking

In a later Old Persian text, an interesting example of stacking relative clauses is attested:

(129) iyam dahyāuš Pārsa$_i$ [taya adam dārayāmiy]$_i$
this.NOM.SG country.NOM.SG Persia.NOM REL 1SG.NOM hold.PRES.1SG
[haya uvaspā umartiyā]$_i$ manā baga
REL good-horsed.NOM.SG good-manned.NOM.SG 1SG.GEN god.NOM.SG
vazraka Auramazdā frābara (AmH 5-7)
great.NOM.SG Ahuramazda.NOM bestow.IMPF.3SG
"This country Persia which I hold, which is possessed of good horses, of good men, upon me the Great God Ahuramazda bestowed (it)."

Example (129) has two stacked relative clauses modifying the head noun phrase

dahyāuš Pārsa, "the country Persia" (which is in the nominative case and hence a hanging topic). The relative pronoun *taya* of the first relative clause is problematic. The head noun *dahyāuš Pārsa*, "the country Persia" is the object of the first relative clause, hence the relative pronoun should be in the accusative case as *tayam*. Brust (2018) raises two hypothesis for this problematic form. First, this could have been a missing auslaut ⟨ma⟩ that is not written; second, in later Old Persian, the neuter form *taya* of the relative pronoun became a universal pronominal form.

These two relative clauses are between the head noun *dahyāuš Pārsa*, "the country Persia" and the verb *frābara* "he (Ahuramazda) bestowed" and there is no way to make them on the edge of the host clause, so they are truly postnominal relative clauses. The *taya*-clause and *haya*-clause differ in the sense that the latter is a verbless nominal clause, hence a prezafe clause, but the former has a verb *dārayāmiy* "I hold", which makes it a center embedded postnominal verbed relative clause. This highlights the dichotomy between Old Persian and the other Indo-Iranian languages in that Old Persian has productive embedded relative clauses other than the prezafe type. Section 3.3.6 provides a detailed syntactic analysis of the emergence of the center embedded verbed relative clauses in Old Persian.

3.3.5 Syntactic Analysis

The sections 3.3.2.2 and 3.3.4 have shown that embedding and nesting are already possible for Old Persian relative clauses, showing that its syntax already had relatively more strategies to make hypotactic structures when the texts were composed. Due to the limited size of the Old Persian corpus, it is not possible to find examples of correlative constructions that are complex enough, comparing to the Vedic ones, to go through a

syntactic analysis. The best examples are the following.

(130) atar imā dahyāva martiya [[haya āgariya āha] avam
within these countries man Rel loyal Cop.Impf.3sg Dem
ubaratam abaram] [[haya arika āha] avam
well-rewarded.Acc.sg bring.Impf.1sg Rel evil Cop.Impf.3sg Dem
ufrastam aparsam] (DB 1.21)
well-questioned.Acc.sg question.impf.1sg
"Within these countries, the man who was loyal, him I rewarded well; (him) who was evil, him I punished well; ⋯"

(131) martiya haya hamataxšatā manā v^{i}θiyā avam
man.Nom.sg Rel effect.Impf.Mid.3sg 1sg.Gen house.Loc.sg Dem
ubartam abaram haya viyanāθaya avam
well-rewareded.Acc.sg bring.Impf.1sg Rel harm.Impf.Caus.3sg Dem
ufrastam aparsam (DB 4.65-67)
well-punished.Acc.sg punish.impf.1sg
"The man who cooperated with my house, him I rewarded well; whoso did injury, him I punished well."

Each of the two examples above has a pair of correlative clauses that are pragmatically constrastive. If we suppose that Old Persian correlative clauses have the same configuration as the Vedic ones, namely, the correlative clauses are base generated in the left periphery, then example (131) can be analyzed as two separate clauses with the head of the second clause elided.

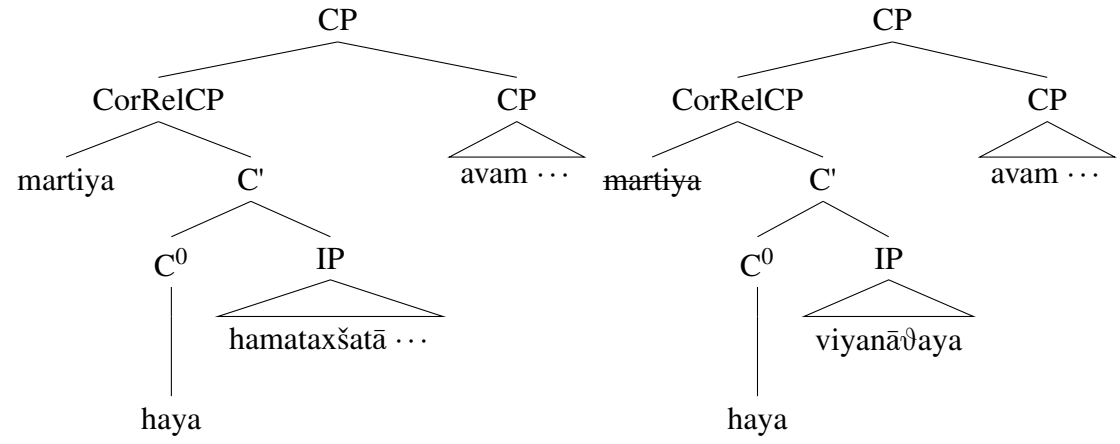

Figure 16:

But example (130) has the local adjunct *atar imā dahyāva* "within these countries" scope over both clauses,

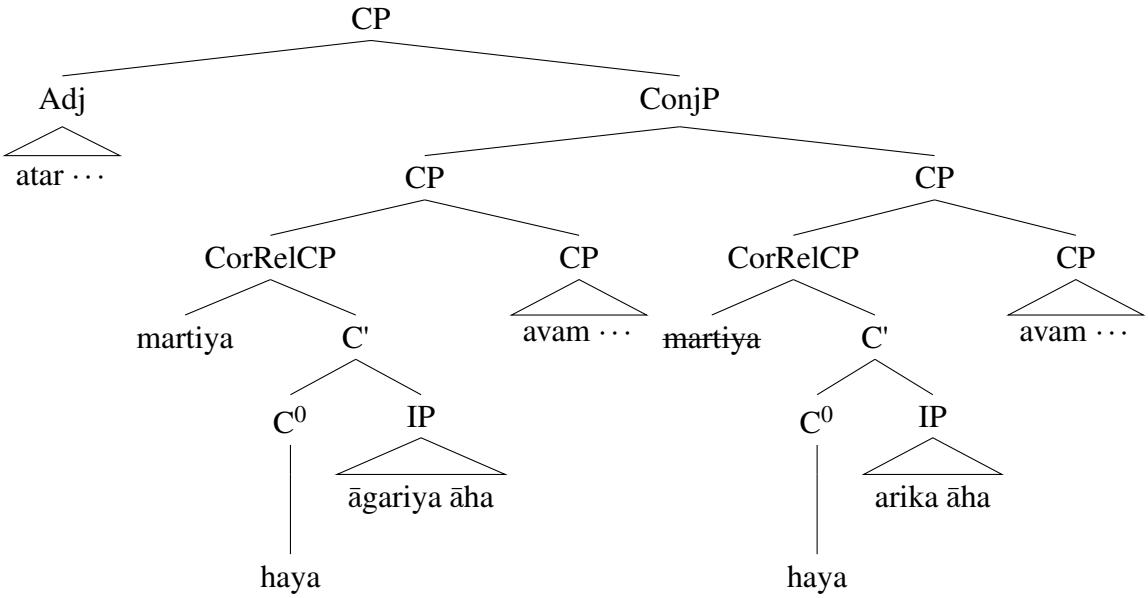

Figure 17:

It is less likely that the local adjunct can scope over the conjoined CP's. If Old Persian correlative clauses are generated in the adjunct position of IP like in modern Hindi, the configuration is more straightforward.

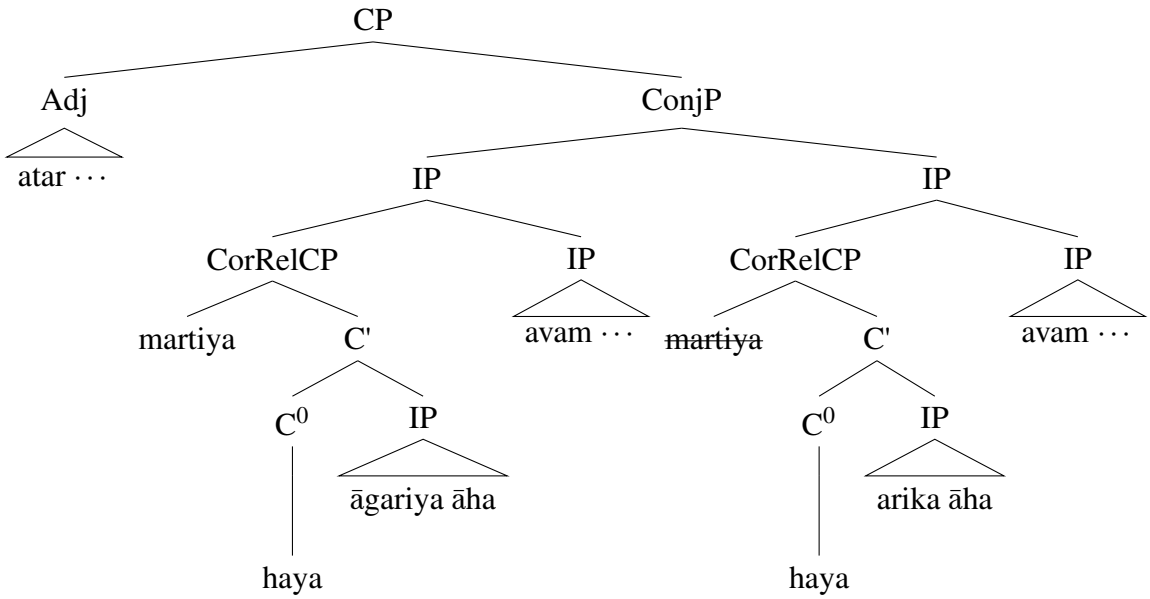

Figure 18:

This configuration suggests that the syntactic structure of the Old Persian correlative is also more like Hindi than like Vedic.

3.3.6 Emergence of Old Persian Embedded Relative Clauses

A key feature that sets Old Persian apart from other Indo-Iranian languages is its use of embedded relative clauses. Example (122) is repeated here as example (132):

(132) avadā hauv Fravartiš$_i$ [$_{CP}$ haya Mādaiy xšāyaϑiya
there this Fraortiš REL.NOM.SG Media.LOC.SG king.NOM.SG
agaubatā]$_i$ āiš hadā kārā patiš mām
call.IMPF.MED.3SG come.IMPF.3SG with army.SG.INS against 1SG.ACC
hamaranam cartanaiy (DB II 66-67)
battle.ACC.SG make.INF
"[T]here this Phraortes who called himself king in Media came with an army against me to join battle."

This center embedded verbed relative clause is not attested in other Indo-Iranian languages, but such structure is very productive in modern Romance and Germanic languages:

(133) The [$_{NP}$ headway$_i$ [$_{RC}$ that we made t_i]] was satisfactory. (Schachter 1973, attributed to Brame 1968)

To my knowledge, no previous literature has proposed that central embedded verbed relative clauses were productive in Proto-Indo-European, nor even in Proto-Indo-Iranian. This suggests that the reanalysis of postposed relative clauses to (non-center) embedded postnominal relative clauses must be independent in the different branches, and the center embedded relative clause must be developed later.

Ram-Prasad (2022: 152-165) focused on the reanalysis of ambiguous examples which could be interpreted as either a postposed relative clause or a (non-center) embedded postnominal relative clause (cf. Hettrich (1988: 608), Hock (1989: 112-113), Davison (2009a)):

(134) imā́m agne śaráṇim mīmṛṣaḥ
this.ACC.SG.F Agni.VOC.SG breach.ACC.SG forget.AOR.CAUS.2SG
naḥ
1PL.GEN.ENCL

imám ádhvānam$_i$ [$_{RC}$ yám ágāma dārā́t]
this.ACC.SG.M way.ACC.SG REL.ACC.SG come.AOR.1PL distance.ABL.SG

"This (ritual) breach of ours, Agni—make it forgotten; make us forget this way which we have come on from afar." (RV 1.31.16ab)

There is one concern for this analysis, i.e. the frequency of word order where the head is linearly adjacent to the relative clause. In the RigVeda and the Gathas, this

word order does not show up frequently. Furthermore, even if the frequency of this word order increases, it remains difficult to determine whether the high frequency of this order led to the emergence of embedded relative clauses or whether embedding was already permitted, causing head nouns to more frequently appear linearly adjacent to their relative clauses.

To explore the development within the Indo-Iranian branch, this dissertation proposes an alternative mechanism for the development of embedded relative clauses in Old Persian, which involves the headedness and the prezafe structures.

The headedness of a relative construction has been discussed extensively in the previous chapter. For the purpose of understanding the emergence of embedded relative clauses, only the raised headed (cor)relative clauses need to be paid attention to:

- raised headed: where the head is base generated in the (cor)relative clause but moves to the left periphery of the (cor)relative, preceding the relative pronoun.

  $[_{\text{TopP}}$ head$_i$ $[_{\text{RC}}$ rel-pn ... ~~head$_i$~~ ...]]

Previous chapters show that Vedic and Old Persian have raised headed relative clauses but Old and Young Avestan do not have such structure except for the prezafe ones.

The other key factor is the prezafe structures. Hale (1988) pointed out that the relationship between the structure of Old Persian relative clauses and the izafe construction must be investigated. Previous chapters demonstrate that Vedic only has prezafe stage I, Old Avestan has stage II, but Young Avestan and Old Persian have true izafe. The following chart summarizes the distribution of two key factors among these languages:

	Izafe stage	Raised headedness	Embedded verbed RC
Vedic	I (nominal RC)	Yes	No
Old Avestan	II (nominal RC with case attraction)	No	No
Young Avestan	III (narrow sense izafe)	No	No
Old Persian	III (narrow sense izafe)	Yes	Yes

Table 15: Distribution of raised headedness and prezafe stages in old Indo-Iranian languages

The center embedded verbed relative clause differs from the Vedic type in two senses: 1. sentential embedding, 2. raised headedness. The only candidate for embedding in Old Indo-European languages is appositive nominal relative clause, namely prezafe Stage 1 (c.f. Qu, 2023). But prezafe Stage I can only provide sentential embedding, not raised headedness, since the head can be in any case but the relative pronoun is always nominative:

(135) tám u stuṣe índram$_i$ [$_{RC}$ yáḥ (*~~índram$_i$~~)
DEM.ACC.SG PT praise.1SG Indra.ACC.SG REL.NOM.SG
vídānaḥ]$_i$
know.MP.NOM.
"I will praise him - Indra, as he is known (RV 7.21.2a)

Although Vedic has raised headed (cor)relative clauses (cf. Section 2.4.3.3), the heads of these clauses have their case assigned in the (cor)relative clauses, not in the host clause. The constant case mismatching of the head nouns and what the (cor)relative clauses assign makes it impossible for the raised headed (cor)relative clauses to take the place of the prezafe structures in stage I. This explains why Vedic embeddings are always prezafe Stage I and no center embedded verbed relative clauses are attested.

If some languages, such as Old and Young Avestan, have prezafe stage II—embedded verbless relative clauses whose head nouns' cases match those of the

relative clause—but lack raised-headed (cor)relative clauses, then inserting a verb into their prezafe stage II configuration becomes difficult. This is because the speakers of these languages did not have access to a structure resembling a postnominal relative clause, namely, [head rel-pn … V] in these languages. As a result, neither Old nor Young Avestan has center-embedded verbed relative clauses.

Old Persian, on the other hand, has both the prezafe stage II (stage III actually), which are *embedded* verbless relative clauses whose head nouns' cases match with the relative clause, and also the raised head (cor)relative clauses, which are non-embedded (mostly) *verbed* (cor)relative clauses whose head nouns precede the relative pronoun, then *embedded postnominal verbed relative clauses* can be developed through a syntactic analogy the usage of these two aforementioned structures.

An Old Persian raised headed relative clause, for example,

(136) [$_{RC}$ kāra Pārsa utā Māda haya upā
army.NOM.SG Persian.NOM.SG and Median.NOM.SG REL.NOM.SG with
mām āha]
1SG.ACC COP.PAST.3SG

is underlyingly

(137) [[kāra Pārsa utā Māda]$_i$ [$_{RC}$ haya
army.NOM.SG Persian.NOM.SG and Median.NOM.SG REL.NOM.SG
~~[kāra Pārsa utā Māda]$_i$~~ upā mām āha]]
with 1SG.ACC COP.PAST.3SG

thus, an embedded prezafe stage II structure like [Gaumātam] [tayam magum], which on the surface also has the head noun preceding the relative pronoun and their cases match, can be reanalyzed as [Gaumātam$_i$, [tayam ~~Gaumātam$_i$~~ magum]], as if it is an embedded relative clause. When the prezafe stage II structures, which can be naturally embedded, are reanalyzed as raised headed relative clauses, the raised headed *verbed* relative clauses can be embedded just as the prezafe structures.

This provides an explanation for the emergence of Old Persian embedded verbed relative clauses.

(138) iyam dahyāuš Pārsa$_i$ [$_{RC}$ taya adam
this.NOM.SG country.NOM.SG Persia.NOM REL.ACC.SG 1SG.NOM
dārayāmiy]$_i$ [$_{IZ}$ haya uvaspā umartiyā]$_i$
hold.PRES.1SG REL.NOM.SG good-horsed.NOM.SG good-manned.NOM.SG
manā baga vazraka Auramazdā frābara
1SG.GEN god.NOM.SG great.NOM.SG Ahuramazda.NOM bestow.PAST.3SG
"This country Persia which I hold, which is possessed of good horses, of good men, upon me the Great God Ahuramazda bestowed (it)." (AmH 5-7)

This example shows that both a verbed relative clause and an izafe structure can be post-nominal and stacked. Since prezafe structures can be embedded in the proto-language and the embedded verbed relative clauses are the result of a syntactic analogy to the prezafe stage II structures, it would not be a surprise that embedded verbed relative clauses occur at the same positions for the izafe structures.

The emergence of embedded relative clause in Old Persian is an innovation internal to the Indo-Iranian branch. To explain why such structure exist in many modern languages in the other Indo-European branches requires independent analysis of each branch.

3.4 Conclusion

The Avestan relative and correlative clauses have more restrictions on the headedness than Vedic. The relative clauses are externally headed and the correlative clauses are internally headed. The assymetry of the headedness in relative and correlative clauses suggests that they are not the same type of clauses.

The syntactic structures of Avestan relative and correlative clauses are the same as the Vedic ones: The relative clauses are post nominal and can be right-extraposed, and the correlative clauses are base generated in the left periphery. The only difference is that the prezafe strucutre in the proto language developed into the true izafe structure in Young Avestan.

The Old Persian relative clauses are not similar to Vedic and Avestan, but to modern Romance and Germanic languages, with respect to both headedness and syntax. Vedic relative clauses have all types of headedness, but Old Persian only has external headed relative clauses and free relative clauses. Vedic relative clauses are rarely embedded, but Old Persian relative clauses can be both right-extraposed or embedded like English relative clauses, and the embedded relative clauses do not have to be the prezafe type. The analysis of the emergence of Old Persian embedded relative clauses through the lens of syntactic analogy may provide insights into the broader development of embedded relative clauses.

The syntactic structure of the Old Persian correlative constructions is more like Hindi than like Vedic, in the sense that the correlative clauses are generated in the adjunct position of the IP like modern Hindi, but not base generated in the left periphery like Vedic.

Prezafe Stage II, namely those with case attractions are attested in Old Persian, and that is one piece of evidence suggesting Old Persian (cor)relative constructions have gone through more changes than Vedic. Therefore, Old Persian does not contribute as much as Vedic does for the study of the syntax of the proto-language.

Combining the data of both Avestan and Old Persian, we may conclude that Proto-Iranian might have already developed Prezafe Stage II since such structure is attested

in all three languages. The headedness of relative and correlative clauses are also more strict in the Iranian branch, which may also be an Iranian innovation.

CHAPTER 4

HITTITE

4.1 Introduction

Anatolian is an extinct branch of Indo-European, which is believed to be the earliest branch to split off from the Proto-Indo-European language (cf. Jasanoff, 2017: 233-234). The most well-documented Anatolian language is Hittite, and it is the earliest directly attested Indo-European language. The Hittite corpus has spans of three centuries and can be divided into Old Hittite (ca. 1600 - 1500 BCE), Middle Hittite (1500-1400 BCE), and "classical" New Hittite (from 1400 BCE on). Unlike the Avestan languages, where Young Avestan is not the direct linear descendant of Old Avestan, the three stages of Hittite are successors to each other. The stage of each example is noted, but due to the fact that the attested (cor)relative clauses in Hittite are not as many as in the other languages such as Vedic, it is difficult to determine whether a certain syntactic feature is maintained exactly the same through all stages of Hittite. For the purpose of this dissertation, I assumed that all stages of Hittite share the same syntactic features under question, such as headedness and base position.

Among all the old Indo-European languages, Hittite is the language that has been studied most extensively in terms of relative and correlative clauses. Studies on Hittite relative clauses have explored their syntactic configurations, prosodic interactions, and broader discourse functions.

Held (1957) observed that Hittite correlative clauses should be categorized as indeterminate relative clauses, where the relative pronoun appears clause-initially, referring to an indefinite, nonspecific entity, and determinate relative clauses, where the relative

pronoun is non-initial, referring to a definite, specific entity. Garrett (1994) offered a comprehensive analysis of relative clauses in Hittite (and also Lycian) in terms of formal syntax and semantics. He introduced the "Held-Garrett rule," which has been foundational in subsequent studies, including Yates (2014) which revisited Anatolian indeterminate relative clauses and further explored the syntactic and semantic dimensions of the "Held-Garrett Rule." Lyutikova and Sideltsev (2020) provided a corpus-based analysis of Hittite determinate relative clauses, arguing that the variation in relative wh-phrase positioning is shaped by the syntax-prosody interface.[1]

Another debated issue for Hittite—and not only for Hittite—is the clausal/sentential status of the correlative clauses. Since the correlative clauses are on the left and edge of the host clause in all Indo-European languages, and the right extraposed relative clauses are on the right edge, many scholars have wondered whether these clauses are paratactic (i.e. separate sentences) or hypotactic (embedded sentences) since the linear structure of the clauses is not embedding. Previous literature, e.g. Delbrück (1900: 413), has argued that hypotaxis developed from parataxis in Indo-European languages. Early works such as Hahn (1946) argued that the Hittite relative pronouns developed from the indefinite pronouns, not the interrogative pronouns, and the (cor)relative clause was independent, hence a paratactic structure. Such a view is widespread and there are very recent works

[1] A similar difference in the position of the relative pronoun in the determinate and the indeterminate correlative clause is also attested in the Sabellic languages, cf. Drigo and Qu (2025). The parallel between Hittite and Sabellic syntax can be explained in several ways: (1) It is a coincidence, especially for the Sabellic languages in which the data is really scarce. (2) They are independent innovation, like a syntax version of Grassmann's Law. (3) Since Hittite and the Sabellic languages are not genetically close to each other, the word order distinction between the determinate and the indeterminate correlative clause can be a feature inherited from Proto-Indo-European. Yates's (2014) and Lyutikova and Sideltsev's (2020) analysis showed that prosody plays an important roles in Hittite (cor)relative clauses and there is no investigation, at least to my knowledge, concerning whether prosody makes a difference on the semantics of the Sabellic relative clauses as much as Hittite. If the Sabellic phenomena are not considered as a coincidence, then there may not be the "Held-Garrett rule" in Anatolian, but in the Sabellic languages instead.

supporting this idea. Motter (2023) explored Hittite correlatives as constructions that establish clausal relations at the discourse level, rather than through strict syntactic embedding, a view further developed in his argument that such correlatives are paratactic and serve as clausal hanging topics.

Probert (2006) discovered examples of embedded relative clauses in Old Hittite. She took a more diachronic and formal approach, distinguishing between adjoined and embedded relative clauses in Old Hittite through the analysis of clause boundary markers like resumptives and conjunctions, adding typological insights in order to classify Old Hittite relative clauses according to their structural strategies to explore their range and variability within the language.[2] Huggard (2015) investigated wh-(non)-movement within correlative clauses, suggesting that the internal architecture of these clauses challenges traditional assumptions about movement and syntactic hierarchy, and argued that the word order of the relativized NP, the relative pronoun, and the other constituent are determined by both the focus types and syntactic movement such as topicalization. Sideltsev (2016) worked on anaphora within Hittite relative constructions and offered a valuable perspective on the correference mechanisms between relative elements and their antecedents. Collectively, these studies reveal a rich and complex picture of relativization in Hittite, situated at the crossroads of syntax, prosody, and discourse.

In this chapter I will focus on the following three arguments. First, I will examine the headedness of Hittite (cor)relative clauses, showing that the types of headedness in Hittite are as diverse as those in Vedic. Second, I will show that the Hittite correlative clauses are not moved from the host clause. This argument has been proposed by previous literature but I will further support it with more formal syntactic evidence. Lastly, I will argue that Hittite correlative clauses are hypotactic by analyzing more complex

[2]Sideltsev (2016) pointed out that Probert's examples are rare and most of her examples come from the same law text, and the paucity of attestations is troubling.

examples.

I argue that if the *kui-* pronouns were indeed relative pronouns, then syntax and semantics would not allow clauses introduced by these pronouns to be independent, hence the (cor)relative clauses are hypotactic.

4.2 Relative Pronouns

The relative pronouns in Hittite are identical to the interrogative pronouns, as shown in the following table:

Case and Gender	Singular	Plural
Nom. Com.	kuiš	kuieš, kueuš
Acc. Com.	kuin	kueuš, kuiuš, kuieš
Nom./Acc. Neut.	kuit	kue
Gen.	kuel	
Dat./Loc.	kuedani	kuedaš
Abl.	kuez	

Table 16: Paradigm of the Hittite Relative Pronoun *kui-*

4.3 Headedness of Correlative Clauses

All five types of headedness that are attested in Vedic correlative clauses are also attested in Hittite correlative clauses: namely, correlate R-expression only, internally headed, free, double headed, and split headed.

4.3.1 Correlate R-expression only

Example (139) is a correlative construction without any internal head, but with a correlate R-expression:

(139) kē māhhan harkanzi [$_{\text{CorCP}}$ {ᶠZ}i-s=a *BELAM QADU*
these just.as perish.PRES.3PL Z.=FOC lord together.with
DAM=*ŠU* DUMU.M{EŠ=*Š*}*U* kuit issista]$_i$ {nu *Š*}*A* ᶠZi
wife=her children=his REL.ACC.SG make.PRET.3SG CONN of Z.
alwanzatar=set [idālu uddār]$_i$=set *QATAMMA* {hara}kdu
sorcery=her evil words=his likewise perish.IMP.3SG
(KBo 15.10 ii 13-16; Middle Hittite)

"As these perish, what Ziplantawiya has done to the lord with his wife and sons, let Ziplantawiya's sorcery, her evil words, likewise perish."[3]

The correlative clause in this example is introduced by the relative pronoun *kuit*, but it does not have an overt lexical head, and hence the correlative clause is interpreted as "what Ziplantawiya has done to the lord with his wife and sons," but it does not specify what type of action she made with a noun until the host clause referred back to the correlative clause with the coindexed noun phrase *alwanzatar* "sorcery". The lexical head *alwanzatar* only appears in the host clause, but not the correlative clause as a correlate R-expression.

Correlative constructions with only the correlate R-expression are very common when direct quotation follows the correlative clause:

(140) [$_{\text{CorCP}}$ ŠEŠ=*YA*=ma=mu kuit kišan *TAŠPUR* … (quotation)]$_i$
brother=my=but=to.me REL.ACC.SG thus write
nu [apās memiyaš]$_i$ iwar {ŠE}Š=*YA* (KUB 21.38 Vo 1-2; New Hittite)
CONN DEM message like brother=my

[3]The Hittite examples used in this chapter are from the database used by Motter (2023), unless otherwise noted.

"Concerning what you, my brother, wrote me thus... (quotation), that message is like my brother (i.e., the kind of message one expects of a king)."

In example (140), the correlative clause does not have an overt head, but the host clause has the head *memiyaš* 'message', coindexed with the correlative clause.

One interesting feature of this example is that the head noun *memiyaš* 'message' is common gender, while *kuit* is the neuter form of the relative pronoun. In this example there is a full quotation of the message, and the quotations are naturally neuter, since they are sentences, which do not have ϕ-features in general. the meaning of this correlative clauses is "you, my brother wrote me that (quotation)", but the relative pronoun *kuit* is not a complementizer since it is not linearly adjacent to the relative clause. The only way to interpret *kuit* is to coindex it with both the quotations and the overt correlate R-expression *memiyaš* in the host clause.

In the correlative clause, a covert head 'message' should be supplied so that the clause is interpreted as "you wrote me (the message) that (quotations)." The relative pronoun has its gender and case agreed in the relative clause, regardless of the features of the correlate R-expression: it is neuter because it takes the quotations as the content of the message, and it is in the accusative case. This aligns with the double headed analysis proposed for the Indo-Iranian languages.

Correlative clauses with only correlate R-expressions are also found in examples where the correlative clause is introduced by a relative adverb rather a relative pronoun, and the host clause has a temporal or location noun head as the correlate.

(141) [nu wet *ABU=YA* kuwapi *INA* KUR ^{URU}Mizri p{ait}]$_i$
CONN come.PRET.3SG father=my when to land Egypt go.PRET.3SG
nu=kan *IŠTU* UD-*UM*$_i$ ^{URU}Mizri ÚŠ-an ŠÀ KUR {...} uktūriēsta
CONN=PT from day Egypt plague? of land persist.PRET.3SG

(KUB 14.13 i 47-49; New Hittite)

"When my father proceeded to go to Egypt, from that day of Egypt a plague has persisted in [Hatti]."

(142) [nu parā kuwapi āras!mi]$_i$ nu pēta$_i$=m[it] *ŪL* saqqahhi
CONN forth where flow.PRES.1SG CONN place=my not know.PRES.1SG
(KUB 31.127+ iii 29-30; Old Hittite)

"Wherever I flow, I do not know [my] location."

In both example (141) and (142), the relative pronouns are both *kwapi*, in example (141) it is the temporal relative adverb 'when' while in example (142) it is the locational relative adverb 'where', and by its nature as an adverb, they do not relativize any overt heads. In their host clauses, the correlate nouns are a temporal noun UD-*UM* 'day' and a locational noun *pēdan* 'place', respectively, functioning as the overt head in the host clauses.

4.3.2 Internally headed

The internally headed correlative clause is the most common correlative clause in Hittite. Example (143) has an internally headed correlative clause.

(143) [$_{\text{CorCP}}$ ŠÀ-*BI* KUR $^{\text{URU.d}}$U-tašša=ya=kan kuiēš URU.DIDLI.ḪI.A *ŠA*
within land Tarhuntassa=PT=PT REL.NOM.PL city.NOM.PL of
LUGAL KUR $^{\text{URU}}$ḪATTI ešer … (list of cities) $^{\text{URU}}$Uppaššanaš]$_i$
king land Hatti COP.PRET.3PL Uppassana
$^{\text{LÚ.MEŠ}}$MUŠEN.DÙ.A *ANA* ZAG KUR-*TI*=aš=kan ēšzi apūšš$_i$=a=šši
augurs to border land=PT=PT COP they=also=him
piyanteš (Bo 86/299 i 68-77; New Hittite)
send.PTCP.PL

"And also the cities within the land of Tarhuntassa which were of the king of Hatti... (list of cities), Uppassana, the augurs (insofar as) one resides in the

border territories, they too are given to him."

The lexical head of the correlative clause is URU.DIDLI.ḪI.A 'cities', because of both the meaning of the sentence, and its agreement with the relative pronoun *kuiēs*. The lexical head does not show itself explicitly in the host clause, but a demonstrative pronoun *apūš* is coindexed with the lexical head. Hence, this is an example of internally headed correlative clause.

4.3.3 Free

Free relative correlative clauses are also attested in Hittite:

(144) DUMU-la⟨š⟩=ma=šša[n] [tuel] kuit kardi nu=za apāt
son=but=3SG 2SG.GEN REL heart.LOC CONN=REFL DEM
ēšši (KUB 1.16+40.65 iii 62-63; Old Hittite)
do.IMP.2SG
"(My?) son, what is in [your] heart, do that."

In example (144), there is no overt lexical head in either the correlative or the host clause, therefore it is a free correlative construction.

4.3.4 Double headed

Double headed correlative clauses are not very common in other Old Indo-European languages, but this type is surprisingly frequent in the Hittite corpus. Here is an example of Hittite double headed correlative clause:

(145) [nu=mu=kan ŠEŠ=*YA* kue kī KUR.KUR.MEŠ dannatta
CONN=1SG=PT brother=my REL.ACC.PL these lands empty
ŠU-i dāis [nu=mu ^{d}IŠTAR GAŠAN=YA kuit
hand-LOC place.PRET.3SG CONN=1SG Ishtar Lady=my because
ŠU-za harta nu=za LÚ.KÚR.MEŠ kuiēs taruhhun
hand-INS hold.PRET.3SG CONN=REFL enemies some defeat.pret.1sg
kuiēs=ma=mu taksulāir]] nu=mu ^{d}IŠTAR GAŠAN=*YA* GAM-an
some reconcile.PRET.3P CONN=1SG Ishtar Lady=my next.to
tiyat nu=za kē KUR.KUR.MEŠ dannatta IŠTU NÍ.TE=*YA*
stand.pret.3sg CONN=REFL these lands empty Prep soul=my
EGIR-pa asesanunun (KUB 1.1 ii 63-67; New Hittite)
back resettle.PRET.1S

"These empty lands which my brother put in my hand—because Ishtar my Lady held me by the hand, I defeated some enemies and some made peace with me—Ishtar my Lady stood with me and I resettled these empty lands on my own."

In example (145), the lexical head KUR.KUR.MEŠ 'lands' shows up both in the correlative clause introduced by the relative pronoun *kue*, and the host clause introduced by the connective *nu*, hence this example is a double headed correlative construction.

4.3.5 Split headed

The split headed correlative construction is not very common in any old Indo-European languages. Here is one example of Hittite split headed correlative clause:

(146) nasma sumēs kuiēs *BELU.*ḪI.A DUMU.MEŠ LUGAL
or 2PL REL.NOM.PL lords sons of.king
maniyahheskatteni [n]u *ŠA* $^{LÚ.MEŠ}$*MUIRTUM* kuēlqa sahhanaza
govern.PRES.2PL CONN of administrators of.someone sahhan
HUL-luwēszi apās=ma apāt memai
become.bad.PRES.3SG that.NOM.SG.C=but that.ACC.SG.N say.PRES.3SG
{quoted bit} n=at GAM-an *NIŠ DINGIR-LIM* GAR-ru
CONN=3SG under oath of.gods put.IMP.MID.3SG
(KUB 21.42 iii 13-20; New Hittite)

"Or you lords and princes who carry out the administration: (if) it becomes dire for the administrators(?) because of someone's sahhan, but that (man) says this: {quoted bit} then let it be placed under oath."

In the correlative clause, the lexical heads are *BELU*.ḪI.A 'lords' and DUMU.MEŠ LUGAL 'princes (lit. sons of king)', but in the host clause, the noun phrase coindexed with these two lexical heads is the word $^{\text{LÚ.MEŠ}}$*MUIRTUM* 'administrators'. These two lexical heads are not identical but share the same referent, therefore this example is a split headed correlative construction.

4.4 Headedness of Relative Clauses

Garrett (1994) classified (cor)relative clauses into four semantic and pragmatic types: indeterminate and determinate relative clauses are preposed, or correlative in terms of this dissertation, while indefinite and nonrestrictive relative clauses are post-posed, or simply relative in terms of this dissertation. In contrast to correlative clauses, relative clauses in Hittite are rarer and less studied.

Example (147) is a typical nonrestrictive relative clause that has been discussed in the previous chapters:

(147) nu=za $^{\text{d}}$Kumarbiš GALGA-tar ZI-ni kattan daškizzi
CONN=REFL Kumarbi wisdom soul-DAT.SG down take.PRES.3SG
UD$^{\text{KAM}}$-an kuiš LÚ ḪUL-an šallanuškizzi (KUB 33.98+ i 4-5)
day.ACC.SG REL.NOM.SG person evil-ACC.SG raise.PRES.3SG

"Kumarbi takes wisdom into his mind, (he) who raises the day as an evil being."

This example is an externally headed relative clause, since the appositional relative

clause is ajoined to the external DP head, not the NP.

Restrictive relative clauses in Hittite can also be postposed. They are externally headed if their lexical head only shows up in the host clause like example (148):

(148) [(KÚ.BABBAR=y)a GUŠKIN (n)]atta udai kuit
silver=CONN gold not bring.PRES.3SG REL.ACC.SG
uemiz[zi]
find.PRES.3SG
"He does not turn in the silver and gold that he finds."

The head nouns in this example are KÚ.BABBAR 'silver' and GUŠKIN 'gold'. The relative clause is not linearly following the head noun, but following the whole host clause. Hence this is an externally headed relative clause.

The type of relative clauses which Garrett (1994) labeled as "indefinite" is difficult to characterize. Typical examples in this type contain a numeral or an indefinite pronoun in the host clause:

(149) nu 8 DUMU.MEŠ-uš uwadanzi SAL-ni=ššan kuiēš
CONN 8 boy.PL-ACC.PL bring.PRES.3PL woman.DAT.SG=PT REL.NOM.PL
nāui pānzi (KUB 9.31 ii 9-10; Middle Hittite)
not.yet go.PRES.3PL
"They bring eight boys who have not yet gone to a woman."

(150) mān ta[m]aiš=ma kuiški *BELUM* ḫandāitta
if other.NOM.SG=but some lord determine.PASS.PRES.3SG
kuiš ḫantezzi[a]nni arta (IBoT 1.36 iv 20-21;
REL.NOM.SG first.position.LOC.SG stand.PRES.3SG
Middle Hittite)

"But if some other official is available who is standing in the front line..."

Garrett (1994) noted that "an indefinite relative clause never repeats its [head] noun", hence the internal head of a relative clause is never overt. The configuration proposed

by Garrett (1994) is as follows (modified in terms of this dissertation):

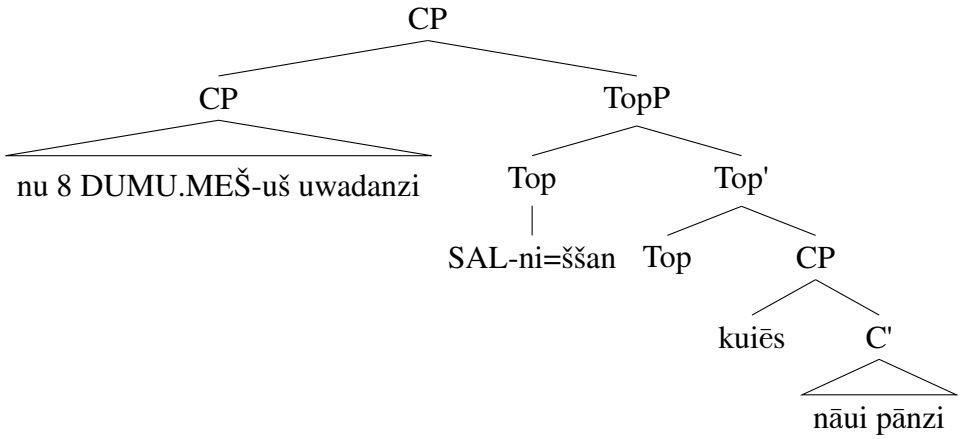

Figure 19:

In this configuration, relative clauses are externally headed.

The headedness in Hittite relativization is intermediate between Vedic and Avestan in the sense that Hittite correlative clauses are more like Vedic, with all kinds of headedness; while Hittite relative clauses are more like Avestan, with only external headedness. Such difference in headedness also shows that correlative and relative clauses are indeed different types of structure, not just variants of the same structure in different linear order.

4.5 Syntactic Analysis

Similar to the old Indo-Iranian languages, and different from Hindi, Hittite correlative clauses are also base generated in a higher position and not generated in the adjunct position of the correlate and then moved. This can be shown from the lack of locality and binding.

4.5.1 A Non-movement Analysis

4.5.1.1 Lack of locality

Hittite correlative clauses can have adjunct clauses as their host clauses. If the correlative clauses are moved from the adjunct positions of their correlates in the adjunct clause, the island effect will be violated. Here is an example where the host clause is a conditional clause. Example (75) is repeated here as example (151)

(151) [kāšma=wa MUŠEN.ḪI.A kue *ANA* EN=*YA* uppaḫḫun]$_i$
PRT=QUOT birds REL.ACC.PL to lord=my send.PRET.1SG
nu=wa=za [mān EN=*YA* apē MUŠEN.ḪI.A$_i$ malāši]
CONN=QUOT=REFL if lord=my those birds approve.PRET.2SG
nu=wa=mu EN=*YA* EGIR-pa ḫatrāu
CONN=QUOT=1SG lord=my back write.IMP.2SG
(AT 125 5–9 New Hittite; Hoffner, 2009: 373)

"The birds which I have sent there to My Lord, if you My Lord approved of those birds, may My Lord write back to me."

Example (151) shows that Hittite correlative clauses are base generated, since otherwise it will violate adjunct-island constraints, namely the *mān*-clause (the 'if'-clause).

I use example (151) to show that Hittite correlative clauses were not moved. Motter's (2023) parataxis analysis would also agree that Hittite correlative clauses were not moved, but he did not appeal to island effects as a piece of supporting evidence. Motter (2023: 119) remarked that he was not aware of any attested Hittite constructions that would serve as a test for island effects, and therefore he did not make any assumption regarding the existence of island effects in Hittite. The goal of my dissertation, however, is to compare old Indo-European languages, including Hittite, with (cor)relative clauses in other languages, and therefore I assume that Hittite and any other old Indo-European

languages share the language universals of modern languages, unless counterexamples are attested.

The question following my general assumption is whether adjunct clauses are islands cross-linguistically. There have been many challenges to the idea that adjunct clauses are islands in certain languages. For example, Japanese and Swedish permits A-bar movements from adjunct islands (see Yoshida 2006 and Anward 1982 respectively).

(152) dono-ringo-o$_i$ Quinn=wa [$_{CP}$ (mosi) Stillman-ga t_i tabe-tara]
which-apple-ACC Quin=TOP if Stillman-NOM eat-COND
okori-masu=ka? (Yoshida, 2006: 73 (64a-b); Japanese)
get.angry-HON=Q
Lit. "Which apple will Quinn get angry if Stillman eats?"

(153) Sportspegeln$_i$ somnar jag [$_{CP}$ om/när jag ser t_i]
Sports-program.DEF fall.asllep I if/when I see
(Anward, 1982: 74; Swedish)

Lit. "The sports program, I fall asleep if/when I see."

Example (152) has wh-movement out of an conditional adjunct island introduced by the conditional verbal ending *-tara*, arguably the C head, and an optional *mosi* 'if', while (153) has topicalization out of a conditional or temporal adjunct island introduced by either *om* 'if' or *när* 'when', therefore, these clauses are weak islands in these languages. These phenomena, among other violations of island effects, deserve their own research in order to refine the theory of island effects and help define its constraints more precisely, such as the relationship between weak islands and A-bar movement, scrambling, etc., which is beyond the scope of this dissertation. Example (151), however, is not comparable to these cases. If we suppose that the Hittite correlative clause in example (151) were moved out of the adjunct clause, then its base generating position would be the adjunct of the modified NP MUŠEN.ḪI.A "birds". But no adjunct clause, not

even those that are weak islands, would allow such movement to my knowledge, that is to say, extracting an adjunct of a NP such as a relative clause from an adjunct (weak) island. Therefore, I claim that Hittite correlative clauses were not moved from their host clause since their host clause can be an adjunct island, whether strong or weak, because otherwise it would be a violation of the adjunct island, on the plausible hypothesis that Hittite is not different from modern languages in terms of syntactic universals.

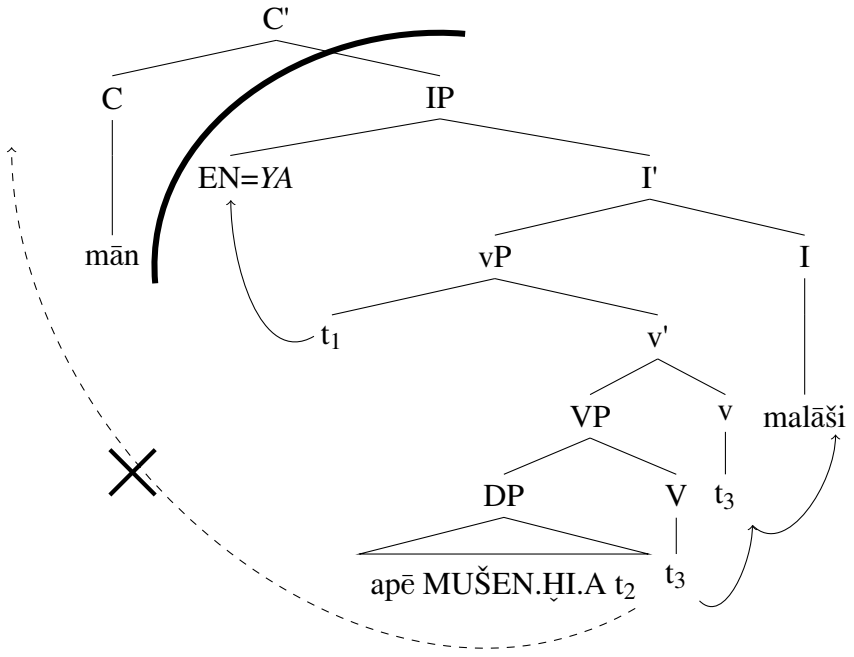

Figure 20:

4.5.1.2 Binding

Lyutikova and Sideltsev (2020: 59-60) showed that Hittite correlative clauses cannot be reconstructed into the host clause, otherwise Binding Condition C will be violated in that the R-expression would be c-commanded by the coindexed pro:

(154) [$_{CorCP}$ kuin=za DUMU-an $^{m.d}$LAMMA-aš$_i$ malaizzi]$_j$ nu pro$_i$ *INA* KUR
REL=REFL son Kurunta prefers CONN in land
$^{URU.d}$U-tašša LUGAL-eznani apūn$_j$ tittanuddu (Bo 86/299 ii 92-93; New
Tarhuntassa kingship.LOC.SG him install.IMP.3SG
Hittite)

"Whichever son$_j$ Kurunta$_i$ prefers, let (him$_i$) install him$_j$ in the kingship in the land of Tarhuntassa."

In example (154), one pronoun (pro$_i$, translated as 'him$_i$') is dropped, but Binding Condition C still holds for pro-drop languages, as the following Swahili example demonstrates:

(155) (pro$_j$) a-li-sem-a kwamba Juma$_i$ a-li-chek-a
3S.SUBJ-PAST-say-FV COMP Juma 3S.SUBJ-PAST-laugh-FV
"S/he$_j$ said that Juma$_i$ laughed." but not "He$_i$ said that Juma$_i$ laughed."

In this Swahili example, the dropped pronoun is the subject of the main clause while the proper name Juma is in the subordinated clause and hence c-commanded by the pro, therefore, the dropped pronoun cannot be coindexed with the name Juma by Binding Condition C.

If we assume Uniformity of Theta-Assignment Hypothesis (UTAH), the dropped pronoun is the agent of the verb *tittanuddu* 'let him install' and the correlate demonstrative *apūn* is the theme, hence the dropped pronoun must c-command *apūn*.

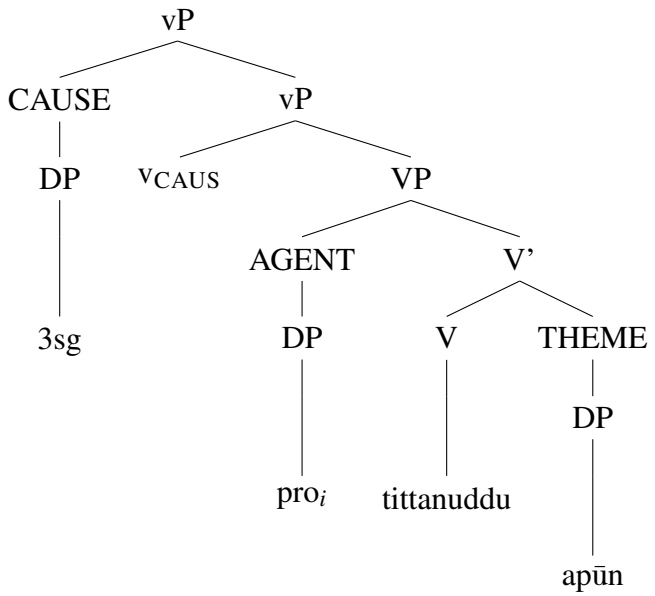

Figure 21:

If the correlative clause is moved from the adjunct position of the correlate demonstrative *apūn* as shown in the tree below, the proper name $^{m.d}$LAMMA-aš 'Kurunta' must be c-commanded by the dropped pronoun and hence cannot be coindexed with it. But the interpretation of the sentence is "whichever son Kurunta prefers, let him, Kurunta, install him, that son, in the kingship in the land of Tarhuntassa." This suggests that the correlative clause cannot be moved from the adjunct position of the correlate demonstrative.

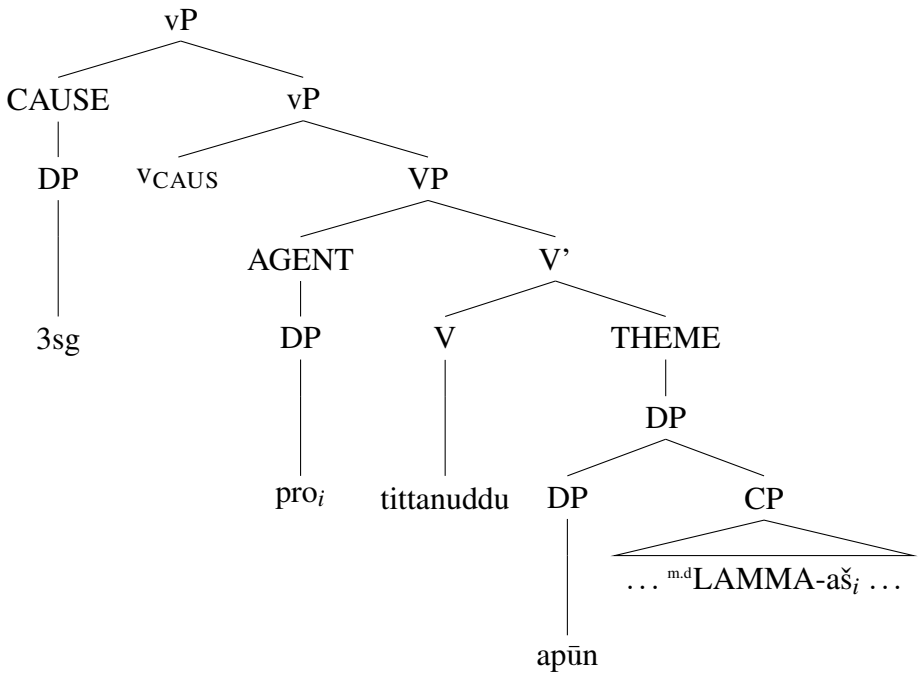

Figure 22:

4.5.2 A Non-paratactic analysis

Motter (2023) argued that Hittite correlative clauses are paratactic, and hence the correlative construction is not formed by the syntax but by the discourse. But there are examples in Hittite suggesting that the correlative clauses are not separate sentences from their host clause, for example:

(156) takku DUMU!.LU[GAL] hantezzis NU.GÁL nu kuis tān pēdas
if prince male.heir there.is.not CONN REL second.rank
[(DU)]MU-RU nu LUGAL-us apās kisaru
son CONN king DEM.NOM.SG become.IMP.3SG
(KBo 3.1 ii 36-38; Old Hittite)

"If there is no first rank prince, whatever son who is of second rank, *he* shall become king."

(157) mān DUMU.LUGAL=ma IBILA NU.GÁL nu kuis
if prince=but male.heir there.is.not CONN REL.NOM.SG
DUMU.MUNUS hantezzis nu=ssi=ssan ^{LÚ}antiyantan appāndu
daughter$_i$ oldest CONN=3SG$_i$=3SG son.in.law take.IMP.3PL
nu LUGAL-us apās kis[(aru)]
CONN king-NOM DEM.NOM.SG become.IMP.3SG
(KBo 3.1 ii 38-39; Old Hittite)

"If there is no prince, (no) male, which(ever) daughter is first rank, for her they shall take an in-marrying (son-in-law) and *he* shall become king.."

The correlative clauses in both example (156) and (157) are between their host clause and a conditional clause, introduced by *takku* and *mān* respectively. The configuration can be simplified as

CondCP CorCP HostCP

Since the conditional clauses are dependent on the host clauses. the structure should be

[[CondCP] HostCP]

If the correlative clauses and the host clauses are paratatic, then the dependency of the conditional clauses on the host clauses will be violated. Therefore, the correlative clauses should not be analyzed as parataxis.

4.6 Comparison with Indo-Iranian

In the previous chapters, I have shown that the distribution of headedness is not equivalent among the Indo-Iranian languages. Vedic demonstrates all possibilities of headedness, while the Iranian languages show more constraints on what headedness is possible with respect to the relativization strategy. In terms of headedness, Hittite is

Types of headedness	Anatolian	Indo-Iranian			
	Hittite	Indic	Iranian		
		Vedic	Old Avestan	Young Avestan	Old Persian
Externally headed	Yes	Yes	Relative	Relative	Relative
Internally headed	Yes	Yes	Correlative	Correlative	Correlative
Free	Yes	Yes	Yes	Yes	Yes
Double headed	Yes	Yes	No	No	No
Split headed	Yes	Yes	No	No	No

Table 17: Comparison with Indo-Iranian languages

more like Vedic, where all types of headedness are attested, as shown in Table 17

The similarity shared between Hittite and Vedic suggests that the diversity of types of headedness in Vedic may be inherited from Proto-Indo-Iranian and Proto-Indo-European. The Iranian branch developed a tendency to use an overt head in the preceding clause, whether it is a correlative clause or a host clause, and this is natural in the base generation analysis, since there is no movement involved in developing a correlative construction and hence whichever head is first to be pronounced surfaces as the overt head, while the other head is a pronoun.

Hittite and all Indo-Iranian languages that have been analyzed have presented clear evidence that movement is not involved in the development of their correlative constructions. Correlative clauses must be base generated in all these languages, yet the location of base generation is under debate. Besides the general argument that (cor)relative clauses do not have the semantic type to be independent clauses, Vedic does not have direct negative evidence against parataxis, but it is clear that Vedic (cor)relative clauses share similar features with dependent clauses such as adjunct clauses, in that all of them have accented verbs while main verbs are unaccented in most cases. The Iranian branches, on the other hand, have direct negative evidence against parataxis, i.e. subordinated correlative construction, repeated here as example (158)

(158) taṯ$_i$=ϑβā pərəsā ərəš.mōi vaocā
DEM.ACC.SG.N=2SG.DAT ask.PRES.1S truly=1SG.DAT say.AOR.IMP.2SG
ahurā [$_{CP}$ [$_{CorCP}$ yā frauuaxšiiā]$_j$ yezī tā$_j$ aϑā
Ahura.VOC REL.ACC.PL say.PRES.1SG whether DEM.NOM.PL verily
haiϑiiā]$_i$ (Y 44.6; OAv.)
truth.NOM.PL
"This I ask you, O Ahura, tell me truly: if what I am about to proclaim is really true."

Although such a subordinated correlative construction is not attested in Hittite, examples (156) and (157) provide evidence for a hypotactic analysis in that the adjunct clause of the host clause may precede the correlative clause. The Iranian languages and Hittite can also have the host clause of a correlative clause and another clause surrounding the correlative clause, and hence the correlative clause cannot be paratactic, though the property of the host clause is different:

Avestan:

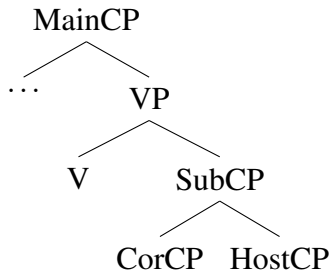

Figure 23:

Hittite:

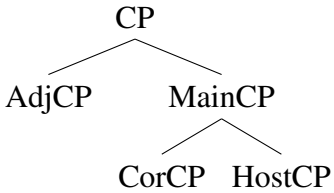

Figure 24:

By comparing the types of headedness and the mechanism of the correlative construction in Indo-Iranian languages and Hittite, it is very likely that the Vedic and Hittite strategy, which demonstrates all types of headedness in the (cor)relative construction, is the inherited from Proto-Indo-European, but other branches still need to be explored.

CHAPTER 5

HOMERIC GREEK

5.1 Introduction

Greek is one of the oldest attested Indo-European languages. The earliest known Greek with written evidence is Mycenaean Greek, which dates back to ca. 1400 - 1200 BCE. It was written in a syllabary called Linear B, rather than the Greek alphabet. There is a 400-year gap between the latest Mycenaean Greek and the earliest Greek forms in the Greek alphabet, which is called the "Greek Dark Ages". Archaic Greek, which spans ca. 800 - 480 BCE, is the earliest Greek known before the discovery of Mycenaean Greek. The earliest and also the most famous literary works of Greek are the epic poems *Iliad* and *Odyssey*. Although the authorship of these epic poems is attributed to the name Homer, these poems were not composed by a single person, but were elaborated by generations of poets. The *Kunstsprache* used in these epic poems, however, is still called Homeric Greek.

Homeric Greek showcases a blend of features from the Ionic and Aeolic dialects of Greek. Since these epic poems were composed in dactylic hexameter, where each line is formed by six feet, and each foot is either a dactyl (long-short-short), or a spondee (long-long), except the last foot is always a spondee or a trochee (long-short). Words of certain shape have to be modified to be compatible with the meter. A typical case is the metrical lengthening of words with three short syllables, for examples, the first syllable of ἀθάνατος (*athánatos*) 'immortal' is lengthened in Homeric Greek.

As one of the most important languages in Classic studies, Greek has been well studied, especially in terms of descriptive grammar and philology. Greek has been discussed

for its relevance to the broader study of Indo-European relative clauses, especially the forms of the relative pronouns, in many works on Indo-European syntax in general, such as Delbrück (1900). As for Greek itself, Chantraine (1958: 236-249, §§345-368) provided a comprehensive descriptive discussion on many aspects of relative clauses in Homer, such as the relative pronouns, the antecedents, and the tense and mood of the verbs in the relative clauses, etc. Monteil (1963) has offered a comprehensive analysis of Greek relativization, examining its morphology—such as the various pronominal stems used for relative pronouns—its syntax, including distinctions between relative and correlative constructions as well as phenomena like case attraction, and its semantics, particularly the contrast between definite and indefinite relative clauses. Nominal relative clauses, as a subtype of relative clauses, were studied by Guiraud (1962) using a corpus ranging from Homer to Euripides. He analyzed their syntactic structure, typology, and stylistic functions, identifying various types of verbless predication—such as identificational, descriptive, and existential constructions—and highlighting their prevalence in poetry.

Probert (2015) is by far the most comprehensive work on Greek relative clause within the framework of modern linguistic theories. She offered a very detailed discussion of relative clause syntax in early Greek, focusing on Homeric and archaic texts. Probert categorized the relative clauses with respect to their syntactic features, such as—in my terms—the relative linear positions to the host clause and headedness. She also paid special attention to the semantic functions of relatives, namely the restrictive, appositive, and maximalizing relative clauses. In addition, she also discussed the patterns of case attraction, and the syntax-pragmatics interface.

5.2 Relative pronouns

The relative pronouns of Homeric Greek derives from the PIE *$h_x\underset{\frown}{i}o$- stem, which is cognate to the *ya*- stems in Vedic and Avestan. The paradigm of the relative pronouns in Homeric Greek is shown in Table 18:

	Singular			Dual	Plural		
Gd.	m.	n.	f.	m., n. & f.	m.	n.	f.
Nom.	ὅς (hós)	ὅ (hó)	ἥ (hḗ)	ὥ (hṓ)	οἵ (hoí)	ἅ (há)	αἵ (haí)
Acc.	ὅν (hón)		ἥν (hḗn)		οὕς (hoús)		ἅς (hás)
Gen.	οὗ (hoũ) ὅου (hóou)		ἧς (hē̃s) ἑῆς (héēs)		ὧν (hō̃n)		
Dat.	ᾧ (hō̃)		ᾗ (hē̃)		οἷς (hoîs) οἷσι[ν] (hoîsi[n])		ᾗς (hē̃s) ᾗσι[ν] (hē̃si[n])

Table 18: Paradigm of the Homeric Greek Relative Pronoun *ho*-

The demonstrative pronouns can also be used as relative pronouns. The paradigm is as follows:

	Singular			Dual	Plural		
Gd.	m.	n.	f.	m., n. & f.	m.	n.	f.
Nom.	ὁ (ho)	τό (tó)	ἡ (hē)	τώ (tṓ)	οἱ (hoi) τοί (toí)	τά (tá)	αἱ (hai) ταί (taí)
Acc.	τόν (tón)		τήν (tḗn)		τούς (toús)		τάς (tás)
Gen.	τοῖο (toîo) τοῦ (toũ)		τῆς (tē̃s)	τοῖιν (toîin)	τῶν (tō̃n)		τάων (táōn) τῶν (tō̃n)
Dat.	τῷ (tō̃)		τῇ (tē̃)		τοῖσι[ν] (toîsi[n]) τοῖς (toîs)		τῇσι[ν] (tē̃si[n]) τῇς (tē̃s)

Table 19: Paradigm of the Homeric Greek Demonstrative Pronoun *ho/to*-

As the tables show, there are a few forms of the demonstrative pronouns identical to the relative pronouns, since the Greek demonstrative pronouns are derived from the PIE **so/to*- pronouns, and PIE **s* and *$h_x\underset{\frown}{i}$* merged into *h* in the initial position before a vowel in Greek. In the cases with the forms that are ambiguous between the relative and demonstrative pronouns, it is difficult to determine which type the pronouns are.

(159) ἀλλὰ τὰ μὲν πολίων ἐξεπράθομεν, τὰ δέδασται, (Il. 1.125; Cunliffe, 1924: 284)

allà tà mèn políōn eksepráthomen, tà dédastai,
but DEM EMPH city.GEN.PL destroy.AOR.1PL DEM divide.PERF.MID.3SG

"but whatever we took by pillage from the cities has been distributed, ..."[1]

In this example, the first demonstrative pronoun τά (*tá*) is interpreted as a relative pronoun that introduces a free relative clause.[2] This is due to the fact that there is no antecedent in the context for τά (*tá*) to refer to as a pronoun, and also the entire clause is a general statement with a quantitative reading.

5.3 Relatives vs. Correlatives

Homeric Greek has both correlative clauses and relative clauses. The following example is a correlative construction:

(160) αἳ γὰρ ὑπ' ἠελίῳ τε καὶ οὐρανῷ ἀστερόεντι
νναιετάουσι πόληες$_i$ ἐπιχθονίων ἀνθρώπων,
τάων μοι περὶ κῆρι τιέσκετο Ἴλιος ἱρή
καὶ Πρίαμος καὶ λαὸς ἐϋμμελίω Πριάμοιο. (Il. 4. 44–7; Probert, 2015: 143)

[$_{CRC}$ haì gár hup' ēelíō te kaì ouranō̃ asteróenti
REL.NOM.PL for under sun.DAT.SG and and sky.DAT.SG starry.DAT.SG

naietáousi pólēes$_i$ epikhthoníōn anthrṓpōn]$_i$
dwell.PRES.3PL city.NOM.PL earth-dwelling.GEN.PL man.GEN.PL

[1]All the translations for Iliad are from Murray (1924).

[2]In this chapter, the accent of each form is given according to its citation form when it is mentioned in isolation, even if the accent changes in context. For example, the accent of the demonstrative pronoun τά (*tá*) appears as grave, i.e. τὰ (*tà*), in the text because its accent is on the last syllable and it is followed by an accented word μέν (*mén*), but when cited alone, it is marked with the acute accent.

táōn$_i$ moi perì kẽri tiésketo
DEM.GEN.PL 1SG.DAT.ENCL around heart.DAT.SG honor.IMPF.3SG
ílios hirḗ
Ilium.NOM.SG sacredNOM.SG

kaì príamos kaì laòs eümmelíō
and Priam.NOM.SG and people.NOM.SG good-speared.GEN.SG
priámoio
Priam.NOM.GEN

"For (among) the cities of earth-dwelling people that provide habitation under the sun and the starry sky, among those sacred Troy was especially honoured by me in my heart, and Priam and the people of good-speared Priam."

In this example, the feminine plural relative pronoun αἳ (*haì*) introduces the correlative clause modifying πόληες (*pólēes*) 'the cities', and the entire clause is coindexed with the demonstrative pronoun τάων (*táōn*), which is also feminine plural, in the following host clause. Therefore this is a correlative construction.

In addition to correlative constructions, Homeric Greek also has relative clauses, both right extraposed and embedded. Probert (2015: 126) pointed out that Greek relative clauses are often extraposed:

(161) ... οὐδ' ἦν Ἀγαμέμνονα εἴπῃς,
ὃς νῦν πολλὸν ἄριστος ἐνὶ στρατῷ εὔχεται εἶναι. (Il. 1.90-91; Probert, 2015: 126)

... oud' ēn Agamémnona eípēs
NEG if.haply Agamemnon.ACC.SG say.AOR.SUBJ.2SG

hòs nũn pollòn áristos enì stratõ̃ eúkhetai
REL.NOM.SG now much best.NOM.SG in army. declare.PRES.3SG
eĩnai.
COP.PRES.INF

"... not even if it is Agamemnon you mean, who now declares himself far the best in the army."[3]

In this example, the head noun Ἀγαμέμνονα (Agamémnona) 'Agamemnon' is in the preceding host clause. The following relative clause is introduced by the relative pronoun ὅς (*hós*) and modifies Ἀγαμέμνονα (Agamémnona).

Embedded relative clauses, however, are also attested, with a noun phrase following the relative clause as an apposition:

(162) Ζεῦ ἄνα, δὸς τείσασθαι, ὅ με πρότερος κάκ' ἔοργεν,
[δῖον Ἀλέξανδρον]$_i$, καὶ ἐμῇς ὑπὸ χερσὶ δάμασσον … (Il. 3. 351–2; Probert, 2015: 133)

zeũ ána, dòs teísasthai,
Zeus.VOC.SG lord.VOC.SG give.AOR.IMP.2SG revenge.AOR.INF.MID
[$_{RC}$ hó me próteros
DEM-REL.NOM.SG 1SG.ACC.ENCL first/before
kák' éorgen]$_i$
bad.deed.ACC.PL do.PERF.3SG

[dĩon aléksandron]$_i$, kaì emẽs hupò khersì
god-like.ACC.SG Alexander.ACC.SG and mine.DAT.PL towards hand.DAT.SG
dámasson …
overpower.AOR.IMP.2SG

"Lord Zeus, grant me to revenge myself on him who has done me harm first—god-like Alexander—, and subdue him at my hands..."

In this example, the free relative clause is introduced by a demonstrative pronoun ὅ (*hó*), and it is the object of the infinitival verb τείσασθαι (*teísasthai*) 'to revenge

[3]Murray (1924) translated from another version with Ἀχαιῶν (Akhaiõn) 'of the Achaeans' instead of stratõ (enì stratõ) 'in the army', and his original translation, before my modification to be compatible with the version Probert used, is "not even if it is Agamemnon you mean, who now declares himself far the best of the Achaeans."

oneself on,' and it is followed by the appositional noun phrase δῖον Ἀλέξανδρον (*dĩon aléksandron*) 'god-like Alexander' hence this relative clause is linearly embedded in the host clause.

5.3.1 Prezafe type in Homeric Greek

The Vedic and Iranian chapters discussed the development of the izafe construction from its precursor, namely the verbless nominal relative clause. This type of relative clause is also attested in Homeric Greek, but it was only in stage I and never developed into the narrow sense izafe, hence it is only the prezafe type.

In Vedic and Avestan, relative clauses are rarely embedded, except for the prezafe type. Greek, however, does not have the restriction on which type of relative clause to be embedded, but the verbless nominal relative clauses in Homeric Greek still have its special characteristics when compared to other relative clauses in Greek.

The typical structure of the prezafe type is "X which Y", meaning "X, which is Y." But there is no overt copula in this structure. In Greek, a nominal relative clause can be either verbless or with an overt copula just like any nominal clause in Old Indo-European languages, and previous literature has discussed the distinction between these two types. Guiraud (1962) claimed that nominal relative clauses need to have an overt copula in the following three cases: (1) it is an indisputable fact, (2) it is informational, and (3) it is formulaic, namely ἥ θέμις ἐστί (*hḕ thémis estí*) "as is customary."

As for the indisputable fact, there are examples which can be interpreted as counterexamples to Giraud's observation:

(163) ἄλλος κέν τις τοῦτο θεῶν δείσειε νόημα,

ὃς σέο πολλὸν ἀφαυρότερος χεῖράς τε μένος τε (Il. 7.456-7)

állos kén tis toũto theõn deíseie
other.NOM.SG PT INDEF DEM.ACC.SG god.GEN.PL fear.AOR.OPT.3SG
nóēma,
thought.ACC.SG

hòs séo pollòn aphauróteros kheĩrás
REL.NOM.SG 2SG.ENCL.INDECL much feeble.COMP.NOM.SG hand.ACC.PL
te ménos te
and mind.ACC.SG and

"Someone else of the gods might perhaps fear this thought, one who is feebler far than you in hand and force."

In this example, Zeus is talking to Poseidon. In the depiction of Homer, Poseidon is the closest god to Zeus by power, and hence Zeus is suggesting that any other god besides the two of them would fear this thought, and they are far feebler than Poseidon, and also Zeus, which is an indisputable fact. But in this example, the relative clause introduced by ὅς (*hós*) is verbless.

Probert (2015) offered the theory that the source for verbless relative clauses is verbless free relative clauses. If a relative clause is verbless and also free, there can only be a relative pronoun and a non-verbal predicate, which is exactly the relative clause in prezafe stage I (since the prezafe structures in Homeric Greek did not have case attraction, prezafe stage II never occurred in Homeric Greek). The other feature that free relative clauses have is that they do not have an overt lexical head, but verbless relative clauses in Homeric Greek can be postnominal or right extraposed, meaning that they can have an external head in the host clause, which Probert suggested is an innovation.

In this section, I will provide an alternative source for verbless relative clauses in Homeric Greek, i.e. appositive nominal relative clauses, which are verbless, namely

prezafe stage I. This hypothesis is compatible with the Indo-Iranian data, and structures that shares common syntactic features (verbless, embeddable) and semantic features (appositive) can be traced back to one single source in Proto-Indo-European. Additionally, Probert (2015) also argues that Greek postnominal verbed relative clauses must be appositive, and hence appositivity and postnominal position can be matched in Greek, either with or without a verb. In the following paragraphs, I will show that Homeric Greek did distinguish verbless and verbed nominal relative clause by their semantics, namely appositive vs. restrictive.

The functions of the copula has been extensively studied in the semantic literature, Mikkelsen (2005), for example. For the purpose of the study of Homeric Greek, I will only list some of the relevant functions of the copula discussed by Mikkelsen.

Clause type	Subject type	Complement type	Example
Predicational	e	$\langle e,t \rangle$	Susan is a doctor.
Specificational	$\langle e,t \rangle$	e	The winner is Susan.
Equative/Identity	e	e	She is Susan.
Identificational	e	e	That (woman) is Susan.

Table 20: Functions of copula

The configuration of a RC with copula "A which Cop B" is

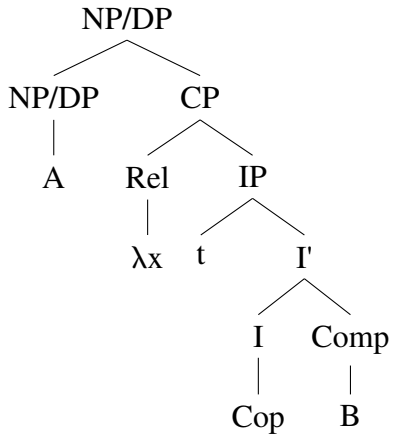

Figure 25:

The semantics of the whole NP is λx.x is A and x Cop B. Hence the semantic usage of the copula is not disambiguated with the scope of the relative clause, but in the NP in the main clause. Consider the following example:

(164) ὡς ἂν Πηλεΐδην τιμήσομεν, ὃς μέγ' ἄριστος (Il.16.271)

hōs àn pēleΐdēn timḗsomen, hòs még' áristos
so PT son.of.Peleus.ACC.SG honor.FUT.1PL REL.NOM.SG great best.NOM.SG

"so that we may win honor for the son of Peleus, who is far the best..."

In this example, the ∅ copula, which is equative, suggest the equation of the lexical head 'son of Peleus' and the best one. If the equation is taken within the scope of the free relative clause, it would be interpret as "whoever is the best."

By collecting all the nominal relative clauses in Homeric Greek, separating them into the ones with a copula and the verbless ones, and examining what functions are shared by the other group, I argue that the verbless nominal relative clauses are confined to the definite appositive relative clauses, while the other usages require an overt copula.

5.3.1.1 Nominal Relative Clauses with a copula

Nominal Relative Clauses with a copula may have the restrictive reading, like the following example:

(165) φίλτατος ἔσκε θεοῖσι βροτῶν οἳ ἐν Ἰλίῳ εἰσίν. (Il. 24.67)

phíltatos éske theoῖsi brotō̃n
dear.SUPERL.NOM.SG COP.IMPF.3SG god.DAT.PL mortal.GEN.PL
[hoì en ilíō eisín] (Il. 24.67)
REL.NOM.PL in Ilios.DAT.SG COP.PRES.3PL

"(but Hector too) was dearest to the gods of all mortals that are in Ilios."

If the relative clause in this example were appositive, then it would suggest that all mortals are known as to be in Ilios, which is clearly not true. Contrarily, this is a typical intersective restrictive RC:

⟦mortals that are in Ilios⟧ = {x | x is a mortal *AND* x is in Ilios}.

The following example is also restrictive:

(166) ἔνθα μὲν εἰς Ἀχέροντα Πυριφλεγέθων τε ῥέουσιν

Κώκυτός θ' ὃς δὴ Στυγὸς ὕδατός ἐστιν ἀπορρώξ, (Od. 10.513-4)

éntha mèn eis akhéronta puriphlegéthōn te
there EMPH into Acheron.ACC.SG Periphlegethon.NOM.SG and
rhéousin
flow.PRES.3SG

kṓkutós th' hòs dḕ stugòs hútatós
Cocytus.NOM.SG and REL.NOM.SG PT Styx.GEN.SG water.GEN.SG
estin aporrhṓks,
COP.PRES.3SG broken.off.NOM.SG

"There into Acheron flow Periphlegethon and Cocytus, which is a branch of the water of the Styx."

In this example, at least two branches are named, therefore, even without the knowledge of "Greek underworld geography", one can still draw the conclusion that Cocytus is a branch of Styx, not "the branch", which does not make sense anyway. It is noteworthy that the copula in a restrictive relative clause is usually predicational. In the example above, the predicate noun "a branch" has semantic type $\langle e,t\rangle$.

Counterintuitively, relative clauses on superlatives are typically restrictive. Adjectives have type $\langle e,t\rangle$ and definite article has type $\langle\langle e,t\rangle,e\rangle$: λP.ιe such that P(e) is true. In English, a superlative adjective like "best" has type $\langle e,t\rangle$ and "the best" has type $\langle e\rangle$. Homeric Greek is a language with overt definite articles, but it does not use the articles

for the superlatives in the relative clauses, hence I argue that their semantic type is still $\langle e,t \rangle$. This explains why relative clauses with superlative have overt copulas like the following example:

(167) Αἰνείαν, ὃς ἐμοὶ πάντων πολὺ φίλτατός ἐστιν. (Il. 5.378)

aineían, hòs emoì pántōn polù
Aeneas.ACC.SG REL.NOM.SG 1SG.DAT all.GEN.PL much
phíltatós estin.
dear.SUPERL.NOM.SG COP.PRES.3SG

"(my dear son) Aeneas, who is far the dearest of all men to me."

When the tense and mood need to be expressed, the copula has to show up, regardless of the semantic meaning:

(168) πὰρ δὲ τοι υἷες ἐμοί, οἵ τοι πομπῆες ἔσονται (Od.3.325)

pàr dè toi huîes emoí, hoí
beside and 2SG.DAT.ENCL son.NOM.PL 1SG.INDECL REL.NOM.SG
toi pompẽes ésontai
2SG.DAT.SG guide.NOM.SG COP.FUT.3SG

"and here at your service are my sons, who will be your guides..."

In this example, an appostive reading is expected, but the relative clause still has an overt copula. In general, copulas in the imperfect or aorist tense can be from the narration, and copulas in the optative mood can be from indirect questions. These copulas are never omitted.

This suggests that morphological interference may be a factor causing confusion, that is to say, When tense/mood need to be expressed, there must be a holder for them, and hence the overt copula is needed despite the usage. This also happens in other languages:

(169) Я студент vs. Я был студентом (Russian)

ja student-∅. vs ja byl student-om
1SG.NOM student-NOM.SG 1SG.NOM COP.PRET.M student-INS.SG

"I am a student." vs. "I was a student."

(170) ana muhandis-un vs. kuntu muhandis-an
1SG engineer-NOM.SG COP.PRET.1SG engineer-ACC.SG-INDEF
(Arabic)

"I am an engineer." vs. "I was an engineer."

Copulas may also express a concessive reading, which is not unheard of in other old Indo-European langauges:

(171) μήθ' Ἑλένην γνωτὸν δὲ [καὶ ὃς μάλα νήπιός ἐστιν] (Il. 7.401)

mḗ=th' helénēn gnōtòn dè [kaì hòs mála
not=and Helen.ACC.SG know.PPP.ACC.SG and and REL.NOM very
nḗpiós estin]
fool.NOM.SG COP.PRES.3SG

"(Let no man now accept the treasure from Alexander, nay,) nor Helen; known is it, [even to him who hath no wit at all], (that now the cords of destruction are made fast upon the Trojans.)"

In this example, the relative clause has a concessive reading "even to him who..." Therefore, the copula is expressed overtly.

Certain particles can trigger the concessive reading more clearly, like περ in the following example.

(172) οἵ περ ἐνέρτεροί εἰσι θεοὶ Κρόνον ἀμφὶς ἐόντες. (Il. 15.225)

hoí per enerteroí eisi theoí
REL.NOM.PL EMPH lower.NOM.PL COP.PRES.3PL god.NOM.PL
krónon amphìs eóntes
Cronos.ACC.SG on.both.sides COP.PAP.NOM.PL

"even the gods that are in the world below with Cronos."

In addition to the functions mentioned above, nominal relative clauses with an overt copula may also express free choice:

(173) οὐδέ μιν ὥς γαμέω: ὃ δ' Ἀχαιῶν ἄλλον ἐλέσθω,

ὅς τις οἵ τ' ἐπέοικε καὶ ὃς βασιλεύτερός ἐστιν. (Il. 9.391-2)

ou=dé min hõs gaméō: hò d' akhaiõn állon
not=but her as marry.FUT.1SG 3SG.NOM PT Achaean.GEN.PL other.ACC.SG
helésthō,
choose.APR.IMP.3SG

hós tis hoĩ t' epéoike kaí
REL.NOM.SG INDEF.NOM.SG 3SG.DAT and be.like.PERF.3SG and
hós basileúterós estin.
REL.NOM.SG kingly.COMP.NOM.SG COP.PRES.3SG

"not even so will I wed her; let him choose another of the Achaeans [that is of like station with himself and more kingly than I]."

The relative clause in this example can be rephrased as "*any* other Achaeans that is like station with himself and more kingly than I," which has the free choice meaning.

5.3.1.2 Nominal Relative Clauses without a copula

Contrarary to the examples with an overt copula, the main function of the verbless nominal relative clauses is to be in apposition of their head:

(174) νέρθεν ἅπας πεπάλακτο καὶ [ἄντυγες αἳ περὶ δίφρον], (Il. 11.535)

nérthen hápas pepálakto kaì [ántuges
from.below whole sprinkle.PLUPERF.3SG and chariot-rim.NOM.PL
haì perì díphron]
REL.NOM.PL around chariot-board.ACC.SG

"(and with blood was all the axle) sprinkled below, and the rims round about the chariot."

This example with the chariot component demonstrates the appositivity of verbless relative clauses perfectly, since the chariot-rims are round about the chariot-board by definition as shown in the figure 26. The chariot-board (δίφρος, dífros) is part 3 in the figure, and the chariot-rim (ἄντυξ, ántyks) is the curly rail around it. Therefore, the relative clause must be appositive.

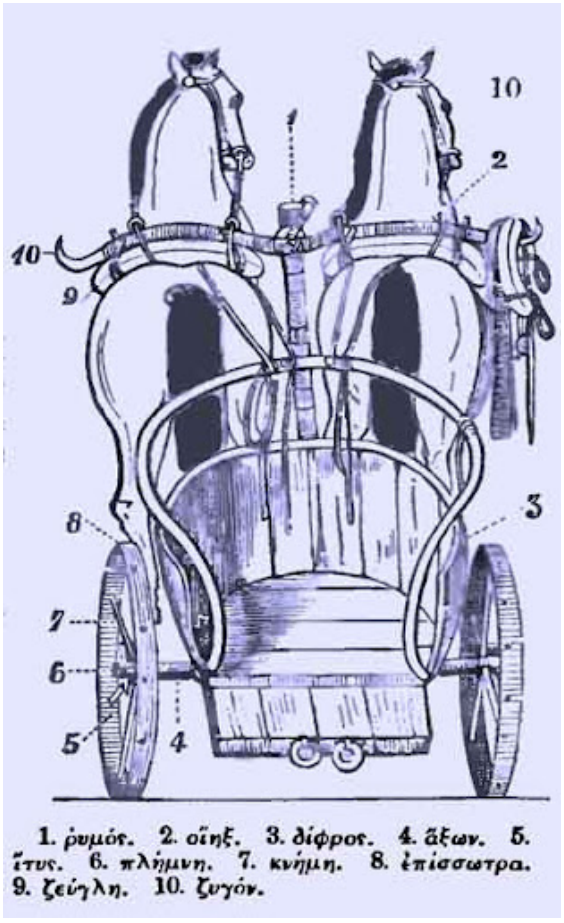

Figure 26: Greek chariot

The only exceptions other than appositive relative clauses are about the superlatives. There are a few examples with superlatives in relative clauses without copula:

(175) αὐτὸς δὲ προκάλεσσαι Ἀχαιῶν ὅς τις ἄριστος. (Il. 7.50)

autòs dè prokálessai akhaiῑ̃n hós tis
self PT call.forth.AOR.INF Achaean.GEN.PL REL.NOM.SG INDEF.NOM.SG
áristos
best.NOM.SG

"and you challenge whoever is best of the Achaeans (to do battle)."

The phrase ὅς τις ἄριστος (*hós tis áristos*) "who(ever) is the best" occurs repeatedly as a formula. In this example it is modifying Achilles, who is known to be the the best of Achaeans in Iliad. This relative clause may be viewed as an epithet, hence in addition to 'Achilles, the god-like,' 'Achilles, the swift-footed,' here they say 'Achilles, the best,' with the superlative being opaque in the phrase.

Another interesting example is about the hero Ajax (Aias):

(176) Αἴαντός θ' ὃς ἄριστος ἔην εἶδός τε δέμας τε

τῶν ἄλλων Δαναῶν μετ' ἀμύμονα Πηλεΐωνα (Od. 11.469-470)

aíantós th' hòs áristos éēn eῖdós
Ajax.GEN.SG and REL.NOM.SG best.NOM.SG COP.IMPF.3SG beauty.ACC.SG
te démas te
and form.ACC.SG and

tῶn állōn danaōn met' amúmona
DEM.GEN.PL other.GEN.PL Danaan.GEN.PL amidst flawless.ACC.SG
pēleΐ̄ōna
son.of.Peleus.ACC.SG

"and of Aias, who in beauty and form surpassed all the Danaans except the flawless son of Peleus."

In Homer, there are two person with the name Ajax, since here the relative clause is to distinguish him from the other one, and hence a restrictive relative clause, hence the copula is overt.

Finally, under the appositive reading analysis, the counterexample to Guiraud (1962) can be explained by saying that since Poseidon is the strongest god except for Zeus, when Zeus mentions 'another god' in front of Poseidon, that god must be feebler than both of them, and hence "who is feebler far than you in hand and force" will be an appositive relative clause to any god, rather than a restrictive relative clause that can find the subset of gods who are weaker, and distinguish them from the gods who are stronger than Poseidon.

5.3.1.3 Interim Summary

By comparing verbed and verbless relative clauses in Homeric Greek, I argue that they are semantically distinct. The verbless nominal relative clause in Homeric Greek aligns with the prezafe construction both syntactically (through the absence of a verb) and semantically (as definite appositive). The presence of the prezafe structure in two early-attested Indo-European branches supports the hypothesis that it was part of Proto-Indo-European syntax and may have been the only type of clausal structure originally available for embedding.

5.4 Headedness

Homeric Greek (cor)relative clauses showcase a variety of headedness, namely, externally headed, internally headed and free.

5.4.1 External headedness

Extraposed relative clauses are externally headed, example (161) is repeated here as example (177):

(177) ... οὐδ’ ἢν Ἀγαμέμνονα εἴπῃς,
ὃς νῦν πολλὸν ἄριστος ἐνὶ στρατῷ εὔχεται εἶναι. (Il. 1.90-91; Probert, 2015: 126)

... oud’ ēn Agamémnona eípēs
NEG if.haply Agamemnon.ACC.SG say.AOR.SUBJ.2SG

hòs nũn pollòn áristos enì stratõ̃ eúkhetai
REL.NOM.SG now much best.NOM.SG in army. declare.PRES.3SG
eĩnai.
COP.PRES.INF

“... not even if it is Agamemnon you mean, who now declares himself far the best in the army.”

As discussed in section 5.3, the head noun of this example Ἀγαμέμνονα (Agamémnona) ‘Agamemnon’ is in the host clause and it is in the accusative case assigned by the verb εἴπῃς eípēs ‘(if) you would say’ in the host clause. The relative clause is not linear adjacent to the head noun, but right extraposed, and the relative pronoun ὅς (hós) is in the nominative case. The non-adjacency and case mismatching clearly show that this example is externally headed.

5.4.2 Internal headedness

Homeric Greek correlative clauses are most commonly internally headed, like the following example demonstrates:

(178) [αἳ γὰρ ὑπ᾽ ἠελίῳ τε καὶ οὐρανῷ ἀστερόεντι

νναιετάουσι πόληες$_i$ ἐπιχθονίων ἀνθρώπων,]$_i$

τάων$_i$ μοι περὶ κῆρι τιέσκετο Ἴλιος ἱρή

καὶ Πρίαμος καὶ λαὸς ἐϋμμελίω Πριάμοιο. (Il. 4. 44–7; Probert, 2015: 143)

[$_{\text{CRC}}$ haì gàr hup’ ēelíō te kaì ouranō̃ asteróenti
REL.NOM.PL for under sun.DAT.SG and and sky.DAT.SG starry.DAT.SG

naietáousi pólēes$_i$ epikhthoníōn anthrṓpōn,]$_i$
dwell.PRES.3PL city.NOM.PL earth-dwelling.GEN.PL man.GEN.PL

táōn$_i$ moi perì kē̃ri tiésketo
DEM.GEN.PL 1SG.DAT.ENCL around heart.DAT.SG honor.IMPF.3SG
ílios hirḗ
Ilium.NOM.SG sacredNOM.SG

kaì príamos kaì laòs eümmelíō
and Priam.NOM.SG and people.NOM.SG good-speared.NOM.GEN
priámoio
Priam.NOM.GEN

“For (among) the cities of earth-dwelling people that provide habitation under the sun and the starry sky, among those sacred Troy was especially honoured by me in my heart, and Priam and the people of good-speared Priam.”

In example (178) the head noun of the correlative clause is πόληες (pólēes) ‘cities’ which is in the nominative case, agreeing with the relative pronoun αἵ (haí), and it is also linearly inside the correlative clause. The correlate demonstrative τάων (táōn) in the host clause, however, is in the genitive case. The case matching and the linear order show that this example has an internal head in the correlative clause.

Homeric Greek relative clauses can also be internally headed, which Probert (2015: 130) referred to as “the type with antecedent ‘incorporated’ ”:

(179) [ὃς δέ κ’ ἀνὴρ$_i$ ἀπὸ ὧν ὀχέων ἕτερ’ ἅρμαθ’ ἵκηται,]$_i$

ἔγχει ὀρεξάσθω … (Il. 4. 306–7; Probert, 2015: 130)

[$_{RC}$ hòs dé k’ anēr$_i$ apò hō̃n okhéōn
REL.NOM.SG PT PT man.NOM.SG from HIS.GEN.PL chariot.GEN.PL
héter’ hármath’ híkētai,]$_i$
other.ACC.PL chariot.ACC.PL come.AOR.SUBJ.3SG

égkhei oreksásthō …
spear.DAT.SG reach.out.AOR.IMP.3SG

“Whatever man reaches another chariot from his chariot is to reach out with his spear...”

Probert (2015: 137) also discussed a type of relative clause whose head is internal, and they are coindexed with a demonstrative pronoun in the host clause, like the following example:

(180) φῇ γὰρ ὅ γ’ αἱρήσειν Πριάμου πόλιν ἤματι κείνῳ,

νήπιος, οὐδὲ τὰ$_i$ ᾔδη, [ἃ ῥα Ζεὺς μήδετο ἔργα]$_i$ (Il. 2. 37–8; Probert, 2015: 137)

phē̃ gàr hó g’ hairḗsein priámou pólin ḗmati
thought for 3.SG EMPH grasp.FUT.INF Priam.GEN.SG city.ACC.SG day.DAT.SG
keínō,
DEM.DAT.SG

nḗpios, oudè tà$_i$ ḗdē, [$_{RC}$ há rha
fool.NOM.SG NEG DEM knowPLUPERF.3SG REL.ACC.PL EMPH
zeùs mḗdeto érga]$_i$
Zeus.NOM.SG intend.IMPERF.3SG deed.ACC.PL

“For he really believed that he should take the city of Priam on that very day—fool that he was!—and he did not know what deeds Zeus was planning.”

5.4.3 Free

Homeric Greek correlative clauses can be free:

(181) [ὃς μέν τ’ αἰδέσεται κούρας Διὸς ἄσσον ἰούσας,]$_i$

τὸν$_i$ δὲ μέγ’ ὤνησαν καί τ’ ἔκλυον εὐξαμένοιο (Il. 9. 508–9; Probert, 2015: 143)

[$_{CorCP}$ hòs mén t’ aidésetai koúras
REL.NOM.SG PT PT respect.AOR.SUBJ.3SG daughter.ACC.PL
diòs ásson ioúsas,]$_i$
Zeus.GEN.SG nearer COP.PAP.ACC.PL

tòn$_i$ dè még’ ṓnēsan kaí t’ ékluon
DEM.ACC.SG PT greatly help.AOR.3PL and and listen.AOR.3PL
euksaménoio
pray.PMP.GEN.SG

“Whoever respects the daughters of Zeus when they come close, him they help greatly and they listen when he prays.”

Homeric Greek relative clauses can also be free:

(182) … γνωτὸν δέ, καὶ [$_{RC}$ ὃς μάλα νήπιός ἐστιν,]

ὡς ἤδη Τρώεσσιν ὀλέθρου πείρατ’ ἐφῆπται. (Il. 7. 401–2; Probert, 2015: 130)

… gnōtòn dé, kaì [$_{RC}$ hòs mála nḗpiós
known.NOM.SG PT even REL.NOM.SG very stupid.NOM.SG
estin,]
COP.PRES.3SG

hōs ḗdē trṓessin oléthrou peírat’
COMP already Troy.DAT.PL destruction.GEN.SG bond.NOM.PL
ephē̃ptai
fasten.PERF.3SG

“It is well known, even (to) (him) who is very stupid, that the bonds of destruction are already fastened onto Troy.”

Table 21 summarizes the distribution of all the languages that have been discussed: Greek shares more similarity in terms of the distribution of possible headedness with the Iranian family, especially in that both Greek and the Iranian languages disfavor overt heads appearing more than once, and this is also very similar to the modern Indo-European languages with postnominal relative clauses, where only one of the double heads is overt if following Cinque's (2020) double headed analysis, or there is only one head under other syntactic analysis, such as the Raising Analysis before Cinque (2020). In the Iranian chapter, I argued that Old Persian differs from the other languages by a syntactic innovation, namely true embedded relative clauses emerged in Old Persian, the similarity between Homeric Greek and the Iranian languages raises the question whether Greek has true embedded relative clause, and if so, whether the correlative clauses are base generated or are relative clauses de facto but moved in front. These questions will be answered in the following section.

Types of headedness	Anatolian	Indo-Iranian				Greek
	Hittite	Indic	Iranian			
		Vedic	Old Avestan	Young Avestan	Old Persian	
Externally headed	Yes	Yes	Relative	Relative	Relative	Yes
Internally headed	Yes	Yes	Correlative	Correlative	Correlative	Yes
Free	Yes	Yes	Yes	Yes	Yes	Yes
Double headed	Yes	Yes	No	No	No	No
Split headed	Yes	Yes	No	No	No	No

Table 21: Comparison of headedness

5.5 Syntactic Analysis

Unlike the Indo-Iranian languages and Hittite, there is no evidence showing that Greek correlative clauses are base generated in the left periphery of the host clause. Chantraine (1958: 254-299 §§374-439) listed the following complementizers for adjunct clauses in Greek: ὅτε (*óte*), ὁπότε (*hoóte*), εὖτε (*heũte*), ἧμος (*hēmos*), ὅπως

(*hópōs*), ἡνίκα (*hēníka*), ἐπεί (*epeí*), ὡς (*hōs*), ἕως (*éōs*), ὄφρα (*óphra*), εἰς ὅ κε (*eis ó ke*), πρίν (*prín*), ὅς (*hós*), ἵνα (*hína*), ὅπως (*hópōs*), εἰ (*ei*), εἰ δ' ἄγε (*ei d'áge*), εἰ περ γαρ (*ei per gar*), ὅτι (*hóti*), and no clause introduced by the relative pronouns has a correlate demonstrative in the adjunct clauses. Although the absence of this structure does not mean it is ungrammatical due to the fact that there is no native speakers to consult, there is one example in Homeric Greek where its adjunct clause has a demonstrative pronoun that refers to the relative clause—but not a coindexed correlate demonstrative pronoun—showing that the correlative clauses are moved from the host clause to the left periphery:

(183) [μητέρα δ', ἣ βασίλευεν ὑπὸ Πλάκῳ ὑληέσσῃ]$_i$,
τὴν$_i$ ἐπεὶ ἂρ δεῦρ' ἤγαγ' ἅμ' ἄλλοισι κτεάτεσσιν,
ἂψ ὅ γε τὴν$_i$ ἀπέλυσε λαβὼν ἀπερείσι' ἄποινα, ... (Il. 425-427)

[$_{RC}$ mētéra d', hḕ basíleuen hupò plákō
mother.ACC.SG and REL.NOM.SG rule.IMPF.3SG under Placus.DAT.SG
hulēéssē]$_i$,
woody.DAT.SG

tḕn$_i$ epeì àr deũr' égag' hám'
DEM.ACC.SG when EMPH hither bring.AOR.3SG at.the.same.time
álloisi kteátessin,
other.DAT.PL property.DAT.PL

àps hó ge tḗn$_i$ apéluse labṑn
back.again 3.SG EMPH DEM.3SG set.free.AOR.3SG take.AAP.NOM.SG
apereísi' ápoina
countless.ACC.PL ransom.ACC.PL

"And my mother, who was queen beneath wooded Placus, her brought he here with the rest of the booty, but he set her free again, when he had taken ransom past counting."

In this example there are three clauses: a relative clause in line 425 introduced by ἥ (*hḗ*) with the antecedent μητέρα (*mētéra*) 'mother' in front, a temporal adjunct clause

in line 426 introduced by the complementizer ἐπεί (*epeí*) and with the demonstrative pronoun τήν (*tḗn*) referring to μητέρα (*mētéra*), and a host clause starting from line 427 also with the demonstrative pronoun coindexed with the relative clause.

The clause introduced by ἥ (*hḗ*) should be taken as a moved relative clause rather than a correlative clause because its head μητέρα (*mētéra*) 'mother' is external but moved with the relative clause, and this structure is not attested in languages like Vedic, where correlative clauses are base generated. In Vedic the head can be in front of the relative pronoun, namely the raised head relative clause, but it is only "linearly external headed" and syntactically it is still internally headed. A relevant example in Vedic is repeated here:

(184) sómam yám brahmā́ṇaḥ vidúḥ
soma.ACC.SG REL.ACC.SG formulator.NOM.PL know.PERF.3PL

ná tásya aśnāti káḥ caná (RV 10.85.3cd)
not DEM.GEN.SG comsume.PRES.3SG anyone at.all

"But the Soma that the formulators know—no one at all consumes that."

In example (184) the head *sómam* 'Soma' is in the accusative case, which agrees with the relative pronoun *yám* but does not agree with the correlative demonstrative *tásya*, which is in the genitive case, in the host clause. This suggests that the head *sómam* is generated in the *yám*-correlative clause and fronted to a TopP prejection. The relative clause in the first line of example (183), however, has its head μητέρα (*mētéra*) 'mother' in the accusative case, which does not agree with the relative pronoun ἥ (*hḗ*), which is in the nominative case, but it agrees with the demonstrative pronoun τήν (*tḗn*), both in the adjunct clause and in the host clause. This suggests that the accusative case of the head μητέρα (*mētéra*) must be assigned by one of the two clauses but not by the relative clause, and hence the head is external. One possible counter-argument

may be that the case mismatching is a compromise to the meter, but if we suppose the head 'mother' is generated in the relative clause, it must be in the nominative case, which is μήτηρ (*mḗtēr*). According to the dactylic hexameter of these epics, the first foot can be either a dactyl (long-short-short) or a spondee (long-long). The accusative case μητέρα (*mētéra*) has one long syllable and two short syllables and the following syllable δ'ἥ (*d'hḗ*) has one and only one consonant in the onset, which forms a dactyl; the nominative case μήτηρ (*mḗtēr*) has two long syllables and thus it forms a spondee regardless of the following syllable. This shows that the accusative case of the head is not a result of the meter.

The difference between the Vedic and Homeric Greek examples is that the Vedic example is a CP and the fronted internal head is in the left periphery of clause, but the Greek example has a NP, and the relative clause can be analyzed as adjoined to the head noun by the Matching Analysis, or the head noun can be analyzed as moved out of the clause to the NP by the Raising Analysis, as shown by the following trees:[4]

[4]In the trees for the Greek sentence the clitic δ' (*d'*) after the head of the relative clause μητέρα (*mētéra*) 'mother', which is underlyingly δέ (*dé*), is omitted since it is generated in a higher position, namely the head of ConjP above the host clause and comes into its current position by a prosodic flip after all the relevant syntactic movements for relative clauses have taken place. A detailed discussion for Greek can be found in Hale (2015) and the more general discussion exemplified by Vedic can be found in Hale (2007: 202-221).

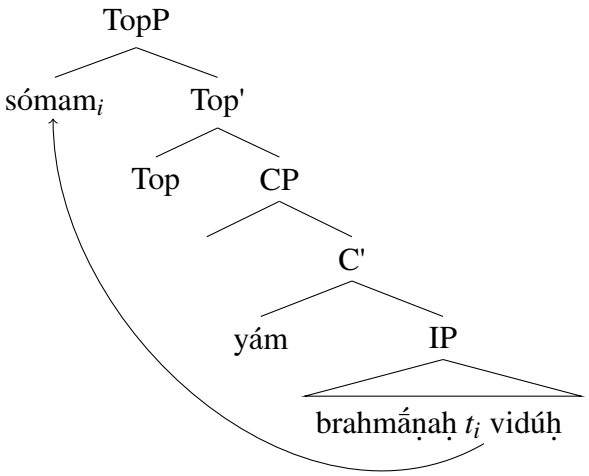

Figure 27:

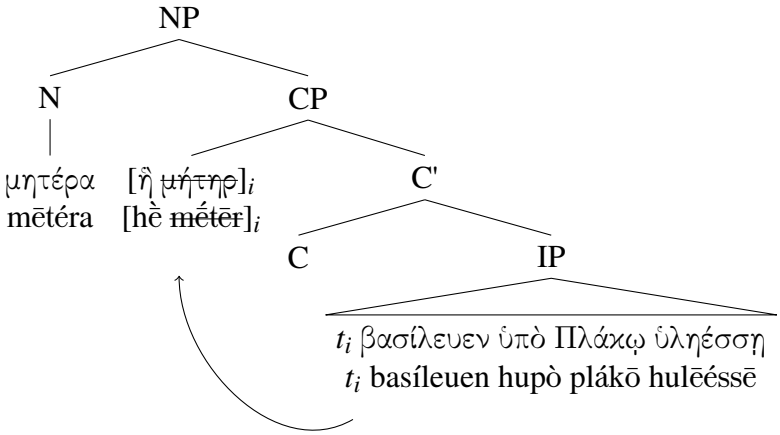

Figure 28:

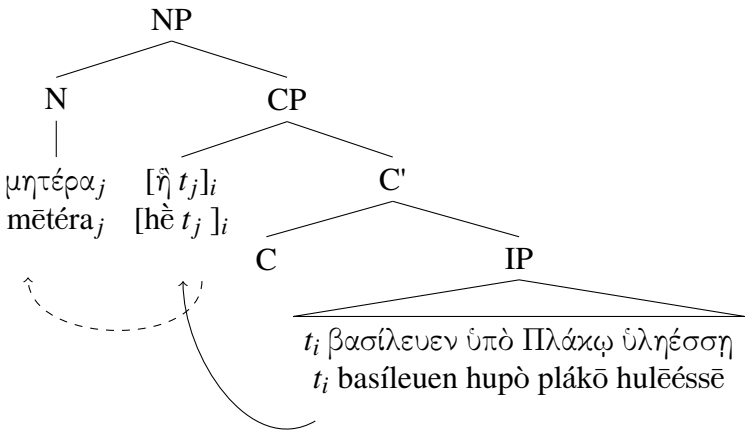

Figure 29:

The follow up question is where the head μητέρα (*mētéra*) is initially generated. The adjunct clause is adjacent to the relative clause and has a demonstrative τήν (*tēn*) fronted, following the relative clause immediately. But it is very difficult to analyze the relative clause as base generated in the adjunct clause. The first reason is that adjunct clauses are islands, at least weak islands. In old Indo-European languages, fronting a constituent of an adjunct clause is very common, but fronting a relative clause after fronting its head lacks syntactic motivation.

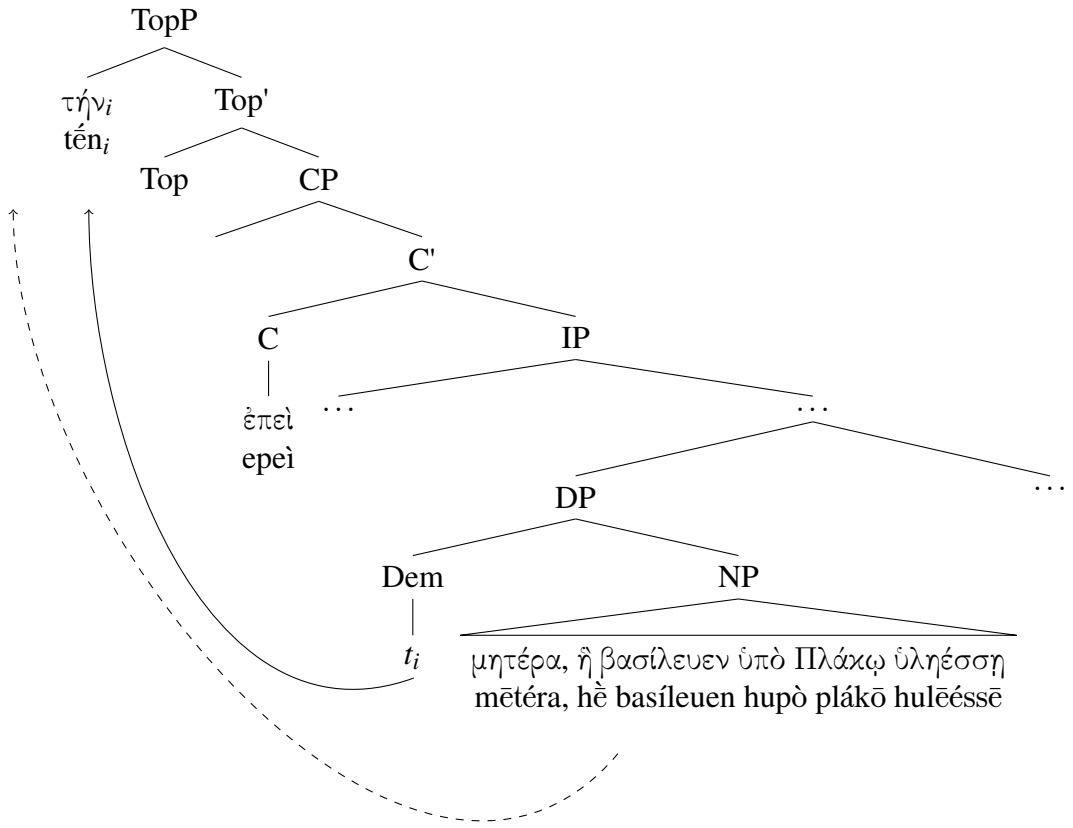

Figure 30:

Since the relative clause immediately preceeds the demonstrative, it may be argued that the whole DP is topicalized, and then the relative clause is moved in front of the demonstrative, but that is a violation of anti-locality, which bans syntactic movements that are too "short". Grohmann (2003) defined anti-locality as a constraint for syntactic movement, namely, movement is banned within the same $\Pi\Delta$ (Prolific Domain), such the DP in this example. In other words, the relative clause, as the complement of the DP, cannot move to the specifier position of the same DP.

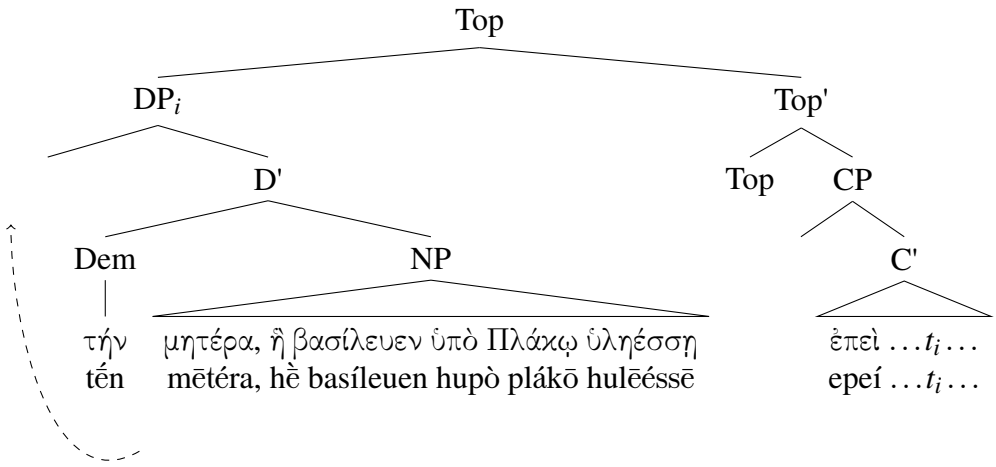

Figure 31:

Now that all the possible structure with the relative clause moved out of the adjunct clause introduced by ἐπεὶ (*epeí*) faces problems, the only candidate for the relative clause to base generate is the host clause, and this will be a very similar structure to what Bhatt (2003) argued for Hindi.

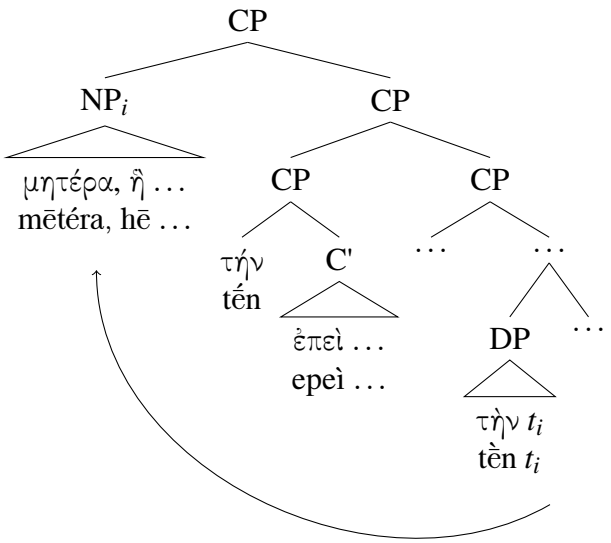

Figure 32:

This example shows that Greek correlative clauses are indeed preposed relative clauses. To my knowledge, no previous literature has argued that Proto-Indo-European relative clauses are moved like in Homeric Greek, and this can still be strengthened by the following syntactic analysis.

If Proto-Indo-European was like Vedic and Hittite, where correlative clauses were base generated and only the prezafe type construction can be embedded as a clausal structure, then Greek embedded relative clause must be an independent innovation as in Old Persian. The Old Persian embedded relative clause is a result of a syntactic analogy of the raised head relative clauses and prezafe stage II. Homeric Greek also has the prezafe construction. Although the prezafe construction developed a different semantic function and case attraction is not attested in Homeric Greek, Greek did not need case attraction to form a postnominal true embedded relative clause since the head noun and the relative pronoun do not have to show case agreement in Greek, as shown in example (183), where the head noun μητέρα (*mētéra*) 'mother' is in the accusative case, and the relative pronoun ἥ (*hḗ*) is in the nominative case. The other condition Homeric Greek needs to go through the same procedure as Old Persian is the raised headed relative clause, and in Homeric Greek the fronted constituents are not confined to the head of the relative clause:

(185) αὐτὰρ ἐγὼ θεός εἰμι, διαμπερὲς ἥ σε φυλάσσω
ἐν πάντεσσι πόνοις ... (Od. 20.47-48)

autàr egṑ theós eimi, diamperès hḗ
but 1SG.NOM god.NOM.SG COP.PRES.1SG right.through REL.NOM.SG
se phulássō
2SG.ACC.ENCL guard.PRES.1SG

en pántessi pónois ...
in all.DAT.PL toil.DAT.PL

"but I am a god, that guard thee to the end in all thy toils."

In this example, διαμπερὲς (*diamperès*) 'right through' is fronted before the relative pronoun ἥ, and it is not the head of the relative clause—not even a noun at all. Now we can consider the two hypotheses for the situation in Proto-Indo-European: First, Proto-Indo-European was more like Vedic and Hittite, where correlative clauses were base generated and a constituent in the (cor)relative clause could be moved in front of the relative pronoun; Second, Proto-Indo-European was more like Homeric Greek, where all relative clauses were base generated as postnominal relative clauses and they either moved to a position linearly in front of the host clause and became correlative clauses, or moved to a position linearly following the host clause and became right extraposed relative clauses. If we suppose that Proto-Indo-European were more like Homeric Greek, then the constituent before a postnominal relative clause would always be its head. In other words, there would have been no case where the relative pronoun is immediately following a non-head fronted constituent as in example (185). Even though the relative clause in example (185) is a right extraposed relative clause, but if postnominal relative clauses cannot front a non-head and right extraposed relative clauses are moved postnominal relative clauses, the structure in example (185) still cannot be developed. In the other hands, when we follow the hypothesis that Proto-Indo-European was more like Vedic and Hittite, then this example is a relic of non-head fronting by topicalization attested in Greek relative clause.

5.6 Conclusion

Although Homeric Greek exhibits variation in terms of headedness of (cor)relative clauses, the syntax of Homeric Greek correlative clauses differs significantly from the Indo-Iranian language and Hittite in that the Homeric Greek correlative clauses are generated in the host clause and moved, which is similar to the process in Hindi, rather than

base generated as in the other two old branches of Indo-European. Greek embedded relative clauses must have developed in a way similar to but independent from Old Persian, namely a syntactic analogy of raised headed relative clause and the prezafe structure.

Section 5.3.1 showed the distinction between the prezafe type relative clauses and verbed relative clauses are retained in terms of appositivity. Although prezafe Stage II, namely case attraction is not attested in Homeric Greek, but inverse attraction is attested. Example (50) is repeated here as example (186).

(186) νῆες ὅσαι πρῶται εἰρύαται ἄγχι θαλάσσης
ἕλκωμεν... (Homer, Il. 14.75-6)

nẽes hósai prõtai eirúatai aŋkhi
ship.NOM.PL REL.NOM.PL foremost.NOM.PL draw.PERF.MID.3PL near
thalássēs | helkōmen...
sea.GEN.SG draw.PRES.SUBJ.1PL

"Let us drag down the ships that are drawn up in the first line hard by the sea."

In examples such as (186), although the direction of the attraction is the reverse of prezafe Stage II, the case agreement with the external head and the relative pronoun may nonetheless trigger a reanalysis of the external head as a raised head.

Example (183) illustrates a correlative clause with an external head whose case is assigned by the host clause. Assuming that Proto-Indo-European was like Vedic and Hittite, where embedding was not productive except for the prezafe type, then the configuration with a linearly external head in front of a correlative clause must result from a syntactic extension of the raised headed (cor)relative clause.

Now compare Old Persian and Homeric Greek. Old Persian developed true embedded relative clauses because it featured both the raised headed (cor)relative clauses and prezafe Stage II. Homeric Greek, on the other hand, had indirect evidence, such as

example (183), for raised headedness. Although prezafe Stage II is unattested in Homeric Greek, inverse attraction could have provided the syntactic environment in which external heads were reanalyzed as raised heads. Through a process parallel to that in Old Persian, Greek may also have permitetd general relative clauses to be embedded, extending beyond the original prezafe type construction.

CHAPTER 6

CONCLUSION

6.1 Types of headedness

This dissertation discussed the syntax of the (cor)relative clauses in Indo-Iranian languages, Hittite, and Homeric Greek, especially in terms of headedness and base generating positions. By comparing these languages, I provided a hypothesis of the emergence of embedded relative clause in Old Persian and Homeric Greek.

To explore the types of headedness of these languages, I followed Cinque's (2020) double headed analysis, where there is a head in both the host clause and the (cor)relative clause, and by the combination of the overtness of each head, four types of headedness of the (cor)relative construction as a whole are developed, namely externally headed, internally headed, free, and double headed. If both heads are overt but they are not lexically identical to each other, then it is the split headed type. Hittite and Vedic show the greatest diversity: They have all the five types in both relative clauses and correlative clauses. The Iranian languages and Greek do not have both heads overt at the same time, and the Iranian languages have the first head overt, regardless of which clause the head is in. Table 22 demonstrates the distribution of the types of headedness in all these languages.

Types of headedness	Anatolian	Indo-Iranian				Greek
	Hittite	Indic	Iranian			
		Vedic	Old Avestan	Young Avestan	Old Persian	
Externally headed	Yes	Yes	Relative	Relative	Relative	Yes
Internally headed	Yes	Yes	Correlative	Correlative	Correlative	Yes
Free	Yes	Yes	Yes	Yes	Yes	Yes
Double headed	Yes	Yes	No	No	No	No
Split headed	Yes	Yes	No	No	No	No

Table 22: Comparison of headedness

6.2 Syntax

All these languages have correlative clauses and relative clauses, but Greek differs from the other two branches in that the others have their correlative clause base generated in the left periphery of the host clause, but the Greek correlative clauses are generated as postnominal relative clauses and then moved in front of the host clause.

In this dissertation, especially in the Vedic chapter, I argued that correlative clauses in Vedic are a different type of relativization that is different from relative clause, based on the fact that Vedic correlative clauses are base generated in the left periphery and it may have all the types of headedness as relative clauses may. The same argument has been made for Hittite, and for the Iranian languages, a similar argument has been made. According to the linear order, all these languages have correlative constructions, but syntactically only Hittite and the Indo-Iranian languages have "syntactic" correlative clauses, while the Greek correlative clauses are indeed preposed relative clauses.

The so called "general theory of correlativity", as in the title of this dissertation, claims that there are two criteria for a clause to be a correlative clause, namely the linear order and the base generating position in syntax. A linear correlative clause may or may nor be a syntactic correlative clause. Table 23 demonstrates the relationship between these two criteria with example languages.

	syntactic correlative	syntactic relative
linearly correlative	Vedic, Hittite	Homeric Greek, Hindi
linearly relative	N/A	English, etc.

Table 23: Relationship between the two criteria

6.3 Future Research

This dissertation has studied and compared the (cor)relative clauses in languages from three branches of Indo-European, and such exploration needs to be extend to the other branches of Indo-European languages. In the discussion of Old Persian and Greek, I made the following two arguments. First, the prezafe structure is a structure in Proto-Indo-European and its descendants in branches other than Indo-Iranian may be a different structure from the true izafe structure in the Iranian languages, such as the embedded structure in Vedic and the verbless appositive relative clauses in Homeric Greek. Second, Old Persian and Greek independently went through a syntactic analogy of the prezafe structure and the raised headed relative clauses to develop embedded relative clauses. The next step is to examine what are the descendants of the prezafe structure in other branches and how these branches developed their own postnominal relative clause, especially in their more recent daughter languages.

Germanic is a promising branch to extend this research to. This is because in Germanic the (cor)relative clauses were introduced by the demonstrative stem **so/to-* and a structure formed by "X rel Y" is attested in almost every, if not all, Germanic languages, namely the weak adjective construction.

Germanic weak adjectives are *n*-stem adjectives, which are the "determinatives" (a term coined by Nussbaum, cf. Merritt, 2023: 124-150 for detail), which are semantically equivalent to the appositive relative clause. This requires a morphosyntactosemantic analysis. The morphosemantic question is how the determinative derivatives developed in each branch and what significance the *n*-stem adjectives have in Germanic, and the syntactosemantic task is to compare the morphological strategy in Germanic and the syntactic strategy in Iranian, to express the appositivity.

Another branch to examine the descendants of the prezafe structure is Slavic, since the morpheme for the "long adjectives" in Slavic, *-j*, has been argued to be developed from the relative pronominal stem $*h_x\underset{\frown}{i}o$-. The difference between Slavic and Iranian is that the relative pronoun attaches to the head noun in Iranian, but to the adjective in Slavic, on the hypothesis that they are cognate to each other. In other words, to express "X which is Y", Iranian naturally used the configuration "X which Y", but Slavic used "Y which X" for some reason. This problem requires a thorough syntactic survey, especially on topicalization and clitics. As discussed in this dissertation, fronting a constituent before the relative pronoun is quite common in Indo-European languages, and Slavic may have used this strategy to develop "Noun Adj rel" from "Noun rel Adj". On the other hands, many Indo-European languages have enclitic forms of personal/demonstrative pronouns, especially the old ones. If Slavic extended the enclitic forms of other pronouns to the relative pronouns, the relative pronouns can be attached to the end of the adjective in the relative clause because of a prosodic flip. A more detailed examination needs to be done to determine if either or both of these hypotheses works for the development in Slavic.

In the other branches of Indo-European with correlative constructions, especially Tocharian, Italic, and Armenian, and also languages outside the Indo-European family such as the Chinese languages and Old Turkish (cf. Belyaev and Haug, 2020), the similar process should be made, namely determining the types of headedness and analyzing whether the correlative clauses are base generated or moved. In particular, the relationship between the relative pronoun and the complementizers in the other old Indo-European languages needs more attention. This aspect has been pursued by previous literature, e.g. Hackstein (2012) for Tocharian. Combining a syntactic analysis under the generative framework will shed more light on the development of clause embedding in general.

BIBLIOGRAPHY

Adiego Lajara, I. X. (2000). Sobre el relativo del antiguo persa. In Forssman, B. and Plath, R., editors, Indoarisch, Iranisch und die Indogermanistik. Arbeitstagung der Indogermanischen Gesellschaft vom 2. bis 5. Oktober 1997 in Erlangen, pages 1–13. Reichert, Wiesbaden. In Spanish.

Anward, J. (1982). Basic swedish. In Engdahl, E. and Ejerhed, E., editors, Readings on Unbounded Dependencies in Scandinavian Languages, pages 47–75. Almqvist & Wiksell, Stockholm.

Aoun, J. and hui Audrey Li, Y. (2003). Essays on the Representational and Derivational Nature of Grammar. MIT Press, Cambridge, MA.

Belyaev, O. and Haug, D. (2020). The genesis and typology of correlatives. Language, 96(4):874–907.

Bhatt, R. (1997). Matching effects and the syntax-morphology interface: Evidence from hindi correlatives. MIT Working Papers in Linguistics, 31:53–68.

Bhatt, R. (2002). The raising analysis of relative clauses: Evidence from adjectival modification. Natural Language Semantics, 10(1):43–90.

Bhatt, R. (2003). Locality in correlatives. Natural Language & Linguistic Theory, 21(3):485–541.

Bianchi, V. (2000). The raising analysis of relative clauses: A reply to borsley. Linguistic Inquiry, 31(1):123–140.

Brame, M. K. (1968). A new analysis of the relative clause: Evidence for a theory. Unpublished manuscript, Massachusetts Institute of Technology.

Brust, M. (2018). Historische Laut- und Formenlehre des Altpersischen: mit einem etymologischen Glossar. Innsbruck.

Caland, W. (1891). Zur Syntax der Pronomina im Avesta. Müller.

Chantraine, P. (1958). Grammaire Homérique, volume 1. Klincksieck, Paris.

Chomsky, N. (1965). Aspects of the Theory of Syntax. MIT Press, Cambridge, MA.

Chomsky, N. (1982). Some Concepts and Consequences of the Theory of Government and Binding. MIT Press, Cambridge, MA.

Chomsky, N. (1995). The Minimalist Program. MIT Press, Cambridge, MA.

Cinque, G. (2015). Three phenomena discriminating between "raising" and "matching" relative clauses. Semantics-Syntax Interface, 2(1):1–27.

Cinque, G. (2020). The syntax of relative clauses: A unified analysis. Cambridge University Press.

Citko, B. (2001). Deletion under identity in relative clauses. In Kim, M. and Strauss, U., editors, Proceedings of the North East Linguistic Society (NELS) 31, pages 131–145. Graduate Linguistic Student Association, Amherst, MA.

Culicover, P. W. and Jackendoff, R. (1999). The view from the periphery: The english comparative correlative. Linguistic inquiry, 30(4):543–571.

Cunliffe, R. J. (1924). A Lexicon of the Homeric Dialect. Blackie and Son, London.

Dashti, S. (2022). The old avestan correlatives: An alternative lfg analysis. In Proceedings of the Lexical Functional Grammar Conference, volume 27, pages 104–123.

Dashti, S. (2025). Non-postnominal relativization in old avestan. In Proceedings of the 34th Annual UCLA Indo-European Conference: Los Angeles, October 27–28, 2023, volume 34, page 41. Helmut Buske Verlag.

Davison, A. (2009a). Adjunction, features and locality in sanskrit and hindi/urdu correlatives. In Lipták, A., editor, Correlatives Cross-Linguistically, pages 223–262. John Benjamins, Amsterdam.

Davison, A. (2009b). Correlative clause features in sanskrit and hindi/urdu. In Longobardi, G., Crisma, P., Gianolla, G., and Guardino, G., editors, Historical Syntax and Linguistic Theory. Oxford University Press, Oxford.

Dayal, V. (1995). Quantification in correlatives. In Bach, E., Jelinek, E., Kratzer, A., and Partee, B. H., editors, Quantification in Natural Languages, pages 179–205. Springer Netherlands, Dordrecht.

Dayal, V. (1996). Locality in Wh-Quantification: Questions and Relative Clauses in Hindi, volume 62 of Studies in Linguistics and Philosophy. Kluwer Academic Publishers, Dordrecht.

de Vries, M. (2002). The Syntax of Relativization. LOT Publications, Utrecht.

de Vries, M. (2005). The fall and rise of universals on relativization. Journal of Universal Language, 6(1):125–157.

Delbrück, B. (1900). Vergleichende Syntax der indogermanischen Sprachen, volume 5. Veb F.A. Brockhaus, Leipzig.

Drigo, J. and Qu, Y. (2025). Types of relativization and relative heads in the sabellic languages. Historical Syntax, 9(11):1–40.

Elizarenkova, T. Y. (1972). Rigveda: Izbrannye Gimny. Nauka, Moscow.

Erlewine, M. and Gould, I. (2016). Unifying japanese relative clauses: copy-chains and context-sensitivity. Glossa: a journal of general linguistics, 1(1):51.

Garrett, A. (1994). Relative clause syntax in lycian and hittite. Die Sprache, 36(1):29–69.

Geldner, K. F. (1951). Der Rig-Veda: Aus dem Sanskrit ins Deutsche Übersetzt. Harvard University Press / Franz Steiner Verlag, London and Wiesbaden. 3 vols.

Gonda, J. (1954). The history and original function of the indo-european particle *kue*, especially in greek and latin. Mnemosyne, 7(3):177–214.

Grohmann, K. K. (2003). Prolific Domains: On the Anti-Locality of Movement Dependencies. John Benjamins, Amsterdam.

Guiraud, P. (1962). La phrase nominale en Grec d'Homère à Euripide, volume 42 of Études et commentaires. C. Klincksieck, Paris. Thèse.

Hackstein, O. (2012). The evolution of finite complementation in tocharian. Tocharian and Indo-European Studies, 13:117–148.

Hahn, E. A. (1946). The origin of the relative *kwi- kwo-*. Language, 22(2):68–85.

Hale, M. (1988). Old persian word order. Indo-Iranian Journal, 31(1):27–40.

Hale, M. (2007). Historical linguistics: Theory and method. Blackwell.

Hale, M. (2015). Syntax, scope and prosody: Ancient greek as a human language. Presented at the Harvard Workshop on Indo-European and Historical Linguistics, November 2015.

Heim, I. and Kratzer, A. (1998). Semantics in Generative Grammar. Blackwell Publishing, Oxford.

Held, W. H. (1957). The hittite relative sentence. Language, 33(4):7–52.

Henderson, B. (2007). Matching and raising unified. Lingua, 117(1):202–220.

Hettrich, H. (1988). Untersuchungen zur Hypotaxe im Vedischen, volume 4. Berlin: de Gruyter.

Heycock, C. (2014). Relative reconstructions. Lecture given at Goethe Universität Frankfurt am Main.

Hock, H. H. (1989). Conjoined we stand: Theoretical implications of sanskrit relative structures in papers in general linguistics. Studies in the Linguistic Sciences, 19(1):93–126.

Hock, H. H. (1990). Review of *Untersuchungen zur Hypotaxe im Vedischen* by heinrich hettrich. Language, 66(3):606–614.

Hoffmann, K. and Forssman, B. (1996). Avestische Laut-und Frexionslehre. Innsbruck: Institut für Sprachwisschenschaft.

Hoffner, H. A. (2009). Letters from the Hittite Kingdom. Society of Biblical Literature, Atlanta.

Horvath, J. (2006). Pied-piping. In Everaert, M. and van Riemsdijk, H., editors, The Blackwell Companion to Syntax, pages 569–630. Blackwell.

Huggard, M. (2015). On wh-(non)-movement and internal structures of the hittite preposed relative clause. Manuscript.

Humbach, H. and Ichaporia, P. (1994). The heritage of Zarathushtra: a new translation of his Gāthās. Winter.

Insler, S. (1975). The Gāthās of Zarathustra, volume 1 of Acta Iranica: Textes et Mémoires. E.J. Brill, Leiden.

Jamison, S. and Brereton, J. (2020). The Rigveda: A Guide. Oxford University Press.

Jamison, S. W. (2022). Stray remarks on nominal relative clauses in vedic and old iranian: Protoproto-izafe. In Grestenberger, L., Reiss, C., Fellner, H. A., and Pantillon, G. Z., editors, Ha! Linguistic Studies in Honor of Mark R. Hale, pages 171–182. Beech Stave Press.

Jamison, S. W. and Brereton, J. P. (2014). The Rigveda: the earliest religious poetry of India, volume 1. Oxford University Press.

Jasanoff, J. H. (2017). The impact of hittite and tocharian: Rethinking indo-european in the 20th century and beyond. In Klein, J. S., Joseph, B. D., and Fritz, M., editors, Handbook of Comparative and Historical Indo-European Linguistics, volume 1, pages 220–238. De Gruyter Mouton, Berlin.

Kayne, R. (1994). The Antisymmetry of Syntax. MIT Press, Cambridge, MA.

Kellens, J. (1987). Avesta i. survey of the history and contents of the book. Accessed March 25, 2025.

Kent, R. G. (1953). Old Persian: Grammar. Texts. Lexicon, volume 33. American Oriental Society.

Klein, J. S. (1985). Toward a Discourse Grammar of the Rigveda. Volume I: Coordinate Conjunction. Carl Winter Universitätsverlag, Heidelberg.

Klein, J. S. (2018). Synchronic and comparative remarks on relativization in the rigveda. In Proceedings of the 28th Annual UCLA Indo-European Conference. Bremen: Hempen, volume 149, page 65.

Lees, R. B. (1961). The constituent structure of noun phrases. American Speech, 36(3):159–168.

Lubotsky, A. (1997). A Ṛgvedic Word Concordance, volume 82–83 of American Oriental Series. American Oriental Society, New Haven, Connecticut. 2 vols.

Lyutikova, E. and Sideltsev, A. (2020). On the syntax of argument clitics in hittite. Transactions of the Philological Society, 118(1):29–78.

Macdonell, A. A. (1910). A Vedic Grammar for Students. Clarendon Press, Oxford. Reprinted multiple times; often cited as a standard reference for Vedic grammar.

Marantz, A. (1993). Implications of asymmetries in double object construction. Theoretical aspect of Bantu grammar.

Melchert, H. C. and Hoffner, H. A. J. (2008). A Grammar of the Hittite Language: Part 1: Reference Grammar. Penn State University Press, University Park, PA.

Merritt, A. E. (2023). ΚΑΛΛΟΣ and ΚΑΛΟΣ: Morphology, Etymology, and Conceptual Genealogy. Ph.d. dissertation, Cornell University.

Meyer, R. (2015). Case attraction and np-linking in old iranian. 6th International Conference on Iranian Linguistics.

Monteil, P. (1963). La phrase relative en grec ancien: Sa formation, son développement, sa structure des origines à la fin du Ve siècle A.C. Klincksieck, Paris.

Motter, T. C. (2023). Hittite correlatives are paratactic. Glossa: a journal of general linguistics, 8(1).

Murray, T. (1924). The Iliad. Loeb Classical Library. Harvard University Press, Cambridge, MA. Translated by T. Murray.

Oldenberg, H. (1909). Ṛgveda: Textkritische und exegetische Noten. Erstes bis sechstes Buch, volume 11.5 of Abhandlungen der Königlichen Gesellschaft der

Wissenschaften zu Göttingen, Philologisch-historische Klasse. Weidmann, Berlin. Reprinted Göttingen: Kraus, 1970.

Pankau, A. (2018). The matching analysis of relative clauses: an argument from antipronominal contexts. The Journal of Comparative Germanic Linguistics, 21(2):189–245.

Probert, P. (2006). Clause boundaries in old hittite relative sentences. Transactions of the Philological Society, 104(1):17–83.

Probert, P. (2015). Early Greek Relative Clauses. Oxford University Press, Oxford.

Qu, Y. (2023). "prezafe": Precursor of izafe and its descendants in other ie branches. Presented at the East Coast Indo-European Conference XLII (ECIEC XLII).

Ram-Prasad, K. (2022). The syntax of relative clauses and related phenomena in Proto-Indo-European. PhD thesis, University of Cambridge.

Reichelt, H. (1909). Awestisches elementarbuch, volume 5. C. Winter.

Risch, E. (1954). Zur lautlichen struktur des altpersisch. Asiatische Studien, 8:149–154.

Ross, J. R. (1967). Constraints on Variables in Syntax. Ph.d. dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Sauerland, U. (1998). The Meaning of Chains. Ph.d. dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Schachter, P. (1973). Focus and relativization. Language, 49(1):19–46.

Seiler, H. (1960). Relativsatz, Attribut und Apposition. Otto Harrassowitz, Wiesbaden.

Sideltsev, A. V. (2016). Hittite anaphora: Two case studies. Archiv Orientální, 84(1):75–104.

Skjærvø, P. O. (2007). Zoroastrian Texts: translated with notes.

Vergnaud, J. R. (1974). French Relative Clauses. Ph.d. dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Windhearn, R. D. (2020). Evidence from innovation: Reconstructing disharmonic headedness for Proto-Indo-European. Ph.d. dissertation, Cornell University.

Yates, A. (2014). Anatolian 'indeterminate' relative clauses revisited: Syntax, semantics, and the 'held–garrett rule'. Paper presented at the 41st Österreichische Linguistiktagung, Vienna, Austria.

Yoshida, M. (2006). Constraints and Mechanisms in Long-Distance Dependency Formation. Ph.d. dissertation, University of Maryland, College Park, MD.