

# MORPHOPHONOLOGICAL, MORPHOSYNTACTIC, AND ICONIC CONSTRAINTS GOVERNING IRREVERSIBLE NOMINAL AND VERBAL BICOORDINATIVES IN TURKISH

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## ABSTRACT

This study investigates the structural principles governing irreversible nominal and verbal binary coordinatives in Turkish, referred to here as *bicoordinatives* (Turkish: *ikileme*). While such binary coordinative formations have long been studied in descriptive work, the rules governing such binary structures have not yet been fully established. Drawing on a relatively large dataset from both Modern Turkish and Old Turkic, the present study argues that these formations are regulated by a systematic interaction of morphophonological, morphosyntactic, and iconic constraints, formulated here as *Ordering Principles* (OPri). The analysis identifies seven hierarchically interacting rules that determine the fixed order of *asymmetric bicoordinatives*. These rules range from segmental and syllabic properties to higher-level iconic relations reflecting event structure and semantic sequencing. It is shown that, when the balance of the syllable pattern is disrupted, asymmetries in syllable structure and syllable count override segmental preferences. The study further demonstrates that these ordering principles are not restricted to Modern Turkish but are already attested in Old Turkic too, indicating long-term structural stability within the language. Beyond bicoordinatives, the paper situates these findings within a broader *block-recursive model of coordination* (BiCo–TriCo–MulCo), showing how binary coordinative units serve as the building blocks for larger coordinative structures. The proposed theoretical framework contributes to Turkish linguistics, coordination theory, and typological research by providing a unified and empirically grounded account of *irreversible coordination*.

**Keywords:** Turkish linguistics, Bicoordinatives, Irreversible binomials, Coordination, Ordering principles, Sonority hierarchy, Morphophonology, Iconicity, Typology

## ÖZ

Çalışma, burada *bicoordinative* olarak adlandırılan Türkçedeki kalıplaşmış ad ve eylem ikilemelerini düzenleyen yapısal ilkeleri incelemektedir. Bu tür eşbağımlı ikili yapılar betimleyici çalışmalarda uzun süreden beri incelense de, bu ikili yapıları düzenleyen kurallar henüz tam olarak belirlenememiştir. Çağdaş Türkçe ve Eski Türkçeden görece geniş bir veri kümesine dayanan bu çalışma, söz konusu yapıların aslında kurallı olduğunu, biçimsesbilimsel, biçimdizimsel ve görüntüsel kısıtlamaların düzenli etkileşimiyle ortaya çıktığını savunmaktadır. Bu kısıtlamalar, çalışmada *Dizilim İlkeleri* (OPri) olarak ele alınmaktadır. İncelemede, *bakımsız ikilemelerin* kalıplaşmış dizilimini belirleyen ve önelemeli olarak etkileşim halinde olan yedi kural tanımlanmaktadır. Bu kurallar, sesbirimsel ve seslem yapısına dayalı özelliklerden, olay yapısı ve anlamsal sıralamayı yansıtan daha üst düzey görüntüsel ilişkilere kadar uzanmaktadır. Seslem örüntüsündeki dengenin bozulduğu durumlarda, seslem yapısı ve seslem sayısındaki farklılıkların sesbirimsel tercihleri geçersiz kıldığı gösterilmektedir. Çalışma, bu ilkelerin yalnızca Çağdaş Türkçeye özgü olmadığını, Eski Türkçede de aynı biçimde işlediğini ortaya koymaktadır. Çalışma ayrıca, ikilemeleri daha geniş bir *öbek yinelemeli eşbağımlama modeli* (BiCo–TriCo–MulCo) içinde ele alarak, ikilemelerin daha büyük eşbağımlı dizilerin temel yapıtaşları olduğunu göstermektedir. Önerilen kuramsal çerçeve, *kalıplaşmış eşbağımlamanın* bütüncül ve veriye dayalı bir açıklamasını sunarak Türk dilbilimine, eşbağımlama kuramına ve tipolojik araştırmalara katkıda bulunmaktadır.

**Anahtar Sözcükler:** Türk dilbilimi, İkileme, Eşbağımlama, Dizilim ilkeleri, Titreşimsel öneleme, Biçimsesbilim, Görüntüsellik, Tipoloji

## 1. Introduction

The structure of irreversible binomials and biverbals — i.e. irreversible coordinations, referred to in this study as *bicoordinatives* (e.g. *alt üst*, *bıkmak usanmak*, etc.) — has received increasing attention in both theoretical and Turkish linguistics.<sup>1</sup> However, this attention has so far focused primarily on nominal formations, while their verbal counterparts have remained largely unexplored, particularly in Turkish linguistics. Despite this growing interest, the structural constraints governing these formations in Turkish remain poorly understood.

These constructions, characterized by the coordination of two lexemes, play a significant role in the morphophonological, morphosyntactic, and semantic structuring of the Turkish lexicon. However, a fundamental and unresolved question persists: according to what principles do these formations emerge and undergo lexicalization? Despite their frequency and apparent regularity, no comprehensive or satisfying account has yet been provided. This study aims to address that gap by revisiting the theoretical framework that I

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<sup>1</sup> For a detailed, annotated, and critical survey of relevant research on Turkish bicoordinatives from 1899 to 2007, see Aydemir (2007), an unpublished MA thesis that is publicly and online available via the Turkish Council of Higher Education (YÖK) National Thesis Center. For more recent synchronic discussions, see Gök & Canalis (2023) and Özkan (2019: 2). The present article therefore does not repeat the historical overview.

first proposed in 2007,<sup>2</sup> while also offering a typologically informed and formally explicit analysis of bicoordinative structures in Turkish, both synchronic and diachronic.

Recent research in phonological typology and morphophonology has shown that ordering asymmetries in linguistic constructions — including coordination and compounding — are systematically shaped by several universal forces. These include the sonority hierarchy (Clements 1990; Parker 2002, 2008), principles of articulatory ease and perceptual salience (Lindblom 1990), and iconicity (Haiman 1985; Croft 2003). Some of the earliest observations in this domain can already be traced back to Jespersen (1904).

Within this framework, Turkish bicoordinatives provide a particularly revealing testing ground, since they exhibit a complex interplay of phonological, morphosyntactic, and iconic factors that determine their irreversible order. While the descriptive literature abounds with examples of Turkish binomials, a coherent model that unifies these different dimensions under a single explanatory framework has not yet been proposed. The present study seeks to fill this gap by systematically identifying the *morphophonological*, *morphosyntactic*, and *iconic constraints* as *Ordering Principles* (OPri) that govern the order of nominal and verbal bicoordinatives in Turkish and by clarifying their functional and diachronic motivation.

## 2. Conceptual and Terminological Framework

### 2.1 Definition and scope of the term *bicoordinative*

The analytical distinctions required by this study make it necessary to introduce a partly refined terminology, since the structural, morphophonological, morphosyntactic, and iconic properties of Turkish bicoordinatives can only be adequately described, evaluated, and precisely delimited through an appropriately differentiated set of terms.

In this study, therefore, I propose the terms *bicoordination* (as a process) and *bicoordinative* (as its product) as a typologically grounded and morphophonologically — morphosyntactically motivated category that captures a specific and structurally marked class of *irreversible* binomial and biverbal coordinations in Turkish. Thus, these notions refer to binary coordination structures that exhibit fixed internal ordering.<sup>3</sup> The label is a translation and adaptation of the term *Bi-Koordinativ* (cf. “*co-ordinative*”, Bloomfield 1933), which I first introduced in my German-language master’s

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<sup>2</sup> The basic theoretical framework of this study was first developed in my German-language master’s thesis (Aydemir 2007). While the original observations have remained robust, the present version expands and refines those initial insights, situating them more explicitly within a broader typological and theoretical framework.

<sup>3</sup> Although *irreversibility* and *lexicalization* are not synonymous concepts in general linguistic theory, they strongly converge in Turkish. Virtually all irreversible bicoordinatives in Turkish are also lexicalized and idiomaticized, behaving as fixed lexical units. Nevertheless, in this study the two notions are kept conceptually distinct: *irreversibility* refers to a structurally mandated ordering constraint, whereas *lexicalization* denotes the diachronic and semantic consolidation of the construction as a stable lexical item.

thesis (Aydemir 2007), alongside the related categories *Tri-Koordinativ* (*tricoordinative*; see §2.4) and *Multi-Koordinativ* (*multicoordinative*; see §2.5), the latter denoting formations consisting of more than two successive irreversible bicoordinatives.

Until that earlier work, these formations had not been systematically classified, and existing terminology in the literature — terms such as *hendiadys*, *word pairs*, *reduplication*, or *binomial* — tended to capture only certain subtypes within a much broader systemic phenomenon, both structurally and functionally, observable across Turkic.<sup>4</sup>

In contrast, the notion *bicoordinative* allows for a more comprehensive typological, morphophonological, morphosyntactic, and iconic account (i.e. *iconicity*, see §5.3) that also enables cross-linguistic comparison. It captures (a) the internal morphophonological, morphosyntactic, and iconic alignment patterns, (b) the contrast between *symmetric* and *asymmetric* formations (see §2.2), and (c) the specific coordination properties shared by binomial and biverbal constructions.

Among these, *asymmetric bicoordinatives* (AsBi) are characterized by a fixed precedence relation between their components (e.g. *alt üst* ‘upside-down’, *dere tepe* ‘over hill and dale’), which makes the order [A] [B] obligatory and the reverse [B] [A] impossible. This contrasts with *symmetric bicoordinatives* (SyBi), which exhibit formal mirroring or full repetition and therefore do not encode any internal precedence hierarchy, even though they are likewise fixed, inseparable, and typically lexicalized (e.g. *bile bile* ‘knowingly’ ← [know-CONV] [know-CONV], *güle güle* ‘good bye’ ← [smile-CONV] [smile-CONV]).

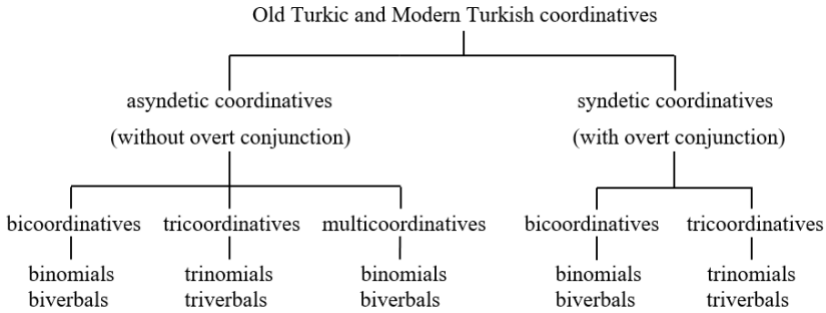
This typological distinction between symmetric and asymmetric formations forms the structural basis of my analysis and motivates the formal ordering constraints captured in Rules 1–7. It also links these constraints to broader functional, synchronic, and diachronic tendencies observed in Turkic.

A further distinction essential to Turkish is that between *syndetic* and *asyndetic coordinations* (see §2.3). This distinction is essential for understanding the structural variation within Turkish bicoordinatives. *Asyndetic bicoordinatives* — e.g. *ev bark*, *dal budak*, *alt üst*, etc. — lack any overt conjunction and show tighter morphophonological integration. *Syndetic bicoordinatives* employ overt coordinators such as *ve*, *ile*, *ya*, *ya da*, etc., in Modern Turkish (see §2.3 for details). In Old Turkic, syndetic coordination is attested both (a) through the genuinely coordinative suffixal pattern [...+II] [...+II],

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<sup>4</sup> In the German (and partly also English) Turkological literature — and to a large extent also in the Turkish linguistic literature written in English — the terminology used for this phenomenon is neither unified nor conceptually stable. A wide range of labels in German — such as *Zwillingsformel*, *Zwillingswort*, *Hendiadyoin*, *Reduplikation*, *Wortreduplikation*, *Doppelausdruck*, *Paarformel*, *zweigliedrige Komposita*, *Wortpaar*, *Paarwort*, *Dopplung*, *Verdopplung*, *Synonymkompositum*, *Antonymkompositum*, *Synonymenpaar*, *Aufzählung*, *Binom*, *Biverb*, *Reimpaar*, *Worthäufung*, as well as English terms like *compound expression*, *word-pair*, *hendiadys*, *word-combination*, *duplication*, *doubling*, *reduplication*, or *fixed two-word sequence*, etc. — illustrate this lack of terminological consensus. Although many of these labels accurately capture specific subtypes within the wider system, they are frequently used as general designations, which has further contributed to the conceptual ambiguity surrounding the phenomenon.

and (b) through overt conjunctions such as *häm* ‘and; both ... and’, *ya* ‘or’, which likewise introduce explicitly marked coordination (see §2.3 for details). This corresponds to the traditional typological opposition between syndetic and asyndetic coordination. As shown schematically in Figure 1, these two types constitute the highest division of the Turkish irreversible coordination system. The primary division between asyndetic and syndetic coordination corresponds to the absence or presence of explicit conjunctions or coordinating morphology.



**Figure 1.** Revised schema of Old Turkic and Modern Turkish irreversible coordinatives (adapted from Aydemir 2007)

While Figure 1 provides a schematic overview of the major coordinative types, concrete realizations of tricoordinatives and multicoordinatives are illustrated and formally modelled in §3.1 (see especially the generalized structural formulas and examples therein).

To accurately assess, characterize, and classify the Turkish cases of irreversible coordinative structures, it is essential to distinguish these major structural types. This differentiation is specific to Turkish and has not been systematically employed in previous research, which is why a precise and comprehensive account of the phenomenon has so far remained lacking.

This conceptual framework may provide a unified basis for analyzing bicoordinatives not only in Turkic and other Altaic languages but also in structurally comparable systems across other language families, including Uralic (e.g. Samoyedic, Hungarian) and Indo-European (e.g. Tocharian, Sogdian), as well as further typologically diverse languages, both synchronically and diachronically.

It should be noted, however, that despite the general typological schema summarized above, the present study focuses exclusively on the formation rules and structural constraints governing irreversible *binary coordinations* (bicoordinatives) in Old and Modern Turkish. Ternary (tricoordinative) formations and multicoordinative chains — while typologically relevant and briefly illustrated where necessary — are not examined in detail in the present work.

The descriptive model developed in the following sections builds on these conceptual distinctions and provides a unified typological and structural account of bicoordinatives in Turkish.

## 2.2 Symmetry and asymmetry in bicoordinatives

*Symmetry* and *asymmetry* in ordering refer to two structural subtypes of lexicalized binary coordinative constructions, which are classified here under the broader term *bicoordinative*. These concepts clarify the internal alignment and structural organization of binary patterns governed by morphophonological (see §5.2), morphosyntactic (see §5.2), and iconic principles (see §5.3), and provide a principled basis for their classification.

In this framework, *asymmetry* refers to a structural hierarchy or preference in which the first slot [A] holds a position of priority over the second [B], despite their apparent coordination (e.g. *deli dolu* ‘zappy, high-spirited’ ← [mad / wild] + [full / overflowing]). Thus, (1) in a *symmetric bicoordinative* (SyBi) the two coordinated elements show full formal repetition or structural mirroring with no detectable precedence or internal hierarchy, typically through formal identity, mirroring, or tight formal parallelism (e.g. *yavaş yavaş* ‘gradually’ ← [slow(ly)] + [slow(ly)]; *gide gide* ‘more and more, gradually’ ← [go-CONV] + [go-CONV]), (2) while an *asymmetric bicoordinative* (AsBi) involves a fixed, irreversible order (i.e. [A] + [B] but not [B] + [A]) with structural and/or iconic integration (e.g. *gide gele* ‘constantly coming and going’ ← [go-CONV] + [come-CONV]).

In this framework, asymmetric bicoordinatives involve irreversible ordering between the two coordinated elements and the first element, i.e. the slot [A], occupies a structurally prioritized position. This priority may be grounded in morphophonological constraints (e.g. segmental markedness, sonority, or syllable balance), morphosyntactic structure (e.g. event structure or argument hierarchy), or iconic principles reflecting conceptual sequencing. In other words, asymmetric bicoordinatives encode a structural or iconic hierarchy, which makes the ordering constraint an inherent part of their lexicalization. Thus, the internal hierarchy is a defining feature of lexicalized and irreversible bicoordinatives (e.g. *gide gele* but not *gele gide*).

To sum up, asymmetry, in this framework, entails four key features: (1) the ordering of the slots [A] and [B] is irreversible; (2) there is an implicit structural or semantic hierarchy between the two slots; (3) this hierarchy is morphophonologically, morphosyntactically, or iconically encoded; and (4) the construction is lexicalized and behaves as a fixed coordinative unit. This typological distinction provides a more coherent basis for classification and helps clarify several long-standing descriptive and terminological ambiguities in the literature. Thus, the symmetric vs. asymmetric distinction proposed here offers a more systematic and encompassing framework, within which the various reduplicated subtypes listed above represent internally coherent patterns of symmetric bicoordination.

Within the broader category of symmetric bicoordinatives — defined by full formal mirroring, strict morphological parallelism, and the absence of

an internal precedence — the following formally and functionally distinct subtypes can be identified. The classification proposed here is form-based, i.e. part-of-speech-based (see also Appendix), distinguishing bicoordinatives according to the lexical category of their base elements, even though these constructions may exhibit functional flexibility and frequently occur in adverbial contexts:<sup>5</sup>

- a) *reduplicated adverbial bicoordinatives* (OTu. *yana yana*; MTu. *seke seke, koşa koşa*):<sup>6</sup> encode manner, intensity, and a range of event-structural or affective nuances associated with verbal action.
- b) *reduplicated adjectival bicoordinatives* (OTu. *öñi öñi*; MTu. *iri iri, koca koca*): encode intensification or augmentative emphasis of a property.
- c) *reduplicated nominal bicoordinatives* (OTu. *ew ew*; MTu. *yer yer, adım adım*): encode distributive or iterative spreading across loci or entities.
- d) *reduplicated distributive bicoordinatives* (MTu. *teker teker, birer birer, azar azar, parça parça*): encode partitive–distributive plurality or stepwise iteration.
- e) *reduplicated pronominal bicoordinatives*:
  - reflexive: OTu. *öz öz, kántü kántü*
  - demonstrative: OTu. *ol ol, bo bo*
  - interrogative-indefinite: OTu. *kayu kayu, kim kim*encode partitive-distributive reference or emphatic generalization.
- f) *reduplicated cardinal bicoordinatives* (OTu. *bir bir*; MTu. *bir bir*): encode incremental iteration or distributive quantification.
- g) *reduplicated onomatopoeic bicoordinatives* (MTu. *cik cik, şırl şırl, ciyak ciyak*): encode iconic repetition of sound events.
- h) *figura etymologica-based bicoordinatives* (MTu. *inim inim inle-, horul horul horla-*): encode repetitive or continuous verbal action through figura etymologica.

These subtypes form a coherent internal hierarchy based on three dimensions:

- a) *formal* properties (full reduplication)
- b) *functional* domains (adverbial, adjectival, nominal, distributive, pronominal, cardinal, onomatopoeic, figura etymologica), and
- c) *macro-structural* behavior (symmetric coordination).

These reduplicated subtypes exhibit full formal symmetry and lack any internal hierarchy between the two conjuncts. Despite their diverse func-

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<sup>5</sup> For an alternative, function-based classification of comparable reduplicative constructions in Turkish, see Göksel & Kerslake (2005: 90). The present study, by contrast, adopts a form-based approach, focusing on the lexical category of the base elements rather than their contextual function.

<sup>6</sup> For ease of reference, representative meanings for each symmetric subtype are provided in Appendix; the examples listed in the main text serve primarily to illustrate structural patterning.

tional domains, they all conform to the symmetric bicoordinative structure, characterized by strict parallelism, mirroring, and the absence of any internal ordering asymmetry.

### 2.3 Syndetic and asyndetic bicoordinatives

The distinction between *syndetic* and *asyndetic coordination* constitutes one of the highest structural divisions within the system of irreversible bicoordinatives in both Turkish and Old Turkic. Although this typological opposition is well established cross-linguistically, its systematic application to Turkic lexicalized and morphologically integrated coordinative formations had not been undertaken in earlier scholarship. The present study therefore adopts this distinction as a foundational categorization and refines it for the purposes of analyzing Turkish bicoordinatives.

This corresponds to the traditional typological opposition between asyndetic and syndetic coordination (Haspelmath 2007). A more systematic application of this distinction to Turkic was first introduced in an earlier work (Aydemir 2007). In the present study, this distinction is applied specifically to Turkish bicoordinatives in order to differentiate between constructions that rely on explicit coordinators (syndetic) and those that occur without any overt connective (asyndetic). These coordinators fall into two major types — *coordinating suffixes* and *coordinating conjunctions* — which are examined in §§2.3.1–2.3.2. These two types of coordinators discussed in this study are henceforth abbreviated as CoS (*coordinating suffix*) and CoC (*coordinating conjunction*). Although the terminology itself is well established crosslinguistically, no previous study had systematically applied this distinction to Turkish lexicalized binomial and biverbal formations before the earlier work in question on the subject.

Within the broader category of syndetic bicoordinatives, two structural subtypes may be distinguished: *syndetic bicoordination* and the relatively rarer *syndetic tricoordination*. The latter is attested only sporadically in Old Turkic (OTu.) sources and is entirely absent from the Modern Turkish (MTu.) data examined here. The Old Turkic example illustrated in (1) displays a polysyndetic pattern (i.e. [...+II ...+II ...+II]) in which three coordinated elements share the same overt coordinator, typically a coordinating suffix. Although typologically noteworthy, such formations fall outside the scope of the present analysis; their structural representations will be briefly discussed and illustrated in the section on *tricoordinatives* (see §2.4), using a CoP-based notation. The discussion in the remainder of this section focuses exclusively on the structural types of syndetic bicoordination, which are both more frequent and more productive in Turkish.

- (1) *süüli aşlı kertgünçli*  
 army-CoS provision-CoS faith-CoS  
 ‘army, provisions, and faith’<sup>7</sup>

Syndetic bicoordination occurs in both binomial (e.g. MTu. *öyle ya da böyle* ‘one way or another’) and biverbal constructions (e.g. MTu. *gitti de gitti* ‘kept going; went on and on’, see §2.3.2.2). However, unlike asyndetic bicoordinatives — where a part-of-speech-based (POS) classification is often necessary (see Appendix) — the syndetic types cannot meaningfully be organized by lexical category, since the attested material is restricted to only a handful of structural patterns. In the verbal domain, for instance, syndetic biverbals are attested only with finite verbs (i.e. MTu. *gitti de gitti*).

For analytical clarity, it is therefore more appropriate to classify syndetic bicoordinatives according to the type of coordinator they employ. This yields two principal subtypes: (a) constructions marked by coordinating suffixes (CoS), and (b) constructions marked by coordinating conjunctions (CoC) (see §§2.3.1–2.3.2). In what follows, both CoS and CoC are treated as subcategories of the more general notion of *coordinator*.

In Old Turkic texts, the postpositive coordinating suffix *+II* — the only morpheme that can be analyzed as a true CoS — is attested frequently in the canonical coordinative pattern [...+II] [...+II].<sup>8</sup> By contrast, the privative suffix *+sXz* is not a coordinating morpheme; it is a derivational marker expressing semantic privation. In other words, although both OTu. *+II* (= *+li / +li*) and MTu. *+IX* (< *+IXg* = *+lig / +lig / +lug / +lüg*), as well as *+sXz*, are suffixes in morphological terms, only OTu. *+II* functions as a true coordinating morpheme. By contrast, *+sXz* and MTu. *+IX* are purely derivational and do not encode coordination.

Consequently, formations of the type [...+sXz] [...+sXz] (e.g. MTu. *evsiz barksız*, ‘homeless’) or mixed patterns such as [...+IX] [...+sXz] in Modern Turkish do not constitute syndetic bicoordination in the strict sense. The parallelism observed in these expressions results from semantic and pragmatic alignment rather than from a coordinative suffix. For this reason, *+sXz*-based sequences are treated here not as coordinative constructions but as derivationally parallel adjectival chains, whereas only the [...+II] [...+II] pattern is analyzed as genuine syndetic bicoordination.

<sup>7</sup> TT V B105. A related issue concerns forms such as Old Turkic *uçsuz kadsız ülgüsüz* [peak+*sXz*] [border+*sXz*] [mass+*sXz*] ‘boundless [...] and immeasurable’ (merits and good deeds) (Clauson 1972: 31), where a string of adjectives marked with *+sXz* (‘privative’) occurs in what superficially resembles a coordinative pattern. However, the suffix *+sXz* is not a coordinating morpheme but a privative derivational suffix and therefore cannot be analyzed as a CoS. The apparent coordinative effect results from semantic and pragmatic parallelism rather than from morphological coordination. In contrast, formations with [...+II] [...+II] in Old Turkic represent genuine CoS-based syndetic coordination. Consequently, mixed patterns of the type [...+IX] [...+sXz] in Modern Turkish do not constitute true cases of syndetic coordination.

<sup>8</sup> A comparable classification is found in Johannessen (2003: 22), who explicitly employs the term “coordinating suffix” for Old Turkic formations marked with [...+II ...+II]. Although her analysis is embedded in a broader typology of coordination in natural language, her terminology overlaps in part with the CoS-based approach adopted here. Typologically comparable with the so-called “bisyndetic” coordinators in Haspelmath (2007: 6). For OTu. *+II*, see Erdal 2004: 166–167.

Most expressions in Modern Turkish that contain surface patterns exhibiting [...+IX] [...+IX] or [...+sXz] [...+sXz] are fully lexicalized and frequently occurring as fixed idiomatic forms. These include items such as MTu. *evli barklı* ‘married and having a family’ ← [house+IX] [property+IX] and MTu. *evsiz barksız* ‘homeless, vagrant’ ← [house+sXz] [property+sXz], whose suffixal marking is synchronically parallel but not demonstrably related to the Old Turkic coordinative [...+II] [...+II] construction. The Old Turkic expression *uçsuz kıdıgsız* ‘boundless, limitless’, attested in HT IX, is likewise likely to have been lexicalized already in Old Turkic, since parallel forms occur in several other early sources. Its Modern Turkish reflex is *uçsuz bucaksız* ‘immense, endless’ ← [edge/end+sXz] [corner+sXz].

Expressions of the form [...+sXz] [...+sXz] represent not true coordinative structures but rather instances of *litotes* — i.e. semantic intensification through double morphological negation. The two suffixes may also co-occur in mixed patterns in Modern Turkish, although in such cases [...+IX] invariably precedes [...+sXz], as in MTu. *belli belirsiz* ‘vaguely, indistinctly’ ← [sign+II] [certain+sXz]. These patterns are derivationally based and semantically parallel, but they do not constitute syndetic coordination in the strict morphological sense (see fn. 6).

Based on the classification presented in Sections §§2.2–2.3 above, the structural types of syndetic bicoordinatives involving an overt coordinator — where [A] and [B] represent distinct components — can be represented as follows:

### 2.3.1 Types of coordinators: coordinating suffixes (CoS)

The category of CoS is restricted to formations in which the two conjuncts are marked (a) with the *genuinely coordinating* Old Turkic suffix +II, yielding a coordinated structure through parallel morphology (i.e. [A+II] [B+II]). Historically, this suffix is the only productive instance of a true coordinating morpheme in Old Turkic.

In addition to this Old Turkic pattern, Modern Turkish exhibits two further formations that *superficially* resemble CoS-based coordination but are not synchronically or historically related to the Old Turkic suffix; (b) expressions formed with +IX, which display a similar surface pattern due to lexicalization rather than to a productive coordinative function; and (c) fully reduplicated adverbial formations of the type [A+IX] [B+IX], which likewise represent morphological repetition rather than genuine CoS-based coordination:

a) [A+II] [B+II], e.g. A+CoS B+CoS (Old Turkic type):

This subtype comprises genuine coordinative formations in Old Turkic, where the suffix +II functions as a productive CoS marker. These constructions encode coordinated nominal structures and are attested widely in Old Turkic inscriptions and texts, as illustrated in (2).

- (2) OTu. *inili açili* (KT/E6)  
younger.brother-CoS elder.brother-CoS

‘younger and elder brothers’

These represent structurally symmetrical formations in which both conjuncts carry the same suffixal marking, forming a coordination through morphological parallelism (see also OTu. *tâjriili yerli, sâvinçli korkınçlı, aşnukılı amtıklı*, among other examples).

b) [A+LX] [B+LX] (Modern Turkish *surface pattern*<sup>9</sup>)

Modern Turkish contains numerous lexicalized expressions, including irreversible bicoordinatives, that display the surface pattern [A+LX] [B+LX], but the suffix +LX (historically < +LXg = +lig / +lig / +lug / +lüg)<sup>10</sup> is not demonstrably related to the Old Turkic coordinative +II. These formations *behave* as if they were CoS-based coordinations, yet their coordinative interpretation arises from lexicalization, rather than from a synchronically productive morphosyntactic rule, as illustrated in (3)–(6). Namely — as suggested above too — MTu. +LX (= +lı / +li / +lu / +lü) is a derivational suffix and not a coordinating morpheme. It therefore does not encode coordination, even though forms derived with this suffix may of course continue to combine productively in new surface patterns at the synchronic level.

- |     |                                                                             |     |                                                                 |
|-----|-----------------------------------------------------------------------------|-----|-----------------------------------------------------------------|
| (3) | <i>evli barklı</i><br>house+LX property+LX<br>‘married and having a family’ | (4) | <i>senli benli</i><br>you+LX I+LX<br>‘hobnob (with)’            |
| (5) | <i>derli toplu</i><br>order(ed)+LX gather(ed)+LX<br>‘tidy; well-organized’  | (6) | <i>allı pullu</i><br>red+LX flake/scale+LX<br>‘showily dressed’ |

Although synchronically parallel to the Old Turkic type, this suffix +LX belongs to a different morphological lineage, and its coordination-like behaviour results from idiomaticization rather than from the presence of a true coordinating suffix.

c) [A+LX] [A+LX] (full repetition pattern)

A third subtype consists of non-CoS bicoordinatives formed by full formal repetition of an +LX-marked base, yielding adverbial expressions in Modern Turkish, as illustrated in (7) and (8) below. Although not coordinative in the strict morphological sense, these expressions share the *reduplicated adverbial bicoordinative template* and typically encode manner, intensity, or habituality (cf. *reduplicated adjectival bicoordinatives*: MTu. *iri iri, koca koca*; and *reduplicated nominal bicoordinatives*: MTu. *yer yer, kapı kapı, ev ev*, etc.; and note that all such reduplicated types fall under the symmetric bicoordinative category outlined in §2.2; cf. also Appendix).

<sup>9</sup> Here *surface pattern* refers to the identical morphological template shared by two historically distinct suffixal constructions (i.e. OTu. +II vs. MTu. +LX).

<sup>10</sup> In the Old Turkic inscriptions (8th c.), +LXg was a formative meaning ‘possessing the referent of the base’ (Erdal 1991).

- (7) MTu. *uslu uslu*  
sense/mind+*LX* sense/mind+*LX*  
'quietly; obediently; in a well-behaved manner'
- (8) MTu. *edalı edalı*  
manner/affectation+*LX* manner/affectation+*LX*  
'gracefully; charmingly'

Although they share the same template of parallel suffixation, these repetitions do not instantiate coordinative structure in the CoS-based sense described under (a); instead, their interpretation arises from adverbialization through lexicalized reduplication rather than from true CoS-based coordination.

The preceding subsection has established the structural and historical profile of suffix-based coordination (CoS) in both Old Turkic and Modern Turkish, distinguishing genuinely coordinative patterns from superficially similar but non-coordinative surface formations. Building on this foundation, the following subsection turns to coordinating conjunctions (CoC), which constitute the second major type of overt coordination in Turkic. Unlike CoS markers, CoC elements outlined in §2.3.2 are free morphemes and encode coordination through syntactic linkage rather than morphological parallelism.

### 2.3.2 Types of coordinators: Coordinating conjunctions (CoC)

Within the broader class of syndetic bicoordinatives, one major subtype consists of constructions marked by coordinating conjunctions (CoC). Unlike asyndetic bicoordinatives, which show no overt connective, CoC-based formations employ explicit conjunctions — whether Old Turkic (OTu.) or Modern Turkish (MTu.) — to link the two coordinated components [A] and [B] (i.e. [A + CoC + B]). Although syndetic coordination is cross-linguistically common, its systematic application to lexicalized irreversible bicoordinatives in Turkic has received little attention prior to earlier work. The present study adopts this category as a structural subtype of syndetic bicoordination and integrates it into the general typology of Turkish bicoordinatives.

As noted in §2.3, syndetic bicoordination in Turkic can be realized either by coordinating suffixes (CoS) or by coordinating conjunctions (CoC). In contrast to CoS-based formations — which are morphologically highly restricted — CoC-based coordinatives display relatively greater internal variety. Nevertheless, they do not lend themselves to a part-of-speech-based classification, since attested examples represent only a few structural templates. Therefore, the classification used here is based solely on the type of conjunction employed.

The following subsections provide a systematic overview of CoC-based syndetic bicoordinatives, following exclusively the examples and structural types documented in Old Turkic and Modern Turkish.

### 2.3.2.1 Disjunctive coordinators:

- [A ya B] OTu. (KB) *kâliş ya barış* ‘coming or going; movement’ (cf. asyndetic: HT IX *kâliş ya barış*; cf. below: *kâliş hâm barış*), *üktüş ya az* ‘more or less’, *kiçiş ya ulug* ‘small or big’.
- [A ya da B] MTu. *er ya da geç* ‘sooner or later’ (cf. asyndetic: *er geç*),<sup>11</sup> *öyle ya da böyle* ‘one way or another’ (cf. asyndetic: *öyle böyle değil* ‘it’s wicked’).
- [A veya B] MTu. *er veya geç* ‘sooner or later’ (cf. asyndetic: *er geç*), *öyle veya böyle* ‘one way or another’.

### 2.3.2.2 Copulative coordinators (i.e. ‘and’-type coordination):<sup>12</sup>

- [A hâm B] OTu. (KB) *açuk hâm yaruk* ‘frank and clear’, *alış hâm beriş* ‘buying and selling; trade’, *kâliş hâm barış* ‘coming and going; movement’ (cf. above *kâliş ya barış*).
- [A ve A] MTu. *ancak ve ancak* ‘if and only if’, *asla ve asla* ‘never and ever’.
- [A da A] (Finite verbs): MTu. *gitti de gitti* ‘kept going; went on and on’, *ağladı da ağladı* ‘wept and wept’, *çoştı da çoştı* ‘grew increasingly excited’;  
(Nominals): MTu. *neler de neler!* ‘all sorts of things; so many things; a great many things’ (cf. asyndetic: *neler neler!* ‘id.’), *aman da aman* ‘oh my goodness!’
- [[A+IA] B]<sup>13</sup> MTu. *kaşla göz arasında* ‘in the blinking of an eye; in no time’ (< *kaş ile göz*), *tuzla buz olmak* ‘to shatter into pieces, break to smithereens’ (< *tuz ile buz*); *akla kara(yı seçmek)* ‘meet a lot of difficulties’ (< *ak ile kara*).

### 2.3.2.3 Adversative coordinators:

- [A [ama A]]<sup>14</sup> MTu. *asla ama asla* ‘never ever’ (cf. above *asla ve asla* ‘never and ever’), *hiç ama hiç* ‘absolutely not’, *hep ama hep* ‘always, all the time’.

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<sup>11</sup> Note that the element *er* is no longer productive in Modern Turkish and survives only in fossilized expressions such as *er geç* ‘sooner or later’. The syndetic form *er ya da geç* is a later expansion of this older asyndetic template.

<sup>12</sup> By *copulative coordinators*, we refer to coordinative markers expressing additive or joint relations (‘and’-type coordination), typically used in constructions denoting combination, accumulation, or conjoint participation (e.g. ‘X and Y’). This contrasts with disjunctive coordination (‘or’-type), which encodes alternatives. The term is employed here descriptively, independent of any specific syntactic theory.

<sup>13</sup> Note that the element *+IA* (< *ile*) in formations such as *kaşla göz arasında* and *tuzla buz* represents a morphologized reflex of the coordinating conjunction/postposition *ile* ‘with, and’. Although not a productive coordinating suffix in synchrony, its behavior in these expressions is functionally parallel to true CoS-marking in that it links the two conjuncts through a bound coordinating marker.

<sup>14</sup> Here *ama* functions not as an adversative connector but as a scalar intensifier (‘all the more, emphatically’), a well-known pragmatic reanalysis in Modern Turkish.

#### 2.3.2.4 Pseudo-coordinators:

- [[A *mX*] A]<sup>15</sup> MTu. *güzel mi güzel* ‘very beautiful’, *olur mu olur* ‘it may well happen / it might be possible; never say never’, *hiç mi hiç* ‘not at all; not in the least’.
- [*AbeA*]<sup>16</sup> MTu. *anbean* ‘with every moment, moment to moment’, *özbeöz* ‘real; genuine’, *günbegün* ‘day by day’.

To sum up, CoC-based syndetic bicoordinatives in Turkish exhibit a limited set of structural templates, but they play a crucial role in the typology of irreversible coordinations. Because these constructions are heavily habitualized or lexicalized and structurally restricted, the classification used here — based solely on the type of conjunction — provides a more accurate and consistent typology than a part-of-speech-based approach.

This section integrates all relevant types attested in the corpus (Old Turkic and Modern Turkish) insofar as they are pertinent to the present framework, while maintaining full compatibility with the analytical foundations laid out in the preceding subsections.

### 2.4 Tricoordinatives

Tricoordinatives in Old Turkic and Modern Turkish are coordinative constructions in which three lexemes occur together, some of which form fixed and lexicalized units, while many others — particularly in Old Turkic — are best understood as occasional formations rather than stable components of the lexicon.

As noted in earlier research,<sup>17</sup> these ternary sequences were often created *ad hoc*, either for metrical or rhythmic purposes in literary compositions or as translation-driven attempts to achieve the most accurate or expressive rendering in religious texts. As will be outlined in §2.4.2, such ternary constructions occur in both asyndetic and suffix-marked syndetic forms, although only the former display the morphophonological cohesion that interacts with ordering constraints. In the Karakhanid period (11-12th centuries), and likewise in Old Uyghur manuscripts (9-14th centuries), such tricoordinatives frequently function as rhetorical devices or textual-stylistic techniques, serving to enhance semantic intensity and stylistic ornamentation. Consequently, most Old Turkic tricoordinatives arise through (a) newly coined combinations (see ex. (9)), (b) extensions of already established bicoordinatives (see ex. (10)), or (c) contaminations involving two pre-existing bicoordinatives, as illustrated in (see ex. (11)). Since the present study focuses on irreversible bicoordinatives, these ternary patterns are discussed only briefly to illustrate how larger coordinative sequences develop through the recursive

---

<sup>15</sup> The inserted interrogative particle *mX* is synchronically a question marker in Turkish, but in these specific bicoordinative constructions it functions exclusively as an intensifier rather than as a marker of interrogation.

<sup>16</sup> The inserted Persian preposition *be* ‘with, for, in order to’ functions here as an intensifier, and all formations containing *be* are treated as fully lexicalized bicoordinatives.

<sup>17</sup> Aydemir 2007.

expansion of binary structures and how they align with the typology of Turkish coordination.

- (9) OTu. *süüli aşlı kertgünçli* ‘army, provisions, and faith’  
[[army-CoS] [provision-CoS] [faith-CoS]] (see ex. (19) below)
- (10) OTu. *yertinçü yer suw* ‘the earth; the world’  
[[earth] + [ground + water]] (see ex. (14) below)
- (11) OTu. *kork- böz- titrâ-* ‘to be afraid, frightened’  
[[to be afraid + to shudder] + [to tremble]] (see ex. (18) below)

#### 2.4.1 Structural domains of tricoordinatives

Old Turkic evidence shows that tricoordinatives occur in three structural domains: adjectival, nominal, and verbal. Although they differ in lexical category and semantic function, all instantiate a recursive Coordination Phrase (CoP) structure that can surface either as tightly integrated asyndetic structures (see §2.4.1.1) or as suffix-marked syndetic formations (see §2.4.1.2).

Old Turkic nominal bicoordinatives display both left-branching and right-branching structures, indicating that the CoP architecture in the nominal domain allows recursive coordination in both directions. In addition to the more familiar left-branching patterns (e.g. *yertinçü yer suw* ‘the earth; the world’, see ex. (14) below), the language also exhibits clear cases of right-branching bicoordinatives (e.g. *aş içgü suwsuş* ‘food and drink’, etc., see ex. (15) below), which ultimately surface as flat two-member sequences. These right-branching patterns are particularly important typologically because they provide the structural basis for certain contamination-derived tricoordinatives. For clarity, both types of bicoordinatives are represented below in their flat surface forms. In other words, Old Turkic nominal coordination is not exclusively left-branching; the system licenses right-branching expansions as well, which surface as flat sequences of two elements (and occasionally three).

A comparable two-way recursive pattern is also attested in adjectival bicoordinatives: Old Turkic exhibits both right-branching structures (e.g. *atlıg küülüg bälgülüg* ‘highly renowned’, see ex. (12) below) and left-branching expansions (e.g. *kirsiz arıg süzök* ‘pure and clean’, see ex. (13) below), both of which surface as semantically intensifying ternary clusters.

For clarity, both branching patterns are presented below in parallel, with their full CoP tree structures and their corresponding flat surface representations.

##### 2.4.1.1 Asyndetic tricoordinatives (AsTri)

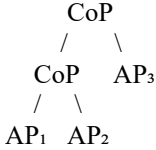
###### a) Adjectival tricoordinatives (ATri)

Asyndetic adjectival tricoordinatives consist of three adjectives forming a cohesive semantic whole, typically expressing completeness or intensification, as illustrated in (12) and (13). ATri typically produce quality intensification, whereby multiple semantically convergent adjectives combine to yield a cumulative or heightened degree of the property. The adjectives involved are

not required to be fully synonymous; rather, they denote closely related properties within the same semantic domain, whose cumulative combination yields intensification.

- (12) OTu. *atlıg küülüg bālgülüg*  
 [[renowned + famous] + [distinguished]] → ‘highly renowned’

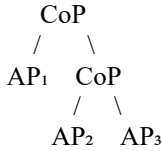
Structural representation:



This right-branching adjectival tricoordinative represents an asyndetic ternary complex consisting of three semantically convergent adjectival items. The first two elements (*atlıg küülüg*) form an intermediate coordination, which then combines with the third (*bālgülüg*), resulting in a structurally ternary CoP configuration. The overall construction expresses semantic intensification and functions as an asyndetic tricoordinative unit; i.e. [[AP<sub>1</sub> + AP<sub>2</sub>] + [AP<sub>3</sub>]] (deep) → [AP<sub>1</sub> + AP<sub>2</sub> + AP<sub>3</sub>] (surface) = Expansion-type tricoordinative.

- (13) OTu. *kırsız arıg süzök*  
 [[dirt-free] + [clean + pure]] → ‘pure and clean’

Structural representation:



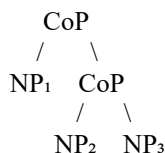
Here, the left-branching *arıg süzök* ‘clean’ is an existing bicoordinative to which *kırsız* is added as a compatible conceptual element. This grouping is motivated by the pre-existing lexicalized bicoordinative *arıg süzök*, which forms a tighter semantic — and likely prosodic — unit, to which *kırsız* is subsequently added; i.e. [AP<sub>1</sub> + [AP<sub>2</sub> + AP<sub>3</sub>]] (deep) → [AP<sub>1</sub> + AP<sub>2</sub> + AP<sub>3</sub>] (surface) = Expansion-type tricoordinative.

#### b) Nominal tricoordinatives (NTri)

Asyndetic nominal tricoordinatives typically arise through the lexical expansion of an already established bicoordinative, representing semantic totalities or conceptual domains, as illustrated in (14) and (15) below:

- (14) OTu. *yertinçü yer suw*  
 [[earth] + [ground + water]] → ‘the earth; the world’

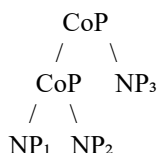
Structural representation:



Here, the left-branching *yer suw* is an existing bicoordinative to which *yertinçü* is added as a compatible conceptual element; i.e.  $[[\text{NP}_1] + [\text{NP}_2 + \text{NP}_3]]$  (deep)  $\rightarrow$   $[\text{NP}_1 + \text{NP}_2 + \text{NP}_3]$  (surface) = Expansion-type tricoordinative.

- (15) OTu. *aş içgü suwsuş*  
 $[[\text{food} + \text{drink}] + [\text{water}]] \rightarrow$  ‘food and drink’

Structural representation:



The Old Turkic form *aş içgü suwsuş* provides a clear example of a *asyndetic* tricoordinative derived through contamination.<sup>18</sup> The apparent grouping reflects the diachronic derivation of the construction from two overlapping bicoordinatives, rather than a purely synchronic ternary coordination. It originates from two overlapping bicoordinatives — *aş içgü* ‘food and drink’ and *aş suwsuş* ‘food and water’ — in which the shared head (*aş*) is retained only once, while the two second elements (*içgü* and *suwsuş*) are reanalysed as parallel conjuncts (i.e.  $aş \text{ içgü} \sim aş \text{ suwsuş} \rightarrow aş \text{ içgü suwsuş}$ ). This process yields a surface structure consisting of three semantically co-equal nouns, forming a flat ternary CoP that denotes a domain-totality (‘food–drink–water’). Although the underlying formation is of the type  $[[\text{NP}_1 + \text{NP}_2] + [\text{NP}_3]]$ , the resulting construction functions as a genuine nominal tricoordinative in terms of coordination symmetry and semantic scope; i.e.  $[\text{NP}_1 + \text{NP}_2] \sim [\text{NP}_1 + \text{NP}_2]$  (contamination)  $\rightarrow$   $[\text{NP}_1 + [\text{NP}_2 + \text{NP}_3]]$  (deep)  $\rightarrow$   $[\text{NP}_1 + \text{NP}_2 + \text{NP}_3]$  (surface) = Contamination-type tricoordinative.

### c) Verbal tricoordinatives (VTri)

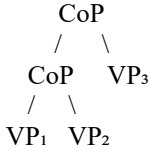
*Asyndetic* Verbal tricoordinatives arise when three verb stems combine into a cohesive coordinative unit that typically expresses intensified action (quantitative or qualitative), semantic intensification, iterative motion, or a cumulative event sequence, as illustrated in (16)–(18). As in the adjectival and nominal domains, such formations originate either (a) through the expansion of an existing biverbal structure (see ex. (16) and (17)) or (b) through the

<sup>18</sup> In historical linguistics, contamination is a cover term for processes whereby two or more formally or semantically related linguistic forms, coexisting in a speech community, influence each other and merge partially, yielding hybrid outcomes. Such effects may operate at different levels of structure (phonological, morphological, lexical, or constructional). In the present study, the term is used in a more restricted sense, referring specifically to the merging of overlapping coordinative expressions.

contamination of two overlapping bicoordinatives (see ex. (18)), producing ternary event complexes that are semantically integrated, sometimes approximating semantic totality, and morphosyntactically symmetric. The resulting structural patterns closely parallel those observed in ATri and NTri, confirming that all three domains instantiate the same recursive CoP-based coordination mechanism.

- (16) OTu. *agırla- aya- tap-*  
[[respect + honour] + [worship]] → ‘to worship; to show reverence’

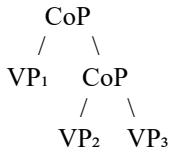
Structural representation:



Here, the right-branching *agırla- aya-* ‘to worship, reverence’ is an existing bicoordinative to which *tap-* ‘to worship’ is added as a compatible conceptual element; i.e. [[VP<sub>1</sub> + VP<sub>2</sub>] + [VP<sub>3</sub>]] (deep) → [VP<sub>1</sub> + VP<sub>2</sub> + VP<sub>3</sub>] (surface) = Expansion-type tricoordinative.

- (17) OTu. *adırl- käs- yar-*  
[separate + [cut + split]] → ‘to cut and split’

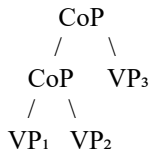
Structural representation:



Here, the left-branching bicoordinative *käs- yar-* ‘to cut and split’ functions as the structural base to which *adırl-* ‘to separate’ is added as a semantically compatible element. The three verbal stems belong to the same event domain (‘acts of separation’) and form an asyndetic ternary coordination expressing cumulative and intensified action; i.e. [[VP<sub>1</sub>] + [VP<sub>2</sub> + VP<sub>3</sub>]] (deep) → [VP<sub>1</sub> + VP<sub>2</sub> + VP<sub>3</sub>] (surface) = Expansion-type tricoordinative.

- (18) OTu. *kork- báz- titrâ-*  
[[to be afraid + to shudder] + [to tremble]] → ‘to be afraid, frightened’

Structural representation:



The Old Turkic sequence *kork- bāz- titrā-* provides a clear example of a *asyndetic* verbal tricoordinative formed through contamination. As in the nominal contamination case in (15), this structure also originates from two overlapping bicoordinatives — *kork- bāz-* ‘to be afraid; to shudder’ and *kork- titrā-* ‘to be afraid; to tremble’ — in which the shared first element (*kork-*) is retained only once, while the two second elements (*bāz-* and *titrā-*) are re-analysed as parallel verbal conjuncts. The resulting ternary complex forms an *asyndetic* CoP that denotes an intensified fear-related event domain (‘fear–shudder–tremble’). Although the underlying configuration is of the contamination type  $[VP_1 + VP_2] \sim [VP_1 + VP_3]$ , the reanalysed structure surfaces as a fully integrated *asyndetic* verbal tricoordinative exhibiting coordinative symmetry; i.e.  $[VP_1 + VP_2] \sim [VP_1 + VP_3]$  (contamination)  $\rightarrow$   $[[VP_1] + [VP_2 + VP_3]]$  (deep)  $\rightarrow$   $[VP_1 + VP_2 + VP_3]$  (surface) = Contamination-type tricoordinative.

Numerous further examples of this pattern are attested in Old Turkic, including forms such as *kork- ürk- bālinglä-* ( $\leftarrow$  *kork- ürk- ~ ürk- bālinglä-*) ‘to be afraid, to be frightened’ and *aç- yad- yarut-* ( $\leftarrow$  *aç- yad- ~ aç- yarut-*) ‘to expose, reveal, uncover’, among others. These sequences arise through the same mechanism of overlapping bicoordinatives with a shared initial element and a reanalysis of the remaining verbal stems as parallel conjuncts.

From a typological perspective, and for now, it seems that contamination-based *asyndetic* verbal tricoordinatives in Old Turkic predominantly follow right-branching patterns; no unequivocal left-branching contamination type has yet been identified in the available corpus.

Taken together, the *asyndetic* verbal tricoordinatives analysed above demonstrate that Old Turkic employs more than one structural route in building ternary verbal complexes. Both right-branching *asyndetic* expansion patterns (e.g. *agırla- aya- tap-*, (16)) and left-branching *asyndetic* ones (e.g. *adırl- käs- yar-*, (17)) are attested, each reflecting the recursive application of the CoP mechanism to semantically compatible verb stems. In addition, *asyndetic* contamination-type formations (e.g. *kork- bāz- titrā-*, (18)) show that overlapping bicoordinatives can likewise give rise to fully integrated ternary structures. Across these patterns, the resulting sequences form *asyndetic* serial coordinations expressing intensified, cumulative, or multi-step event structures.

To sum up, from a typological standpoint, Old Turkic exhibits two structurally distinct types of expansion-based *asyndetic* verbal tricoordinatives. Some are right-branching, where an existing bicoordinative receives an additional verbal element in final position (as in example (16)), while others are left-branching, where the added verb precedes an already established bicoordinative structure (as in example (17)). Both patterns surface as flat ternary sequences but differ in their internal CoP configuration —  $[[VP_1 + VP_2] + [VP_3]]$  versus  $[[VP_1] + [VP_2 + VP_3]]$  — demonstrating that the verbal domain allows *asyndetic* recursive coordination in both structural directions. This bidirectional expandability provides the morphosyntactic basis for the full range of *asyndetic* verbal tricoordinatives attested in Old Turkic.

#### 2.4.1.2 Syndetic tricoordinatives (SyTri)

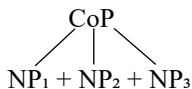
Syndetic tricoordinatives in Old Turkic are extremely rare and, unlike their adjectival, nominal and verbal asyndetic counterparts, do not constitute a productive or structurally diverse category. The only securely attested pattern involves polysyndetic nominal formations in which three coordinated elements are marked by the same coordinating suffix (CoS) — i.e. [...+// ...+// ...+//] — yielding a formally syndetic but semantically unified ternary sequence.

As noted earlier (see §2.3), such formations occur only sporadically in the Old Turkic corpus and have no counterparts in Modern Turkish. Moreover, verbal SyTri structures are unattested, which is expected given that the relevant coordinating suffix (+//) is morphologically incompatible with verbal stems. In principle, a CoC-based (conjunction-marked) tricoordinative would also be typologically possible, but no such example has been identified in Old Turkic textual sources.

The following example — identical to the one introduced in §2.3 — illustrates the only securely documented Old Turkic SyTri configuration, consisting of three nominals, each bearing the coordinating suffix +//:

- (19) OTu. *süüli aşlı kertgünçli* (TT V B105)  
[[army-CoS] [provision-CoS] [faith-CoS]] → ‘army, provisions, and faith’

Structural representation:



This pattern shows that syndetic tricoordination exists in Old Turkic only as a marginal subtype of nominal coordination, limited to occasional polysyndetic constructions and lacking evidence of broader structural generalization.

#### 2.4.1.3 Idiomatic and formulaic tricoordinatives in modern Turkish

Modern Turkish displays only limited productivity in the formation of tricoordinatives. Unlike Old Turkic — where ternary constructions occur across adjectival, nominal, and verbal domains through both expansion and contamination — the modern language preserves only a small set of habitualised, conventionalised, and stylistically fixed ternary expressions. Although these items do not originate from productive CoP-recursion in the synchronic grammar, they nevertheless satisfy the structural criteria for tricoordinatives: three lexemes forming a cohesive semantic and prosodic unit.

One well-known example is *ham hum şaralop* (or *şorolop*), which originates from the contamination of the bicoordinative *ham hum* ‘mumbling; gibberish’ and the onomatopoetic form *şaralop* (~ *şorolop*), yielding a ternary complex meaning ‘vague muttering; nonsensical talk’. The structure consists of three phonologically and semantically compatible components forming an asyndetic tricoordinative unit.

Other idiomatic expressions likewise surface as fixed ternary patterns in the modern language, including:

- (20) *öldüm öldüm dirildim*  
öl-dü-m öl-dü-m diril-di-m  
die-PST-1SG die-PST-1SG revive-PST-1SG  
'I was so scared / terrified' (*lit.* 'I died, died, and came back to life')
- (21) *ye iç yat*  
ye iç yat  
eat-IMP.2SG drink-IMP.2SG lie.down-IMP.2SG  
'eat, drink, and sleep'
- (22) *yandım bittim kül oldum*  
yan-dı-m bit-ti-m kül ol-du-m  
burn-PST-1SG finish-PST-1SG ash become-PST-1SG  
'I was utterly devastated' (*lit.* 'I burned, I was finished, I became ash')
- (23) *el pençe divan*<sup>19</sup>  
el pençe divan  
hand palm court  
'showing extreme respect; in a deeply reverential posture'

These sequences are synchronically habitualised, functioning as formulaic or idiomatic tricoordinatives whose ternary structure is preserved through frequent usage. Although they do not participate in the productive derivational pathways attested in Old Turkic (i.e. expansion-based or contamination-based CoP recursion), they display the same surface property: three coordinated lexical items forming a cohesive ternary semantic unit.

Overall, Modern Turkish maintains the structural possibility of tricoordination, but its contemporary system relies almost exclusively on habitualised, conventionalised, idiomatized, fixed ternary expressions, rather than the morphologically and stylistically productive patterns characteristic of Old Turkic.

#### 2.4.1.4 Functional interpretation of tricoordinatives (ATri, NTri, VTri)

Across adjectival, nominal, and verbal domains, tricoordinatives contribute a wide range of semantic, aspectual, and stylistic effects. Structurally, they emerge through the recursive expansion or contamination of bicoordinatives; functionally, they yield tightly integrated ternary units that amplify or elaborate the conceptual space encoded by their components. These formations thus operate not only as grammatical coordinations but also as devices of semantic enrichment and stylistic intensification, especially in Old Turkic literary and religious texts. The following functional domains sum-

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<sup>19</sup> The expression *el pençe divan* historically derives from an earlier adverbial construction in which the bicoordinative *el pençe* functioned as an independent manner adverb ('with hands clasped in front, respectfully') modifying the verb phrase *divan durmak* ('to bow, to stand in reverence before someone'). Through conventionalization, the adverbial modifier and the verbal base underwent lexical fusion, yielding the fixed idiom *el pençe divan* with the adverbial meaning 'showing utmost reverence'.

marize the principal interpretive effects associated with ATri, NTri, and VTri structures:

- a) *Iterative event sequencing*: repetitive or cyclic action; OTu. *kork-ürk-bälinglä-* ‘to be afraid, to be frightened’ (see §2.4.1.1(c)).
- b) *Intensified action*: quantitative or qualitative strengthening of the event; OTu. *agırla- aya- tap-* ‘to worship; to show reverence’ (ex. (16)).
- c) *Semantic intensification*: cumulative reinforcement of a conceptual domain; OTu. *atlıg küülüg bälgülüg* ‘highly renowned’ (ex. (12)).
- d) *Semantic totality*: near-exhaustive or domain-wide coverage of related concepts; OTu. *aş içgü suwsuş* ‘food–drink–water’ → ‘food and drink (in general)’ (ex. (15)).
- e) *Aspectual culmination*: cumulative or progressive event structuring; OTu. *adırl- käs- yar-* ‘to cut and split’ (ex. (17)).
- f) *Property intensification*: a heightened degree or cumulative buildup of a quality; OTu. *kırsız arıg süzök* ‘pure and clean’ (ex. (13)).
- g) *Rhetorical or textual–stylistic function*: enhancing rhythm, emphasis, and expressive force in discourse; e.g. *öldüm öldüm dirildim* ‘I was so scared / terrified’ (*lit.* ‘I died, died, and came back to life’) (ex. (20)).

While tricoordinatives represent the minimal extension of binary coordination beyond two components, Old Turkic and Modern Turkish also exhibit larger coordinative chains consisting of more than three elements. These formations go beyond ternary structures and give rise to what may be termed multicoordinatives, i.e. coordinative constructions involving four or more successive elements. As will be shown in the following section, such multi-coordinative structures emerge either as simple enumerations or as concatenated chains of bicoordinatives, and they play a distinct role in the organization of complex coordinative sequences in Turkic.

## 2.5 Multicoordinatives (enumerations and concatenations)

Multicoordinatives are coordinative constructions consisting of more than three successive elements. They occur with both nominal and verbal bases and, in principle, allow an unrestricted number of coordinated expressions of varying internal complexity. Under the umbrella term multicoordinative, two structurally and functionally distinct phenomena are subsumed in the present framework:

- a) *simple enumerations* involving more than three coordinated items, and
- b) *concatenations (chainings) of bicoordinatives*, i.e. the recursive coordination of already established bicoordinative units without overt conjunctions.

For the first type, the widely used cross-linguistic term *enumeration* is retained. For the second type, in this study, the term *concatenation* is used in its standard linguistic sense to denote the process — and its result — of the rule-governed, linear placement of linguistic elements, forming strings in which elements stand in a relation of succession (e.g.  $X + Y + Z$ ) (Bussmann 1998; Crystal 2008). This foundational process plays a central role in many approaches to morphological and syntactic theory (see, e.g. Haspelmath & Sims 2010). The present analysis, however, does not engage with theoretical debates on concatenation *per se*, but focuses instead on its empirically observable phonetic and morphophonological correlates in Turkish bicoordinatives. In contrast to simple enumerations, concatenations of bicoordinatives typically display internal structural organization, semantic domain coherence, and rhetorical structuring.

The structures described above as “concatenations (chainings) of bicoordinatives” are henceforth referred to as *multicoordinatives* (MulCo). In the present framework, multicoordinatives are defined as linear coordinative chains formed by the successive alignment of two or more independent bicoordinatives. Unlike tricoordinatives, which involve exactly three coordinated elements within a single recursive CoP domain, multicoordinatives represent higher-order coordinative chains resulting from the iterative linking of bicoordinative units. Depending on the lexical category of their components, three subtypes are distinguished here: NMulCo (nominal multicoordinatives), VMulCo (verbal multicoordinatives), and AMulCo (adjectival multicoordinatives). Structurally, these formations instantiate stepwise recursive coordination at the level of bicoordinative blocks, while functionally they serve as powerful devices of textual structuring, semantic amplification, and rhetorical intensification in Old Turkic.

It should furthermore be noted that a single multicoordinative (MulCo) structure may itself contain more than one NMulCo, AMulCo, or VMulCo segment in succession, yielding mixed nominal, adjectival, and verbal chains within the same linear coordinative sequence, as illustrated in (31) and (32) below.

### 2.5.1. Enumerations

Most enumerations in Old Turkic are syntactically conditioned and largely context-bound. As already observed by Röhrborn, many of them represent “syntactic chance products” (i.e. *nonce constructions*), especially in translation texts (Röhrborn 1983). In Buddhist Old Turkic, for example, long nominal lists frequently arise through near-literal word-for-word renderings from a source language (most often Chinese). A representative case is the following passage from the Old Turkic *Xuanzang-Biography* (see ex. (24)):

- (24) OTu. *altun, kümüş, tuç, ud, koyn, titir tävä, kızıl tuz, tış tuz, kara tuzta ulatı*  
'gold, silver, bronze, cattle, sheep, female and male camels, red salt, white salt, black salt, etc.'

Such enumerations primarily reflect source-text structure and therefore remain of limited structural relevance for coordination typology. They do not normally contain true bicoordinatives or tricoordinatives as internal building blocks and thus lie largely outside the core domain of irreversible coordination.

### 2.5.2 Concatenations of bicoordinatives

Concatenations are structurally and functionally highly informative, as they are formed by the successive alignment of multiple bicoordinatives. These formations resemble bicoordinatives and tricoordinatives in their role as text-structuring devices and appear to serve expressive, rhetorical, and stylistic purposes such as intensification, variation, elaboration, emphasis, emotional colouring, and semantic specification. Typical examples from Old Turkic illustrate how several bicoordinatives can be aligned consecutively, as illustrated in (25)–(31).

Throughout this section, coordinative formations are classified according to the part-of-speech (POS) category of their constituents, not according to the semantic or functional interpretation they yield in context:

- (25) OTu. *miñ miñ tümän tümän*  
[[thousand] [thousand]] + [[ten-thousand] [ten-thousand]] = MulCo  
'countless, innumerable'
- (26) OTu. *öñi öñi adrok adrok*  
[[various] [various]] + [[different] [different]] = AMulCo  
'each different in its own way'
- (27) OTu. *eş tuş adaş kudaş*  
[[spouse] [associate]] + [[friend] [comrade]] = AMulCo  
'friends; kith and kin'
- (28) OTu. *aya- ağırla- tapın- udun-*  
[[to honour] [to respect]] + [[to worship] [to reverence]] = VMulCo  
'to reverence and venerate'
- (29) OTu. *yaşur- batur- ürt- kizlä-*  
[[to hide] [to conceal]] + [[to cover up] [conceal]] = VMulCo  
'to hide, conceal'
- (30) OTu. [*yıd yıpar*] [*hwa çäçäk*] *üzä* [*tapıg udug*] *kılsarlar*  
incense incense flower flower with offering offering do-COND-3PL = NMulCo  
'If they perform offerings with incense and flowers'
- (31) OTu. [*kök kalıg*] *täg* [*uçsuz tüpsüz*] [*öñi öñi*] [*basdaçı täpdäçi*] *ärür*  
(Kara & Zieme 1977)  
sky heaven like end-PRIV bottom-PRIV different different tread-PTCP step-PTCP be-AOR.3SG → 'Like the sky he is boundless; he treads everything'

In such cases, the individual bicoordinatives remain structurally intact but are arranged into a higher-order coordinative chain. Semantically, these concatenations often cover a coherent conceptual field and evoke effects of hyperbole, rhetorical amplification, and cumulative elaboration. An extreme illustration is provided by extended multicoordinative chains such as the following (see ex. (32)), which consists of thirteen successive bicoordinatives:

- (32) [şlok nom]<sub>1</sub> *ärdini için tolþ* [ellärin uluşların]<sub>2</sub> [käntlärin suzakların]<sub>3</sub> [ävlärin barkların]<sub>4</sub> [orduların karşuların]<sub>5</sub> [atların yañaların]<sub>6</sub> [aguların barımların]<sub>7</sub> [ädlärin tavarların]<sub>8</sub> [ärdinilärin yinçülärin]<sub>9</sub> [ogulların kızların]<sub>10</sub> [kunçuyaların hatunların]<sub>11</sub> [amrak isig]<sub>12</sub> *özlärinä [tidip ıdalap]<sub>13</sub> temin ök nom ärdiniñ äşidgäli boltular.* (Zieme 1996)

‘Because these (and other Bodhisattvas), for the sake of the teaching contained in a single śloka,<sub>1</sub> relinquished and abandoned<sub>13</sub> their entire lands and realms,<sub>2</sub> their cities and villages,<sub>3</sub> their houses and dwellings,<sub>4</sub> their palaces and royal residences,<sub>5</sub> their horses and elephants,<sub>6</sub> their treasures and possessions,<sub>7</sub> their goods and property,<sub>8</sub> their jewels and pearls,<sub>9</sub> their daughters and sons,<sub>10</sub> their wives and concubines,<sub>11</sub> (even) their own beloved<sub>12</sub> selves, they were then able to hear the Dharma-jewel at once.’

Here the expressive force of the passage (i.e. (32)) largely derives from the cumulative effect of concatenated bicoordinatives rather than from simple syntactic listing. These extended chains are not lexicalized fixed expressions; their expressive effect instead arises from the sequential combination of pre-existing bicoordinatives. In translated Old Turkic passages such as those of the Altun Yaruk (*Suvarñaprabhäsottamasūtra*, cf. (32)), this ordering is not random but reflects the parallel enumerative structure of the source text.

Finally, Modern Turkish still preserves related multicoordinative behaviour, though with far more limited productivity, as illustrated in (33), where the multicoordinative also based on concatenated bicoordinatives:

- (33) MTu. *gide gele gide gele*  
go-CONV come-CONV go-CONV come-CONV  
‘coming and going again and again’

Formally, multicoordinatives (MulCo) can be modelled as higher-order recursive coordinations formed through the successive alignment of bicoordinative blocks – which surface as a flat linear sequence – rather than individual lexemes. This process may be represented schematically as  $[[Bi_1 + Bi_2] + Bi_3 + \dots + Bi_n]$  (deep)  $\rightarrow$  [MulCo] (surface), where “Bi” denotes any nominal, verbal, or adjectival bicoordinative (i.e. NBi, VBi, ABi), and “n” is in principle unbounded (see §2.5.3 below).

Depending on the lexical category of the chained blocks, the resulting structure may be classified as NMulCo (nominal), VMulCo (verbal), or AMulCo (adjectival). Furthermore, mixed multicoordinatives are also possi-

ble, in which nominal, verbal, and adjectival bicoordinatives occur mixed together in any order within the same MulCo chain; e.g.  $[[\text{NBi}_1 + \text{VBi}_2] + \text{ABi}_3 + \dots + \text{XBi}_n] \rightarrow [\text{MulCo}]$  (see §2.5.3 below). A MulCo necessarily requires the successive coordination of at least two bicoordinatives; that is, MulCo structures minimally begin with two bicoordinative units.

### 2.5.3 Structural schemata of multicoordinatives (MulCo)

For the formal generalization of multicoordinatives as *flat linear alignments* at the surface level and as *chains of recursive bicoordinatives* at the deep level, the following structural schemata are proposed:

- a) General structural schema of multicoordinatives (surface):  
 $[[\text{Bi}_1 + \text{Bi}_2] + \text{Bi}_3 + \dots + \text{Bi}_n] \rightarrow [\text{MulCo}]$ ,  
 where  $\text{Bi} \in \{\text{NBi}, \text{VBi}, \text{ABi}\}$ .

This schema captures the surface realization of MulCo as a flat linear concatenation of independently formed bicoordinative blocks.

- b) Structural schemata of the deep subtypes:
1. Homogeneous multicoordinatives:
    - Nominal:  
 $[[\text{NBi}_1 + \text{NBi}_2] + \text{NBi}_3 + \dots + \text{NBi}_n] \rightarrow [\text{NMulCo}]$
    - Verbal:  
 $[[\text{VBi}_1 + \text{VBi}_2] + \text{VBi}_3 + \dots + \text{VBi}_n] \rightarrow [\text{VMulCo}]$
    - Adjectival:  
 $[[\text{ABi}_1 + \text{ABi}_2] + \text{ABi}_3 + \dots + \text{ABi}_n] \rightarrow [\text{AMulCo}]$
  2. Mixed (heterogeneous) multicoordinatives  
 $[[\text{NBi}_1 + \text{VBi}_2] + \text{ABi}_3 + \dots + \text{XBi}_n] \rightarrow [\text{MulCo}]$ ,  
 where  $\text{XBi} \in \{\text{NBi}, \text{VBi}, \text{ABi}\}$ .

The latter represents mixed multicoordinatives, in which nominal, verbal, and adjectival bicoordinatives may occur successively mixed together in any order within the same coordinative chain.

Adverbial bicoordinative (AdvBi) or tricoordinative (AdvTri) sequences in Turkish are treated here as category-shifted realizations of adjectival or verbal bicoordinatives at the level of syntactic function, and no independent AdvBi or AdvTri classes are therefore postulated.

### 2.5.4 Typological interpretation of multicoordinatives

Typologically, Turkish coordination displays a strictly hierarchical expansion pathway from BiCo  $\rightarrow$  TriCo or BiCo  $\rightarrow$  MulCo. While tricoordinatives emerge through single-step recursive expansion or contamination of bicoordinatives, multicoordinatives represent higher-order coordinative chains formed by the iterative concatenation of independent bicoordinative blocks. Unlike simple enumerations, MulCo structures thus instantiate recursion at the level of coordinative units rather than at the level of individual lexical items. A crucial theoretical consequence of the present model is, thus, that in multi-

coordinatives, the basic unit of recursion is not the individual lexeme but the bicoordinative block itself.

The structural schemata above (see §2.5.3) formalize the fact that multicoordinatives are not basic coordinative units, but higher-order constructions derived through iterative recursive coordination of bicoordinative blocks. The model captures:

- a) the flat linear appearance of MulCo at the surface level,
- b) the stepwise recursive structure at the deep level,
- c) the existence of both homogeneous and mixed multicoordinative chains, and
- d) the theoretically unlimited extensibility of coordinative concatenation.

To sum up, from a structural point of view, multicoordinatives constitute the outermost extension of the recursive coordinative system described in this study. While enumerations primarily reflect syntactic and translational mechanisms, chains of bicoordinatives reveal the full stylistic and rhetorical potential of recursive coordination. They show that the same morphophonological and iconic principles governing irreversible bicoordinatives also operate at higher levels of coordinative complexity.

### **3. Typological Overview of Turkish Coordinative Constructions (BiCo–TriCo–MulCo)**

The present BiCo–TriCo–MulCo model intersects with Haspelmath's cross-linguistic typology of coordination (Haspelmath 2004, 2007) in recognising coordination as a structurally complex and typologically variable construction. Haspelmath's framework primarily classifies coordination with respect to linking strategies (conjunctions vs. affixes), symmetry and asymmetry of conjuncts, and clause-level coordination patterns. The present study converges with this approach in treating coordination as an internally structured constructional domain, but diverges in analytical focus by modelling coordination as a block-recursive system operating on coordinative units (*bicoordinatives*, *tricoordinatives*, *multicoordinatives*) rather than on individual conjuncts alone. While Haspelmath's typology is largely conjunction- and clause-oriented, the BiCo–TriCo–MulCo framework foregrounds the recursive expansion of coordinative blocks as higher-order constructional units, thereby providing a complementary perspective on the structural organization of coordination, particularly in morphologically rich languages such as Turkish. While both approaches converge in recognising structurally complex coordination, they diverge in their analytical focus: Haspelmath's typology is primarily clause- and conjunction-oriented, whereas the present framework is block-recursive and construction-based.

### 3.1 Generalized structural formulas

This subsection presents a set of generalized structural formulas that abstract and schematically capture the recursive architecture of coordinative constructions developed in this study. The formulas are intended as formal summaries of the underlying combinatorial principles governing bicoordinatives, tricoordinatives, and multicoordinatives, highlighting how simple binary coordination serves as the structural base for higher-order recursive extensions.

- a) Bicoordinatives (BiCo)
 
$$[X_1 + X_2] \rightarrow [\text{BiCo}]$$
- b) Tricoordinatives (TriCo)
 

Expansion-type:

Right-branching:  $[[X_1 + X_2] + [X_3]] \rightarrow [X_1 + X_2 + X_3]$

Left-branching:  $[[X_1] + [X_2 + X_3]] \rightarrow [X_1 + X_2 + X_3]$

Contamination-type:

$$[X_1 + X_2] \sim [X_1 + X_3] \rightarrow [X_1 + X_2 + X_3]$$
- c) Multicoordinatives (MulCo)
 

General recursive schema:

$$[[\text{Bi}_1 + \text{Bi}_2] + \text{Bi}_3 + \dots + \text{Bi}_n] \rightarrow [\text{MulCo}]$$

Mixed (heterogeneous) multicoordinatives

$$[[\text{NBi}_1 + \text{VBi}_2] + \text{ABi}_3 + \dots + \text{XBi}_n] \rightarrow [\text{MulCo}]$$

## 4. Main Theoretical Contributions of the BiCo–TriCo–MulCo Model

- a) *Block-recursive view of coordination:*

The model reconceptualizes coordination as a recursive system operating on bicoordinative (BiCo) blocks rather than on isolated lexical conjuncts, showing that higher-order coordinatives (TriCo, MulCo) emerge through the iterative coordination of already coordinated units.

- b) *Unified treatment of expansion and contamination:*

It provides a unified structural account of both *expansion-type* and *contamination-type* tricoordinatives within a single CoP-based recursive framework. The model provides the first integrated structural account of both expansion-type and contamination-type tricoordinatives within a single recursive CoP-based framework, demonstrating that these two formation pathways are not independent mechanisms but structurally related outcomes of the same coordinative recursion.

- c) *Formal modelling of multicoordinatives:*

Multicoordinatives are formally characterized for the first time through generalized recursive schemata (e.g.  $[[\text{Bi}_1 + \text{Bi}_2] + \text{Bi}_3 + \dots + \text{Bi}_n] \rightarrow [\text{MulCo}]$ ), capturing both their flat surface appearance and stepwise deep recursive structure.

d) *Partial projection of ordering principles (OPri) across recursive coordinative levels:*

The model shows that the morphophonological, morphosyntactic, and iconic ordering principles (OPri) that strictly govern irreversible bicoordinatives do not transfer mechanically or fully to higher coordinative configurations. These principles remain partially active in tricoordinatives and multicoordinatives, but their governing and ordering force progressively weakens as coordinative blocks expand and are chained sequentially.

In multicoordinatives consisting of two bicoordinative blocks (i.e.  $[B_1 + B_2]$ ), the irreversible structure of the individual bicoordinatives still allows OPri to operate to a substantial degree across the entire construction. By contrast, once the number of coordinated blocks exceeds two, yielding long multicoordinative chains, the blocks are primarily aligned linearly and sequentially, and no consistent global ordering or iconic priority is observed between adjacent blocks. In such cases, OPri continues to operate internally within each bicoordinative block, but no longer constrains the ordering relations between blocks.

A similar partial projection is observable in contamination-based tricoordinatives formed from the interaction of two pre-existing bicoordinative blocks (e.g. in TriCo contaminated of two bicoordinative blocks,  $[B_1 + B_2]$ ), where OPri applies locally within the source bicoordinatives but does not always or consistently extend uniformly to the newly formed three-component structure.

e) *A unified synchronic and diachronic framework for BiCo–TriCo–MulCo structures:*

The present study proposes, for the first time, a unified synchronic and diachronic theoretical framework for the systematic classification and formal modelling of irreversible coordinative constructions in Modern Turkish and Old Turkic under the BiCo–TriCo–MulCo architecture. While reduplicative and coordinative formations have long been recognised in the literature, they have typically been treated as isolated lexical or stylistic phenomena under diverse labels. The present model integrates these formations into a single recursive system, explicitly distinguishing bicoordinatives, tricoordinatives, and multicoordinatives as structurally related but hierarchically differentiated construction types, and formalizes their relations by means of generalized structural formulas.

Although the model is developed on the basis of Modern Turkish and Old Turkic data, its block-recursive architecture is formulated at a level of abstraction that may perhaps facilitate cautious cross-linguistic comparison — primarily with other Turkic languages and, secondarily, with certain Altaic and some Uralic languages (e.g. Samoyedic, Hungarian), and perhaps even with structurally compatible patterns observed in extinct languages such as Tocharian and Sogdian.

## 5. Structural, Constructional, and Iconic Constraints Governing Bicoordinatives in Turkish

The question of whether Turkish bicoordinatives follow systematic structural principles has been raised since the earliest studies on Turkish irreversible coordination,<sup>20</sup> yet its full resolution has remained unattained. The view that Turkish bicoordinatives constitute *irregular formations* stems largely from the absence of a coherent model capable of capturing their internal ordering constraints. Yet, as both descriptive and comparative data increasingly suggest, these formations are far from arbitrary.

Early work by Foy (1899), Çağatay (1940–41), and Ağakay (1954) correctly identified several morphophonological and morphosyntactic tendencies governing the internal arrangement of bicoordinatives. Their observations, however, were never integrated into a unified theoretical framework. This has contributed to the assumption by some scholars<sup>21</sup> — as mentioned above — that Turkish bicoordinatives are irregular or unpredictable constructions.<sup>22</sup>

A re-examination of the phenomenon shows, however, that Turkish bicoordinatives exhibit a robust set of *Ordering Principles* (OPri), rooted in their morphophonological structure, morphosyntactic and iconic alignment. These collectively determine the irreversible ordering characteristic of asymmetric bicoordinatives. Some of these principles were implicitly recognised in earlier scholarship, while others emerge clearly only when a sufficiently broad synchronic and diachronic dataset is brought into the analysis. When taken together, these principles reveal that irreversible bicoordinatives form a structurally constrained domain rather than irregular formations.

The following sections therefore reconstruct and refine the formation rules that govern Turkish asymmetric bicoordinatives (AsBi). These rules are based on three sources:

- a) some of the earlier descriptive observations of Foy, Çağatay, and Ağakay,<sup>23</sup>
- b) subsequent observations in the typological and phonological literature, and

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<sup>20</sup> Foy (1899) appears to be the first to address this question.

<sup>21</sup> Schilling remarks, for example, that “morphophonological criteria apparently play no decisive role in the formation of Old Turkic paired expressions” (Schilling 2001: 159). Müller also considers the rules proposed in the literature to be “vague” (Müller 2004: 46, 50).

<sup>22</sup> A detailed critical discussion of earlier descriptive accounts, including those of Foy (1899) and Çağatay (1940–41), is provided in Aydemir (2007) and will not be repeated here.

<sup>23</sup> Several descriptive observations in the earlier literature can be retrospectively related to specific ordering principles formulated in the present study. Thus, Foy (1899) correctly identified a number of tendencies corresponding to Rules 3, 4, 5, and 6, particularly with regard to segmental composition, vocalic onset, syllable count, and syllable structure. Çağatay’s (1940–41) observations can be most directly associated with sonority-based ordering tendencies (Rule 2a), while Ağakay (1954) anticipated aspects of vowel-based preferences (Rule 1) and event-structural sequencing (Rule 7). However, none of these earlier accounts formalised these tendencies as hierarchically organised rules or recognised their systematic interaction across different structural levels. Subsequent studies, often without direct reference to these earlier works, have tended to reiterate individual observations in isolation rather than integrating them into a comprehensive explanatory framework or a unified model.

- c) the results of my own analyses of both Old Turkic and Modern Turkish datasets.

Two clarifications are necessary before introducing these rules: (1) First, they apply exclusively to lexicalised asymmetric bicoordinatives in Modern Turkish. Non-lexicalised, compositional, or contextually generated coordinations represent structurally distinct phenomena and are therefore not subject to OPri-based constraints. (2) Second, while the rules are not constructed with Old Turkic as their primary domain, preliminary comparison shows that a large proportion of Old Turkic examples examined by me conform to the same OPri-based tendencies.

The effectiveness of the criteria proposed here for predicting component order was tested on over 180 Old Turkic and over 400 Modern Turkish bicoordinatives examined by me.<sup>24</sup> These numbers do not represent the total size of the corpora, of course, but they are sufficient to reveal stable and recurrent ordering patterns across both diachronic and synchronic periods.

Understanding the structural organisation of Turkish bicoordinatives thus requires acknowledging two foundational observations. (1) First, the irreversible ordering of asymmetric bicoordinatives is governed by a system of morphophonological ordering principles that determine the relative prominence and placement of their components. (2) Second, these principles interact systematically with broader morphosyntactic and iconic factors, giving rise to stable patterns of lexicalised asymmetric binary formations. The following subsections present these principles and prepare the ground for their formal statement in Rules 1–7.

### 5.1 Phonological and sonority-based constraints (Rules 1, 2a, 2b)

Phonological structure provides the most fundamental layer of asymmetry in Turkish bicoordinatives. Before morphophonological, syntactic, or iconic factors come into play, the ordering of the two components is shaped by basic principles of vowel sonority, consonantal sonority, and articulatory progression. These principles jointly form the phonetic–phonological core of the OPri model, determining the natural direction in which sound sequences tend to unfold within irreversible bicoordinatives.

At this foundational level, the internal order of Turkish bicoordinatives reflects a consistent interaction between acoustic openness, articulatory effort, and segmental mobility.

- a) Rule 1 (see §5.1.1) captures the tendency for pairs to begin with more sonorous (i.e. lower or more open) vowels and proceed toward less

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<sup>24</sup> I present here a compiled set of Modern Turkish data, partly drawing on materials from Ağakay (1954) and Hatiboğlu (1981), while omitting some items from these sources since many of them are not lexicalised, and adding several others. All Modern Turkish examples included here are well-formed and lexicalised. Italic round brackets “( )” indicate frequently occurring inflected forms; non-italic round brackets “( )” indicate commonly attested verbal forms or variants; for Old Turkic data, see Aydemir 2007 (earlier list) and Aydemir 2013 (non-list data).

sonorous ones; e.g. *tek tük* ‘here and there’, *çar çur (et-)* ‘to squander’, etc.

- b) Rule 2a (see §5.1.2) extends this logic to consonants, showing that the first member typically contains a segment with higher consonantal sonority, while the second tends to contain one with lower sonority; e.g. *döl döş* ‘descendence, children’, *dere tepe* ‘over hill and dale’, etc.
- c) Rule 2b (see §5.1.3) accounts for cases where vowel and consonant sonority alone do not predict the ordering. These cases follow a systematic [posterior] → [anterior] articulatory progression, reflecting the biomechanical dynamics of speech production. This auxiliary criterion explains otherwise irregular-looking sequences by showing that articulatory movement itself contributes to irreversible ordering; e.g. *kaba saba*, *kanlı canlı*, *kızır bozar*, *kıvır zıvır*, etc.

Taken together, these three rules demonstrate that the asymmetry intrinsic to Turkish bicoordinatives originates not from lexical idiosyncrasy, but from universal phonological and articulatory biases governing segment organization. They define the natural “phonological backbone” upon which higher-level morphophonological, morphosyntactic, and iconic constraints subsequently build.

The following sections present these principles in detail, beginning with Rule 1, which establishes the vocalic foundation of phonological asymmetry.

#### 5.1.1 Rule 1 – Vowel sonority hierarchy in Turkish bicoordinatives

In the vowel system of Turkish asymmetric bicoordinatives, ordering tendencies reflect a consistent hierarchy of sonority, governed by degrees of acoustic openness and oral aperture. High vowels, which involve a narrower oral aperture and lower acoustic sonority, tend to follow low vowels whose wider oral aperture and greater sonority facilitate perceptual prominence. This *open-to-close (low-to-high)* progression corresponds to the universal vowel sonority scale, in which /a/ [ɑ] shows the highest sonority, followed by /o/ [o], /e/ [ɛ], /ö/ [ø], and /ı/ [ɯ], /i/ [i], /u/ [u], /ü/ [y] at the lowest end. Accordingly, the preferred ordering pattern in Turkish asymmetric bicoordinatives is:

[low / mid vowel] → [high vowel], i.e.  
[more sonorous] → [less sonorous]

This pattern is consistent with the widely held view that the sonority hierarchy acts as a fundamental organizing principle in linguistic sequencing (Clements 1990; Parker 2002; Parker 2008). In this respect, Rule 1 forms the vocalic foundation of irreversible ordering and prepares the structural ground for the consonantal and articulatory hierarchies formalised in Rules 2a and 2b.

### Rule 1.

The vocalic sonority hierarchy (i.e. *low / mid vowel* → *high vowel*):  
the component containing the relatively more sonorous or open vowel  
comes first.  
[+open] [-open]

Constraint: Rule 1 does not apply when another higher-ranked rule is active, namely:

- a) Rule 4 (vocalic vs. non-vocalic onset) [+vocalic] [-vocalic]: *abuk sabuk, özene bezene*
- b) Rule 6 (open vs. closed syllable) [+open syllabic] [-open syllabic]: *ulu orta, yeme içme*

[+open] [-open]: MTu.: *akıllı uslu, altüst* (< *alt üst*), *az uz, cart curt, cak cuk* (*çiğnemek*), *cambul cumbul, can ciğer, cangıl cüngül, çalı çırpı, çanak çömlek, çangıl çungul, çangır çungur, çar çur, çarık çürük, çarpık çurpuk, çayır çimen, dan dun, dangıl dungul, davul zurna, dayamak döşemek, dayalı döşeli, deli dolu, derli toplu, doğru dürüst, efil üfül* (*esmek*), *fakir fukara, falan filan, falan fistic, fasa fiso, garç gurç, gelen giden, gelin güvey, gelir gider* (*hesabı*), *gelmek gitmek, hacı hoca, ham hum, kambur kumbur, kara kuru, karı koca, kem küm, langır lungur, namaz(ında) niyaz(ında), oğul uşak, rahat huzur, sağ salim, sağ selamet, sağa sola, sağdan soldan, sağlı sollu, sağda solda, sağı solu, sarmaş dolaş, sayım suyum, sele suya* (*karişmak*), *tek tük, saymak sövmek, saz(i) söz(ü)* (~ *saz(lı) söz(lü)*), *şangır şungur, tad(i) tuz(u), taka tuka, takas tukas, tangır tungur, tatlısı tuzlusu, tatsız tuzsuz, tepeden turnağa, ters türs, var yok, varı yoğu, vara yoğa* (*üzülmek*), *varsa yoksa, yakmak yıkmak, yalan dolan, yamru yumru, yamuk yumuk, yatak yorgan, yeri yurdu, yer yurt, yeri yurdu, zar zor.*

OTu.: *agır ulug, äzüg igid, kävil- kogşa-, töz tüb.*

#### 5.1.2 Rule 2a – Consonantal sonority hierarchy in Turkish bicoordinatives

The internal ordering of Turkish asymmetric bicoordinatives is not determined by vowels alone. In a large subset of lexicalised formations, the decisive factor is the *relative consonantal sonority* of the two components. Consonantal sonority shows how much a consonant blocks the flow of acoustic energy. Consonants that allow more airflow and have more regular vibration are naturally more sonorous than those that involve tighter constriction. This principle, originating in Jespersen's (1904:186) concept of open articulation and later formalised in phonological sonority theory (Clements 1990; Parker 2002, 2008), predicts that in bicoordinatives the more sonorous consonant tends to occur in the first component, while the second typically contains a less sonorous segment. The Turkish asymmetric bicoordinatives strongly support this universal tendency. Across both Modern Turkish and Old Turkic, bicoordinatives regularly exhibit a descending sonority pattern, whereby the acoustic openness of the initial consonant is greater than that of the following one.

The consonantal hierarchy that emerges from the corpus aligns closely with universal scales proposed in the literature. In Turkish bicoordinatives, the relevant hierarchy can be represented as in (34):

- (34) *rhotic consonants* → *laterals* → *nasals* → *voiced fricatives* → *voiced affricates* → *voiced stops* → *voiceless fricatives* → *voiceless affricates* → *voiceless stops*<sup>25</sup>

This descending hierarchy captures the preference for the more sonorous consonant to appear in the first component of the bicoordinative, followed by a segment of lower sonority (e.g. *sus pus*, *süs püs*, *soy sop*, *çat pat*, *yırtık pırtık*, etc.; for further examples, see below). In all such formations, the acoustic–articulatory openness decreases from the first member to the second, producing a natural sonority-descending sequence. This tendency indicates that irreversible ordering does not arise from lexical arbitrariness but rather from phonetic and phonological biases favouring sequences that begin with more resonant segments.

While general sonority hierarchies have been discussed since Jespersen (1904), the internal *relative sonority hierarchy of obstruents* had not been clearly established prior to the late 2000s. The ordering proposed here (see ex. (34) and (35a)), originally formulated on the basis of Turkish data in my 2007 MA thesis, coincides exactly with the *relative obstruent hierarchy* later assumed by Parker (2008) on the basis of a broad survey of the phonetic and typological literature (see ex. (35b)). This convergence suggests that the Turkish data reflect a phonetic ordering principle of broader typological relevance:

- |       |                                                                                                                                                                                       |                           |       |                                                                                                                                                                                      |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (35a) | relative sonority of obstruents proposed in Turkish                                                                                                                                   | (more sonorous)           | (35b) | relative sonority of obstruents proposed by Parker                                                                                                                                   |
|       | <i>voiced fricatives</i><br><i>voiced affricates</i><br><i>voiced stops</i><br><i>voiceless fricatives</i><br><i>voiceless affricates</i><br><i>voiceless stops</i><br>(Aydemir 2007) | ↑<br>↓<br>(less sonorous) |       | <i>voiced fricatives</i><br><i>voiced affricates</i><br><i>voiced stops</i><br><i>voiceless fricatives</i><br><i>voiceless affricates</i><br><i>voiceless stops</i><br>(Parker 2008) |

Some bicoordinatives, however, display ordering patterns that cannot be fully accounted for by consonantal sonority alone and require an additional articulatory perspective; e.g. *kaba saba*, *kanlı canlı*, *kızır bozar*, *kıvrır zıvrır*, etc. (see Rule 2b below). These cases motivate the formulation of a separate articulatory ordering principle, which is developed in Rule 2b below.

<sup>25</sup> Aydemir 2007: 56, 58.

### 5.1.3 Rule 2b – Articulatory progression sequence (auxiliary criterion)

In some bicoordinative pairs (e.g. *tuz buz*, *kaba saba*, *kızar- bozar-*, etc.; for further examples, see below), the ordering appears to run counter to the descending sonority pattern described in Rule 2a. In such cases, the sequence seems to “rise” in sonority rather than descend. Although these bicoordinatives comply with Rule 2b (*posterior* → *anterior* articulatory place sequencing), their initial consonants also display a surface pattern of rising sonority, i.e. an increase in sonority of consonants from left to right ([low sonority] → [higher sonority]), as seen in sequences such as *t–b*, *k–s*, and *k–b*. Thus, these formations do not constitute exceptions to the sonority hierarchy itself; instead, they are governed by an additional principle. This suggests that the natural sound flow in Turkish cannot be explained solely in terms of acoustic–perceptual sonority but must also be considered in relation to the direction of articulatory movement.

Closer inspection shows that some of these pairs follow a systematic progression from *posterior* to *anterior* articulatory positions (e.g. /k/ → /b/ or /k/ → /s/). Although this type of ordering cannot be captured by traditional sonority hierarchies, it is mechanically natural from the perspective of speech production – i.e. the systematic tendency toward *back-to-front* movement of articulators. During articulation, movements of the tongue and other articulators from the back (posterior) toward the front (anterior) of the vocal tract facilitate rhythmic flow, articulatory ease, and coarticulation.

While this directional tendency is not explicitly formulated in the phonetic literature as a “*posterior* → *anterior*” principle, it is compatible with well-known observations that articulatory gestures often proceed from more constricted to less constricted configurations (e.g. Browman & Goldstein 1989; Lindblom 1990).

Therefore, for the patterns observed in this study, the descriptive term *articulatory progression sequence* is proposed. This term differs from classical feature systems (e.g. [dorsal], [coronal], [labial]) in that it characterizes the direction of segmental production, providing an additional, articulation-based measure that complements the phonological interpretation and sonority-driven analysis of bicoordinative structures. This sequence of movement proceeds from less mobile to more mobile articulators, can be summarized as illustrated in (36):

- (36) [laryngeal] [palatal / dental / labial], [palatal] [dental / labial], [dental] [labial], i.e.  
*tongue root* → *tongue body* → *tongue blade* → *tongue front* → *tongue tip* → *lower lip*

It represents the increasing mobility of articulatory organs from the back toward the front of the vocal tract and accounts for the Turkish bicoordinatives exhibiting *rising sonority* as phenomena grounded not in sonority itself but in an articulatory principle of productional naturalness. This articulatory movement from back to front mirrors the natural biomechanical flow

of speech and interacts with the sonority hierarchy to yield a consistent pattern of *descending sonority* combined with *ascending articulatory mobility*.

These two interacting hierarchies — i.e. the *descending sonority hierarchy* (Rule 2a) and the *articulatory progression sequence* (Rule 2b) — together define the phonotactic constraints governing a range of Turkish bicoordinatives. In such cases, *articulatory progression* does not override sonority but interacts with it as an auxiliary ordering principle. While they account for the majority of phonologically regular patterns, other types of coordination obey distinct morpho-semantic or lexical principles discussed in the subsequent rules. In this way, the two hierarchies presented here complement the other rules by introducing the phonotactic dimension of Turkish asymmetric bicoordinative formation.

Accordingly, the tendencies discussed above are formalised in Rules 2a and 2b as follows:

#### Rule 2a

<p>The consonantal sonority hierarchy (sonority-descending)</p> <p><i>rhotic consonants</i> → <i>laterals</i> → <i>nasals</i> → <i>voiced fricatives</i> → <i>voiced affricates</i> → <i>voiced stops</i> → <i>voiceless fricatives</i> → <i>voiceless affricates</i> → <i>voiceless stops</i></p> <p>[fricative] [affricate], [fricative] [stop], [affricate] [stop]</p> <p>[+sonorant] [-sonorant]</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

#### Rule 2b

<p>Relative articulatory mobility hierarchy by place of articulation (auxiliary criterion)<sup>26</sup></p> <p><i>tongue root</i> → <i>tongue body</i> → <i>tongue blade</i> → <i>tongue front</i> → <i>tongue tip</i> → <i>lower lip</i></p> <p>[laryngeal] [palatal / dental / labial], [palatal] [dental / labial], [dental] [labial]</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

[+consonant] [+consonant]:<sup>27</sup> MTu. *bağıra çağıra, bağır- çağır-, bağırış çağırış, bakkal çakkal, başı sonu, bata çıka, belli başlı, belli besli, boy pos (/ bos), boylu poslu, bölük pörçük, büyük küçük, börek çörek, canla başla, cıncık*

<sup>26</sup> This sequence reflects increasing articulatory mobility from posterior to anterior positions and helps account for bicoordinatives exhibiting surface patterns of rising sonority. The concept of a *relative mobility hierarchy of articulators* is used here as a conceptual tool referring to a phonologically and phonetically motivated phenomenon, rather than to an absolute or universal articulatory scale. This notion aligns with observations in approaches emphasizing *articulatory ease* and *gestural phonology*, and was previously introduced and discussed in earlier work by the author (Aydemir 2007) under the term “*Relative Beweglichkeitshierarchie der Artikulationsorgane (Artikulatoren)*.” The qualifier *relative* therefore underscores its function as a comparative ordering preference specific to coordinative structures. Within this framework, certain ordering preferences in Turkish bicoordinatives reflect a relative articulatory progression from posterior to anterior positions, which is compatible with reduced articulatory cost in sequential production.

<sup>27</sup> This feature indicates that the bicoordinatives in this group begin with a consonantal onset.

*boncuk, cici bici, cicili bicili, çala çırpa, çalı çırpı, çalmak çırpmak, çalışmak çabalamak, çanak çömlek, çarşı pazar, çat pat, çatal bıçak, çiti piti, çoluk çocuk, dağ taş, dala çıka, dere tepe, derme çatma, dertsiz tasasız, döl döş, düğün bayram (etmek), gezmek tozmak, girdi çıktı, girinti(lı) çıkıntı(lı), giyim kuşam, giyinmek kuşanmak, gizli kapaklı, gizli saklı, hesap kitap, gözüne dizine (durmak), halim selim, halis muhlis, hali vakti, hamal camal (~ hammal cammal), haraç mezat, kaba saba, kader kısmet, kadir kıymet, kan ter, kanlı canlı, kanı canı (kalmamak), kanlı canlı, kapı baca, karda kışta, karda buzda, kargacık burgacık, karman çorman, kızarmak bozarmak, kona göçe, konar göçer, kurt kuş, küçük(lü) büyük(lü), kıvrır zıvrır, saç baş, sarmaş dolaş, senet sepet, senetsiz sepetsiz, senli benli, sere serpe, sıkı fıkı, soy(lu) sop(lu), soyu sopu, sus pus, süklüm püklüm, süs püs, süslü püslü, şöyle böyle, şu bu, şundan bundan, şura bura, şurada burada, şuralı buralı, yağmur çamur, yaka paça, yalan dolan, yaş baş, yaşlı başlı, yata kalka, yatak yorgan, yaz boz, yaz kış, yazar bozar, yılan çıyan, yırtık pırtık.*

OTu. *aşnukılı amtıklı, barça tükäl, buşuşlıg korkınçlıg, çiziz tartıg, çom- bat-, karlıg buzluğ, kaçığ köprüg, kälış barış, kâziz tiziz, küsüşlüg tilâkliğ, sävinçli korkınçli, sı- buz-, sıg tümgä, sıg yuka, sıgun muygak, yaruk yaşuk.*

#### 5.1.4 Closing remarks to Rules 1, 2a, and 2b

Together, Rules 1, 2a, and 2b establish the phonological foundation of asymmetry in Turkish bicoordinatives. They show that the irreversible ordering observed in these constructions is not accidental or lexically idiosyncratic, but arises from the interaction of vowel sonority, consonantal sonority, and articulatory mechanics. These factors operate at different but complementary levels, shaping ordering preferences that tend to proceed from higher to lower acoustic openness and, independently, from posterior to anterior positions in articulatory space.

Taken together, these interacting hierarchies define a coherent phonological architecture that constrains the formation of asymmetric bicoordinatives in Turkish. This architecture does not by itself account for all aspects of bicoordinative structure, but it provides the necessary phonetic and phonological grounding upon which higher-level asymmetries are built. The following set of morphophonological and morphosyntactic constraints (Rules 3–6) extend this foundation into the structural domain, where phonetic and rhythmic asymmetries become conventionalized through patterns of syllable structure, onset configuration, and morphological alignment.

#### 5.1.5 From phonological asymmetry to structural asymmetry

The phonological principles outlined in Rules 1, 2a, and 2b establish the foundational sound-based conditions — such as vowel and consonantal sonority as well as articulatory directionality — that give rise to asymmetric bicoordinatives in Turkish. Yet the internal organization of these formations cannot be derived from phonological factors alone. Once phonological asymmetry is in place, additional constraints come into effect — constraints that pertain to syllable shape, segmental arrangement, and morphosyntactic align-

ment. In other words, phonological asymmetry constitutes only the initial layer of a more complex system, one whose full structure becomes visible only when higher-level morphophonological and morphosyntactic factors are taken into account. The following rules therefore move beyond the phonological domain and address the morphophonological and morphosyntactic factors that systematically contribute to irreversible ordering.

## 5.2 Morphophonological and morphosyntactic constraints (Rules 3-6)

Rules 3–6 specify the structural mechanisms through which the phonological patterns identified above become integrated into stable coordinative templates. While Rules 1, 2a, and 2b explain asymmetry in terms of sonority and articulatory directionality, the present section focuses on how segmental composition, syllable configuration, and morphosyntactic organization further shape irreversible ordering. Together, these constraints chart the transition from purely phonological tendencies to fully structuralized patterns characteristic of Turkish bicoordinatives.

### 5.2.1 Rule 3 – Vowel backness and ordering in bicoordinatives

Rule 3 operates at the level of segmental composition and concerns vowel quality rather than consonantal sonority or articulatory directionality. Unlike Rules 2a and 2b, which are sensitive to consonantal properties, Rule 3 captures an ordering preference based on vowel backness when syllable count is the same. The rule thus introduces a vocalic dimension of asymmetry that interacts with, but is hierarchically subordinate to, the phonological constraints discussed earlier.

#### Rule 3

With equal syllable count, the component containing a back vowel comes first. [+back] [-back]
--------------------------------------------------------------------------------------------------

Constraint: Rule 3 does not apply when another higher-ranked rule is active, namely:

- a) Rule 1 (vowel openness) [+open] [-open]: *deli dolu, sele suya*,
- b) Rule 2a (sonorant vs. non-sonorant onset) [+sonorant] [-sonorant]: *belli başlı, dere tepe*
- c) Rule 4 (vocalic vs. non-vocalic onset) [+vocalic] [-vocalic]: *üst baş, iri yarı, ipe sapa*
- d) Rule 5 (unequal syllable count) [+fewer syllables] [-fewer syllables]: *el ayak, göz kulak*
- e) Rule 6 (open vs. closed syllable) [+open syllabic] [-open syllabic]: *pılı pırtı, ulu orta*

[+back] [-back]: MTu. *az öz, baş göz (etmek), baş(ı) beyn(i), çarık çürük (~çürük çarık), çanak çömlek, çayır çimen, hayal meyal, karışanı görüşeni, kaş göz (etmek), kaşı gözü, kazma kürek, kırık dökük, kırıla döküle, kırılanı*

*dökülenu, kıyı(da) köşe(de), mal mülk, paldır küldür, pat küt, yara bere, yazar çizer, yaz- çiz-*

OTu. *açın- igid-, aşıl- üstäl-, bıçık tikig, tañdalığ keçälig.*

#### 5.2.2 Rule 4 – Vocalic vs. non-vocalic onset

This rule captures a systematic preference for vowel-initial components in coordinative ordering when syllable number is the same.

##### Rule 4

With equal syllable count, the component with a vocalic onset comes first.  
[+vocalic] [-vocalic]

Constraint: Rule 4 does not apply when another higher-ranked rule is active, namely:

- a) Rule 5 (unequal syllable count) [+fewer syllables] [-fewer syllables]:  
*aç susuz, ardi arkası*

[+vocalic] [-vocalic]: MTu. *abur cubur, abuk sabuk (/ subuk), aç tok, açık saçık, açık seçik, açıl- saçıl-, adı sanı, ağrı sızı, ah vah, ahım şahım, akar kokar, ak(ça) pak(ça), akil fikir, aksır- tuksır-, alaca bulaca, alacak verecek, alavere dalavere, ahcı verici, alık salık, alım satım, allak bullak, allem kallem, allı pullu, alla- pulla-, aman zaman, ana baba, analı babalı, analı danalı, anasız babasız, anlı şanlı, apar topar, abdestinde namazında, ara sıra, ara-sor-, arama tarama, ara- tara-, aslı fashı, aslı nesli, as- kes-, aşacağı yukarı, aşna fişne, atılmaz satılmaz, atik tetik, ayan beyan, ayda yılda, aygın baygın, ayıla bayıla, ayıl- bayıl-, ayrı gayrı, az buz, az çok, ecir sabır (dilemek), eciş bücüş, eften püften, eğri büğrü, eğri doğru, eksik gedik, el(e) gün(e), el(i) kol(u), el(i) yüz(ü), eni konu, enine boyuna, eninde (/ önünde) sonunda, er geç, eselese-, eski püskü, estek köstek, eş dost, et(i) bud(u), etli butlu, etli(ye) sütlü(ye), etme bulma, etten kemikten, etme eyleme, ev bark, evele- gevele-, evir- çevir-, evire çevire (dövmek), evli barklı, ezik büzüük, ezil- büzüül-, ezile büzüüle, ıcığını cıcığını (çıkarmak), ıkıl- sıkıl-, ıkın- sıkın-, ıkına sıkına, iklim tıklım, ıvrır zıvrır, içi dışı, içli dışlı, ikide birde (~ ikide bir), ileri geri, in cin, incik boncuk, inişli çıkışlı, ipe sapa (gelmemek), ipsiz sapsız, iri yarı, ismi cismi, iyi kötü, ofla- pufla-, okuma yazma, okur yazar, ondan bundan, onu bunu, onun bunun, orada burada, oram buram, öcü böcü, ölç- biç-, ölüm kalm, ölüsü dirisi, öteberi (< öte beri), öteki beriki, ötesine berisine, öyle böyle, özene bezene, özen- bezen-, ufacak tefecik, ufak tefek, ufla- pufla-, üç beş, üçe beşe, utana sıkıla, üfle- püfle-, üfleye püfleye, üfüre püfüre, üst baş.*

OTu. *açıl- yadıl-, alku barça, arığ simäk, arığ turuk, arkurı turkaru, asıg tusu, at kü, atlıg küllüg, ayag çiltäg, ayal- kötrül-, ägsük käreğäk, äñ- çıñ-, äñinçig tañlançig, ärän kırkın, äsin bulıt, eligläär bäglär, iliş- tartış-, ödräk küvüz, ög kañ, ögir- sävin-, ögrünç sävinç, öl şı, uçuz yenik, uzun kızka, ülgü kolu, üküş tälüm.*

### 5.2.3 Rule 5 – Syllable count asymmetry

This rule captures a systematic preference for the component with fewer syllables in coordinative ordering when the two components differ in syllable count. Rule 5 operates at a higher structural level than the phonological constraints discussed in Rules 1, 2a, and 2b, and renders inoperative Rules 3 and 4 whenever syllable count is unequal. In such cases, differences in syllable number take precedence over vowel backness (Rule 3) and onset type (Rule 4), reflecting the strong organizing role of syllabic structure in the stabilization of Turkish bicoordinatives. Thus, segmental preferences (e.g. vowel backness or vocalic onset) become relevant only when the syllabic structure of the two components is balanced.

The abundance and stability of Old Turkic evidence suggest that, like the other rules discussed here, Rule 5 is not a late or peripheral development but has operated consistently since the earliest attested stages of Turkish. Although less frequently discussed than vowel harmony, syllable-count asymmetry appears to form part of a deeper organizing layer of the language, interacting systematically with segmental constraints such as vowel backness and onset type. This constellation of interacting principles points to a phonological system in which harmonic, segmental, and syllabic structures are mutually reinforcing rather than independent, a pattern that may be of particular interest for research at the phonetics–phonology interface.

As illustrated in the following examples, the rules are not mutually exclusive but hierarchically ordered. Rule 5 is ranked above Rule 4 and applies only when syllable count asymmetry is present; when syllable counts are equal, ordering is determined by lower-ranked rules such as Rule 4.

#### Rule 5

With equal syllable count, the component with fewer syllables comes first. [+fewer syllables] [–fewer syllables]
---------------------------------------------------------------------------------------------------------------------

Constraint: Rule 5 does not apply when another higher-ranked rule is active, namely:

- a) Rule 1 (vowel openness) [+open] [–open]: *akıllı uslu*
- b) Rule 4 (vocalic vs. non-vocalic onset) [+vocalic] [–vocalic]: *ileri geri, ikide bir*

[+fewer syllables] [–fewer syllables]: MTu. *acı tatlı, aç susuz, al aşığı (olmak / etmek), alet edevat, ar namus, ardı arkası, aslı astarı, az buçuk, bağ bahçe, belli belirsiz, bet beniz, bet bereket, bıç- usan-, birlik beraberlik, bit- tüken-, bitmez tükenmez, bul- buluştur-, can ciğer, çift çubuk, çul çaput, dağ bayır (dolaşmak), dal budak, deli divane, dertsiz tasasız, dili damağı (kurumak), din iman, dip bucak, dip doruk, dirlik düzenlik, dışından tırnağından (artırmak), don gömlek, don paça, döne dolaşa, dön- dolaş-, dur durak (yok), durmuş oturmuş, dur otur (yok), el alem, el avuç, el ayak, el ense, el etek, el pençe (divan durmak), fakir fukara, falan festekiz, falan feşmekan, gel gelelim, gelin görünce, genci ihtiyarı, gizli kapaklı, görmüş geçirmiş, göz kulak (olmak),*

*güç(lü) kuvvet(li), güle oynaya, güllük gülistanlık, günlük güneşlik, haddi hesabı, hak hukuk, hal hatır, han hamam, hanım hanımcık, hısım akraba, ister istemez, it köpek, kan revan, karga tulumba, kapacak, kas- kavur-, kılık kıyafet, kırdı bayırda, kış kıyamet, kıt kanaat, kızı kırsığı, kız kızan, kol kanat, kör topal, kör kütük, kul köle, kul kurban, kulu köpeği (olmak), od ocak, palas pandıras, saç sakal, saç- savur-, sap saman, sar- sarmala-, sesi soluğu, ses seda, sessiz sedasız, seve oynaya, sildi süpürdü, sor- soruştur-, söz sohbet, suya sabuna (dokunmak), sür- sürüştür-, şen şakrak, takım taklavat, tak-takıştır-, taşı tarağı, taşı toprağı, telli duvaklı, top tüfek, toz duman, toz toprak, tuz biber, un ufak, ucu bucağı, ucu ortası, uçsuz bucaksız, uçta bucakta, ver-veriştir-, yarı buçuk, yarım yamalak, yerli yabancı, yol yolak, yol yordam, yol yöntem, zehir zemberek, zil zurna.*

OTu. *aç okı, aş azuk, aş- üklit-, aşı üstüyü, asdaçı üstädäçi, aya- ağırla-, el uluş, ençgü äsängü, bür budık, çın kertü, çoğ yalın, çöb evdängü, hwa çäçäk, hua yavişgu, ı ıgaç, irü belgü, iş küdüük, iz oruk, ka kadaş, keng alkıg, kog kıçmık, kol- ötün-, kork- titrä-, köl öläng, körk mäniz, köz kulkak, kurt koñuz, midik pirtigçan, münlüg kadaglıg, nom şazın, oñşatıg yöläşürüg (~ yöläşürüg oñşatıg), suk- tünä-, şın süngük, tärkin tavrakın, tıd- bäklä- toyın şınnanç, toz toprak, tüş yemiş, tüşlig utlılıg, uç kızıg, uçsuz kızıgsız, ula- üklit-, ulug kıçıg, ürk- bälinglä-, ürküt- bälinglä-, yän ätäk, yeg kodıki, yeg üstünki, yer- münä-, yol oruk, yu- arıt-, yul yulak.*

#### 5.2.4 Rule 6 – Open vs. closed syllable structure

Rule 6 addresses asymmetry at the level of syllable structure by treating the open vs. closed syllable contrast as an ordering principle. While Rules 3–5 operate on segmental composition and syllable count, the present rule targets the internal phonotactic configuration of the syllable itself. When higher-ranked phonological, morphosyntactic, or iconic constraints do not apply, Turkish bicoordinatives show a preference for components containing open syllables to precede those with closed syllables, reflecting a tendency toward syllabic structure simplicity and rhythmic balance. Here, the open vs. closed syllable contrast is understood in relative terms: the ordering reflects a comparison between the overall syllabic structure of the two components, rather than the presence of any particular open or closed syllable within individual words.

#### Rule 6

With equal syllable count, the component containing an open syllable comes first.

[+open syllable] [–open syllable]

Constraint:

Rule 6 applies only when ordering is not already determined by Rules 1–5 or by iconic constraints (Rule 7).

[+open syllable] [–open syllable]: MTu. *ağır aksak, ana oğul, baba oğul, balta nacak, börtü böcek, çeki düzen, doğru dürüst, dorma dolaş, düğün dernek, gece gündüz, gözü gönü (açılmak), hırlı hırsız, ilim irfan, irili ufaklı, iğne iplik, kazma kürek, kelle kulak, konu komşu, köşe bucak, olur olmaz, pılı pırtı, rica minnet, saçma sapan, sere serpe, sille tokat, tarla tapan, tekme tokat, ulu orta, utanmaz arlanmaz, yalan yanlış, yeme içme.*

OTu. *arta- aşgın-, isig amrak, kaçā küntüz, kurgu yenik, tünlā küntüz, tözün kövşāk, uyat- äymän-, yaru- yaltri-, yaruk yaltrik, yarut- yaltrit-, yerük ägsük.*

### 5.3 Rule 7 – Iconic and event-based ordering (iconic constraints)

While Rules 1–6 account for asymmetric ordering in Turkish bicoordinatives on phonological, morphophonological, and morphosyntactic grounds, a further major class of constructions is governed by *iconicity*, that is, by semantic and cognitive principles reflecting the linear representation of real-world events. In such cases, the ordering of components mirrors a conceptual sequence grounded in temporal, causal, or scalar relations rather than in segmental or prosodic structure.

In iconic bicoordinatives, the first component represents a state, action, or value that is *conceptually anterior* to the second. This study captures this principle by means of the feature notation [+anterior] → [–anterior], where anteriority is understood in a broad sense, encompassing temporal precedence, causal priority, or scalar progression.

Typical examples include MTu. *bugün yarın* ‘soon, any day now’ ← [‘today’] [‘tomorrow’], *er geç* ‘sooner or later’ ← [early] [late], *üç beş* ‘a small number, a few’ ← [three] [five], as well as OTu. *korkmak titrämäk* ‘to be very afraid’ ← [to fear] [to tremble] and *yu- arıt-* ‘to wash and cleanse’ ← [to wash] [to purify]. In all such cases, the fixed order reflects a real-world progression: what occurs earlier, is causally prior, or represents a lower point on a scale precedes what follows.

Reversing the order of these lexicalized bicoordinatives (*\*yarın bugün, \*geç er, beş üç*, etc.)<sup>28</sup> results in markedness and semantic degradation, demonstrating that their ordering is not arbitrary but anchored in conceptual structure. The constructions are therefore irreversible not because of phonological well-formedness, but because the reversed sequence no longer aligns with the underlying perceptual or cognitive logic.

In earlier work (2007), I described such constructions as *bikonditionelles Koordinativ* (‘biconditional coordinative’) in order to capture the fact that the two components stand in a logically dependent semantic relation. In the present study, however, I adopt the term *iconic bicoordinative*, aligning the analysis with the broader typological notion of *iconicity*, according to which linguistic form tends to reflect conceptual and experiential structure. This terminological shift preserves the original insight while facilitating comparison

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<sup>28</sup> Note that *beş üç* remains possible in Turkish, but only as a literal numeral sequence (e.g. a 5–3 score), rather than as a lexicalized or structurally fixed bicoordinative.

with cross-linguistic research on iconic ordering in coordination and binomials.<sup>29</sup>

Iconic bicoordinatives may thus express, among others:

- a) anterior–posterior relations (e.g. MTu. *eninde sonunda, er geç*),
- b) causal relations (e.g. MTu. *sararmak solmak*, OTu. *korkmak titrämäk*),
- c) scalar progressions (e.g. MTu. *az çok, küçük büyük, üç beş*).

Although these relations differ in surface semantics, they share a directional conceptual structure grounded in anteriority. For this reason, they are uniformly represented here as [+anterior] → [–anterior].

As the ordering in these constructions is determined by conceptual event structure, iconicity constitutes an overriding constraint that is not subordinated to the phonological or morphosyntactic principles described in Rules 1–6.

#### Rule 7

Iconically motivated obligatory ordering (event hierarchy):<sup>30</sup> The component denoting the anterior state or event precedes the posterior one.  
[+anterior] [–anterior]

Constraint: none

[+anterior] [–anterior]: MTu. *bugün yarın* ‘in the next few days; sooner or later’ ← [today] [tomorrow], *eninde sonunda* ‘sooner or later; in any case’ ← [before] [after], *kapkaç* ‘snatch theft’ ← *kap kaç!* ← [grab!] [run away!], *sabah akşam* ‘constantly; all the time’ ← [morning] [evening], *sararmak solmak* ‘to become increasingly pale / to fade’ ← [to turn yellow] [to wither]), *üç beş* ‘a few; a small number’ ← [three] [five], etc.

OTu. *açıl- yadıl-* ‘to spread, to expand’ ← [to open] [to spread], *korkmak titrämäk* ‘to be very afraid’ ← [to fear] [to tremble], *yu- arıt-* ‘to wash and cleanse’, *yüğürmäk kaçmak* ‘to flee, to run away’ ← [to run] [to flee], etc.

#### 5.3.1 Bicoordinative compounds: compounding under iconic constraints

A subset of iconic bicoordinatives undergoes further structural reanalysis through compounding and develops into compound nouns in Turkish. The following examples (see (37)), among many others, illustrate how an originally coordinative structure is reanalysed as a single lexical unit through compounding:

- (37) *alaşağı* ‘overthrow’ ← *al aşağı* [bottom] [down],  
*öteberi* ‘various things’ ← *öte beri* [the other side] [this side],

<sup>29</sup> This use of iconic ordering is consistent with well-established functional and typological accounts of form–meaning mapping (e.g. Givón 1985, Haiman 1985), though a full discussion of iconicity theory lies beyond the scope of the present study.

<sup>30</sup> This corresponds to what I earlier termed (2007) “*Logisch-semantisch orientierte obligatorische Wortfolge*” or “*Inhaltshierarchie*”.

*elalem* ‘(colloquial) folk’ ← *el alem* [(other) people] [world],  
*alsat* ‘buying an item and selling it quickly’ ← *al sat!* ← [buy!] [sell!],  
*çekyat* ‘sofa bed’ ← *çek yat!* ← [pull out!] [lie down!],  
*gelgit* ‘ebb and tide; going back and forth for nothing’ ← *gel git!*  
[come!] [go!],  
*kapkaç* ‘snatch theft’ ← *kap kaç!* ← [grab!] [run away!],  
*oldubitti* ‘fait accompli’ ← *oldu bitti* [become-PST] [finish-PST]  
 *vurkaç* ‘hit and run’ ← *vur kaç!* ← [hit!] [run!].

Conceptually, these formations preserve the same iconic anterior–posterior structure: the first component denotes the initiating action or state, while the second denotes the resulting action, outcome, or social frame. What changes is their grammatical status: coordination gives way to compounding, while the construction remains morphologically transparent and largely semantically compositional, preserving the core iconic relation between its components, even though some degree of semantic abstraction or conventionalization may occur.

In several cases (e.g. *alaşağı* < *al aşağı et-* ‘take down, overturn’; *çekyat* < *çekyat kanepes* ‘sofa bed’), the apparent semantic shift reflects not a loss of iconic meaning but an ellipsis-based reanalysis; i.e. originally bicoordinative structures are condensed into elliptical nominal forms. In *alaşağı*, for instance, the compound preserves an underlying directional bicoordinative structure (*al* ‘down/below’ + *aşağı* ‘down’), which is morphologically condensed rather than semantically reinterpreted.<sup>31</sup>

This development raises questions of broader typological relevance, particularly with regard to the interaction between iconic sequencing, compounding, and category change. However, a systematic comparison of such formations lies beyond the scope of the present study.<sup>32</sup>

While iconic sequencing is widely attested cross-linguistically, the systematic development of compounds from bicoordinative structures under iconic constraints appears to be particularly characteristic of Turkish.

## 6. Conclusion

This study has examined the internal ordering principles of irreversible nominal and verbal bicoordinatives in Turkish and has shown that their apparent rigidity is not accidental or lexically idiosyncratic. Instead, irreversible ordering emerges from a layered system of interacting constraints

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<sup>31</sup> Note that several bicoordinatives preserve archaic or otherwise non-productive lexical items that no longer function as independent lexemes in Modern Turkish but survive due to lexicalized coordinative templates. A clear example is *alaşağı*, where *al* represents an old directional noun meaning ‘down, below, bottom’ (cf. Hungarian *al* ‘sub, nether, under-’, showing a close formal and semantic parallel), also attested in formations such as *alt* (< *al + -t*). Similarly, in *er geç* ‘sooner or later’, *er* is no longer used as a free lexical item in Modern Turkish but is preserved exclusively within the bicoordinative construction. Such cases illustrate that bicoordinatives not only encode iconic ordering but also act as conservative morphological domains that retain archaic elements through formulaic stabilization.

<sup>32</sup> The present discussion focuses specifically on compounds derived from bicoordinative structures under iconic constraints (here termed *iconic compounds*). For general treatments of compounding in Turkish, see van Schaik (2002) and Göksel & Haznedar (2007).

operating at phonological, morphophonological, morphosyntactic, and iconic levels.

At the most basic level, phonological asymmetry is established through vowel and consonant sonority relations and articulatory directionality (Rules 1, 2a, and 2b). These principles define preferred sound sequences that favour descending sonority or, in specific cases, rising sonority driven by posterior-to-anterior articulatory progression. Together, they constitute the phonetic–phonological foundation upon which irreversible ordering is built.

Building on this foundation, Rules 3–6 demonstrate how phonological tendencies become structurally stabilized. Segmental composition, onset type, syllable structure, and syllable count interact to yield robust ordering preferences that override lower-level phonological factors when necessary. In particular, syllable count (Rule 5) emerges as a highly stable organizing principle, operative from Old Turkic to Modern Turkish, and capable of neutralizing segmental preferences such as vowel backness or vocalic onset when the balance of syllable structure is disrupted. These findings suggest that structural asymmetries play a central role in the structural stabilization of bicoordinative patterns in Turkish.

Rule 7 extends the analysis beyond form-internal constraints by demonstrating the role of iconic sequencing. In a subset of bicoordinatives, ordering reflects conceptual relations such as temporal succession, causality, or resultative structure, aligning linear form with event structure. These iconic patterns not only motivate irreversible coordination but also provide a bridge to compounding, where coordinative constructions may be reanalysed as single lexical units while often retaining morphological transparency and semantic compositionality.

Taken together, the seven rules outline an integrated architecture of asymmetry in Turkish bicoordinatives. Rather than invoking a single explanatory factor, the study shows that irreversible ordering arises from the cumulative interaction of multiple constraint types, hierarchically organized but mutually reinforcing. This architecture captures both the synchronic regularities of Modern Turkish and their diachronic continuity with Old Turkic, highlighting the depth and stability of coordinative ordering principles in the language.

More broadly, the findings contribute to typological discussions of coordination, phonological asymmetry, and iconicity by demonstrating how language-specific data can reveal general principles of ordering that are neither purely phonological nor purely semantic. Turkish bicoordinatives thus offer a particularly clear window into the interaction between sound structure, constructional organization, and meaning in the emergence of irreversible constructions. Additionally, while iconic sequencing, coordination, and compounding are each widely attested cross-linguistically, Turkish is typologically distinctive in that these three domains converge in a systematic and structurally integrated way within the same class of constructions.

## Appendix

### A Part-of-Speech–Based Classification of Irreversible Bicoordinatives in Modern Turkish and Old Turkic

This appendix presents the original part-of-speech–based classification of irreversible bicoordinative constructions in Modern Turkish and Old Turkic, covering both binomial and biverbal formations. First developed in my German-language master’s thesis, the taxonomy is reproduced here with only minor adjustments, as it continues to provide an empirically robust and typologically coherent structural framework. The aim of this appendix is strictly classificatory: it organizes the attested bicoordinatives according to their lexical category (noun, adjective, verb, pronoun, numeral, etc.), without proposing semantic or functional generalizations. For reasons of space, only one or two representative examples from Old Turkic (OTu.) and Modern Turkish (MTu.) are given for each subtype, together with their lexical meanings. These meanings help sharpen the semantic contours of each structural pattern and assist readers in interpreting the morphophonological and morphosyntactic types discussed in the main text. This POS-based taxonomy is intended as a comprehensive empirical overview; deeper semantic, pragmatic, or discourse-functional distinctions lie outside the scope of the present constraint-oriented analysis. For additional examples, readers may consult the compilations of Old Turkic and Modern Turkish bicoordinatives.<sup>33</sup>

## 1. Bicoordinatives

### 1.1. Nominal bicoordinatives (NBi)

#### 1.1.1. Nouns:

- a) Kinship nominals: OTu. *ata ana* ‘parents’; MTu. *ana baba* ‘id.’.
- b) Inanimate nominals: OTu. *öl şı* ‘humidity’; MTu. *kap kacak* ‘pots and pans’.
- c) Oppositional nominals: OTu. *az üküş* ‘more or less’; MTu. *az çok* ‘id.’.
- d) Synonymic nominals: OTu. *asıg tusu* ‘benefit’; MTu. *delik deşik* ‘full of holes’.
- e) Quantifying nominals:
  - Totality: OTu. *alku kamağ* ‘all; the whole’.
  - Multiplicative: OTu. *üküş tälüm* ‘numerous; a great many’; MTu. *onlarca yüzlerce* ‘tens or hundreds; a great many’.

**1.1.2. Adjectives:** OTu. *uçsız kırıksız* ‘unlimited’; MTu. *uçsuz bucaksız* ‘id.’.

**1.1.3. Adverbs:** OTu. *keçä küntüz* ‘round the clock’; MTu. *gece gündüz* ‘id.’.

#### 1.1.4. Pronouns:

- a) **Personal pronouns:** none.
- b) **Reflexive pronouns:** OTu. *öz öz* ‘each his own’, *käntü käntü* ‘id.’.

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<sup>33</sup> Ölmez 1997, 1998; Şen 2003; Ölmez 2017, 2022; Özkan 2019; Akyağın 2024; Karaman 2022; Şahin & Özbek 2025.

**c) Demonstrative pronouns:** OTu. *ol ol* ‘whichever’; MTu. *şu bu* ‘so-and-so’.

**d) Interrogative-indefinite pronouns:** OTu. *kim kayu* ‘whoever’, *kim kim* ‘id.’.

### 1.1.5. Numerals:

**a) Cardinals:** OTu. (inscriptional) *eki üç* ‘two-three’; MTu. *beş on* ‘around five to ten’.

**b) Distributives:** OTu. *bir bir* ‘one by one’; MTu. *bir bir* ‘id.’.

**1.1.6. Interjections:** MTu. *uf puf* ‘huff and puff’, *of of* ‘oh dear; alas’.

**1.1.7. Onomatopoeia:** MTu. *patır kütür* ‘crash-bang’, *tangır tungur* ‘rattle; clatter’.

### 1.1.8. Reduplication and reduplicative forms (Nominal Reduplication):

#### 1.1.8.1. Morpheme- or word-level reduplication:<sup>34</sup>

**1.1.8.1.1. Nouns:** OTu. *ew ew* ‘from house to house’, *mağ mağ* ‘step-by-step’; MTu. *yer yer* ‘locally; occasionally’, *adım adım* ‘step-by-step’.

**1.1.8.1.2. Adjectives:** OTu. *öñi öñi* ‘multifarious’, *başka başka* ‘id.’.

**1.1.8.1.3. Adverbs:** OTu. *yana yana* ‘again and again’, MTu. *tekrar tekrar* ‘id.’.

#### 1.1.8.1.4. Pronouns:

**a) Personal pronouns:** none.

**b) Reflexive pronouns:** OTu. *öz öz* ‘each his own’, *kántü kántü* ‘each his own’.

**c) Demonstrative pronouns:** OTu. *ol ol* ‘whichever’, *anta anta* ‘here and there’.

**d) Interrogative-indefinite pronouns:** OTu. *näçä näçä* ‘however many, any number of times’; MTu. *nice nice* ‘a great many’.

#### 1.1.8.1.5. Numerals:

**a) Cardinals:** OTu. *bir bir* ‘one by one’; MTu. *bir bir* ‘id.’.<sup>35</sup>

**b) Distributives:** MTu. *birer birer* ‘one by one’.

#### 1.1.8.1.6. Onomatopoeia:

**a) Morpheme reduplication:** OTu. (UygW) *kıs kus* ‘smacking sound’; MTu. *cik cik* ‘tweet tweet’.

**b) With vowel addition (Paragoge):** MTu. *gargara* ‘gargling’

**1.1.8.2. m-Reduplication:** MTu. *kitap mitap* ‘book or such things’; *at mat* ‘horse and such’.

**1.1.8.3. Figura etymologica:** MTu. *inim inim inle-* ‘to moan continuously’; *horul horul horla-* ‘to snore loudly’; *oylum oylum oy-*, a colloquial, metaphorical, and often half-joking threat, meaning

<sup>34</sup> Note that subsections 1.1.8.1.1–1.1.8.1.6 classify *reduplicated* forms by the part-of-speech (POS) of their base; hence numerals, pronouns, nouns, etc. reappear here.

<sup>35</sup> Note that some reduplicated formations (e.g. *bir bir*) exhibit a mismatch between their part-of-speech (POS) classification and their semantic function. In such cases, the items are listed here according to the POS of the base form (e.g. *bir* as a cardinal numeral), while their functional interpretation (e.g. distributive ‘one by one’) is indicated separately. This organization reflects the fact that the classification in this appendix is fundamentally POS-based rather than function-based.

roughly ‘to carve somebody up / to tear somebody to pieces’, and similar figurative expressions of threat; etc.

## 1.2. Verbal Bicoordinatives (VBi)

Note that the label *Verbal Bicoordinatives (VBi)* is used here in a part-of-speech sense. It designates bicoordinative constructions whose base forms are *verbal in origin*. This category is therefore broader than the narrow functional notion of *biverbals*, which requires the coordination of two finite predicates. Participial, infinitival, and converbial formations included below (see §1.2.2.) are thus *verbal-origin bicoordinatives*, not finite biverbals.

### 1.2.1. Finite verbs

The finite subtypes listed here constitute *true biverbals*, i.e. coordinations of two inflected verb forms. Non-finite verbal formations, though included in §1.2 due to their verbal origin, do not belong to the biverbal class proper.

#### 1.2.1.1. Indicative:

- a) **Perfect (indefinite / evidential) -mXŞ:** MTu. *yemiş içmiş* ‘he/she ate and drank’ (cf. adjectival: *gelmiş geçmiş* ‘ever, of all time’).
- b) **Perfect (definite) -DX:** OTu. *bilti uktı* ‘he/she understood’; MTu. *düşündü taşındı* ‘he/she thought and thought again’.
- c) **Present -yor:** —
- d) **Aorist -(X)r, -(A)r, (Neg.) -mAz:** OTu. *ayayur ağırlayur* ‘to worship’; MTu. *(ara sıra) gelir gider* ‘comes and goes occasionally’ (cf. binomial: *gelir gider* ‘income and expense’).
- e) **Future -DAÇI, -gAy, -(y)AcAk:** —
- f) **Combined Indicative (Mixed TAM Bicoordinatives):**<sup>36</sup> A subtype combining two different indicative TAM categories within the same biverbal sequence: MTu. *oldu olacak* ‘on the verge of happening’ (perfect + future) → ‘in/on the cards’, *bitti bitecek* ‘almost finished’ (perfect + future), *gitti gidiyor* ‘on the verge of leaving/going’ (perfect + progressive).

#### 1.2.1.2. Mood:

- a) **Conditional -(y)sA:** MTu. *varsa yoksa* (< *var ise yok ise*) ‘only; nothing but’, *olsa olsa* ‘at most’.
- b) **Optative:** —
- c) **Imperative:** OTu. *yarızun yaltrızun* ‘Let it shine and sparkle!’, *örtbas* ‘cover-up, delitescence’ (< *ört bas*) ← [cover-IMP.2SG] [press-IMP.2SG], *gelgelelim* ‘however, nevertheless’ (< *gel gelelim*) ← [come-IMP.2SG] [come-OPT.1PL] (*lit. come-come-*

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<sup>36</sup> Mixed TAM refers to the combination of two different tense–aspect–mood (TAM) categories within a single bicoordinative predicate sequence.

*let-us*), *gelin görün* ‘however’ ← [come-IMP.2PL] [see-IMP.2PL].

### 1.2.2. Non-finite verbs

**1.2.2.1. Infinitive -mAk:** OTu. *ulamak üklitmäk* ‘to add and multiply’, *ögirmäk sävinmäk* ‘joyousness’; MTu. *bıkmak usanmak* ‘have had fill of something’.

#### 1.2.2.2. Participle:

**a) Perfect participle -DX, -mXş (< -mİş), -dXk (< -dOk):**

OTu. *ötgürmiş topulmuş* ‘having penetrated’; MTu. *oldubitti* (< *oldu bitti*) ‘fait accompli’, *girdi çıktı* ‘input-output’, *gelmiş geçmiş* ‘ever, of all time’, *olmuş bitmiş* ‘fait accompli’, *batmış bitmiş* ‘collapsed’, *tanıdık bildik* ‘familiar’.

**b) Imperfect participle -DAçI, -(X)r, -(A)r, (Neg.)-mAz, -(y)An:**

OTu. (BT 8) *üz Mädäçi käsmädäçi (ärür)* ‘(he is) the one not breaking and not cutting (the lineage and the order)’; lit. both forms are present participles in *-DAçI*; OTu. (UygW) *açtaçı yaddaçı* ‘interpreter’; MTu. *okur yazar* ‘literate person’, *bitmez tükenmez* ‘perpetual, never-ending’, *olur olmaz* ‘unnecessarily’, *olan biten* ‘goings-on’, *gelen geçen* ‘passerby’.

**c) Future participle: -(y)AcAk:**

MTu. *alacak verecek* ‘receivables and payables’.

### 1.2.3. Converb:

**a) Converb -(y)A:**

MTu. *tıka basa* ‘chuck-full’, *ite kaka* ‘kicking and screaming’, *güle güle* ‘good bye’, *gitgide* (< *git- git-e*) ‘gradually, more and more’.

**b) Converb -(y)U:**

OTu. *kolu ötünü* ‘humbly imploring’, *asa üstüyü* ‘by multiplying and increasing’.

**c) Converb -(y)Xp:**

OTu. *ögirip sävinip* ‘by rejoicing’, *tavranıp katıglanıp* ‘by striving’; MTu. *yatıp kalkıp dua et-* ‘to give thanks continually’, *durup durup* ‘repeatedly’.

**d) Converb -mAdAn (< -mAtIn / -mAdIn):**

OTu. *körmädin äşidmädin* ‘without seeing or hearing’, MTu. *bilip bilmeden konuşmak* ‘shoot off one's mouth, talk through hat’.

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### Abbreviations and Symbols

+ nominal suffix

–	verbal suffix
~	synchronically coexisting overlapping forms
ABi	adjectival bicoordinative
AdvBi	adverbial bicoordinative
AdvTri	adverbial tricoordinative
AMulCo	adjectival multicoordinative
AP	adjective phrase
AsBi	asymmetric bicoordinative
AsTri	asyndetic tricoordinatives
Bi	bicoordinative
BiCo	bicoordinative
BT 8	Kara & Zieme 1977
HT	Old Turkic Xuanzang Biography
HT III	Ölmez & Röhrborn 2001
HT IX	Aydemir 2013
KB	Kutadgu Bilig (11th century)
KT	Kül Tegin inscription (8th century)
MTu.	Modern Turkish
MulCo	multicoordinative
NBi	nominal bicoordinative
NMulCo	nominal multicoordinative
NTri	nominal tricoordinative
OTu.	Old Turkic
SyBi	symmetric bicoordinative
TriCo	tricoordinative
TT V	Bang & Gabain 1931
UygW	Wilkens 2021
VBi	verbal bicoordinative
VMulCo	verbal multicoordinative
VTri	verbal tricoordinative

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