Valency classes in the languages of West Asia: grammaticalization and convergence

Abstract

While the languages of the Anatolia–Caucasus–Iran–Mesopotamia (ACIM) area are well known for their complex verbal morphology and alignment systems, the organization of valency class systems in this area has received little attention. This study addresses this gap by identifying typologically unusual properties of valency class systems in ACIM languages and relating their emergence to shared grammaticalization pathways.

The analysis draws on data from BivalTyp, a typological database documenting valency patterns of bivalent verbs across a large language sample. The focus is on five languages: Turoyo (Semitic; Turkey; turo1239), Assyrian Neo-Aramaic (Semitic; Iran; urmi1250), Kurmanji (Iranian; Turkey; nort2641), Sorani (Iranian; Iran; mukr1239), and Zazaki (Iranian; Turkey; zaza1246), whose patterns are evaluated against a broader ACIM background.

Two types of typologically unusual phenomena recur across several languages in the sample and more generally in the ACIM area: (i) non-canonical valency patterns arising as by-products of tense-conditioned splits in argument coding, and (ii) the hanging-argument pattern. The former results from non-trivial mappings between argument-coding configurations across TAM categories, yielding a typologically uncommon situation in which a verb's valency class cannot be identified on the basis of a single diagnostic TAM form. Hanging arguments are typically fronted noun phrases occurring with psychological predicates; they are neither flagged nor indexed on the verb and do not conform to the properties of canonical subjects, objects, or adnominal possessors, thereby posing challenges for valency analysis.

Both phenomena are shown to have developed through the grammaticalization and subsequent reanalysis of oblique pronouns originally expressing beneficiary-, possessor-, or experiencer-like roles.

Keywords: valency classes, alignment splits, psychological predicates, possessive constructions

1. Background and aim

It is well known that many Indo-Aryan languages, as well as several other languages of the Anatolia–Caucasus–Iran–Mesopotamia (ACIM) area, exhibit tense-conditioned (or, more broadly, TAM-conditioned) alignment splits (Haig 2008: 9; Verbeke 2013): perfective forms show ergative alignment (1a), while imperfective forms show a different alignment pattern (1b).

Hindi (Indo-Aryan; India; hind1269)

(1a)	*laṛk-e=ne*	*gari*	*cala-yi*	*hɛ*
	boy-m.sg.obl=erg	car.f.sg.nom	drive-perf.f.sg	be.prs.3sg
	‘The/a boy has driven a car.’ (adapted from Butt 2017, 811)			
(1b)	*laṛk-a*	*gari*	*cala-ta*	*hɛ*
	boy-m.sg.nom	car.f.sg.nom	drive-impf.m.sg	be.prs.3sg
	‘The/a boy is driving a car.’ (adapted from Butt 2017, 811)			

Although tense-conditioned splits have been widely discussed, their impact on **valency classes** remains underexplored. The existence of alignment splits in transitive verbs is, in principle, independent of how valency classes are defined as language-specific sets of verbs that pattern alike in their argument-coding devices. Nevertheless, we argue that in several Neo-Aramaic and Iranian languages of the ACIM area, argument-coding splits create an unusual typological situation: a verb’s valency pattern in the perfective and imperfective does not map straightforwardly onto each other, and its valency class cannot be determined from a single diagnostic TAM form.

For illustration, consider Kurmanji. The verb *xistin* ‘strike, beat, play’ takes an object marked by a preposition—expected of an intransitive verb—but still shows a tense-conditioned split in subject coding—expected of transitive

verbs. Crucially, this behavior sets this verb apart from other bivalent verbs that take preposition-marked objects.

Kurmanji

(2a) *zilam niha* *li* *gîtar-ê* *di-x-e*

man now at guitar(f)-obl.f prs-beat.ipfv-3sg

'The man is playing the guitar now.' (Bivaltyp, #34)[1]

(2b) *duh* *pîrek-ê* *li* *gîtar-ê* *xist*

yesterday woman-obl.f at guitar(f)-obl.f beat.pfv.sg

'Yesterday the woman played the guitar.' (Bivaltyp, #34, variant, own data)

Identifying valency classes in ACIM languages is further complicated by another typologically unusual scenario, illustrated in (3):

Assyrian Neo-Aramaic

(3) *+Ašur* *xoš-u* *bitay=əla*

PN(m) happiness(f)-poss.3m.sg come.prog=3f.sg

mən *d-a* *+sudra*

from oblpron-dem.sg shirt(f)

'Ashur likes this shirt.' (BivalTyp, #58)

[1] Here and below, examples from the BivalTyp database (Say 2020-) are marked as shown here, with the number after "#" referring to the corresponding questionnaire stimulus. In some cases, we cite modified versions from the same sources; these are labeled "variant," as in (2b).

Here, the first NP (the proper name) is neither flagged nor indexed on the verb (which agrees in gender with *xoš-* 'happiness', as expected for canonical subjects). It therefore differs from typical subjects, objects, and obliques, yet it cannot be analyzed as a canonical NP-internal possessor either. We refer to such NPs as "hanging arguments", noting that they are common in ACIM languages, especially in complex predicates that exhibit a mismatch between syntactic and discourse structure.

In this paper, we examine valency class systems in five focus languages of the ACIM area—Assyrian Neo-Aramaic, Turoyo (both Neo-Aramaic > Semitic), and Kurmanji, Sorani, and Zazaki (Iranian > Indo-European). We concentrate on the typologically unusual scenarios outlined above and provide a broader areal-typological discussion. The selection of these five languages is largely practical: BivalTyp (see Section 3.2), our main data source, contains suitable datasets for them. Nonetheless, we aim to highlight illuminating cases of convergent development in this Aramaic–Iranian contact zone.

The paper is structured as follows. Section 2 provides a brief overview of the linguistic area, focusing on Aramaic and Iranian languages and their contact. Section 3 introduces our dataset and working definition of valency classes. Sections 4 and 5 address tense-conditioned splits in valency classes and hanging arguments, respectively. Section 6 concludes with a discussion of the main findings and their diachronic implications.

2. Introduction to the area and languages

2.1. West Asia as a linguistic area

Eastern Anatolia, or more broadly the ACIM area—also known as the Western Asian Transition Zone (Haig et al. 2024) or the Araxes-Iran Linguistic Area (Stilo 2015) —has been in the focus of numerous studies, characterizing it as a linguistic area (Stilo 2015; Donabedian & Sitaridou 2020) or as a transition zone (Haig 2014; Haig & Khan 2018; Haig et al. 2024) at the intersection of several major geographic regions and language families. Although the boundaries of the area are difficult to define precisely, many shared features are widely attributed to long-term contact and convergence. Parallels have

been observed in phonology (Haig & Khan 2018), nominal and verbal morphology (Noorlander & Stilo 2015a; 2015b; Haig 2017b), and syntax, including word order (Haig et al. 2024).

An important domain where convergence has been identified and analyzed is morphosyntactic alignment, including tense-conditioned argument-coding splits (Doron & Khan 2012; Coghill 2016; Haig 2017a; Noorlander 2021a). In contrast, verb-specific valency patterns and valency classes have received, in our view, insufficient attention even though valency patterns and valency classes are generally known to be susceptible to contact-induced change (Grossman & Witzlack-Makarevich 2019; Alfimova & Kozhanov & Say 2025).

2.2. Focus languages

In this section, we provide an overview of our five focus languages from two families: Semitic and Indo-European. The Semitic languages are Assyrian Neo-Aramaic and Turoyo, both Aramaic. The Indo-European languages belong to the Northwestern Iranian branch: two Kurdish varieties, Kurmanji (Northern Kurdish) and Sorani (Central Kurdish), and Zazaki from the Zaza–Gorani subgroup.

2.2.1. Turoyo and Assyrian Neo-Aramaic

Turoyo (or Surayt) is a Neo-Aramaic (Semitic) language originally spoken by the Christian population of the region commonly referred to as Tur Abdin, part of the modern Turkish provinces of Mardin and Şırnak. The language is still spoken in Tur Abdin, particularly in the town of Midyat and a few neighboring villages. The number of Turoyo speakers in Turkey is estimated at around three thousand (Shabo Talay, p.c.), with a considerable diaspora in Europe.

By the conventional glottonym “Assyrian Neo-Aramaic”, we refer to a North-Eastern Neo-Aramaic (NENA) dialect originally spoken by the Christian population in and around Urmia in western Iran (other NENA varieties were originally spoken in Turkey, Iraq, and Syria). Due to conflicts in the 19th and early 20th centuries, many Assyrians left their homeland (Khan 2016b: 1–7), forming large diasporas in the USA, Europe, Australia, Georgia, and Armenia. Some of our data come from communities that settled in the South Caucasus

and Russia, including a compact community in Urmiya village, Krasnodar Krai (Sarkisov 2022; Ovsjannikova & Zabelina & Kozhanov forth.). The Urmi dialect also forms the basis of the literary koine, understood by educated speakers across Neo-Aramaic dialects (Khan 2016b: 7–11).

Turoyo and Assyrian Neo-Aramaic both belong to the Eastern branch of Neo-Aramaic, but represent distinct subgroups: Turoyo is part of the Turoyo-Mlahso group (Jastrow 2011), while Assyrian Neo-Aramaic belongs to the NENA group (Khan 2007). The two groups share certain innovations, such as the “new” imperfective and perfective forms based on the original active and passive participle, respectively. Turoyo, however, preserves several conservative features in phonology and morphology (Jastrow 2015; Häberl & Kashintseva & Loesov 2024). The two languages are not mutually intelligible.

Speakers of Turoyo in Turkey typically also speak Kurmanji and Turkish. Some are essentially bilingual in Turoyo and Kurmanji, having grown up in villages with mixed Aramaic–Kurdish population. In the diaspora, Turoyo is generally reserved for home use, while the language of the country of residence is spoken publicly. The younger generation is gradually losing the heritage language (Talay 2002). Similarly, most speakers of Assyrian Neo-Aramaic have left Iran, and diaspora communities use the official language of their host country—English, Armenian, Georgian, or Russian.

2.2.2. Kurmanji and Sorani

Kurmanji (Northern Kurdish) is one of the three branches of Kurdish and the most widely spoken Iranian language in Turkey, with an estimated 10–15 million speakers (Haig 2018a: 106). It is spoken across large parts of eastern and central Anatolia and extends into northern Iraq, northern Syria, and the westernmost regions of Iran. Kurmanji is relatively dialectally uniform, largely due to its comparatively recent expansion across this wide area (Haig & Öpengin 2018: 164).

Sorani (Central Kurdish), the second major branch of Kurdish, is spoken by roughly three million speakers in Iraq and a similar number in western Iran (Haig 2018b: 267). It enjoys high prestige, supported by long-standing state backing, media presence, and ongoing standardization efforts. ‘Central

Kurdish'covers several varieties. The standard language is based on the dialect of Sulemaniyya (Northern Iraq). Another prominent dialect is Mukri, spoken in and around Mahabad in western Iran (Öpengin 2016; Haig 2018b: 270). The Sorani data in BivalTyp come from a speaker of the Mukri variety.

2.2.3. Zazaki

Zazaki is another Northwestern Iranian language spoken in central Anatolia, primarily in the area between Siverek, Erzincan, and Varto, by roughly two million speakers (Paul 1998: xii–xiii). Although Zazaki has often been classified as part of the Kurdish subgroup—and many Zazaki speakers identify as Kurds—recent research shows that it forms a separate branch within Northwestern Iranian, only distantly related to Kurmanji (Haig & Öpengin 2018: 160–161).

2.2.4. Relevant linguistic features of the focus languages

Both Turoyo and Assyrian Neo-Aramaic retain non-concatenative morphology, though to a lesser degree than older Semitic languages: verbs are built from consonantal roots with vowels intercalated between them. As noted above, both languages have developed two main inflectional bases—imperfective (IPFV) and perfective (PFV)—ultimately derived from the active and passive participles of earlier Aramaic (Doron & Khan 2012: 225–226; Noorlander 2021a: 12). TAM forms are built from these bases through affixation. Two sets of person-number-gender indexes, referred to here as the S-series (SS) and L-series (LS), display tense-conditioned splits and play a central role in the discussion below.[2]

In Turoyo, subjects of transitive and intransitive verbs may be flagged with the preposition *l-* (see fn. 1 and also Coghill 2016, 87–90; Waltisberg 2016, 177–79). In Assyrian Neo-Aramaic, some direct objects—typically definite and human—may be flagged by the preposition *ka* 'to, for', though this marking is

[2] Noorlander (2021a, 39–42) provides a detailed discussion of these suffixes, referring to them as the E-series and L-series markers. The *l-* element in the L-series goes back to a polyfunctional Aramaic preposition used for indirect objects—particularly recipients and goals—as well as definite direct objects. These originally oblique markers were later extended to coding A-arguments in the perfective subsystem based on the passive participle (thus producing an ergative pattern), and eventually to S-arguments as well (fully in Assyrian Neo-Aramaic, partially in Turoyo) within the perfective system.

optional (Khan 2016c: 256–257). Neither language has morphological case. Word order is SVO in Turoyo, while Assyrian Neo-Aramaic displays a more fluid order with a preference for SOV (Noorlander & Molin & Haig 2025: 301–302).

In Kurmanji, Sorani, and Zazaki, the verb likewise has two primary stems—present and past—from which additional tenses are built. As in Neo-Aramaic, there are two series of person and number indexes, and their distribution as subject and object markers depends on tense and transitivity (see Section 4).

Kurmanji and Zazaki have two cases: an unmarked direct case (DIR) and an oblique case (OBL). The oblique case serves multiple functions beyond core-argument flagging, including marking recipients, goals, and prepositional arguments (Paul 1998: 21; Haig 2018a: 115). Case plays only a minor role in Sorani. A notable feature of all three languages is the head-marking possessive (ezafe) construction. In Kurmanji and Zazaki, where case distinctions are retained, the ezafe marker on the noun fully or partially neutralizes them (Paul 1998: 31–32; Haig 2018a: 120).

All three languages show basic SOV order. Non-core arguments such as recipients and goals typically occur after the verb (Haig 2022; Haig et al. 2024).

2.2.5. Other languages in the sample

When discussing valency classes in Sections 4 and 5, we also draw on a wider range of ACIM languages from several families, primarily using data from BivalTyp, our main data source (see Section 3.2). These additional languages include Persian (Iranian; Iran; west2369), Turkish (Turkic; Turkey; nucl1301) and Azerbaijani (Turkic; Azerbaijan; nort2697), several Arabic dialects from Iraq and Syria, namely Northern Syrian Arabic (Semitic; Syria; nort3139), South Levantine Arabic (Semitic; Israel; sout3123), and Jewish Baghdadi Arabic (Semitic; Iraq; jude1266) four Kartvelian languages, Armenian (Indo-European; Armenia; nucl1235), and numerous Nakh-Daghestanian languages. Due to space constraints, we cannot provide a separate profile for each of these languages.

2.3. Contact between Aramaic and Iranian

Since our study focuses primarily on Neo-Aramaic and Iranian, it is worth briefly outlining the history of contact between Semitic and Iranian languages. The earliest secure evidence of such contact dates to the 6th century BCE, with the rise of the Achaemenid Empire, where Aramaic served as the official administrative language and the ruling elite spoke Iranian (Folmer 2020). Aramaic documents from the 5th century BCE already contain Old Persian loanwords (Folmer 2024). At this time, Aramaic functioned as the lingua franca of the Fertile Crescent, although there is no reliable evidence for direct contact between the spoken varieties of Old Aramaic and Old Persian.

In the first centuries CE, Aramaic-speaking communities lived on both sides of the border separating the Roman Empire from various Iranian and Persianate states, including the Parthian kingdom and the Sasanian Empire. Once again, evidence for language contact is mostly indirect—for example, Iranian loanwords in Eastern Aramaic (notably Syriac; Ciancaglini 2008).

Aramaic–Iranian contact is often discussed in relation to the development of ergativity and tense-conditioned alignment splits. Iranian languages are known to have shifted from the accusative alignment found in Old Persian (Haig 2008: 25), to the ergative or otherwise non-accusative alignment in the past tense in Middle Persian (Haig 2008: 92–95). Old and Middle Aramaic (Beyer 1986) had the nominative-accusative alignment typical of Semitic languages (Coghill 2016: 2). Some Neo-Aramaic languages—including certain Christian and Jewish NENA varieties and Turoyo—have later developed tense-conditioned splits: present-tense systems remain consistently nominative-accusative, while past-tense systems display ergative features, producing what Hemmauer and Waltisberg (2006) describe as mixed alignment in Turoyo.

The influence of Iranian on Aramaic was first suggested decades ago by E. Kutscher, who compared the Aramaic passive/resultative participle plus dative pronoun construction with the Old Persian *manā kartam* construction (Kutscher 1969: 135; Haig 2008: 26). This sparked ongoing debate about the grammaticalization path and the extent of Iranian influence on Aramaic (Coghill 2016: 40–43, 162–170). Most scholars agree that some Iranian

interference occurred, given the widespread ergativity in Indo-Iranian languages versus its limited presence in geographically proximate Aramaic varieties. However, such analyses typically focus on alignment and verbal constructions generally, rather than on verb-specific coding patterns and individual valency classes, which is the focus of our study.
Less well understood is the contact of Aramaic and Iranian with other regional languages. Turoyo, for example, has long been in contact with Arabic varieties spoken in Syria and Anatolia. Several studies have examined lexical and morphological borrowings (Coghill 2015; Furman & Loesov 2016; Kuzin forth.) and even broader questions of an Aramaic substrate in Arabic (Pat-El & Stokes 2022), yet little is known about how this contact affects valency and argument marking. Similar gaps exist regarding the influence of Armenian on Kurmanji (Haig & Öpengin 2018: 164) or Azerbaijani on Assyrian Neo-Aramaic (Khan 2016b: 37–40). For a recent comprehensive study of mutual influence between the Neo-Aramaic variety of Sanandaj and Gorani in western Iran, see Khan and Mohammadirad (2024).

3. Valency classes and the BivalTyp database

3.1. Valency patterns and valency classes

The central notions in this study are **valency patterns** and **valency classes**. The valency of a verb can be defined as "the list of its arguments with their coding properties" (Malchukov et al. 2015, 30). Cross-linguistically, argument-coding properties include flagging (case and adpositions), indexing, and, more rarely, word order (Malchukov et al. 2015, 31–33; Sinnemäki 2008; see also Haspelmath 2019 for terminology). In (4) the looking person ('the boy') is unflagged and indexed on the verb by a clitic derived from a copula form marked for number and gender, while the object ('the clouds') is flagged by the preposition *+al* 'on' and not indexed.

Assyrian Neo-Aramaic

(4)	*yala*	*gašuk=əl*	*+al*	*+ayvə*	*cumə*
	boy(m)	observe.prog=3m.sg	on	cloud(f).pl	black.pl

‘The boy is looking at the black clouds.’ (BivalTyp, #95)

While factors such as part of speech, animacy, definiteness, tense–aspect–mood, information structure, and word order can influence valency patterns (Iemmolo 2011; Witzlack-Makarevich & Seržant 2018; Chappell & Verstraete 2019; Creissels 2024; Haspelmath forth.) , the primary determinant is lexical: a valency pattern is largely governed by the verb.[3] For example, the preposition *+al* ‘on’ in (4) occurs specifically with the verb *gašək* ‘look’ in any context with a comparable meaning.

This lexical control underlies the notion of a **valency class**: a set of verbs that behave alike with respect to argument coding. Most languages have a basic transitive class whose verbs may show alternations, such as differential object marking, but these alternations affect all verbs in the class similarly. Likewise, in Assyrian Neo-Aramaic, the coding of the ‘looker’ argument of *gašək* depends on tense: in (4), it is indexed by a clitic derived from the copula; in other TAM-forms, it is indexed by S- or L-series suffixes. Crucially, these fluctuations are shared across many verbs, allowing us to define a **coding status** as the set of verb-specific arguments that display identical coding behavior across varying contexts (TAM, referential properties of arguments, etc.). The coding status of the ‘looker’ argument in (X) can be identified as simply “subject”, as most Assyrian Neo-Aramaic verbs have a first argument behaving like the ‘looker’ argument of *gašək*.

Assuming a general isomorphism hypothesis (Cysouw 2014), valency classes defined by argument-coding properties are expected to group semantically similar verbs—a cornerstone assumption in both theoretical and lexicographic research (Apresjan 1967; Helbig & Schenkel 1983: 60–61; Levin 1993: 1–10; Van Valin 1999; Malchukov 2015b). Although this hypothesis likely holds in broad terms, valency class systems differ greatly across languages. It therefore remains an empirical question which aspects of semantics–syntax mappings

[3] For the sake of brevity, we use the term “verb” to encompass any type of *valency carrier* (Gaszewski 2020), such as a serial verb construction or a predicatively used adjective.

are cross-linguistically stable and which vary. Several typological projects have addressed this question (Bickel et al. 2014; Malchukov & Comrie 2015), including BivalTyp (Say 2020a-), the main empirical source for the present study, as discussed in 3.2.

3.2. BivalTyp and its main design features

BivalTyp is a typological database that identifies valency classes for 130 bivalent predicates across 149 languages (as of October 2025). It is based on a questionnaire of 130 sentences representing *contextualized meanings* rather than abstract verbs, following the exemplar-semantics approach (Cysouw 2014: 24–25). Translations therefore need not use specialized verbs; they must simply **(i)** express the same contextualized meaning as the questionnaire sentence and **(ii)** include two clause-level dependents corresponding to the pre-annotated arguments.

These arguments are labeled X and Y, with X accumulating more proto-agent entailments (Dowty 1991). The main response variable is the **valency class**, defined as the ordered combination of the coding statuses associated with X and Y. Argument-coding devices, and therefore tags, are language-specific: for instance, “SBJ_al” in (4) refers to the preposition *+al* ‘on’.

Contributors are instructed to assign tags that **(i)** capture relevant contrasts between lexical items and **(ii)** avoid distinctions not reflected in overt coding. In simple cases, a tag records a stable argument-coding pattern for a verb. For example, the German entry for ‘flatter’ includes *schmeicheln* with the tag “NOM_DAT”, reflecting the consistent use of the nominative and dative case by this verb’s arguments. In cases where verbs show argument-coding splits driven by TAM, referential, or information-structural factors, tags identify coding statuses that unify arguments across verbs when they share the same array of coding options governed by the same factors. Thus, in the Assyrian Neo-Aramaic dataset, the “SBJ” component does not refer to a specific marker but signals coding parallelism with other arguments that behave alike. By the same logic, Turoyo, Kurmanji, Sorani, and Zazaki distinguish SBJ.TR vs. SBJ.INTR because the respective arguments differ in their coding properties (see Section 4).

Valency-class tags can therefore be viewed as lexical instructions that, together with the grammar of a language, allow users to project argument coding in specific sentences. Contributors perform the inverse task: from observed translations (and occasionally additional examples), they determine the minimal set of tags needed for accurate projection.

Identifying a verb's valency class may require considering several modified versions of the target sentence. Initially, we viewed this as a recurring technical difficulty in coding our five focus languages. Ultimately, however, these difficulties reflect deeper grammatical patterns partially shared across these languages (Section 4).

A further challenge arises when the equivalents of X and Y do not behave as canonical clause-level dependents, raising issues of inclusion and annotation. These cases were again initially viewed as technical difficulties for BivalTyp, but ultimately proved to reveal broader grammatical parallels among the focus languages and beyond (Section 5).

The datasets for the five focus languages were contributed by Mansour Amadeh (Sorani), Nikita Kuzin (Turoyo, Kurmanji), Sergey Say (Assyrian Neo-Aramaic), and Uğur Sermiyan (Zazaki). The BivalTyp sample includes a relatively dense grid of languages spoken in the ACIM area, and these data are also used for broader areal comparison. The complete dataset is provided in the Supplementary Materials available at **REMOVED FOR ANONYMIZATION**.

4. Tense-conditioned splits and valency classes

4.1. Focus languages

In most languages, verbs either maintain a stable argument-coding frame across TAM forms or follow regular, predictable splits. As a result, a verb's valency class can usually be determined from a single diagnostic TAM form. In our focus languages, however—Neo-Aramaic and Iranian—this is often not the case. Their argument-coding splits typically require examining both present- and past-tense forms to establish a verb's valency class. This exceptional behavior affects both questionnaire arguments, X and Y.

In what follows, we use the terms subject and object in the conventional sense found in the grammars. As we show, neither category is homogeneous in terms of argument coding, and the full system requires additional distinctions, leading to more fine-grained coding statuses as defined in Section 3.

4.1.1. Indexing of subjects

In four of the five focus languages (Turoyo, Kurmanji, Sorani, and Zazaki), the default pattern is that transitive and intransitive subjects are indexed alike in forms built on the IPFV base (e.g., present, imperfect), but differently in forms built on the PFV base (e.g., preterite, perfect). In Turoyo, for example, intransitive subjects in both tenses (5a, 6a) and transitive subjects in the IPFV (5b) take S-series markers, whereas transitive subjects in the PFV (6b) take L-series markers.

Turoyo

(5a) *ko-dəmx-o*

prs-sleep.ipfv-ss.3f.sg

‘She is sleeping / she sleeps.’ (own knowledge)

(5b) *ko-fəṯ-o* *u* *tarco*

prs-open.ipfv-ss.3f.sg art.m.sg door

‘She opens the door.’ (own knowledge)

(6a) *damix-o*

sleep.pfv-ss.3f.sg

‘She fell asleep.’ (own knowledge)

(6b) *fṯəḥ-la* *u* *tarco*

open.pfv-ls.3f.sg art.m.sg door

‘She opened the door.’ (own knowledge)

The same split is well documented in Sorani (Öpengin 2016: 48–50; Haig 2017a: 481–483). Here too, the contrast is expressed through two sets of markers: verbal agreement markers and pronominal clitics. The four examples from Sorani below illustrate the pattern. In the present tense, agreement markers obligatorily index the subject of both transitive and intransitive verbs (7a–7b). In the past tense, intransitive subjects are still indexed by agreement markers (8a), whereas transitive subjects are indexed by pronominal clitics (8b).

Sorani Kurdish

(7a)	*minał-k-an*	*de-r̂o-n*	*bo*	*xiwêndinge*
	children-def-pl	ind-leave.prs-3pl	for	school
	‘The children are going to school.’ (Mansour Amadeh, p.c.)			

(7b)	*minał-k-an*	*perdax-ek-an*	*de-ʂikên-in*
	children-def-pl	glass-def-pl	ind-break.prs-3pl
	‘The children break the glasses.’ (Mansour Amadeh, p.c.)		

(8a)	*minał-k-an*	*r̂oîʂt-in*	*bo*	*xiwêndinge*
	children-def-pl	leave.pst-3pl	for	school
	‘The children went to school.’ (Mansour Amadeh, p.c.)			

(8b)	*minał-k-an*	*perdax-ek-an=yan*	*ʂikand-Ø*
	children-def-pl	glass-def-pl=pc.3pl	break.pst-3sg
	‘The children broke the glasses.’ (Mansour Amadeh, p.c.)		

Thus, the distribution of indexing requires distinguishing two types of subjects in both Turoyo and Sorani Kurdish, reflected in the BivalTyp tags SBJ.TR and SBJ.INTR.

4.1.2. Flagging of subjects

Kurmanji and Zazaki, in addition to the indexing splits discussed in 4.1.1, also show tense-conditioned splits in subject flagging. In Kurmanji, the basic transitive pattern is straightforward: in IPFV forms, the subject is unmarked (DIR) and the direct object appears in the OBL case (9a). In PFV forms, the pattern reverses: the subject is flagged with OBL, while the direct object remains unmarked (9b).

Kurmanji

(9a)	*cotkar*	*kur-î*	*di-şîn-e*	*mal-a*	*xwe*
	farmer.dir	boy-obl	prs-send.ipfv-3sg	house-ez.f	refl

‘The farmer sends the boy to his (farmer’s) house.’ (adapted from Haig 1998, 164)

(9b)	*cotkar-î*	*kur*	*şand*	*mal-a*	*xwe*
	farmer-obl	boy.dir	send.pfv.3sg	house-ez.f	refl

‘The farmer sent the boy to his (farmer’s) house.’ (adapted from Haig 1998, 164)

However, deviations from this canonical scheme are common. Several factors contribute to this. First, in modern Kurmanji, oblique marking is frequently lost on masculine nouns (Thackston 2006: 49; Haig & Öpengin 2018: 173). Second, there are several types of non-canonical oblique marking (Haig 2017a, 478–81). In BivalTyp, the most frequent scenario is one where the first argument takes oblique case in the PFV, even though the second argument is consistently flagged by a preposition, as is typical of intransitive verbs. Crucially, the behavior of the predicate in the IPFV (10a) does not allow one to predict this unexpected OBL marking in the PFV (10b).

Kurmanji

(10a) *zilam* *li* *kilit-ê* *xwe* *di-ger-e*

man.dir at key-ez.pl refl prs-look_for.ipfv-3sg

'The man is looking for his keys.' (BivalTyp, #39)

(10b) *jinik-ê* *duh* *tevahiy-a* *roj-ê*

woman-obl.f yesterday whole-ez.f day-obl.f

li *miftey-ên* *xwe* *geriy-e*

at key-ez.pl refl look_for.pfv-3sg

'Yesterday, the woman looked for her keys all day.' (BivalTyp, #39, variant, own data)

In the same way, complex verbs formed with the light verb *kirin* 'do, make' also take oblique-marked subjects in PFV, even when the second argument is introduced by a preposition:

Kurmanji

(11) *jinik-ê* *berê* *ji* *zilam* *hez* *di-kir*

woman-obl.f earlier from man.obl love prs-do.pfv.sg

'The woman used to love the man.' (BivalTyp, #46, variant, own data)

A similar pattern is found in Zazaki. The two cases—direct (DIR) and oblique (OBL)—mark core arguments, and their functions reverse from IPFV to PFV.

As in Kurmanji, the PFV forms of some predicates (12)—though importantly not all (13)—with adpositional objects show oblique-marked subjects.

Zazaki

(12) *bɨlusk-i* *da* *kɛjɛj-i=ro*

lightning-m.obl hit.pst house-m.obl=to

'The lightning hit the house.' (BivalTyp, #79)

(13) *o* *gɨna* *des=ro*

3m.sg.dir touch.pst.3m.sg wall.obl=to

'He touched the wall.' (Bivaltyp, #22)

Consequently, the verbs in (12) and (13) belong to different valency classes. As with the indexing patterns in Turoyo and Sorani (4.1.1), the flagging patterns in Kurmanji and Zazaki require distinguishing two subject coding statuses in BivalTyp, tagged SBJ.TR and SBJ.INTR.

4.1.3. Indexing of direct objects

As suggested by the discussion of subject indexing above, several Neo-Aramaic and Iranian languages show a "mirroring" of subject and object indexing in present vs. past tense. In Sorani Kurdish (14a–14b), pronominal clitics index the direct object in the imperfective when it is not expressed as a full noun phrase or independent pronoun, whereas in the perfective the same function is carried out by verb agreement markers. A similar pattern is found in Hewrami (Iranian; Iraq and Iran; hawr1242; Mohammadirad 2025, 30).

Sorani Kurdish

(14a) *de = yan-ʂikên-im*

ind = 3pl.pc-break.prs-1sg

‘I break them.’ (BivalTyp, #44, variant, Mansour Amadeh, p.c.)

(14b) ʂikand = im-in

break.pst = 1sg.pc-3pl

‘I broke them.’ (BivalTyp, #44, variant, Mansour Amadeh, p.c.)

This “mirroring” of suffixes is also widely attested in NENA languages (Doron & Khan 2012; Noorlander 2021a: 2):

Assyrian Neo-Aramaic

(15a) *+bət-kaṭl-a-li*

fut-kill.ipfv-ss.3f.sg-ls.1sg

‘She will kill me.’ (Say 2020, 660)

(15b) *+kṭəl-a-li*

kill.pfv-ss.3f.sg-ls.1sg

‘I killed her.’ (Say 2020, 660)

To summarize, index mirroring is characteristic of several Iranian and Semitic languages, including Sorani Kurdish and Assyrian Neo-Aramaic. However, this phenomenon does not necessarily give rise to additional valency classes. The situation is different in Turoyo, which therefore deserves special attention.

In Turoyo, the SS-series of personal suffixes indexes direct objects only when the object NP is absent or fronted; otherwise, the default 3ms form is used. Only third-person pronominal objects can be indexed in this way. Examples (16a-b) illustrate the contrast between obejct NPs in post-verbal (16a) and fronted positions (16b), whereas example (17a) and (17b) display index mirroring in clauses without lexical arguments

Turoyo

(16a) *twəl-li* *i* *ale* *w* *u* *niro*

break.pfv-ls.1sg art.f.sg plough and art.m.sg yoke

'I broke the plough and the yoke.' (Ritter 1967: 428)

(16b) *i* *ale* *w* *u* *niro* *twir-i-li*

art.f.sg plough and art.m.sg yoke break.pfv-ss.3pl-ls.1sg

'The plough and the yoke, I broke them.' (own data)

(17a) msik-i-li

catch.pfv-ss.3pl-ls.1sg

'I caught them.' (own knowledge)

(17b) ko-məsk-i-li

prs-catch.ipfv-ss.3pl-ls.1sg

'They catch me.' (own knowledge)

The crucial feature of Turoyo is that the reversal of indexes cannot be predicted on the basis of the IPFV forms alone. as illustrated by examples (18) and (19).

Turoyo

(18a) *an niše k-zumr-i i zmarto /*

art.pl woman.pl prs-sing.ipfv-ss.3pl art.f.sg song

k-zumr-i-la

prs-sing.ipfv-ss.3pl-ls.3f.sg

‘The women sing the song / sing it (f.).’ (own knowledge)

(18b) *an niše k-šəmʕ-i i mosiqa /*

art.pl woman.pl prs-hear.ipfv-ss.3pl art.f.sg music

k-šəmʕ-i-la

prs-hear.ipfv-ss.3pl-ls.3f.sg

‘The women hear the music / hear it (f.).’ (own knowledge)

(19a) *an niše zmər-re i zmarto /*

art.pl woman.pl sing.pfv-ls.3pl art.f.sg song

zmir-a-lle

sing.pfv-ss.3f.sg-ls.3pl

‘The women sang the song / sang it. (f.)’ (own knowledge)

(19b) *an niše šamiʕ-i i mosiqa /*

art.pl woman.pl hear.pfv-ss.3pl art.f.sg music

šamiʕ-i-la

hear.pfv.3m.sg-ss.3pl-ls.3f.sg

‘The women heard the music / heard it (f.).’ (own knowledge)

The verb *zomər* ‘to sing’ is a canonical transitive verb showing the expected reversal of indexes: in the IPFV (18a), the S-series suffix marks the subject and the L-series (if present) the object, while in the PFV (19a) these roles are reversed. By contrast, *šomaʕ* ‘to hear’ aligns with *zomər* in the imperfective (18b), but does not show the reversal in the PFV (19b), displaying no tense-conditioned split. Consequently, these verbs belong to different valency classes despite similar IPFV patterns. In BivalTyp, *šomaʕ* and similar verbs are coded as SBJ.SS_DO.LS. The distinction between two coding statuses of what are otherwise treated as direct objects (DO vs DO.LS) is unique to Turoyo among our focus languages.

4.1.4. Indexing and flagging of other arguments

In Turoyo, additional coding statuses emerge when both pronominal and nominal arguments in the IPFV and PFV forms are considered. In the PFV example (20), the ‘receiver’ argument is indexed by an L-series suffix, just like A arguments of canonical transitives, see (6b).

Turoyo

(20) *qayəṯ-le* *ʕaṣro* *kall-at*

stick.pfv-ls.3m.sg ten money-pl

‘He received ten gold pieces.’ (Ritter 1967: 168)

Despite the identical PFV indexing in *ftəḥ-la* (6b) and *qayəṯ-le* (20), the verbs differ in their IPFV forms: the ‘opener’ in *ko-fəṯḥ-o* (6a) is indexed by an S-series suffix, while the ‘receiver’ in (21) is indexed by an L-series suffix.

Turoyo

(21) *kul* *ḥa* *ko-qoyaṯ-le* *ʕaṣro* *kall-at*

each one prs-stick.ipfv-ls.3m.sg ten money-pl

‘Everyone receives ten gold pieces.’ (Ritter 1967: 168)

Thus, the ‘receiver’ argument is consistently indexed by L-series suffixes in both PFV and IPFV forms, earning a distinct coding-status tag (OBJAGR) in BivalTyp and setting it apart from subjects and canonical direct objects (see similar examples in other Neo-Aramaic varieties in Noorlander 2021b, 57–62).

Finally, as mentioned in 4.1.3, in Turoyo it is sometimes relevant whether an argument is expressed by a full lexical NP. Although flagging does not play a major rule in distinguishing morphosyntactic statuses, in some valency patterns it is obligatory with lexical NP objects.

Turoyo

(22a) *aḏiʕ-o-le*

know.pfv-ss.3f.sg-ls.3m.sg

‘She got to know him.’ (own knowledge)

(22b) *qre-la-le*

hear.pfv-ls.3f.sg-ls.3m.sg

‘She called him.’ (own knowledge)

(23a) *meqəm* *me* *šato* *Gabriyel* *aḏəʕ* *Yuḥanən*

before from year pn know.pfv.3m.sg pn

‘A year ago Gabriel got to know John.’ (BivalTyp, #32)

(23b) *Gabriyel* *qre-le* *l* *Yuḥanən*

pn call.pfv-ls.3m.sg to pn

‘Gabriel called John.’ (BivalTyp, #31)

In (22a), the L-series suffix *-le* indexes the person recognized; in (22b), the second L-series suffix indexes the person called. This parallelism could suggest identical coding statuses for the second arguments of *oḏəʕ* ‘know, recognize’ and *qore* ‘call’. However, when a lexical argument is introduced, the predicates diverge: in (23b), *l-* flagging of the second argument is obligatory, whereas it is absent in (23a).

4.1.5. Summary

Four of the five focus languages (Turoyo, Kurmanji, Sorani Kurdish, and Zazaki) show multiple coding statuses associated with arguments indexed on the verbs beyond just ‘subject’ and ‘direct object’. Identifying these statuses requires considering both PFV and IPFV forms as well as the behavior of lexical vs. pronominal arguments. The most complex system is found in Turoyo, whose coding patterns are summarized in Table 1.

Table 1. Coding statuses and coding devices in Turoyo

Coding status	Flags	Indexes			
		Lexical arguments		Pronominal arguments	
		PFV	IPFV	PFV	IPFV
SBJ.TR	no	LS	SS	LS	SS
SBJ.INTR	no	SS	SS	SS	SS

DO	no	no	no	SS	LS
DO.LS	no	no	no	LS	LS
IO	*l-*	no	no	LS	LS
OBJAGR	no	LS	LS	LS	LS

Although the coding devices in Table 1 are limited to a single overt flag and two index sets, their distribution across conditions yields six distinct coding statuses. Neither PFV nor IPFV alone suffices to distinguish them. For example, IPFV forms conflate SBJ.TR and SBJ.INTR, while PFV forms neutralize the distinction between SBJ.TR and OBJAGR.

4.2. Beyond focus languages

TAM-conditioned argument-coding splits are typologically widespread. The best-known case is the subtype of split ergativity in which perfective or past forms show ergative properties absent from the corresponding imperfective or present forms (Malchukov 2015a). This pattern is frequently attested in the ACIM area and adjacent regions, particularly in the Iranian (Haig 2008) and Indo-Aryan (Verbeke 2013) branches of Indo-European.

The Hindi example in (1) illustrated such a split affecting both case marking and indexing. This parallelism, however, is far from universal. In both Kartvelian and Nakh-Daghestanian—two indigenous families in the northern ACIM area—TAM-conditioned splits are less straightforward.

Kartvelian languages have a well-known system of TAM “series”, each associated with distinct case frames for core arguments. Table 2 (from Rostovtsev-Popiel 2023; see Testelets 2020, 513 for details) shows the pattern for Georgian.

Table 2. Case marking of core arguments across TAM-series in Georgian

	Subject	**Direct object**	**Indirect object**
Series I: present/future	NOM	DAT	DAT
Series II: aorist/optative	ERG	NOM	DAT
Series III: perfect/pluperfect	DAT	NOM	OBL

As Table 2 suggests, case marking in Kartvelian is intricate: the same dative marker, for example, may receive different interpretations across TAM forms. However, case alternations do not affect verbal indexing (Testelets 2020: 512–513), and—more importantly—are generally consistent across major verb classes. For example, bivalent verbs that take ergative + nominative in the aorist display predictable case frames in other TAM forms.

Nakh-Daghestanian languages generally show ergative alignment in both case marking and indexing. Many of them, however, also have the so-called bi-absolutive construction, headed by a transitive verb but featuring two arguments in the absolutive. This alternation also partially affects indexing, as illustrated by the basic transitive construction in (24a) and its bi-absolutive counterpart in (24b).

Archi

(24a) *buwa-mu* *xx^{w}alli* *b-ar-ši* *b-i*

mother(II)-erg bread(III) III-make-cvb III-be

‘Mother is baking the bread.’ (Forker 2012, 78, with further reference to A. E. Kibrik’s description)

(24b) *buwa* *xx^{w}alli* *b-ar-ši* *d-i*

mother(II) bread(III) III-make-cvb II-be

‘Mother is baking the bread.’ (Forker 2012, 78, with further reference to A. E. Kibrik’s description)

Forker (2012) provides an extensive survey of bi-absolutive constructions in Nakh-Daghestanian. Wherever the bi-absolutive is attested, it is restricted to imperfective forms and contrasts with consistently ergative patterns in perfective forms. For the present discussion, the key point is its generality: when a language has the alternation, it applies freely to all transitive verbs (Forker 2012: 79).

4.3. Interim summary

TAM-conditioned or TAM-restricted argument-coding splits are common across the wider ACIM region. What sets our focus languages (Section 4.1) apart is the verb-specificity of their coding alternations. There is often no single diagnostic TAM form that reveals a verb’s “primary” argument-coding frame from which all others derive transparently. Instead, the interaction of flagging and indexing splits has produced a complex system of valency classes whose argument-coding properties can only be identified by examining at least two TAM forms in parallel.

5. Hanging arguments

5.1. Hanging arguments in Assyrian Neo-Aramaic

We first identified what we call hanging arguments when they created technical challenges for annotating valency patterns in BivalTyp, but we later found that they follow similar grammaticalization paths and form an areal feature across our focus languages and West Asia. For clarity, we begin with Assyrian Neo-Aramaic before turning to the other languages.

5.1.1. Basic features

The defining properties of hanging-argument constructions are illustrated by (25) and (26).

Assyrian Neo-Aramaic

(25) *+Ašur* *xoš-u* *bitay=əla*
pn(m) happiness(f)-poss.3m.sg come.prog=3f.sg
mən *d-a* *+sudra*
from oblpron-dem.sg shirt(f)
'Ashur likes this shirt'. (BivalTyp, #58)

(26) *brata* *adiyya* *riš-o* *+mray=əl*
girl(f) now head(m)-poss.3f.sg ache.prog=3m.sg
'The girl now has a headache'. (BivalTyp, #1, variant, own data)

In both examples, the clause-initial NPs (i) are inherent to the predicate's semantics, (ii) are unflagged, (iii) are not indexed on the verb, and (iv) are not prosodically separated from the rest of the clause. These features characterize hanging arguments. Additional similarities include their experiencer role and resumption by an adnominal possessive marker on another NP,[4] triggering verbal agreement as with canonical subjects.

[4] Possessive markers such as *-u* (P.3M) and *-o* (P.3F) function as indexes (cf. Jügel and Samvelian 2020 on Persian). When attached to verbs, they can index core arguments (e.g., direct objects in progressive constructions), revealing a link between adnominal and verbal indexing (Barotto & Sansò 2025). In examples (25) and (26), however, they attach to nouns and are not tense-dependent—grounds enough to treat hanging arguments separately from canonical core arguments in BivalTyp.

Hanging arguments can be described negatively, as elements that differ not only from canonical subjects, direct objects, or obliques, but also from possessors in canonical adnominal and predicative constructions (5.1.2) and genuine topics (5.1.3).

5.1.2. Comparison with possessive constructions

Canonical adnominal possessive constructions involve the "annexation element" *=ət* (Khan 2016c: 534–542) with the possessee preceding the possessor (27).

Assyrian Neo-Aramaic

(27)	*brun=ət*	*+Ašur*	*+vər-rə*	*gu*	*beta*
	son(m)=rel	pn	enter.pst-ls.3m.sg	in	house
	'Ashur's son entered the house.' (own data)				

Intervening material between components of adnominal possessives is generally impossible, highlighting a further distinction from hanging arguments, as seen in the intervening use of *adiyya* 'now' in (26). In sum, sequences like *brata rišo* are not possessive NPs and cannot appear in neutral contexts such as 'I saw the girl's head'.

Predicative possessive constructions with present-tense reference are illustrated in (28).

Assyrian Neo-Aramaic

(28)	*xda*	*baxta*	*ə̀t-la*	*+ṭla*	*brunva*
	one.f	woman(f)	exist-ls.3f.sg	three	son(m).pl

‘One woman has three sons.’ (own data)

Here, the possessor NP is clause-initial and unflagged, like hanging arguments, but differs in being indexed by an L-suffix. Khan (2016a) groups possessors in predicative possessives with hanging arguments historically, as conventionalized left-dislocations triggered by discourse. Synchronically, however, they employ different coding devices, so BivalTyp assigns a unique tag (OBJAGR) to possessors in the entry for ‘have’ (28), distinct from both canonical subjects and hanging arguments.

The distribution of grammatical features in predicative possessive constructions suggests that possessors display transitory behavior and evolve from clause-external to clause-internal positions (Khan 2016c: 70–79, 390–396; Say 2020b: 669–674; Logvinova 2022). In this sense, Assyrian Neo-Aramaic predicative possessives combine features of Topic possessives, Locational possessives, and Have-possessives (Stassen 2009; 2013), aligning with Chappell & Creissels’ (2019) observation that Topic Possessors are inherently unstable and can shift toward Have-possessives.

5.1.3. Comparison with genuine topics

True discourse topics, in contrast to hanging arguments, are separated prosodically from the clause and resumed by an independent pronoun or NP. Khan (2016c: 385–390) distinguishes EX1 constructions (our hanging arguments) from EX2 constructions (true topics); see also Khan (2016a). Three differences are particularly relevant:

(i) Verb specificity: Hanging arguments are verb-specific; for certain lexical items, hanging-argument constructions are “the norm” (Khan 2016c: 395). This is crucial for BivalTyp, which registers the most natural patterns for predefined predicate meanings. Topic constructions can appear with any verb under discourse conditions.

(ii) Discourse compatibility: Hanging arguments can carry any discourse status, unlike topics. Negative and indefinite pronouns, which cannot be topics, can function as hanging arguments (29); see also Jügel and Samvelian (2020, 146–48) for Persian.

Assyrian Neo-Aramaic

(29) *háč* *náša* *lább-u* *lé* *+ṭáləb*
no man(m) heart(m)-poss.3m.sg neg ask.prs(m.sg)
šárva *kəšta*
soup(f) cold.f
'Nobody likes cold soup' (Khan 2016a, 94; glosses are modified for uniformity)

(iii) Linear position: Hanging arguments generally appear at the left periphery, but this is a tendency rather than a strict rule (Khan 2016a: 105), similar to canonical subjects and predicative possessors.

While historically related to topicalization, hanging arguments have become routinized with specific predicates and are treated as default valency patterns, not directly driven by information structure.

5.1.4. Functional distribution and valency implications

Hanging arguments in Assyrian Neo-Aramaic meet BivalTyp's inclusion criteria: they are clause-level constituents corresponding to predefined semantic arguments. Their coding differs from that of subjects, direct objects, and predicative possessors, warranting a separate tag, EXT, reflecting Khan's EX1 category ("extraposition"). EXT applies when a hanging-argument construction is the default means of expressing a predicate meaning with two predefined semantic arguments realized as full NPs. In BivalTyp, 12 Assyrian Neo-Aramaic entries featuring 10 distinct predicative expressions use EXT: *+marrə* for 'feel pain' (26), *+avər gu ləbba* [enter in heart] 'be fond'; *xoš atə* [happiness come] for 'like' (25), 'love' and 'fall in love', *ləbba ṗakkə* [heart split] 'hate', *ləbba mapyəš* [heart leave] 'get upset', *ləbba +sarəx* [heart be_mad] 'get irritated',

+*xṭita atə* [sin come] ‘sympathize’, *ceyp payəš* [pleasure remain] ‘take offence’, +*aynə* +*paləṭ* [eyes leave] ‘despise’, and *avə šəmma* [name be] ‘be called’.
EXT arguments always correspond to the X argument in BivalTyp (also outside Assyrian Neo-Aramaic); see Section 3 for the distinction between X and Y. The predicate-driven use of hanging-argument patterns arises when the argument indexed as the grammatical subject “is intrinsically unsuitable to be the topical pivot” (Khan 2016a: 99).[5] Two relevant subtypes should be discussed:

(i) The simplex verb ‘feel pain, ache’. In (26), the human experiencer (X) is coded as a hanging argument, while the syntactic subject is the body part (Y), yielding the EXT_SBJ valency pattern. This compensates for the inherently low discourse status of body parts (Hopper & Thompson 1985: 167; Dahl & Koptjevskaja-Tamm 2001: 209). An alternative with the experiencer encoded as an NP-internal possessor (30) is dispreferred by the speakers.[6]

Assyrian Neo-Aramaic

(30) *ʔriš=ət* *brata* +*mray=əl*
head(m)-rel girl(f) ache.prog=3m.sg
Lit. ‘The girl’s head aches’. (Say 2020b: 669)

(ii) Complex idiomatic predicates. In constructions like (25), metaphorical body-part nouns (‘heart’, ‘eyes’) or abstract psychological nouns (‘happiness’, ‘pleasure’, ‘sin’) serve as subjects, while the experiencer occurs clause-initially.[7]

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[5] This contrasts with neutral cases such as ‘Peter’s brother got sick’, where both possessor and possessee can be construed as significantly affected and as discourse topics.

[6] In this respect, Assyrian Neo-Aramaic aligns with the cross-linguistic tendency of pain predicates to form bivalent patterns (Reznikova & Rakhilina & Bonch-Osmolovskaya 2012: 443–446).

[7] The list of such predicates in Assyrian Neo-Aramaic is not limited to those in BivalTyp. Further examples include *ləbba yakəd* [heart burn] ‘be upset’, *šənta atə* [sleep come] ‘be sleepy’, *ce(y)p atə* [pleasure come] ‘enjoy’, *ləbba* +*ṭaləb* [heart ask] ‘want, feel like’, *zala azəl* [disgust go] ‘dislike’, *soda*

Again, constructions with hanging arguments mitigate the possible syntax-discourse mismatch: they allow the expected low-animacy noun (Comrie 1989: 185–200; Ji & Liang 2018) to function as the subject while at the same time securing a prominent syntactic position for the experiencer. The second predefined BivalTyp argument (Y) is usually marked by the preposition mən 'from', as in (25) or (31), yielding the valency pattern tagged EXT_men.

Assyrian Neo-Aramaic

(31) *+Ašur* *+ayn-u* *+plaṭ=ənа*
pn eye(f).pl-poss.3m.sg leave.prog=3pl
mən *švav-u*
from neighbour(m)-poss.3m.sg
'Ashur despises his neighbor.' (BivalTyp, #126)

The EXT tag in BivalTyp aligns with Khan's discussion of experiencers whose grammatical role "is not coded" (Khan 2016c: 355).[8]

5.2 Areal-typological overview

5.2.1. Terminological overview

Hanging-argument constructions like those in Section 5.1 have been identified across West Asia and beyond, but cross-study comparison is hampered by divergent terminology, coverage, and aims. Recurring properties mentioned include:

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atə [enjoyment come] 'enjoy' (Khan 2016a; 2016b: 354–355), and *ləbba gavəl* [heart vomit] 'feel nauseous' (Polina Andreeva, p.c.).

[8] Khan contrasts these cases with those where the experiencer is coded as a possessor. Yet all such examples (Khan 2016b: 354–355) involve pronominal experiencers, unlike the "not coded" cases, which use full NPs. Khan's possessor-coded experiencers pattern like the hanging-argument constructions in (20) and (26), except that no lexical NP appears clause-initially. For valency classification, Khan's two types can likely be treated as one, in contrast to patterns where experiencers are subjects or direct objects.

(i) Lack of flagging and verbal indexing, unlike with canonical subjects and objects (Sedighi 2009).
(ii) Clause-initial position, tied to information-structure labels such as "left dislocation" (Khan 2016a; Homayouni & Alinezhad & Motavallian 2023) or "hanging topics" (Deulofeu 2008).
(iii) Experiential semantics, yielding labels "psych(ological) predicates" or "experiencer constructions" (Sedighi 2009; Jügel & Samvelian 2020).[9]
(iv) Bipartite predicates, combining a general verb ('come', 'leave', 'remain') and a non-verbal element, relating to "complex predicates" (Samvelian 2018; Taghipour 2025), even though the two phenomena are sometimes shown as distinct (Sedighi 2009).
(v) Possessive relations with body parts ('heart') or "spiritual parts" ('mood', 'disgust') suggesting parallels with possession, even if both functions—hanging topics and possessors—are derived from something else, cf. "Indirect Participant role" (Haig 2008: 107–108).
These various criteria do not identify the same set of constructions. Given this heterogeneity, we focus on argument coding (i), understanding hanging arguments as NPs that are inherent in the predicate's meaning but unindexed on the verb (unlike canonical subjects) and unflagged.

5.2.2. The prevalence of hanging-argument patterns in the dataset: an overview

Hanging arguments are labeled "EXT" throughout the BivalTyp database. We found 60 such patterns across 11 languages.[10] These 11 languages include four

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[9] These predicates do not form a homogeneous or clearly defined class. Emotions and emotional attitudes ('worry', 'like') are usually central, but some authors also include mental states and activities ('think', 'forget') and physiological states and events ('be hungry', 'vomit') (Taghipour 2025, fn. 3).

[10] Besides the BivalTyp entries labeled with EXT, Laz, a Kartvelian language influenced by Turkish, has two entries that likely involve hanging arguments:

Laz

(32)	*Käzim-i*	*Fatma-s*	*tol-i*
	pn-nom	pn-dat	eye-nom
	do-skidun-Ø		
	prv-remain-3sg.inact		
	'Käzim envies Fatma.' (BivalTyp, #116)		

Both the entry shown in (i) and the entry for 'get irritated' (BivalTyp, #128, lit. 'X, heart turns by Y') are debatable, as their syntax is unclear, but they share important traits with hanging-argument patterns

from our narrow scope—Assyrian Neo-Aramaic (12 entries), Turoyo (4), Sorani Kurdish (20), and Kurmanji (1)—plus five more languages spoken in West Asia: Northern Syrian Arabic (11), Jewish Baghdadi Arabic (4), South Levantine Arabic (3) (all Semitic); Persian (1) (Iranian); and Karata (1) (Nakh-Daghestanian).[11] These data highlight hanging arguments as an areal phenomenon of West Asia, arguably centering on the Semitic-Iranian borderland.[12]

This finding echoes Khan (Khan 2016c: 355–359), who compared experiencer constructions in Neo-Aramaic to other languages in the region (Kurdish, Persian, and Azerbaijani), arguing that some Neo-Aramaic patterns were borrowed from non-Semitic languages. Khan does not specifically discuss hanging-argument patterns, as his focus is broader, covering any non-subject experiencer coding (objects, possessors), but his examples of common periphrastic patterns (e.g., those involving *xoš* 'happiness, good') are illuminating. Khan's conclusion that Aramaic languages share valency phenomena with neighboring languages regarding non-agentive animate participants likely holds true for hanging-argument constructions as well.

5.2.3. Verb meanings

Hanging-argument patterns occur in a broad but non-random subset of the 130-item predicate sample in BivalTyp. Predicates whose X-argument is realized as a hanging argument tend to show co-variation between their meaning, the coding of Y, and the internal structure of the predicate expression. We outline these groups, including psychological and possession-related predicates.

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in other languages: the idiomatic complex predicate, the conveyed meaning, and the lack of overt flagging on both the experiencer and the possessed body part.

[11] A caution is warranted: hanging-argument constructions may be underrepresented in BivalTyp. As they do not fit the canonical mapping of verb arguments to standard grammatical roles, language experts may disfavor contributing them. Consequently, the absence of a hanging-argument pattern in a specific data "cell" (predicate + language) may be due to this sampling bias, not necessarily its true absence in the language. Conversely, any instance where it is registered can be considered a bona fide example.

[12] The two non-West-Asian languages featuring EXT arguments are Maltese (closely related to West-Asian Arabic varieties, 1 entry) and Standard Indonesian (2 entries).

The largest group[13] displaying hanging-argument patterns denotes emotions and other psychological states, with the X-argument as the experiencer. This class splits into two types based on the coding of the Y-argument (the stimulus). **(i)** Y coded by oblique devices. This type shows an areal distribution, being attested in Assyrian Neo-Aramaic, Turoyo, Sorani Kurdish, Kurmanji, as well as Jewish Baghdadi Arabic and Persian. All predicates are complex predicates whose non-verbal component is an abstract psychological noun (e.g., 'pleasure', 'trust') or a metaphorical body part (e.g., 'heart', 'eye'). These patterns are morphosyntactically and semantically similar, typically involving an adnominal possessive marker that links anaphorically to the hanging argument, as in (25) and (31). The pattern in (33) is similar, except that it features a copula.

Sorani Kurdish

(33) *Hîwa rîq=î le Ferhad-e*
pn hatred=3sg.pc from pn-be.prs.3sg
'Hiwa hates Farhad.' (lit. 'Hiwa, there is his hatred from Farhad') (BivalTyp, #57)

A further variation related to possessive constructions occurs when there is a full-fledged ezafe structure:

Kurmanji

(34) *pîrek ewleyîy-a wê li zilam di-hat*
woman trust-ez.f she.obl.f at man prs-come.pfv.3sg
'The woman trusted the man.' (Lit. 'The woman, her trust came to the man') (BivalTyp, #114)

(ii) Stimulus coded as a core argument (typically the subject). This less homogeneous subclass includes patterns with simplex verbs (35), non-verbal predicates (36), or complex predicates involving a body part (37).

[13] Note that this overview is based on the BivalTyp predicate sample, which targets bivalent verbs and is not meant to represent the verbal lexicon as a whole.

Sorani Kurdish

(35) *ême* *kursî-î* *niwê=man* *de-w-ê*
we chair-ez new=1pl.pc ind-want.prs-3sg
'We want new chair(s)'. (BivalTyp, #121, variant, Mansour Amadeh, p.c.)

(36) *Hîwa* *ça-î* *gerim=î* *pê-xoş-e*
pn tea-ez warm=3sg.pc prev-good-be.prs.3sg
'Hiwa enjoys hot tea.' (BivalTyp, #120)

Turoyo

(37) *Gabriyel* *k-oṭe* *u* *bayto*
pn prs-come.ipfv.3msg art.m.sg house(m)
l *bol-e*
to mind(m)-poss.3m.sg
'Gabriyel remembers the house.' (BivalTyp, #76)

Physiological predicates, semantically similar to psychological ones, are represented in BivalTyp by the predicate 'ache'. Its hanging-argument pattern is attested in Assyrian Neo-Aramaic (26), Northern Syrian Arabic, and Sorani Kurdish (38). All such entries involve a simplex verb with an explicitly marked possessive relation on the body-part noun.

Sorani Kurdish

(38) *Hîwa* *ewr̂o* *ser=î* *d-êş-ê*
pn today head=3sg.pc ind-hurt.prs-3sg
'Hiwa has a headache today.' (BivalTyp, #1)

The other group of predicates that recurrently display hanging-argument patterns centers on the predicative possessive construction ('have'), which in West Asian languages is often headed by an existential copula or by the verb 'to be' (39).

Sorani Kurdish

(39) *Hîwa* *maşên-êk=î* *he-ye*

pn car-indf = 3sg.pc exist-be.prs.3sg
'Hiwa has a car.' (BivalTyp, #38)

The construction in (39) cannot be analyzed as involving a possessive NP (see Section 5.2.1 on Assyrian Neo-Aramaic). Nor can it be treated as a topicalized variant of a construction with a possessive NP, as shown by the semantic contrast between (39) and (40):

Sorani Kudish

(40) *maṣên-î* *Hîwa-î* *he-ye*
car-ez pn-obl exist-be.prs.3sg
'There is Hiwa's car' (acceptable in, for example, the following dialogue: — How do we go on a trip? — There is Hiwa's car [available]; Mansour Amadeh, p.c.).

Several Arabic varieties also feature predicative possessive constructions with hanging arguments. While the pattern in (41a), which is also typical of Modern Standard Arabic, falls unproblematically under Stassen's "locational possessive type" (Stassen 2009: 48–54), the pattern in (41b)—where the possessor NP is clause-initial (a hanging argument) and doubled by a prepositional index[14]—is problematic for purely synchronic analysis.

Jewish Baghdadi Arabic

(41a) *ʿand-u* *l-Abrahām* *sīyāra*
by-poss.3m.sg to-pn car
'Abraham has a car.' (Lit. 'By Abraham (is) a car') (BivalTyp, #38)

(41b) *Abrahām* *ʿand-u* *sīyāra*
pn by-poss.3m.sg car
'Abraham has a car.' (Lit. 'Abraham, by him (is) a car') (BivalTyp, #38, variant, Bar-Moshe, p.c.)

[14] The alternation between PP-internal and hanging-argument coding also occurs with predicates such as 'feel pain', 'have illness', 'be called', 'like', 'remain', and 'be fond'.

As Creissels (2022: 598) argues, this latter pattern is transitory and best seen as the result of an "unfinished process of have-drift", moving toward a transitive possessive type (cf. Maltese, Creissels 2022, 600; for a similar drift in Sinitic languages, see Chappell and Creissels 2019). That said, the indexing in (41b) differs from that in the basic transitive pattern.

The example in (41b) is not included in BivalTyp, as (41a) was preferred by the language contributor, but their competition illustrates a potential diachronic pathway to hanging-argument constructions. BivalTyp does, however, include numerous Arabic entries where X functions simultaneously as a hanging argument (EXT) and as an argument with a prepositional flag. In these cases, this pattern is the basic construction for 'to have' (42) and related meanings such as 'be short' or 'remain' (43),[15] as it is neutral and lacks canonical counterparts or is strongly preferred over them.[16]

South Levantine Arabic

(42) *Shadi ʿind-o sayyara*
pn at-poss.3m.sg car
'Shadi has a car.' (BivalTyp, #38)

Northern Syrian Arabic

(43) *Aḥmad ẓal maʕ-ā ʕašra euro*
pn remain.pfv.3m.sg with-poss.3m.sg ten euro
'Ahmad has ten euro left.' (BivalTyp, #61)

The final recurrent predicate type is 'be called'. This occurs in languages where the literal structure is 'X its name is Y' (see also Khan 2016a, 99 for an alternative), and where X meets our definition of a hanging argument (44).
Northern Syrian Arabic

[15] BivalTyp entries with hanging arguments can be linked to the predicative possessive construction on language-specific grounds, including predicates such as 'hold', 'need', 'give birth', 'have illness', and 'forfeit' when they align morphosyntactically—and sometimes lexically—with it.

[16] BivalTyp makes no distinction between these scenarios; see Taghipour (2025) for a different approach based on Persian data.

Northern Syrian Arabic

(44)	*hal*	*ʔāla*	*əsəm-ha*	*buṣla*
	this	instrument(f)	name-poss.3f.sg	compass

'This instrument is called compass.' (BivalTyp, #51)

Parallel examples to (44) are found in South Levantine Arabic and Assyrian Neo-Aramaic, with Y realized as the complement of the copula.[17]

5.2.4. Summary and discussion

The overview above reveals **i)** recurrent use of complex predicates, especially for psychological meanings; **ii)** adnominal possessive indexes on non-verbal elements; **iii)** competition with and possible diachronic links to canonical adnominal possessive constructions; **iv)** the role of predicative possessive constructions involving existential predicates; and **v)** transitory patterns in which an argument is coded as a hanging argument and later resumed as a pronominal object of a preposition.

A further point concerns the relationship between possessive indexes in hanging-argument patterns and canonical verbal indexes. Some languages, such as Sorani Kurdish, use the same clitics in adnominal markers in hanging-argument constructions (45) and as verbal indexes, e.g., transitive subject markers in past-tense sentences (46), see Samvelian (2007: 242–246). This polyfunctionality highlights a diachronic parallel between the emergence of hanging-argument constructions and tense-conditioned indexing splits (see also Barotto and Sansò 2025).

Sorani Kurdish

(45)	*Hîwa*	*le-ew*	*diyarî-e*	*ser=î*
	pn	from-this	gift-dem	head=3sg.pc
	sufrma	*bû-Ø*		
	spinning	be-pst.3sg		

[17] A few entries use syntactically similar copular constructions to express predicates such as 'cost' (lit. 'X its price is Y') or 'have a quarrel' (lit. 'X his fight with Y is').

‘Hiwa was surprised at this gift.’ (BivalTyp, #118)

(46) *Hîwa* *sêw-êk=î* *xiward-Ø*
pn apple-indf=3sg.pc eat.pst-3sg
‘Hiwa ate an apple.’ (BivalTyp, #26)

The diachronic link between hanging-topic constructions and canonical argument marking has been explored in detail for Persian (Jügel and Samvelian 2020, esp. p. 149; Taghipour 2025; for a broader view on Persian complex predicates, see Samvelian 2018). Curiously, BivalTyp includes only one Persian hanging-argument entry, shown in (47):

Persian

(47) *Ahmad* *az* *īn* *pīrāhan*
pn from this shirt
xoš-eš *mī-āy-ad*
good-pc.3sg cont-come.prs-3sg
‘Ahmad likes this shirt.’ (BivalTyp, #58)

Jügel and Samvelian (2020) argue that clause-initial NPs in constructions like (47) display some subject-like syntactic properties, such as controlling reflexives, while also retaining topic-like features. Prosodic analysis supports this transitory status, showing at least two superficially similar “left-dislocation” types in Persian (Homayouni et al. 2023).[18]

These observations suggest that hanging-argument constructions represent a diachronically transitory state, with their presence across ACIM-area languages reflecting parallel grammaticalization scenarios.

[18] One issue for Persian is whether the verb in constructions like (47) agrees with the nominal component or shows default 3SG features, suggesting an impersonal construction. In parallel Semitic structures, the verb typically shows gender agreement with the non-verbal component (25), confirming that it preserves subject properties while the hanging topic does not; see the same conclusion for Persian in Sedighi (2009).

5.3. Related phenomena

In this section, we provide a brief typological overview of various broader phenomena that do not meet our definition of hanging-argument constructions as observed in several languages of West Asia but provide a typological context for their understanding.

5.3.1. Left dislocation

Hanging-argument constructions are plausibly related to patterns commonly known as left dislocation. Left dislocation is widespread cross-linguistically—possibly universal (Westbury 2016: 22)—and allows speakers to introduce a referent to the left of the clause whose interpretation depends on it. A key feature relevant to the rise of hanging arguments is that left-dislocated constituents often lack overt flagging, in contrast to their resumptive counterparts inside the clause and to right-dislocated elements (Lambrecht 2001: 1069–1070; Westbury 2016: 26).

Unlike hanging-argument patterns, left-dislocation constructions are, by definition, marked variants that coexist with default clause structures. Yet they may become conventionalized diachronically, and unflagged clause-external positions can give rise to fully grammaticalized patterns. For instance, in many languages of northeastern Africa, the "no case (distinction) before the verb" rule (König, C. 2008: 240) likely developed through the conventionalization of formerly discourse-marked constructions such as clefts (König, C. 2008: 266–267). The emergence of hanging-argument constructions in several West Asian languages is probably driven by similar mechanisms.

5.3.2. Topic-based predicative possessive constructions

As shown in Section 5.2.3, several West Asian BivalTyp languages exhibit hanging-argument patterns in their predicative possessive ('have') constructions. Section 5.1.2 also revealed a similar, though not fully identical, pattern in Assyrian Neo-Aramaic. These phenomena reflect a broader typological correlation: possessors in predicative possessive constructions of the type 'Peter has a car' are typically animate and definite, and therefore natural topics.

According to Stassen's influential typology of predicative possession, some languages make this possessor–topic link explicit by employing the so-called

Topic Possessive strategy (Stassen 2009: 57–62; 2013). This strategy is identified for many East and Southeast Asian languages (Stassen 2013), where sentence topics play a central role in grammar. Although the status of a distinct "Topic possessive" type has been questioned on analytic and empirical grounds (Chappell & Creissels 2019: 468), the recurrent connection between possessor marking and natural sentence topics is clear. This is supported both by the West Asian data discussed above and by Stassen's "topic-locational hybrids" (2009: 96–106), many of which come from Afro-Asiatic languages.

5.3.3. External possessors

The hanging-argument patterns are partly motivated by the limited suitability of canonical adnominal possessive constructions for expressing the relevant predicate meanings. Constructions like 'the boy's head aches' are problematic because the possessor occupies a low syntactic position despite its high discourse prominence as an experiencer (Kibrik 2003), a mismatch especially clear in languages where the possessor follows the possessee, like in our focus languages. A common cross-linguistic response to this mismatch is the use of external-possessor constructions, which typically coexist with internal (adnominal) possessors, as in (48a) and (48b).

Russian

(48a) *glaz-a* *starik-a* *pokrasne-l-i*
eye-nom.pl oldman-gen.sg redden-pst-pl
'The oldman's eyes turned red.' (own knowledge)

(48b) *u* *starik-a* *pokrasne-l-i* *glaz-a*
at oldman-gen.sg redden-pst-pl eye-nom.pl
'The oldman's eyes turned red.' (own knowledge)

External possessors tend to occur when the possessor is highly topical or strongly affected, and they are usually marked by oblique devices (König, E. & Haspelmath 1997). In this respect, hanging-argument patterns without any overt flagging differ from external-possessor constructions; yet in functional motivation they are closely aligned, cf. the discussion of Persian in Taghipour (2025). Symptomatically, oblique markers used with external possessors may

also serve as default coding devices with certain predicates. Russian u ‘at, by’, seen in (48b), is employed for the X argument in three BivalTyp entries—‘have’, ‘feel pain’, and ‘remain’—a subset of the predicate meanings associated with hanging-argument constructions in West Asian languages (see Section 5.2.3).

5.3.4. Quasi-adnominal possessors

Another typological response to the syntax–discourse mismatch noted in Sections 5.1.4 and 5.3.3 is found in languages with quasi-adnominal patterns, where the possessor retains the dedicated adnominal possessor morphology (“genitive”) but behaves syntactically like a clause-level argument, e.g., through its linear freedom (49) and other constituency effects (see Ovsjannikova and Say 2014 for a gradient analysis of Bashkir).

Avar

(49)	*ʕali-l*	*aħmad-i-da*	*ccin*	*b-aq-un*	*b-ugo*
	pn-gen	pn-obl-loc	anger	n-rise-seq	n-cop

‘Ali is angry with Ahmad.’ (BivalTyp, #117)

Quasi-adnominal patterns are common in Daghestanian and Turkic languages in the BivalTyp sample and show clear parallels to hanging-argument constructions in the areally adjacent ACIM languages.[19] Shared features include: **i)** their frequent use with periphrastic predicates (cf. Haspelmath 1993, 279–80 on Lezgian), and **ii)** their association with possessive (‘have’, ‘remain’) and psychological predicates, two semantic zones also linked to hanging-argument patterns (Section 5.2.3). Many West Asian languages even share the same periphrastic templates for psychological predicates (e.g., ‘X’s happiness comes’ for ‘X likes’), despite variation in whether X is a hanging argument (Neo-Aramaic, Kurdish) or a quasi-adnominal genitive (Turkic, Daghestanian); see, e.g., the parallels between Assyrian Neo-Aramaic and Azerbaijani (Khan 2016c: 357).

[19] Armenian presents a further twist, as its “dative” case is syncretically used to mark indirect objects, direct objects, and adnominal possessors, blurring the distinction between the genitive and locational strategies for coding predicative possession.

The morphological identity with the adnominal possessive form is definitional for Stassen's Genitive Possessive type of predicative possession, found widely in Nakh-Daghestanian, Armenian, and many Turkic languages (Stassen 2013). Importantly, the constituency of such predicative possessive constructions is not always obvious (Stassen 2009: 114).

5.3.5. Body-part-based expressions for psychological states

Many hanging-argument patterns discussed in Sections 5.1 and 5.2 involve complex predicates denoting psychological states but incorporating body-part nouns, linking to the broader cross-linguistic use of body-part terms ('heart', 'eye', 'head', etc.) in expressing emotions. The association between emotions and body parts may be universal (Wierzbicka 1999: 176), while the specific parts and metaphors are culture- and language-specific. For a recent overview, see Ponsonnet & Laginha (2020) on Australia, which also surveys work from other regions.

For our purposes, the key dimension of variation is syntactic: languages differ in whether experiencers are coded as locations, possessors, or subjects. Hanging-argument patterns can be viewed as a transitional stage between experiencer-as-possessor patterns (Section 5.3.4) and experiencer-as-subject coding. Avar illustrates this development clearly; compare (50) to (49) above:

Avar

(50) *ʕali* *aħmad-i-da* *rak'* *χun* *w-ugo*
pn pn-obl-loc heart die.seq m-cop
'Ali took offence at Ahmad.' (BivalTyp, #123)

In (50), unlike (49), the experiencer is no longer genitive-marked, and the verb agrees with the experiencer rather than the body part. The experiencer thus acquires full subject-coding properties, while the former body-part noun ('heart') is reduced to a preverb-like element. Similar developments are common in the Caucasus (cf. BivalTyp data for Lak or Adyghe) and have been reported elsewhere, e.g., Yakkha (Kiranti > Sino-Tibetan) in (Schackow 2011).

5.3.6. Summary

Hanging-argument patterns are substantively related to several well-known typological phenomena surveyed in this section, including left dislocation, topic- and genitive possessives as coding strategies for predicative possession, and the widespread use of body-part terms in psychological predicates.

6. Conclusion

In analyzing BivalTyp valency classes for five ACIM languages—Assyrian Neo-Aramaic, Turoyo, Kurmanji, Sorani, and Zazaki—we identified two recurring typologically unusual phenomena: non-canonical valency classes arising as by-products of tense-conditioned argument-coding splits (Section 4) and a pattern we term *hanging arguments* (Section 5).

Although tense-conditioned splits are well documented for Semitic and Iranian languages of the ACIM area, their consequences for valency-class systems have received little attention. In particular, such splits may lead to a proliferation of valency classes,[20] which is especially striking given the poverty of the case systems of these languages (no case marking in Aramaic and a two-case system in Kurdish). In some cases, this leads to systems in which a verb's valency class cannot be reliably inferred from a single diagnostic TAM form, as in Turoyo.

A key observation is that in the four languages discussed in Section 4 (Turoyo and the three Iranian varieties), two distinct subject coding statuses must be distinguished (e.g. SBJ.INTR vs. SBJ.TR). While this distinction directly reflects a familiar TAM-conditioned split comparable to differential coding of S and A in present vs. past forms, the broader set of bivalent predicates documented in BivalTyp reveals a much more complex picture. In particular, the assignment of SBJ.INTR vs. SBJ.TR cannot be predicted from the coding of

[20] This does imply that such effects do not exist. For discussion of some Hindi verbs with unpredictable behavior across major TAM forms, see Butt (2017, 812). A systematic cross-linguistic analysis of non-transparent valency mappings between present and preterite forms remains a task for future research.

the non-subject argument or from coarse semantic parameters such as animacy or agentivity.

From a diachronic perspective, these patterns can be traced to the grammaticalization of resultative participle constructions. In Turoyo, two historically distinct participles (**CaCCiC-* and **CCiC-*) grammaticalized with S-series suffixes (originally enclitic pronouns) and L-series suffixes (originally oblique pronouns; Coghill 2016, 109; Barsky and Loesov 2021), respectively, ultimately yielding two subject-coding statuses (SBJ.SS vs. SBJ). This divergent development explain why Turoyo displays a richer valency system compared to most NENA languages, which generalized the L-series for past-tense subjects across all verbs, including monovalent ones.[21]

The unique DO.SS vs. DO.LS distinction in Turoyo is likewise historically determined, reflecting both the absence of a restriction of the **CaCCiC-* participle to monovalent verbs and the inheritance by the L-series suffixes of the polyfunctionality of the preposition *l-* (see fn. 2), which allows them to index, for example, dative possessors and experiencers. Together, these developments produced verbs in which L-series indexing is not TAM-sensitive (Noorlander 2021b, 86–87), giving rise to a distinct coding status (OBJAGR in BivalTyp).

In Iranian languages, the development of tense-conditioned splits likewise originates in a construction combining a resultative participle with an oblique agent in the genitive case, including oblique clitic pronouns (Haig 2008: 26). As Haig (2008, 316), notes, this construction involved an inherent tension: although resultative participles were intransitive and unable to assign accusative case, they were nevertheless used in transitive clauses, giving rise to what he terms “lingering intransitivity” (2008: 317).

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[21] Like Turoyo, Mlahso, Modern Western Aramaic, and some Jewish Neo-Aramaic dialects show non-uniform grammaticalization across the lexicon. In Modern Western Aramaic, for example, both *CCiC-* and *CaCCiC-* participles function as perfects, but *CCiC-* is mostly restricted to transitive verbs and *CaCCiC-* to intransitives (Arnold 1990: 76). Both, however, are inflected with the same suffix series, derived from enclitic pronouns.

The effects of this lingering intransitivity are arguably still visible in the valency-class behavior of the three Iranian languages considered here, all of which have inherited the TAM system of earlier Iranian. In Sorani, both pronominal clitics and verb agreement markers are retained, yielding the SBJ.TR vs. SBJ.INTR distinction. In Kurmanji and Zazaki, by contrast, clitics have been lost, but some subjects (SBJ.TR) may still be flagged with the oblique case. In Kurmanji, this subject flagging appears to be transitional, with numerous deviations from canonical argument marking (see also Haig 2017a, 478–79).

The second phenomenon discussed here, hanging arguments, is virtually unattested outside West Asia in the BivalTyp sample. While initially defined by surface properties—lack of flagging and verbal indexing and a clause-initial position—hanging arguments in fact form a broader cluster of features, including the frequent presence of resumptive pronominal material, a strong association with complex predicates, and a concentration in specific semantic domains such as possession and emotion.

Although related constructions—such as left dislocation, external possession, and topic-as-possessor patterns—are cross-linguistically widespread, we argue that their simultaneous presence in the ACIM area facilitated the emergence of hanging arguments as an areal feature. This development was likely further supported by several morphosyntactic factors: (i) the erosion of case marking (cf. Jügel and Samvelian 2020, 139 on Persian), (ii) the conventionalization of left dislocation as the default order for some predicate meanings, (iii) head-initial possessive noun phrases with at least partial possessive indexation, and (iv) the parallel use of possessive markers as argument markers elsewhere in the system. In short, hanging arguments reflect convergent diachronic pathways in which experiencer-like referents occupy an intermediate position between discourse topics, adnominal possessors, and canonical subjects, without fully aligning with any.

Finally, the two phenomena examined here are diachronically related. Both involve the grammaticalization and subsequent reanalysis of oblique phrases originally expressing benefactive or experiencer-like roles. As noted by Haig (2008) and Khan (2016a), such oblique constructions underlie both ergative patterns and predicates of possession, obligation, and emotion.[22] The two diverge in their outcomes: ergative patterns generalize across verbs but remain TAM-restricted, whereas experiencer-based constructions are verb-specific but are not restricted to specific TAM forms.

Despite similar origins, the two phenomena arise from distinct diachronic processes, whose outcomes shape cross-linguistic differences (Haig 2008, 315). Minor valency classes from tense-conditioned splits emerge when historically oblique subject coding in the preterite/perfective system overgeneralizes beyond canonical transitives as defined by the second argument coding. Hanging-argument patterns arise when oblique coding of the clause-initial argument is lost, sometimes leaving a trace as a possessive suffix on the nominal component of a complex predicate (cf. Jügel and Samvelian 2020, 149-150; see also a brief discussion of the Persian pattern *man xoš=am miyāyad* 'I like it' in Haig 2008, 315). While the general outlines of these processes are likely shared by many Iranian and Aramaic languages, their details differ, producing variation among our five focus languages and beyond.

[22] See also Barotto and Sansò (2025) for a broad typological perspective on parallels between possessive and ergative indexing.

Acknowledgements

ACKNOWLEDGEMENTS, INCLUDING REFERENCES TO FUNDING AUTHORITIES, REMOVED FOR PURPOSES OF ANONYMIZATION

Abbreviations

Glossing abbreviations:

1, 2, 3 – 1st, 2nd, 3rd person

I, II, III — 1st, 2nd, 3rd class

abs – absolutive

art – article

cvb – converb

cont - continuative

dat - dative

def – definite

dem - demonstrative

dir – direct

erg – ergative

ez – ezafe

exist – existential (predicate)

f – feminine

fut – future

gen - genitive

inact – inactive

ind – indicative

indf - indefinite

ipfv – imperfective

ls – L-series suffixes

loc - locative

m – masculine

n - neuter

neg - negation

nom – nominative

obl – oblique

oblpron – oblique pronoun

poss – possessive

pn – personal name

pc – pronominal clitic

perf – perfect

pfv – perfective

pl – plural

prs – present

prog – progressive

prv - preverb

refl – reflexive

rel - relator

pst – past

seq - sequential

sg – singular

sm – series marker

ss – S-series suffixes

Data accessibility statement

See Section Supplementary material.

Ethics and consent

Ethical considerations do not apply.

Funding information

ACKNOWLEDGEMENTS, INCLUDING REFERENCES TO FUNDING AUTHORITIES, REMOVED FOR PURPOSES OF ANONYMIZATION

Supplementary material

The complete dataset of BivalTyp predicates and examples for languages that have been cited in this paper is provided in the Supplementary Materials available at **REMOVED FOR ANONYMIZATION**.

Competing interests

The authors declare that they have no competing interests.

References

Alfimova, Daria & Kozhanov, Kirill & Say, Sergey. 2025. Areal effects on argument-coding patterns: Problems, progress, and prospects. *Studies in Language* 49(4). 757–777. DOI: https://doi.org/10.1075/sl.25057.koz

Apresjan, Juri. 1967. *Eksperimental'noe issledovanie semantiki russkogo glagola [Experimental study of the semantics of Russian verb]*. Moscow: Nauka.

Arnold, Werner. 1990. *Das Neuwestaramäische. V. Grammatik*. Wiesbaden: Otto Harrassowitz Verlag.

Barotto, Alessandra & Sansò, Andrea. 2025. When possessor and argument indexes coincide: A cross-linguistic survey. *Folia Linguistica*. DOI: https://doi.org/10.1515/flin-2024-0013

Barsky, Eugene & Loesov, Sergey. 2021. A History of the Intransitive Preterite of Ṭuroyo: From a Property Adjective to a Finite Tense. In Khan, Geoffrey & Noorlander, Paul M. (eds.), *Studies in the Grammar and Lexicon of Neo-Aramaic*, 1–28. Cambridge: Open Book Publishers. DOI: https://doi.org/10.11647/OBP.0209.01

Beyer, Klaus. 1986. *The Aramaic Language: its distribution and subdivisions*. Göttingen: Vandenhoeck & Ruprecht.

Bickel, B. & Zakharko, T. & Bierkandt, L. & Witzlack-Makarevich, L. 2014. Semantic role clustering: An empirical assessment of semantic role types in non-default case assignment. *Studies in Language* 38(3). 485–511. DOI: https://doi.org/10.1075/sl.38.3.03bic

Butt, Miriam. 2017. Hindi/Urdu and Related Languages. In Travis, Lisa Demena & Massam, Diane & Coon, Jessica (eds.), *The Oxford Handbook of Ergativity*, 807–831. Oxford: Oxford University Press.

Chappell, Hilary & Creissels, Denis. 2019. Topicality and the typology of predicative possession. *Linguistic Typology* 23(3). 467–532. DOI: https://doi.org/10.1515/lingty-2019-0016

Chappell, Hilary & Verstraete, Jean-Christophe. 2019. Optional and alternating case marking: Typology and diachrony. *Language and Linguistics Compass* 13(3). 1–42. DOI: https://doi.org/10.1111/lnc3.12311

Ciancaglini, Claudia Angela. 2008. *Iranian loanwords in Syriac*. Wiesbaden: Ludwig Reichert Verlag.

Coghill, Eleanor. 2015. Borrowing of verbal derivational morphology between Semitic languages: the case of Arabic verb derivations in Neo-Aramaic. In Gardani, Francesco & Arkadiev, Peter & Amiridze, Nino (eds.), *Borrowed morphology*, 83–108. Berlin-München-Boston: De Gruyter Mouton. DOI: https://doi.org/10.1515/9781614513209.83

Coghill, Eleanor. 2016. *The rise and fall of ergativity in Aramaic: Cycles of alignment change*. Oxford: Oxford University Press.

Comrie, Bernard. 1989. *Language universals and linguistic typology: Syntax and morphology* 2nd ed. Chicago: University of Chicago Press.

Creissels, Denis. 2022. Existential predication and predicative possession in Arabic dialects. *STUF - Language Typology and Universals* 75(4). 583–612. DOI: https://doi.org/10.1515/stuf-2022-1064

Creissels, Denis. 2024. *Transitivity, valency, and voice*. Oxford: Oxford University Press.

Cysouw, Michael. 2014. Inducing semantic roles. In Luraghi, Silvia & Narrog, Heiko (eds.), *Perspectives on Semantic Roles*, 23–68. Amsterdam and Philadelphia: John Benjamins. DOI: https://doi.org/10.1075/tsl.106.02cys

Dahl, Östen & Koptjevskaja-Tamm, Maria. 2001. Kinship in grammar. In Baron, Irène & Herslund, Michael & Sørensen, Finn (eds.), *Dimensions of possession*, 201–225. Amsterdam and Philadelphia: John Benjamins. DOI: https://doi.org/10.1075/tsl.47.12dah

Deulofeu, J. 2008. Peripheral constituents as generalized hanging topics. In Kawajima, R. & Philippe, G. & Sowley, T. (eds.), *Phantom Sentences: Essays in Linguistics and Literature Presented to Ann Banfield*, 227–257. Bern: Peter Lang.

Donabedian, Anaid & Sitaridou, Ioanna. 2020. Anatolia. In Adamou, Evangelia & Matras, Yaron (eds.), *The Routledge Handbook of Language Contact*, 404–433. London & New York: Routledge.

Doron, Edit & Khan, Geoffrey. 2012. The typology of morphological ergativity in Neo-Aramaic. *Lingua* 122(3). 225–240. DOI: https://doi.org/10.1016/j.lingua.2011.11.008

Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67(3). 547–619.

Folmer, Margaretha. 2020. Aramaic as *Lingua Franca*. In Hasselbach-Andee, Rebecca (ed.), *A Companion to Ancient Near Eastern Languages*, 1st ed., 373–399. Wiley. DOI: https://doi.org/10.1002/9781119193814.ch20

Folmer, Margaretha. 2024. The Linguistic Milieu of Elephantine Aramaic: Persian Loanwords and Examples of Egyptian Code-switching. In Barnea, Gad & Kratz, Reinhard G. (eds.), *Yahwism under the Achaemenid Empire. Professor Shaul Shaked in Memoriam*, 81–150. Berlin-Boston: De Gruyter. DOI: https://doi.org/10.1515/9783111018638-003

Forker, Diana. 2012. The bi-absolutive construction in Nakh-Daghestanian. *Folia Linguistica* 46(1). 75–108. DOI: https://doi.org/10.1515/flin.2012.3

Furman, Yulia & Loesov, Sergey. 2016. Five Essays in Lexical Interaction between Spoken Arabic and Turoyo. *Zeitschrift Für Arabische Linguistik* (63). 5–18.

Gaszewski, Jerzy. 2020. Does Verb Valency Pattern Areally in Central Europe? A First Look. In Szucsich, Luka & Kim, Agnes & Yazhinova, Uliana (eds.), *Areal Convergence in Eastern Central European Languages and Beyond*, 13–53. Berlin: Peter Lang. DOI: https://doi.org/10.3726/b16313

Grossman, Eitan & Witzlack-Makarevich, Alena. 2019. Valency and transitivity in contact: An overview. *Journal of Language Contact* 12(1). 1–26. DOI: https://doi.org/10.1163/19552629-01201001

Häberl, Charles & Kashintseva, Ksenia & Loesov, Sergey. 2024. Ṭuroyo. In Häberl, Charles (ed.), *Language Diversity in Iran*, 285–357. Berlin-Boston: De Gruyter. DOI: https://doi.org/10.1515/9783110641578-009

Haig, Geoffrey. 1998. On the interaction of morphological and syntactic ergativity: Lessons from Kurdish. *Lingua* 105(3–4). 149–173. DOI: https://doi.org/10.1016/S0024-3841(98)00014-X

Haig, Geoffrey. 2008. *Alignment change in Iranian languages: A construction grammar approach*. Berlin-New York: Walter de Gruyter.

Haig, Geoffrey. 2014. East Anatolia as a linguistic area? Conceptual and empirical issues. *Bamberger Orientstudien* 1. 13–36.

Haig, Geoffrey. 2017a. Deconstructing Iranian ergativity. In Coon, Jessica & Travis, Lisa Demena & Massam, Diane (eds.), *The Oxford Handbook of Ergativity*, 465–500. Oxford: Oxford University Press.

Haig, Geoffrey. 2017b. East Anatolia. Language Contact in a Transition Zone. In Hickey, Raymond (ed.), *The Cambridge Handbook of Areal Linguistics*, 396–423. Cambridge: Cambridge University Press.

Haig, Geoffrey. 2018a. Northern Kurdish (Kurmanjî). In Haig, Geoffrey & Khan, Geoffrey (eds.), *The languages and linguistics of Western Asia*, 106–158. Berlin-Boston: De Gruyter Mouton. DOI: https://doi.org/10.1515/9783110421682-004

Haig, Geoffrey. 2018b. The Iranian languages of northern Iraq. In Haig, Geoffrey & Khan, Geoffrey (eds.), *The Languages and Linguistics of Western Asia*, 267–304. Berin-Boston: De Gruyter Mouton. DOI: https://doi.org/10.1515/9783110421682-009

Haig, Geoffrey. 2022. Post-Predicate Constituents in Kurdish. In Matras, Yaron & Haig, Geoffrey & Öpengin, Ergin (eds.), *Structural and Typological Variation in the Dialects of Kurdish*, 335–377. Cham: Springer International Publishing. DOI: https://doi.org/10.1007/978-3-030-78837-7_8

Haig, Geoffrey & Khan, Geoffrey. 2018. Introduction. In Haig, Geoffrey & Khan, Geoffrey (eds.), *The Languages and Linguistics of Western Asia*, 1–29. Berin-Boston: De Gruyter Mouton. DOI: https://doi.org/10.1515/9783110421682-001

Haig, Geoffrey & Öpengin, Ergin. 2018. Kurmanji Kurdish in Turkey: structure, varieties, and status. In *Linguistic Minorities in Turkey and Turkic speaking minorities of the peripheries*, 157–229. Wiesbaden: Harrassowitz Verlag.

Haig, Geoffrey & Rasekh-Manand, Mohammad & Stilo, Donald & Schreiber, Laurentia & Schiborr, Nils. 2024. Post-predicate elements in the Western Asian Transition Zone: Data, theory, and methods. In Haig, Geoffrey & Rasekh-Manand, Mohammad & Stilo, Donald & Schreiber, Laurentia & Schiborr, Nils (eds.), *Post-predicate elements in the Western Asian Transition Zone: A corpus-based*

approach to areal typology, 1–54. Berlin: Language Science Press. DOI: https://doi.org/10.5281/zenodo.14266331

Haspelmath, Martin. 1993. *A Grammar of Lezgian*. Berlin and New York: Mouton de Gruyter.

Haspelmath, Martin. 2019. Indexing and flagging, and head and dependent marking. *Te Reo* 62(1). 93–115. DOI: https://doi.org/10.17617/2.3168042

Haspelmath, Martin. forth. The non-unity of differential object marking: Flagging versus indexing. Retrieved from https://www.academia.edu/143981528/The_non_unity_of_differential_object_marking_Flagging_versus_indexing

Helbig, Gerhard & Schenkel, Wolfgang. 1983. *Wörterbuch zur Valenz und Distribution deutscher Verben*. Tübingen: Max Niemeyer.

Hemmauer, Roland & Waltisberg, Michael. 2006. Zum relationalen Verhalten der Verbalflexion im Ṭurojo. *Folia Linguistica Historica* 40(27/1–2). 19–59.

Homayouni, Zeinab & Alinezhad, Batool & Motavallian, Rezvan. 2023. An acoustic study of Persian topic constructions. *Journal of Language Research* 13(2). 161–186. DOI: https://doi.org/10.22059/JOLR.2023.352355.666816

Hopper, Paul J. & Thompson, Sandra A. 1985. The iconicity of the universal categories 'noun' and 'verb.' In Haiman, John (ed.), *Iconicity in Syntax*, 151–183. Amsterdam and Philadelphia: John Benjamins.

Iemmolo, Giorgio. 2011. *Towards a typological study of differential object marking and differential object indexation*. University of Pavia dissertation.

Jastrow, Otto. 2011. Turoyo and Mlahso. In Weninger, Stefan (ed.), *The Semitic languages: An International Handbook*, 697–707. Berlin, Boston: De Gruyter Mouton.

Jastrow, Otto. 2015. Language contact as reflected in the consonant system of Ṭuroyo. In Butts, Aaron Michael (ed.), *Semitic Languages in Contact*, 234–250. Leiden-Boston: Brill. DOI: https://doi.org/doi.org/10.1163/9789004300156_013

Ji, Jie & Liang, Maochen. 2018. An animacy hierarchy within inanimate nouns: English corpus evidence from a prototypical perspective. *Lingua* 205. 71–89. DOI: https://doi.org/10.1016/j.lingua.2017.12.017

Jügel, Thomas & Samvelian, Pollet. 2020. Topic agreement, experiencer constructions, and the weight of clitics. In Larson, Richard K. & Moradi, Sedigheh & Samiian, Vida (eds.), *Advances in Iranian Linguistics*, 137–154. Amsterdam-Philadelphia: John Benjamins. DOI: https://doi.org/10.1075/cilt.351.08jug

Khan, Geoffrey. 2007. The North-Eastern Neo-Aramaic Dialects. *Journal of Semitic Studies* 52(1). 1–20. DOI: https://doi.org/10.1093/jss/fgl034

Khan, Geoffrey. 2016a. Left Dislocation in North-Eastern Neo-Aramaic dialects. *Stellenbosch Papers in Linguistics Plus* 50. 91–110. DOI: https://doi.org/10.5842/50-0-718

Khan, Geoffrey. 2016b. *The Neo-Aramaic Dialect of the Assyrian Christians of Urmi* Vol. 1. Leiden-Boston: Brill.

Khan, Geoffrey. 2016c. *The Neo-Aramaic Dialect of the Assyrian Christians of Urmi* Vol. 2. Leiden-Boston: Brill.

Khan, Geoffrey & Mohammadirad, Masoud. 2024. *Language contact in Sanandaj: A study of the impact of Iranian on Neo-Aramaic*. Basel-Berlin-Boston: De Gruyter.

Kibrik, Aleksandr E. 2003. Vnešnij possessor v russkom jazyke [External possessor in Russian]. In Kibrik, A. E., *Konstanty i peremennye jazyka [Constants and variables of language]*, 307–319. St. Petersburg: Aleteya.

König, Christa. 2008. *Case in Africa*. Oxford: Oxford University Press.

König, Ekkehard & Haspelmath, Martin. 1997. Les constructions à posesseur externe dans les langues d'Europe. In Feuillet, Jack (ed.), *Actance et valance dans les langues de l'Europe*, 525–606. Berlin: Mouton de Gruyter.

Kutscher, Edward Yechezkel. 1969. Two" passive" Constructions in Aramaic in the Light of Persian. In *Proceedings of the International Conference on Semitic Studies*, 132–151. Jerusalem: Israel Academy of Sciences and Humanities.

Kuzin, Nikita. forth. Adaptation of Arabic and Kurmanji Verbs in Ṭuroyo. In Meyer, Ronny & Reintges, Chris (eds.), *Perspectives on Templatic Morphology*,. Wiesbaden: Harrassowitz Verlag.

Lambrecht, Knud. 2001. Dislocation. In Haspelmath, Martin & Konig, Ekkehard & Oesterreicher, Wulf & Raible, Wolfgang (eds.), *Language Typology and Language Universals*, 1050–1078. Berlin: Walter de Gruyter.

Levin, Beth. 1993. *English verb classes and alternations: A preliminary investigation*. Chicago and London: University of Chicago Press.

Logvinova, Natalia N. 2022. The syntactic status of arguments in predicative possession in NENA Urmi dialect. *Rhema* 2. 67–85. DOI: https://doi.org/10.31862/2500-2953-2022-2-67-85

Malchukov, Andrej. 2015a. Towards a typology of split ergativity: A TAM-hierarchy for alignment splits. In Bornkessel-Schlesewsky, Ina & Malchukov, Andrej &

Richards, Marc D. (eds.), *Scales and hierarchies: A cross-disciplinary perspective*, 275–296. Berlin-Boston: De Gruyter Mouton.

Malchukov, Andrej. 2015b. Valency classes and alternations: Parameters of variation. In Malchukov, Andrej & Comrie, Bernard (eds.), *Valency classes in the world's languages*, Vol. 1, 73–130. Berlin-Boston: Mouton de Gruyter. DOI: https://doi.org/10.1515/9783110338812-007

Malchukov, Andrej & Comrie, Bernard (eds.). 2015. *Valency classes in the world's languages*. Berlin-Boston: Mouton de Gruyter.

Malchukov, Andrej & Valency Classes Project, Leipzig. 2015. Leipzig Questionnaire on valency classes. In Malchukov, Andrej & Comrie, Bernard (eds.), *Valency Classes in the World's Languages*, Vol. 1, 27–40. Berlin-Boston: De Gruyter Mouton. DOI: https://doi.org/10.1515/9783110429343-001

Mohammadirad, Masoud. 2025. *A grammar of Hewramî*. Berlin: Language Science Press.

Noorlander, Paul M. 2021a. *Ergativity and Other Alignment Types in Neo-Aramaic: Investigating Morphosyntactic Microvariation*. Leiden-Boston: Brill.

Noorlander, Paul M. 2021b. Towards a typology of possessors and experiencers in Neo-Aramaic: Non-canonical subjects as relics of a former dative case. In Khan, Geoffrey & Noorlander, Paul M. (eds.), *Studies in the Grammar and Lexicon of Neo-Aramaic*, 29–93. Cambridge: Open Book Publishers. DOI: https://doi.org/10.11647/OBP.0209.02

Noorlander, Paul M. & Molin, Dorota & Haig, Geoffrey. 2025. Between VO and OV in Arabic and Aramaic: A corpus-based typology with implications for word-order

shifts. *Studies in Language* 49(2). 289–336. DOI: https://doi.org/10.1075/sl.24027.noo

Noorlander, Paul M. & Stilo, Donald. 2015a. On The Convergence Of Verbal Systems Of Aramaic And Its Neighbours. Part I: Present-based Paradigms. In Khan, Geoffrey & Napiorkowska, Lidia (eds.), *Neo-Aramaic and its Linguistic Context*, 426–452. Piscataway, NJ: Gorgias Press. DOI: https://doi.org/10.31826/9781463236489-026

Noorlander, Paul M. & Stilo, Donald. 2015b. On The Convergence Of Verbal Systems Of Aramaic And Its Neighbours. Part II: Past Paradigms Derived From Present Equivalents. In Khan, Geoffrey & Napiorkowska, Lidia (eds.), *Neo-Aramaic and its Linguistic Context*, 453–484. Piscataway, NJ: Gorgias Press. DOI: https://doi.org/10.31826/9781463236489-027

Öpengin, Ergin. 2016. *The Mukri Variety of Central Kurdish. Grammar, Texts, and Lexicon*. Wiebaden: Ludwig Reichert Verlag.

Ovsjannikova, Maria & Say, Sergey. 2014. Between predicative and attributive possession in Bashkir. In Suihkonen, Pirkko & Whaley, Lindsay (eds.), *On Diversity and Complexity of Languages Spoken in Europe and North and Central Asia*, 175–202. Amsterdam and Philadelphia: John Benjamins. DOI: https://doi.org/10.1075/slcs.164.06ovs

Ovsjannikova, Maria & Zabelina, Elizaveta & Kozhanov, Kirill. forth. Non-Urmi North-Eastern Neo-Aramaic varieties in the village of Urmiya, Russia: Distinctive features of phonology and morphology. *Journal of Semitic Studies*. DOI: https://doi.org/10.1093/jss/fgaf041

Pat-El, Naʾama & Stokes, Phillip W. 2022. The 'Aramaic substrate'hypothesis in the Levant revisited. *Journal of Semitic Studies* 67(2). 563–606. DOI: https://doi.org/10.1093/jss/fgac002

Paul, Ludwig. 1998. *Zazaki. Grammatik und Versuch einer Dialektologie*. Wiesbaden: Dr. Ludwig Reichert Verlag.

Ponsonnet, Maïa & Laginha, Kitty-Jean. 2020. The role of the body in descriptions of emotions: A typology of the Australian continent. *Pragmatics and Cognition* 27(1). 20–82. DOI: https://doi.org/10.1075/pc.00011.pon

Reznikova, Tatiana & Rakhilina, Ekaterina & Bonch-Osmolovskaya, Anastasia. 2012. Towards a typology of pain predicates. *Linguistics* 50(3). 421–465. DOI: https://doi.org/10.1515/ling-2012-0015

Ritter, Hellmut. 1967. *Ṭuroyo. Die Volksprache der syrischen Christen des Ṭūr-ʾAbdīn. A: Texte*. Vol. 1. Beirut: Steiner (in Komission).

Rostovtsev-Popiel, Alexander. 2023. Bivalent patterns in Georgian. In Say, Sergey (ed.), *BivalTyp: Typological database of bivalent verbs and their encoding frames*,. Retrieved from https://bivaltyp.info

Samvelian, Pollet. 2007. A lexical account of Sorani Kurdish prepositions. In *Proceedings of the 14th International Conference on Head-Driven Phrase Structure Grammar*, 235–249. DOI: https://doi.org/10.21248/hpsg.2007.14

Samvelian, Pollet. 2018. Specific features of Persian syntax: The Ezafe construction, differential object marking, and complex predicates. In Sedighi, Anousha & Shabani-Jadidi, Pouneh (eds.), *The Oxford Handbook of Persian Linguistics*, 226–272. Oxford University Press. DOI: https://doi.org/10.1093/oxfordhb/9780198736745.013.9

Sarkisov, Ivan. 2022. Sotsiolingvisticheskaja situatsija v sele Urmija [Sociolinguistic situation in the Urmia village]. *Acta Linguistica Petropolitana* 18(3). 181–205. DOI: https://doi.org/10.30842/alp23065737183181205

Say, Sergey. 2020a. BivalTyp: typological database of bivalent verbs and their encoding frames. Retrieved from https://www.bivaltyp.info

Say, Sergey. 2020b. Markirovanie aktantov dvuxmestnyx predikatov v novoaramejskix idiomax sela Urmiya [Bivalent predicates' argument encoding in Neo-Aramaic varieties spoken in Urmiya, Krasnodar Krai]. *Acta Linguistica Petropolitana* 2(XVI). 654–689. DOI: https://doi.org/10.30842/alp2306573716224

Schackow, Diana. 2011. Possessive experiencer verbs in Yakkha: Between compounds and phrasal idioms. *Nepalese Linguistics* 26. 239–249.

Sedighi, Anousha. 2009. Do psychological constructions in Persian involve complex predicates? *Rice Working Papers in Linguistics* 1. 65–78.

Sinnemäki, Kaius. 2008. Complexity trade-offs in core argument marking. In Miestamo, Matti & Sinnemäki, Kaius & Karlsson, Fred (eds.), *Language Complexity: Typology, Contact, Change*, 67–88. John Benjamins. DOI: https://doi.org/10.1075/slcs.94.06sin

Stassen, Leon. 2009. *Predicative Possession*. Oxford: Oxford University Press.

Stassen, Leon. 2013. Predicative Possession. In Dryer, Matthew S. & Haspelmath, Martin (eds.), *The world atlas of language structures online*,. Leipzig: Max Planck Institute for Evolutionary Anthropology. Retrieved from http://wals.info/chapter/117

Stilo, Donald L. 2015. An introduction to the Atlas of the Araxes-Iran linguistic area. In Comrie, Bernard & Golluscio, Lucía (eds.), *Language contact and*

documentation. Contacto lingüístico y documentación, 355. Berlin-München-Boston: De Gruyter Mouton. DOI: https://doi.org/10.1515/9783110317473.343

Taghipour, Sahar. 2025. One morphology, different syntax: The case of Persian psychological constructions. *Glossa* 10(1). DOI: https://doi.org/10.16995/glossa.16606

Talay, Shabo. 2002. Die aramäische Sprache (Turoyo) und ihre Zukunftsaussichten in der Diaspora. *Journal of Eastern Christian Studies* 54(1). 65–76.

Testelets, Yakov. 2020. Kartvelian (South Caucasian) Languages. In Polinsky, Maria (ed.), *The Oxford Handbook of Languages of the Caucasus*,. Oxford: Oxford University Press.

Thackston, Wheeler M. 2006. *Kurmanji Kurdish: A Reference Grammar with Selected Readings*. Unpublished manuscript. Retrieved from https://archive.org/details/thackston-2006-kurmanji-grammar-readings

Van Valin, Jr., Robert D. 1999. Generalized semantic roles and the syntax-semantics interface. In Corblin, Francis & Dobrovie-Sorin, Carmen & Marandin, Jean (eds.), *Empirical Issues in Formal Syntax and Semantics 2*, 373–389. The Hague: Thesus.

Verbeke, Saartje. 2013. *Alignment and ergativity in new Indo-Aryan languages*. Berlin-Boston: Walter de Gruyter.

Waltisberg, Michael. 2016. *Syntax des Ṭuroyo*. Wiesbaden: Harrassowitz Verlag.

Westbury, Josh. 2016. Left dislocation: A typological overview. *Stellenbosch Papers in Linguistics Plus* 50. 21–45. DOI: https://doi.org/10.5842/50-0-715

Wierzbicka, Anna. 1999. *Emotions Across Languages and Cultures: Diversity and Universals*. Cambridge: Cambridge University Press.

Witzlack-Makarevich, Alena & Seržant, Ilja. 2018. Differential argument marking: Patterns of variation. In Witzlack-Makarevich, Alena & Seržant, Ilja (eds.), *Diachrony of Differential Argument Marking*, 1–40. Berlin: Language Science Press. DOI: https://doi.org/10.5281/zenodo.1228242