Iranian perception predicates revisited: Evidence from Hazaragi

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Abstract

Taking the recent work by Asudeh & Rad (2023) on Persian predicates of perception as a point of departure, we investigate predicates of perception in the under-researched Iranian language Hazaragi. We show that the proposed existing classification for Persian predicates of perception is not adequate in light of data from Hazaragi and propose an alternative analysis for predicates of perception formed via N-V combinations. This analysis sees most of the N-V combinations as metaphorical and idiomatic uses, but some as instances of N-V complex predications, which we analyze via the event-based linking approach we have previously formulated for Urdu/Hindi N-V predicates of perception (Butt et al. 2023).

1 Introduction

Asudeh & Rad (2023) present a glue semantics analysis of Persian verbs of perception based on Viberg's original typologically motivated classification (Viberg 1984, 2001).[†] We take this paper as our point of departure and propose an alternative approach. We do this on the basis of data from the related but under-researched Iranian language Hazaragi. Overall this paper together with Asudeh & Rad (2023) must be seen as part of a larger discussion currently taking place within LFG as to the status and interpretation of predicate-argument relations in LFG. In the original formulation of LFG, predicate-argument relations were seen as part and parcel of a predicate's subcategorization frame (Butt & King 2006 [1983]). In light of work in the 1980s and 1990s on causatives, applicatives and other argument alternating phenomena primarily in Bantu and Romance, LFG's *Mapping Theory* was developed (see Butt 2006 for an overview) and continually updated in different ways (see Findlay et al. 2023 for the most recent overview), so that currently several different proposals exist for the relationship between semantic roles and grammatical relations.

A new twist was brought into research on the relation between a predicate's event participants and the corresponding f-structural subcategorization frame by the continual development of a formal syntax-semantics interface within LFG, namely glue semantics (Dalrymple et al. 1993; Dalrymple 1999; Asudeh 2023) and the fact that event-based formal semantics generally makes reference to a predicate's event participants in the meaning representations, for example as practiced in Davidsonian semantics (e.g., Davidson 1967; Parsons 1990, 1995). The question then arises—if there is a formal treatment of predicate event participants as part of the clausal semantic analysis, then why postulate a separate argument structure? The answer to this question by the line of research represented by, a.o., Asudeh & Giorgolo (2012), Asudeh et al. (2014), Findlay (2016) and Findlay (2020) is that there is in fact no need for a separate argument structure representation that potentially duplicates information also available independently in a semantic representation.

However, the reason that argument structure approaches focusing on the lexical semantics (rather than the clausal semantics) of predicates have been undertaken at

[†]We are very grateful to Ash Asudeh for the lively and interesting discussions of this topic at Accra as part of LFG'24 and to both him and Siavash Rafiee Rad for raising the topic of Iranian psych predicates in the first place at LFG'23 in Rochester. We would also like to thank our reviewers for extremely valuable feedback. The work in this project was supported by funding from Project-ID 251654672 — TRR 161, Project D02 "Visual Analytics for Linguistic Representations".

least since Ostler (1979) is motivated by the observation that there seems to be a subset of a combination of semantic and morphological information that is relevant for the determination of a predicate's overall syntactic subcategorization frame. It is this subset of information that Mapping Theories such as that formulated in LFG seek to capture (see also Alsina 2001). A case in point has been the study of complex predicates, where one or more predicational elements are combined to form a single syntactic predication (Mohanan 1994; Butt 1995; Alsina 1996; Alsina et al. 1997; Butt 2010; **?**) and it is only this combined set of arguments coming from within lexical semantics that then enters the clausal semantic calculations.

In this context, Asudeh & Rad (2023) present an analysis of Persian N-V verbs of perception that follows the newer glue semantic approach to predicate-arguments and eschews a separate representational level for a(rgument)-structure. They combine this with an approach that maps between macro roles in the sense of Van Valin & Polla (1997), more fine grained thematic roles and their realization as grammatical functions. Asudeh & Rad (2023) thus also formulate a new theory of mapping.[1]

In recent work, we investigated Indo-Aryan psych predicates and N-V combinations (Butt et al. 2023), but from the perspective of an alternative extension to LFG's Mapping Theory in terms of an Event-Based Linking Theory (Schätzle 2018; Beck & Butt 2024). We therefore see this paper as contributing to the ongoing discussion about the integration of predicate-argument information into the architecture of LFG.

The paper is structured as follows. In section 2 we first present Viberg's crosslinguistic classification scheme for verbs of perception that Asudeh & Rad (2023) base themselves on. In section 3 we provide a brief recap of what we have already established about verbs of perception with respect to Urdu/Hindi and the attendant analysis of the N-V predicates of perception as complex predicates within our Event-Based Linking Theory. We compare our analysis with that of Asudeh & Rad (2023) for Persian in section 4 and then move on to an alternative analysis in section 6 based on our findings in section 5 for the related Iranian language Hazaragi, of which co-author Bano is a native speaker. Section 7 concludes.

2 Viberg on verbs of perception

Viberg conducted a series of studies on the crosslinguistic properties of verbs of perception. Most relevant for this paper are the comparative, typologically oriented studies in Viberg (1984, 2001). Viberg proposes to classify verbs of perception crosslinguistically in terms of the five basic senses: 1) sight, 2) hearing, 3) touch, 4) taste, 5) smell. His analysis further shows that verbs of perception seem to fall into theree basic categories crosslinguistically and that these categories can be described in terms of the types of events that are involved. As shown in (1), he distinguishes between Activities, Experiences, and Copulatives. Activities involve an agentive activity, experiences consist of an Experiencer perceiving a Stimulus and copulatives involve only a Stimulus that is emitted, with the appearance of Experiencer in the clause being optional.

[1]Note that Asudeh & Rad's particular theory of mapping is new, but that much of the work around folding a-structure into a more general semantics account has also (necessarily) involved formulating alternatives to LFG's classic Mapping Theory.

(1) a. **Activity**, e.g., *Ali listened to the birds.* (Agent-Theme)
b. **Experience**, e.g., *Ali heard the birds.* (Experiencer-Stimulus)
c. **Copulative**, e.g., *The birds sounded happy (to Ali).* (Stimulus-(Experiencer))

Taking the five sensory categories together with the three types of events identified by Viberg, this results in 15 possible cells that languages can potentially lexicalize with dedicated verbs of perception. Viberg finds that languages have very different lexicalization patterns. Generally, not all the cells are filled with dedicated lexical items such as *listen* or *hear* in (1) for English. For example, *hear* might be expressed by a periphrastic construction such as 'sound came' or be expressed by various different phrasings altogether. Viberg also finds polysemy between verbs of perception so that a single lexical item is used to express both 'hear' and 'see', for example, and thus fills multiple cells. Overall Viberg proposes a cognition-based hierarchy between the different perception types in order to make sense of the crosslinguistic lexicalization and polysemy patterns.

Evans & Wilkins (2000) conducted a follow-up study with a focus mainly on Australian languages to examine whether Viberg's generalization holds over this set of languages. On the whole, they found that Viberg's approach and insights hold, though they propose some refinements. Most recently, Norcliffe & Majid (2024) conducted a large scale typological study that also aimed at investigating Viberg's results and insights in more detail and with a larger sample of languages. Their findings are not only broadly in line with Viberg, they also confirm patterns which Viberg had only identified tentatively and find that sight appears to work somewhat differently from the other senses, also often giving rise to raising verbs like 'seem'. While the empirical findings are broadly in line with Viberg, Norcliffe & Majid (2024) propose a different explanation of the crosslinguistic patterns. Rather than invoking a cognition-based hierarchy, they propose that communicative constraints and conceptual similarity give rise to the observed crosslinguistic patterns.

While the crosslinguistic data, issues and proposed explanations are fascinating in their own right, delving more deeply into them would lead us too far afield in the context of this paper, which is to study Indo-Iranian verbs of perception more closely in terms of their argument structure properties. In this context, we would also like to note that while Norcliffe & Majid (2024) look at 100 languages, they do not include a single Iranian or Asian language in their sample.

We thus return to Viberg (1984), who explicitly discusses Persian and Hindi and provides the following table for Hindi (Viberg 1984: 133).[2] As can be seen, polysemy is posited for Hindi between 'look at/see' and 'hear/listen' so that the language is analyzed as not distinguishing these verbs in terms of whether the perception is agentive. Several cells are left completely unfilled, indicating that the language does not have a dedicated lexical item to express this type of perception. Furthermore, as can be seen in Table 1, some cells are filled by N-V combinations, e.g., *xʊʃbu*'smell' + *a* 'come'.[3]

Viberg's compilation of these patterns is extremely valuable. However, given his macro perspective of identifying typological patterns, it is unsurprising that some details of the empirical observations are incomplete or incorrect.

[2]Table adjusted in terms of transcription and glossing.

[3]Note that *sũg*^{h} is the verb for 'to smell' and is agentive in that it takes an ergative subject. In contrast, *xʊʃbu* is a noun that combines with the motion verb 'come' to take a dative subject.

	Activity	Experience	Copulative
sight		dekʰ 'look at/see'	
hearing		sʊn 'hear/listen'	
touch	tʃu 'touch'	cʊbʰ 'prick/pinch'	lɑg 'seem'
taste	cɑkʰ 'taste'	dative SUBJ + lɑg 'seem'	
smell	sũgʰ 'smell'	dative SUBJ + xʊʃbu a 'smell come'	

Table 1: Viberg's table for Hindi predicates of perception

While we have not done an exhaustive study of Urdu/Hindi verbs of perception, there are some immediate observations that can be made with respect to Viberg's Hindi table. For one, more cells could be filled with more lexical items. For example, there is a well-known causative alternation in Hindi between *dekʰ* 'see' and *dɪkʰ* 'appear to'. The latter would be a candidate to fill the sight/Experience cell. Furthermore, this same cell could also hold the N-V combination in (2), which is a very common way of expressing non-agentive 'see' in Urdu/Hindi.

(2) ɑli=ko kabutɛr nɑzɑr ɑ-ya (Urdu/Hindi)
Ali.M=Dat pigeon.M.Sg.Nom sight.F.Sg come-Perf.M.Sg
'Ali saw a pigeon (lit. sight of a pigeon came to Ali).'

Viberg (1984: 133) does note that in general South Asian languages appear to use the dative to signal experiencer semantics (as in the cells taste/Experience and smell/-Experience in Table 1, for example. This observation is in line with our own work (Ahmed & Butt 2011; Butt & Deo 2013; Beck & Butt 2024), as well as other work (e.g., Verma & Mohanan 1990; Mohanan 1994; Montaut 2003; Ahmed 2006).

In the next section we take a closer look at the Urdu/Hindi patterns, focusing on the N-V combinations. We show how one can account for these via an approach which posits a separate representation for a-structure and combines this with mapping principles to explain the regular relationship between a predicate's semantic event partcipants and the predicate's syntactic subcategorization frame through our Event-Based Linking.

3 Urdu/Hindi predicates of perception

3.1 Case alternations and semantics

Urdu/Hindi shows regular alternations in the case marking system that correspond to generalizable semantic differences (Butt & Ahmed 2011). A case in point is a very regular alternation between datives and ergatives whereby ergative subjects denote Actors/Initiators in the broad sense and datives in contrast signal non-agentivity, as in

(3-b), for example, where the dative corresponds to experiencer semantics and stands in contrast to (3-a).

(3) a. nadya=**ne** kahani **yad** **k-i**
Nadya.F.Sg=Erg story.F.Sg.Nom memory do-Perf.F.Sg (Urdu/Hindi)
'Nadya remembered a/the story (actively).'
(lit.: Nadya did memory of the story.)

b. nadya=**ko** kahani **yad** **a-yi** (Urdu/Hindi)
Nadya.F.Sg=Dat story.F.Sg.Nom memory come-Perf.F.Sg
'Nadya remembered a/the story (it came to her mind).'
(lit.: Memory of the story came to Nadya.)

Both examples in (3) involve N-V combinations, which in these cases have been shown to be complex predicates (Mohanan 1994). This means that the noun and the verb combine their a-structures (information about event participants) to form a predication that is equivalent to that of a single verb and which results in a monoclausal f-structure (only one SUBJ, no embedded COMP or XCOMP; see e.g., Mohanan 1994; Alsina 1996; Butt 1995, 2010).

Note that (3-a) contains the agentive light verb *kar* 'do' whereas (3-b) makes use of the motion verb *a* 'come'. It can be shown that most of the modern experiencer predicates with dative subjects find their origin in spatial expressions so that 'Memory of a story comes to Nadya' changes to mean 'Nadya remembered the story' (see Beck & Butt 2024; Butt & Ahmed 2011; Montaut 2003, 2009, 2016 and references therein). The ergative is licensed by the light verb 'do' in (3-a), while the dative is licensed by the non-agentive light verb 'come' in (3-b).

Examples such as (3) illustrate that the morphosyntax of languages like Urdu/Hindi wears the clausal semantics on its proverbial sleeve. In what follows, we propose to take this observation seriously and expect the morphosyntax together with the lexical items used in N-V combinations to provide us with the building blocks of a compositional analysis. Before proceeding on to the presentation and analysis of Hazaragi verbs of perception and what we can conclude from that with respect to Persian, the next sections illustrates our overall approach to complex predication and mapping between a-structure and f-structure by way of an apparent exception to the pattern in (3).

3.2 An apparent exception

As part of his overall discussion of Hindi, Viberg (1984: 134) notes that there are uses of the otherwise agentive verb *de* 'give' with an experiencer dative subject to form an experiencer predicate; see (4) (note that the glossing in (4) is Viberg's). This example is extremely interesting as it would seem to constitute an exception to the otherwise very robust pattern of dative = non-agentive verb, ergative = agentive verb.

(4) mʊj^{h}e vo dɪk^{h}ai diya (Urdu/Hindi)
me-to he be=visible gave
'I saw him.' (Viberg 1984: 134)

We investigated examples like (4) in Butt et al. (2023) in some detail and found that: 1) there is no other instance in the language where the agentive verb *de* 'give' occurs

with a dative subject; 2) the combination with *de* 'give' occurs only with exactly two predicates of perception: *dɪkʰai* 'seeing' and *sʊnai* 'hearing'. These two forms turned out to be interesting in and of themselves and we determined they are morphologically complex, consisting of: a) the verb stem; b) the causative morpheme *-a*; c) a nominalizing morpheme *-i*. The full/proper gloss of (4) is then as in (5).

(5) mʊjʰe vo dɪkʰ-a-i di-ya (Urdu/Hindi)
I.Dat Pron.3.Sg.Nom see-Caus-Nomlz.F.Sg give-Perf.M.Sg
'I saw him.' (lit. He gave sighting to me.)

Somehow this combination of morphology then ends up meaning 'seeing' and 'hearing' and together with 'give' ends up meaning 'see' and 'hear'.

3.3 Complex predication

We found that we could explain the seeming exception offered up by (5) if we analyzed it as a complex predicate made up of three different parts that are then nominalized. Our approach was couched within the Event-Based Linking Approach first suggested by Schätzle (2018) and then worked out further in Beck & Butt (2024) in combination with Butt's overall theory of complex predication (Butt 2014).

3.3.1 Theoretical background

Given space constraints, we provide only a brief sketch of our approach in this section; see Schätzle (2018), Butt (2014) and Beck & Butt (2024) for details. Overall we work with the ideas in Kibort's (2007; 2008; 2014) version of LFG's Mapping Theory; see also Findlay et al. (2023: 741–748) for an overview. Kibort posits four abstract argument types as an independent tier of representation ('argument slots') at a-structure, eschewing thematic role labels (cf. also Grimshaw 1990). These are represented with an x, a notation we adopt. Our overall linking schema is as shown in (6).

(6) General Linking Schema

		init	proc	res	rh	
Predicate	<	x	x	x	x	>
		FIGURE	GROUND			
Grammatical Functions		SUBJ	OBJ	OBJ_θ	OBL	

We extend and expand on Kibort's ideas by integrating an event-based approach to linking. We do this by adopting Ramchand's (2008) tripartite organization of subevental structure. Ramchand decomposes an event into three major subevents: i) a causing or initiating subevent (*init*), which results in ii) a process subevent (*proc*), which results in iii) a result state (*res*). In addition, *rhemes* (*rh*) are descriptions of a predicate that are in a static relationship with one of the three subevents of a predicate, like the classic static spatial Figure/Ground relationship (Talmy 1975; Svenonius 2010). *Rhemes* roughly correspond to LFG's OBLs. We analyze the abstract argument slots posited by

Kibort as being licensed by the subevents *init, proc, res* and *rh*, with a maximum of four arguments per monoclausal predication, as proposed by Findlay (2016: 317f.).

A mapping or linking algorithm determines which of the argument slots are linked to which of the grammatical functions. For this algorithm we again combine Kibort's formulation with further proposals in the literature, namely the use of Proto-Role information (Dowty 1991) as operationalized for LFG by Zaenen (1993). We combine this with notions of prominence in terms of Figure vs. Ground (based on the original proposals by Talmy 1975). In brief, the event participant with the most Proto-Agent properties is linked to the SUBJ , while the event participant with the most Proto-Patient properties is linked to the OBJ. Typical Proto-Agent properties include being licensed by an *init* event, being realized as a Figure and being sentient. Typical Proto-Patient properties include being licensed by a *proc* or res subevent and being realized as a Ground. The rhemes are considered to be inert with respect to Proto-Role properties and tend to be linked to OBL.

We further combine this linking algorithm with Butt's theory of complex predication. This also has several parts. For one, complex predicates are taken to be formed when two or more predicational elements enter into a relationship of co-predication. Each predicational element adds arguments (or information about an argument) to a monoclausal predication. That is, we can tell that an N+V, V+V or A+V or V+Inflection combination is a complex predicate if each part can be shown to contribute to the overall predication in terms of the number and type of arguments that are involved. Following Alsina (1996), the argument combination is triggered by one of the elements being an instance of an *incomplete predication*, that is a *light verb*, which must combine with another event predication in order to be able to deploy its a-structure. Following the XLE notation (Crouch et al. 2011) for variables, we notate such incomplete predication with a %, e.g., *%proc*.

When two or more a-structures are combined, certain arguments are coindexed/-identified with other arguments. We follow the formalization in Butt (2014), whereby the highest (as determined by the subevental structure) embedded argument is identified with the lowest matrix argument. Exactly how all these pieces of the formalism work together is illustrated in the next section.

3.3.2 Analysis of the apparent exception

In this section, we work with (7) as the running example to be analyzed. Recall that the noun *dɪkʰai* 'seeing' consists of several pieces of morphology, which each affect the overall a-structure of the predication. These are: 1) the verb of perception *dɪkʰ* 'appear'; 2) the causative morpheme *-a*; 3) a nominalizing affix *-i*. This complex word additionally combines with the verb *de* 'give', which in this case is acting as a light verb that triggers complex predication.

(7) mujʰ-e jahaz dɪkʰ-a-i di-ya (Urdu/Hindi)
Pron.1.Sg-Dat plane.M.Sg.Nom see-Caus-Nomlz.F.Sg give-Perf-M.Sg
'I saw a plane.'

Let us begin with the light verb. It is based on the ditransitive agentive verb 'give'. Under Ramchand's subevental approach to predicate-argument structure, it would there-

fore be analyzed as containing an *init* subevent (licensing the Agent/Actor of the event), a *proc* subevent (representing the event in progress and generally licensing the Undergoer/Patient of the event) and a *res* subevent, which represents the end result of the event and generally licenses the Goal or endpoint of the event. In its light verb use, the *proc* part of the event is taken to be filled by another predicate, that is, what is 'given' to somebody is not a thing, but an event. In our example in (7) it would be the 'seeing' event that is given to the speaker. The overall subevental analysis of the light verb version of 'give' is thus as shown in (8).

(8) GIVE < init %proc res >

Next we look at the verb of perception *dɪkʰ* 'appear to'. In Viberg's classification scheme it would fill the Experience/sight cell. That is, we have an Experiencer responding to a Stimulus that can be perceived by sight. In Ramchand's system, Experiencers are analyzed as holders of a state of experience. This translates into the verb consisting of two subevents: 1) a holder of a state; 2) a rheme. The Experiencer (holder of a state) is licensed by the *init* subevent. The stimulus is inert and licensed by the *rheme*. We thus propose the subevental analysis in (9) for *dɪkʰ* 'appear to'.

(9) APPEAR TO < init rh >

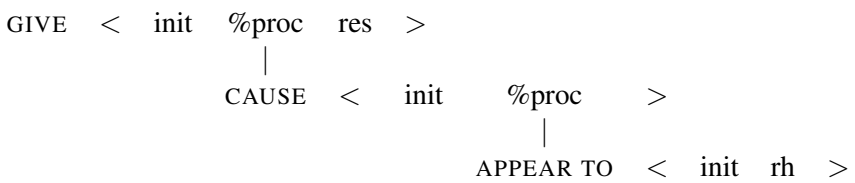
The causative morpheme *-a* involves a causer (initiator in Ramchand's system) that causes an event. This event is again represented as *proc* and as a variable to be substituted into: %proc, as shown in (10).

(10) CAUSE < init %proc >

We now have all the pieces of the complex predication in place except for the nominalizing suffix *-i*. In line with LFG's classic Mapping Theory (and approaches to nominalization in general), we take this nominalization to suppress the highest argument of the a-structure it combines with.

The complete analysis of how the complex predication is arrived at in Butt et al. (2023) is shown in (11). We begin with the verb of perception 'appear to', which is causativized. The causativization is represented by substituting in the subevental structure of 'appear to' into the *%proc* event variable of the causative. This complex combination in turn is substituted in to the *%proc* subevent of the light verb 'give'.

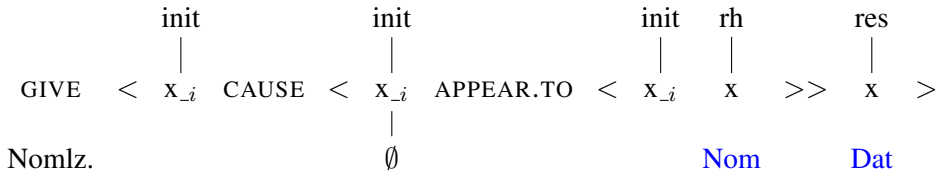
(11)



Overall this results in the complex argument structure in (12), in which the effects of argument identification due to complex predicate formation (cf. Butt 2014) are applied: 1) the highest argument of 'appear to' is identified with the lowest available argument of the causative; 2) the highest argument of the causative is identified with the low-

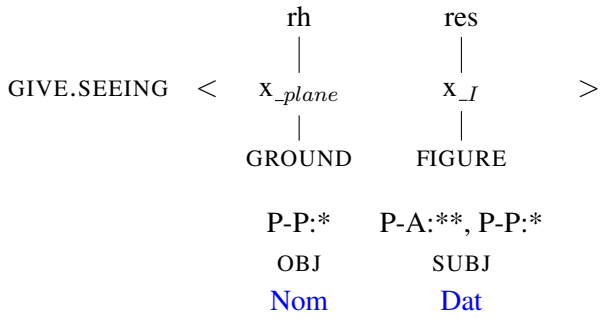
est available argument of ‘give’. We thus end up with three arguments in the complex predication: 1) the argument licensed by the *init* subevents; 2) the Stimulus argument licensed by the *rheme*; 3) the Goal or endpoint of the event as licensed by *res*.

(12)

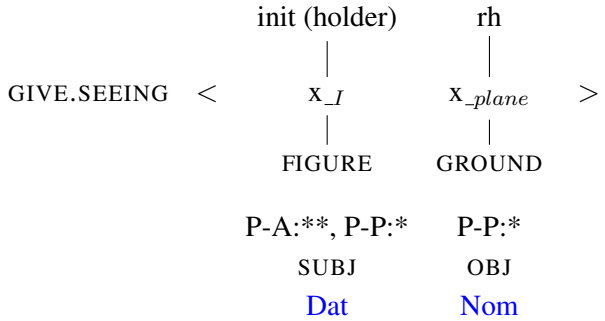


When this complex predication is nominalized, the nominalization prevents the coindexed *init* arguments from being expressed in the syntax, as also shown in (12). So the complex predication works out to only express two arguments in the syntax: a *rheme* (the stimulus) and a *res*. The linking to grammatical functions of the configuration in (12) is shown in (13). The number of Proto-Role properties are indicated via ‘*’. The argument licensed by the rheme receives one Proto-Patient (P-P) property on account of it being a GROUND, the argument licensed by the result subevent receives a P-P property because it is a result, but two Proto-Agent (P-A) properties because it is a sentient argument and functions as the FIGURE in our example. It is thus this argument that is linked to SUBJ, while the rheme (the Stimulus) is linked to OBJ.

(13)



(14)



There is independent evidence that configurations as in (13) with sentient goals were reanalyzed as part of language change and were reinterpreted over time as representing an experiencer configuration in which there is a holder of a state, as in (14), rather than a spatial predicate in which something "arrives" at a destination as in (13) (e.g., see Schätzle 2018; Beck & Butt 2024). The dative case marking is due to the original goal (result) semantics (cf. Butt & King 1991, 2003; Butt & Ahmed 2011), but is retained, giving rise to dative subjects in the language and exceptionally associating a dative subject with the otherwise agentive verb *de* 'give'.

With respect to our running example, we further suggest that the originally complex predications of *dɪkʰai* and *sunai* have been lexicalized to form the nouns 'seeing' and 'hearing', respectively. This accounts for the fact that this construction is not productive today in that we can find these expressions of perception only with *dɪkʰai* and *sunai* in modern Urdu/Hindi.

Having illustrated how complex predicates of perception can be accounted for systematically via our Event-Based Linking Approach in combination with Butt's theory of complex predication, even with respect to seemingly exceptional instances of verbs of perception, we now turn to examining Iranian from this perspective.

4 Persian Verbs of Perception

Asudeh & Rad (2023) base their investigation of Persian verbs of perception on the original classification by Viberg and present the data in Figure 1 as an overview of the types of verbs of perception available in Persian. As can be seen, they adopt a slightly different terminology from Viberg, labeling Activity verbs as Actor verbs and replacing 'Copulative' with the more perspicuous term 'Percept'. Their assumptions as to the underlying event participants of these predicates are also indicated in the table (ACTOR,STIMULUS; EXPERIENCER,STIMULUS; STIMULUS,EXPERIENCER)

Actor ⟨ACTOR,STIMULUS⟩		**Experiencer** ⟨EXPERIENCER,STIMULUS⟩	**Percept** ⟨STIMULUS,EXPERIENCER⟩	
negāh kard-an look do-INF X look at Y		did-an see-INF X see Y	be češm āmad-an/resid-an to eye come-INF/arrive-INF Y was seen by X	
guš kard-an ear do-INF X listen to Y		šenid-an hear-INF X hear Y	sedā dād-an sound give-INF Y emitted a sound to X	be guš āmad-an/resid-an to ear come-INF/arrive-INF Y was heard by X
lams kard-an touch do-INF X touch Y (possibly inadvertently)	dast zad-an hand hit-INF X feel Y (necessarily intentionally)	ehsās kard-an sense do-INF X feel Y	hes dād-an sense give-INF Y emitted a feel to X	
maze kard-an taste do-INF X taste Y		(maze) hes kard-an (taste) sense do-INF X taste Y	maze dād-an taste give-INF Y emitted a taste to X	
bu kard-an smell do-INF X smell Y		(bu) hes kard-an (smell) sense do-INF X smell Y	bu dād-an smell give-INF Y emitted a smell to X	

Figure 1: Table classifying Persian verbs of perception from Asudeh & Rad (2023: 49)

We found this classification interesting as it includes several N-V combinations with agentive verbs that are classified as experiencer verbs. For example, 'sense+do' is classified as an experiencer/stimulus type and 'sound/sense/taste/smell+give' are classified

as stimulus/experiencer types. The 'sound+give' construction in particular is very reminiscent of the Urdu/Hindi 'hearing/seeing give' construction discussed above. This construction was identified as being exceptional to an otherwise very regular pattern in Urdu/Hindi, whereby agentive verbs do not show up with dative subjects.

Unlike Urdu/Hindi, Persian does not allow for non-nominative subjects. This means that agentive and experiencer subjects are not distinguished morphologically. However, as experiencer semantics clash with agentive semantics (experiencers are non-agentive by definition), we decided to take a closer look.

4.1 The glue semantics plus macro role analysis

Asudeh & Rad (2023) assume that the N-V constructions are complex predicates and provide a compositional glue semantics analysis. However, while they use the formal means of the Restriction Operator (Kaplan & Wedekind 1993) to effect predicate composition at the level of f-structure, their analysis does not assume that each part of the predication contributes arguments (or some extra information about the event participants) to the overall predication. Rather, as can be seen in Figures 2 and 3 for the verbs 'do' and 'give', respectively, all of the information about the event participants of the overall predication is encoded on the verb.

kardan
(↑ PRED) = 'do'

$$\lambda\mathcal{R}\lambda y\lambda x\lambda v.\mathcal{R}(y)(x)(v) \wedge \textsc{undergoer}(v) = y \wedge \textsc{actor}(v) = x :$$
$$[(\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma] \multimap$$
$$[(\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma]$$
$$\left(\left\{\begin{array}{l|l} \lambda Q\lambda y\lambda x\lambda v.(\mathbf{do}(Q))(v) \wedge \textsc{patient}(v) = y \wedge \textsc{agent}(v) = x : & \\ (\uparrow_\sigma \textsc{pvp}) \multimap (\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma & \end{array}\right\}\right)$$
$$\left(\left\{\begin{array}{l} \lambda Q\lambda y\lambda x\lambda v.(\mathbf{do}(Q))(v) \wedge \textsc{stimulus}(v) = y \wedge \textsc{experiencer}(v) = x : \\ (\uparrow_\sigma \textsc{pvp}) \multimap (\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma \end{array}\right\}\right)$$

Figure 2: Glue semantics analysis of Persian 'do' (Asudeh & Rad 2023: 50)

dādan
(↑ PRED) = 'give'

$$\lambda\mathbb{R}\lambda z\lambda y\lambda x.\mathbb{R}(z)(y)(x)(v) \wedge \textsc{loc}(v) = z \wedge \textsc{und}(v) = y \wedge \textsc{act}(v) = x :$$
$$[(\uparrow \textsc{obl})_\sigma \multimap (\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma] \multimap$$
$$[(\uparrow \textsc{obl})_\sigma \multimap (\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma]$$
$$\left(\left\{\begin{array}{l|l} \lambda z\lambda y\lambda x\lambda v.\mathbf{give}(v) \wedge \textsc{goal}(v) = z \wedge \textsc{th}(v) = y \wedge \textsc{ag}(v) = x : & \\ (\uparrow \textsc{obl})_\sigma \multimap (\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma & \end{array}\right\}\right)$$
$$\left(\left\{\begin{array}{l} \lambda z\lambda y\lambda x\lambda v.\mathbf{P}_{\neg v}(v) \wedge \textsc{exp}(v) = z \wedge \textsc{stim}(v) = y \wedge \textsc{source}(v) = x : \\ (\uparrow \textsc{obl})_\sigma \multimap (\uparrow \textsc{obj})_\sigma \multimap (\uparrow \textsc{subj})_\sigma \multimap (\uparrow_\sigma \textsc{event}) \multimap \uparrow_\sigma \end{array}\right\}\right)$$

Figure 3: Glue semantics analysis of Persian 'give' (Asudeh & Rad 2023: 51)

The lexical entries in Figures 2 and 3 integrate glue semantics with a mapping ap-

proach that works with the macro role approach pioneered by Van Valin & Polla (1997). This is very similar to Dowty's Proto-Roles, which were invoked above in our analysis. The basic predication of the verb 'do' in Figure 2 is thus in terms of an Actor and an Undergoer: these are the macro role event participants licensed by the verb. Asudeh & Rad (2023) propose that these macro roles can be specified further in terms of their semantics via a set of general purpose entailment relations between thematic roles and macro roles that govern which macro role could potentially be realized as which particular thematic role and which grammatical functions these thematic roles could then be related to. These are shown in (15) (Asudeh & Rad 2023: 50).

(15) a. AGENT, EXPERIENCER, SOURCE $\subseteq$ ACTOR &
AGENT $\cap$ EXPERIENCER $\cap$ SOURCE = $\emptyset$ SUBJ roles
b. THEME, STIMULUS $\subseteq$ UNDERGOER &
THEME $\cap$ STIMULUS = $\emptyset$ OBJ roles
c. GOAL, EXPERIENCER, SOURCE $\subseteq$ LOCATION &
GOAL $\cap$ EXPERIENCER $\cap$ SOURCE = $\emptyset$ OBL roles

The set of entailments is essentially a list of disjunctions specifying which thematic role can correspond to a macro role. Note that Experiencers and Sources can be associated with both Actors and Locations.

The effect of the macro role specification is shown in the lower half of the lexical entries in Figures 2 and 3. This is the part enclosed in round brackets and it also provides for the possibility of combining with a so-called preverbal element (PVP, the noun in our case). As can be seen for 'do' in Figure 2, when combined with a noun, this verb can either predicate as an agentive verb or it can predicate as an experiencer verb.

The same is true for the verb 'give' in Figure 3. It has a standard ditransitive reading involving an Agent, Theme and a Goal and an additional experiencer reading with an Experienecer, a Stimulus and a Source (the **P** in the lexical entry stands for a Perceptual Predicate). The experiencer reading is intended to account for examples as in (16).

(16) max bu-ye xub mi-dād (Persian)
Max smell-Ezafe good Dur-give.Past.3Sg
'Max smelled good.' (Asudeh & Rad 2023: 60)

Unlike in Butt's approach to complex predication, where light and main verb versions are taken to predicate differently in terms of their predicational abilities, in Asudeh & Rad's approach the light and main verb versions are treated identically in terms of their predicational power. The light verb combines with a further element (the N or preverbal element in Persian), but it does not receive any information relevant for the determination of the overall number and type of arguments from the noun. The noun is not assumed to provide any argument specifications of its own, very much unlike the analysis we saw for the Urdu/Hindi 'seeing/hearing'+give constructions above.

Overall, it appears that the experiencer semantics of the verbs 'do' and 'give' for verbs of perception in Persian are arrived at via lexical stipulation rather than falling out from more general crosslinguistic or compositional principles. We also note a possible dissonance between the classification given in Figure 1 and the actual semantics associated with the predicate of perception. Consider, for example, (16), which is classified

as being of the type smell/Copulative by Viberg (1984) and therefore also by Asudeh & Rad (2023) (smell/percept in their terminology). According to Viberg, items in this category denote: 1) states; 2) non-agentive actions. But both 'give' and 'do' are agentive verbs, resulting in a seeming contradiction of lexical vs. clausal semantics. One might also postulate that while the English translation in (16) denotes a state, the Persian N-V construction might actually not do so. We therefore decided to investigate this possibility with respect to the closely related language Hazaragi.

5 Evidence from Hazaragi

Hazaragi is an under-researched Iranian language which is mainly spoken in Hazarajat in central Afghanistan (Dulling 1973) and in Quetta (Pakistan), but also world-wide in the Hazara diaspora. Hazaragi is strucuturally very close to Dari, one of the national languages of Afghanistan (Kieffer 2003), as well as to Persian.

5.1 Tests for the classification scheme

Viberg (2001) proposes several tests to differentiate between the three perception types. One test concerns aspect. The Activities/Actor category should consist of events which contain a non-resultative (unbounded) process. In contrast, the Experience category is taken to encompass states or inchoatives and Copulative/Percept are only states.

Another test pertains to the degree of agentivity exhibited by the Actor of the event. The Activities/Actor category should contain activities that are controlled and possibly intentional, whereas the Experience and the Copulative/Percept categories involve perceptions (experiences) which cannot be controlled because they happen involuntarily. Sample tests for the degree of agentivity include, for example, pairs of examples like in (17). If somebody is ordered to do something, they must do so actively, so an experiencer predicate is not good in these contexts.

(17) a. I ordered/persuaded Peter to listen. (Activities/Actor)
b. I ordered/persuaded Peter to #hear. (Experience)

In the next section, we apply tests to perception predicates in Hazaragi to determine how they should be classified.

5.2 Hazaragi classification and comparison with Persian

Asudeh & Rad (2023) focus on five examples. We focus on the same five examples for the sake of analytical comparison and always first present the Persian and then the Hazaragi equivalent. We apply tests to the Hazaragi equivalent to see how the data should be categorized and compare it to the table for Persian constructed by Viberg/Asudeh & Rad. The tests we use to determine agentive/controlled actions are: 1) embedding under *X ordered/persuaded Y to* ... ; 2) compatiblity with adverbs like *deliberately*. With respect to aspectual properties, we check whether a predicate is compatible with the progressive *darau*. If it is, we can identify it as an unbounded event with a process component and can conclude that this is an instance of the Activities/Actor type.

We demonstrate that *darau* acts as a progressive with respect to (18) and (19), which involve different ways of expressing 'believe'. In English this is clearly a stative verb. In Hazaragi, we have two different N-V combinations: one with the agentive activity verb 'do' (19) and one with the stative 'have' (18). As can be seen, *darau* is not compatible with the stative version of 'believe', but does work when the verb is an agentive activity verb.

(18) a. ma yaqeen dar-om (Hazaragi)
I belief have-1Sg
'I believe.'

b. *ma darau yaqeen dar-om (Hazaragi)
I Prog belief have-1Sg
'I am believing.'

(19) a. ma i qisa=ra yaqeen mu-n-um (Hazaragi)
I this story=OM belief Impf-do.Pres-1Sg
'I believe this story.'

b. ma i qisa=ra darau yaqeen mu-n-um (Hazaragi)
I this story=OM Prog belief Impf-do.Pres-1Sg
'I am believing this story (at the moment, but am doubtful).'

Overall we have found that *darau* consistently acts as a progressive in Hazaragi.

5.2.1 Copulative/Percept and 'give'

We begin applying our tests to (19), repeated here as (20). This example is classified as a stative Copulative/Percept and is analyzed as having an a Stimulus object ('smell') and an unexpressed Experiencer.

(20) max bu-ye xub mi-dād (Persian)
Max smell-Ezafe good Dur-give.Past.3Sg
'Max smelled good.' (Asudeh & Rad 2023: 60)

(21) max bu=yi xub mi-dad (Hazaragi)
Max smell=Ezafe good Impf-give.Past.3.Sg
'Max smelled good.'

The examples in (22-a) and (22-b) test for control/agentivity, while (22-c) tests for stativity by checking whether the verb is compatible with the progressive.

(22) a. ali max=ra guf-t ki bu=yi xub bi-di (Hazaragi)
Ali Max=OM say-Past.3.Sg that smell=Ezafe good Imp-give.Pres.2.Sg
'Ali told Max to smell good.'

b. ??max az qast bu=yi xub mi-dad (Hazaragi)
Max knowingly smell-Ezafe good Impf-give.Past.3.Sg
'Max smelled good deliberately.'

c. max darau bu-yi xub mi-dad (Hazaragi)
Max Prog smell-Ezafe good Impf-give.Past.3.Sg
'Max was smelling good.'

The tests yield the result that the subject Max can indeed be ascribed control over the action and that it is an unbounded activity. In contrast to what was posited for Persian, the very similar Hazaragi thus yields a classification of Activities/Actor whereby we have an Agent-Theme (Agent=Max, Theme=smell) constellation in an ongoing activity.

5.2.2 Experiencer and 'do'

Viberg and Asudeh & Rad classify (23) as an Experience verb of perception. This means we expect an Experiencer-Stimulus configuration with Max as the experiencer and 'food' as the stimulus. In addition, it should be stative or inchoative.

(23) max bu-ye ghazā hes kar-d (Persian)
Max smell-Ezafe food sense do-Past.3.Sg
'Max smelled food.' (Asudeh & Rad 2023: 60)

(24) max naan bu-yi kad (Hazaragi)
Max food smell-Indef do.Past.3.Sg
'Max smelled food. (lit. Max did food smelling.)'

Again, the examples in (25-a) and (25-b) test for control/agentivity while (25-c) tests for stativity (incompatibility with the progressive).

(25) a. max az qast naan=ra buyi kad (Hazaragi)
Max knowingly food=OM smell do.Past.3sg
'Max smelled food on purpose.'

b. ali max=ra naan=ra bu-yi kad-o=ra guf-t (Hazaragi)
Ali Max=OM food=OM smell-Indef do-Inf=OM say-Past.3.Sg
'Ali told Max to smell the food.'

c. max naan=ra darau bu-yi mu-kad (Hazaragi)
Max food=OM Prog smell Impf-do.Past.3.Sg
'Max was smelling the food.'

Again the Hazaragi data works differently from what was posited for Persian. The application of the tests instead point to an Agent-Theme configuration (Agent=Max, Theme=food) and an ongoing activity.

5.2.3 Activities/Actor and 'hit'

Viberg and Asudeh & Rad classify (26) as an Activities/Actor type. This means that we expect an Agent-Theme configuration (Agent=Max, Theme=clothes) and that the event be an activity with a process component.

(26) max lebās-rā dast zɑd (Persian)
Max clothes-OM hand hit.Past.3Sg
'Max felt the clothes.'

(27) max kala=ra dist zad (Hazaragi)
Max clothes=OM hand hit.Past.3.Sg
'Max felt the clothes.'

Again, (28-a) and (28-b) test for control/agentivity while (28-c) tests for stativity (incompatibility with progressive). As can be seen from (28), the tests indeed yield an Agent-Theme configuration and an ongoing activity.

(28) a. ali max=ra guft ki kala=ra dist bi-zan (Hazaragi)
Ali Max=OM say.Past.3.Sg that clothes=OM hand Imp-hit.Pres.2.Sg
'Ali told Max to feel/touch the clothes.'

b. max az qast kala=ra dist zad (Hazaragi)
Max knowingly clothes=OM hand hit.Past.3.Sg
'Max deliberately felt/touched the clothes.'

c. Max darau kala=ra dist mi-zad (Hazaragi)
Max Prog clothes=OM hand Impf-hit.Past.3.Sg
'Max was feeling/touching the clothes.'

Given that *zad* 'hit' is an agentive verb, these results are also fully in line with its default semantics.

5.2.4 Copulative/Percept and 'come'

Viberg and Asudeh & Rad classify (29) as a Copulative/Percept type. This leads us to expect a Stimulus-Experiencer configuration (Experiencer=owner of the eye, Stimulus=light) and a stative predication.

(29) nur-i az dur be češm āma-d (Persian)
light-Indef from afar to eye come.Past-3Sg
'A light was seen from afar.' (Asudeh & Rad 2023: 61)

In this case the Hazaragi uses a slightly different expression, employing the verb 'fall' instead of 'come' and (31) is given as the better way of expressing (29). Note that in (31) 'light' is actually functioning as the subject and 'Ali' as the object (*Ali* carries the object marker *ra*), unlike what is suggested by the English translation.

(30) roʃn-i az dur mane cim mo-prid (Hazaragi)
light-Indef from far inside eye Impf-fall.Past.3.Sg
'Light was seen from afar.' (lit. Light fell into the eye from afar.)

(31) ali=ra roshn-i malum dad (Hazaragi)
Ali=OM light-Indef knowledge give.Past.3.Sg
'Ali saw a light.'

In order to remain close to the Persian for the sake of comparison, we apply our tests to the version with 'fall' in (30). In this case we see that control/agentivity cannot be attributed to the subject ('light'). In terms of aspect, it behaves as an ongoing activity. The result of the tests is in line with the basic semantics of 'fall', which has a process component, but is non-agentive.

(32) a. *ali guft ki roʃn-i az dur da cim mo-prid (Hazaragi)
Ali say.Past.3.Sg that light-Indef from far inside eye Impf-fall.Past.3.Sg
'Ali told the light to be seen from afar.'

b. *roʃn-i qastan az dur mane cim par-id (Hazaragi)
light-Indef deliberately from far inside eye fall-Past.3.Sg
'Light fell into the eye deliberately from afar.'

c. roʃn-i az dur darau mane cim mo-prid (Hazaragi)
light-Indef from far Prog inside eye Impf-fall.Past.3.Sg
'Light was being seen from afar.'

5.2.5 Copulative/Percept and 'arrive'

Viberg and Asudeh & Rad classify (33) as a Copulative/Percept. This means we expect a Stimulus-Experiencer configuration (Stimulus=sound, Experiencer unexpressed) and a stative predication. As shown in (34), in this case Hazaragi can use both 'arrive/reach' and 'fall'.

(33) sedā-ye ajib-i az ānjā be guš resid (Persian)
sound-Ezafe strange-Indef from there to ear arrive.Past.3Sg
'A strange sound was heard from there.' (Asudeh & Rad 2023: 61)

(34) awaz=i ajib az unzunji mane goʃ res-id/par-id (Hazaragi)
sound=Ezafe strange from there inside ear reach-Past.3.Sg/fall-Past.3.Sg
'A strange sound arrived from there.'

We apply our tests to both possibilities and find that they do not differ in terms of their behavior. As in the last section with 'come', we find that there is no evidence for agentivity and that the predication can be interpreted as an ongoing activity.

(35) a. *ali guft ki awaz=i ajib az unzunji mane goʃ
Ali say.Past.3.Sg that sound=Ezafe strange from there inside ear
res-id/par-id (Hazaragi)
reach-Past.3.Sg/fall-Past.3.Sg
'Ali told a strange sound to arrive from there.'

b. *awaz=i ajib qastan az unzunji mane goʃ
sound=Ezafe strange deliberately from there inside ear
res-id/par-id (Hazaragi)
reach-Past.3.Sg/fall-Past.3.Sg
'A strange sound deliberately arrived from there.'

c. awaz=i ajib darau az unzunji mane goʃ
sound=Ezafe strange Prog from there inside ear
me-rsid/mo-prid (Hazaragi)
Impf-reach.Past.3.Sg/Impf-fall.Past.3.Sg
'A strange sound was arriving from there.'

5.2.6 Interim summary

Our investigation has shown that the Hazaragi predicates of perception do not quite conform to the classifications that one would expect given what has been posited for the closely related language Persian. Instead, what we find is that all of the predicates of perception that involve agentive verbs ('give', 'do', 'hit') behave like agentive activity predicates and that the predicates of perception formed with verbs of motion ('come',

'reach/arrive', 'fall') behave like non-agentive verbs. This is entirely in line with the behavior one would expect of these verbs of motion and agentive verbs independently.

We also found no difference with respect to stativity among the different N-V predicates of perception. Again, this is what one would expect given the underlying semantics of the verbs of motion and the agentive verbs: all of these denote events that involve a process and therefore none of them denote states.

The empirical evidence for Hazaragi thus does not support adopting the classification given for Persian predicates of perception (the same battery of tests remains to be run for Persian). In the next section we therefore propose an alternative analysis.

6 Analysis

Recall that Asudeh & Rad (2023) propose a complex predicate analysis for the N-V predicates of perception. This involves invoking the formal mechanism of the Restriction Operator to allow for the composition of two predicates as part of the c-structure rules which serve to put the predicates together. The effect is that a single PRED with a single subcategorization frame is projected to the f-structure. However, while the N and V elements of the Persian predicates of perception can be composed like this, it is not clear to us why this is necessary. This is because in complex predication the tricky part tends to be that information about the predicate-argument structure is coming from two (or more) places at once and must be combined somehow.

In contrast, in Asudeh & Rad's analysis, the verbs ('do', 'give', 'come', 'fall') are doing all of the heavy lifting in the sense that all of the information as to the number and types of arguments of the supposed complex predication is coming from them. The nouns contribute their own PRED, but beyond that the nouns otherwise contribute no information about the type and number of arguments to the overall predication. This is very different from what we saw with respect to the Urdu/Hindi 'seeing/hearing+give' above. But if the N-V constructions are not complex predicates, then what are they? A closer look shows that most of the Hazaragi predicates of perception are not actually complex predicates, but instances of metaphorical and idiomatic usages.

6.1 Predicates of perception via metaphors

Consider (36), for example. If one examines the overall predication one finds that the subcategorization frame and the number and type of event participants are exactly that of the main verb 'fall': there is some X which falls to some location. We have exactly two arguments in (36): the light (subject) and the place where it falls (the location, namely the inside of an eye). There are no additional arguments or specifications. So this is not a complex predication, but a metaphorical use of 'fall'.

(36) roʃn-i az dur mane cim par-id (Hazaragi)
light-Indef from far inside eye fall-Past.3.Sg
'Light was seen from afar.' (lit. Light fell into the eye from afar.)

The same is true for (37) and (38). In (37) we have the verbs 'reach/fall' and the number and type of arguments exactly match what the main verb versions would have,

namely that there is an X which falls towards or reaches some location: a sound (X) falls/reaches the ear (location).

(37) awaz=i ajib az unzunji mane goʃ res-id/par-id (Hazaragi)
sound=Ezafe strange from there inside ear reach-Past.3.Sg/fall-Past.3.Sg
'A strange sound arrived from there.'
(lit. A strange sound arrived into the ears from there.)

(38) max bu=yi xub mi-dad (Hazaragi)
Max smell=Ezafe good Impf-give.Past.3.Sg
'Max smelled good.'

Example (38) involves an agentive verb, unlike the previous two examples. Similarly to the previous examples, however, we find that there are no extra arguments in the clause that cannot be attributed to 'give' and there are also no further oddities in the argument realization that would point towards complex predicate formation. The only special feature exhibited by (38) is the absence of the goal, as we have Max who functions as the agent and who is giving off a smell to an unspecified goal, which in this case must be interpreted as the world in general.

6.2 Predicates of perception via complex predicates

In contrast, we find that the predications with 'do' fit the complex predicate schema. Consider (39), for example.

(39) max naan bu-yi kad (Hazaragi)
Max food smell-Indef do.Past.3.Sg
'Max smelled food. (Lit. Max did food smelling.)'

Here we have three possible arguments: 'Max', 'food' and 'smell'. However, the verb 'do' does not license more than two arguments: an Agent and a Theme (or the event/thing to be done). We thus have an extra argument that needs to be accounted for. This can be done elegantly via a complex predicate analysis. Under this analysis we have a light verb 'do', which takes the noun 'smell' as an argument. The noun 'smell' in turn contributes an argument to the overall predication, namely the thing that is smelled: the food (cf. Mohanan 1994). Our Event-Based Linking analysis is shown in (40).

(40)

$$\begin{array}{lllll} \text{DO} & < & \text{init}_i & \%\text{proc} & > \\ & & & | & \\ & & & \text{SMELL} < \text{init}_i & \text{rh} > \end{array}$$

In this analysis the combination of an agentive verb with an experiencer predicate (the noun) yields a configuration which can only be interpreted as an experiencer predicate. In addition, since the two *init* arguments of 'do' and 'smell' are identified with one another, we end up with a subject which has properties of both an agent and an experiencer, accounting for the data in section 5.

We thus arrive at exactly the right kind of an analysis without lexical stipulation, but by putting together the pieces of the predication in a systematic manner and letting

each piece contribute what it "wears on its sleeve" anyway, so to speak.

6.3 Predicates of perception with 'hit'

In this last section we turn to the examples with 'hit' as in (41). These turn out to be more difficult to analyze. As we saw above, a complex predicate analysis would assume two parts of the predicate. One would be the verb 'hit', which like 'do' is agentive and involves an Agent and a Patient. So, as with 'do', we would posit an *init* and a *proc* subevent. However, 'hand' is not an eventive noun (cf. Grimshaw 1990) and it is difficult to understand what its event participants could be.

(41) Max kala-ra dist zad (Hazaragi)
Max clothes=OM hand hit.Past.3.Sg
'Max felt/touched the clothes.'

(42)

$$\text{HIT} \;<\; \text{init}_i \quad \%\text{proc} \;>$$
$$\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\quad \text{HAND} \;<\; ??? \;>$$

In the reading of the physical hand, there are no arguments it can contribute. In the reading of 'handing' somebody something, it could have three arguments (an agent (X) who hands a goal (Y) something (Z)). But this also does not fit (41) since we do not see any extra goal arguments in the clause.

We here tentatively conclude that it is likely that (41) is an instance of an idiomatic use of N-V combinations, as has been established for the use of 'hit' in combination with nouns for Swahili, for example (Olejarnik 2009).

7 Conclusion

We were inspired to embark on the investigations in this paper by the work presented by Asudeh & Rad (2023) on Persian verbs of perception. In our examination of the classification and analysis of N-V verbs of perception, we focused on the under-researched language Hazaragi and found that the existing classifications by Viberg and Asudeh & Rad cannot be applied to Hazaragi. We suspect that the same conclusion can also be reached with respect to the Persian examples from Viberg and Asudeh & Rad, but this remains to be established.

We also took issue with the complex predicate analysis proposed by Asudeh & Rad. For Hazaragi, we showed that the N-V combinations with 'do' are the only ones that can directly and elegantly be explained as complex predicates. The other N-V combinations are better analyzed as metaphorical and idiomatic usages.

For the N+'do' complex predicates, we proposed an analysis in terms of the Event-Based Linking developed in Schätzle (2018) and Beck & Butt (2024) and the theory of complex predication from Butt (1995, 2014) to propose a compositional analysis. Under this analysis the experiencer semantics of the predicates of perception are located in the experiencer predicate (e.g., 'smell'), rather than as part of the agentive light verb (contra Asudeh & Rad 2023).

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