

## Appendix: VP shells or neoconstructionism?

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The analysis spelled out in *Argument structure hierarchies and alternations in causative and double object constructions* (Hallman 2024) bears a strong resemblance to the ‘VP shell’ hypothesis of Larson (1988; 2014). Larson claims that syntactic structures are binary branching—a head may only compose semantically with two arguments within its maximal projection, a complement and a specifier. In order to combine with more arguments, it must move to a higher head position, whose specifier it may compose with semantically. The analysis of trivalent *ʕata* ‘give’ in Arabic in section 6 is a variation on this idea. The verb stem has three arguments (plus an event argument), which it combines with in turn in the specifier positions of VP, ApplP and vP. The projections ApplP and vP have no associated semantics; they merely host arguments that the trivalent verb combines with. The causative verb *zalla* ‘make someone wash something’ consists of the underlying transitive verb *zala* ‘wash’, which combines with its theme in [spec,VP] and its agent in [spec,ApplP]. Little-v in this case hosts a causative morpheme that relates its complement ApplP denoting an event description and its specifier denoting a causer. In this case, big-V is semantically contentful, as is little-v, and ApplP functions as a semantically inert syntactic scaffolding for the composition of the verb stem with its external argument. In both cases, ApplP is projected only for this purpose, to structurally accommodate an argument of the verb stem. Larson refers to such a semantically inert projection as a ‘VP shell’. The analysis proposed in the accompanying article maintains that vP and ApplP may function as VP shells, but may in principle also host contentful morphemes like the causative morpheme in little-v. However, the fact that morphologically basic trivalent verbs cannot be causativized, as discussed there, indicates that only three argument-licensing projections may co-occur, which limits possible argument structures and possible morphological augmentations of those argument structures.

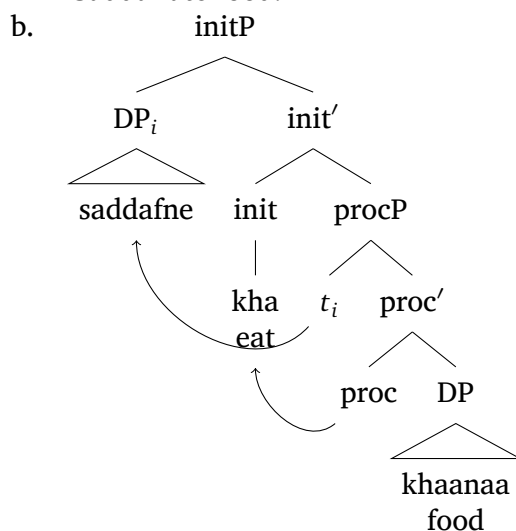
In this last respect, this analysis bears a resemblance to the neo-constructionist framework developed in Ramchand 2008. The neo-constructionist framework also posits three layers of syntactic structure responsible for argument structure and its alternations, shown in (1). There, the head *init* introduces the subject of an ‘initiating state’, typically an agent, and *proc* the subject of a process set in motion by the initiating state, typically a patient/theme. The complement of *proc* may be the projection ResP or a ‘rheme’. The head *res* introduces the subject of a state resulting from the process that ProcP describes. A rheme is a phrase (DP/NP, PP or AP) whose denotation stands in a homomorphic relation to the process that ProcP describes. It is an incremental argument (the apple in *eat the apple*), a scale (of phase in *melt the ice*) or a path (the trail in *walk the trail*). In this approach, the thematic relation a term bears to an event is strictly determined by its position in the complex verb phrase.

- (1) [initP [procP [{resP / rheme}]]]

In her analysis of Hindi causatives, Ramchand claims that the verb stem *kha* ‘eat’ occurs with three arguments, a rheme—here the incremental argument representing the thing

eaten, an undergoer argument subject of ProcP (the eater) and an initiator argument subject of InitP, which in ordinary transitive contexts is the same as the undergoer by virtue of movement of the undergoer DP from [spec,procP] to [spec,initP], as illustrated in (2b) for (2a). The base verb determines the repertoire of arguments it occurs with by virtue of its feature specification. The verb stem *kha* bears the features [init] and [proc]. These features must be licensed by head movement through the respective heads. As a result, a verb does not directly license an argument. Rather, it bears a feature that must be licensed in a head position, which in turn introduces the relevant argument, whose thematic role is determined by what subevent (initiating state or process) it is the subject or complement of, which in turn is determined by its position in the syntax. In (2b), the verb *kha* ‘eat’, with features [proc] and [init], originates in *proc* where its [proc] feature is licensed, and moves to *init*, where its [init] feature is licensed. The subject of *kha* ‘eat’ and other verbs of consumption is base generated in [spec,procP], where its interpretation as the subject of the eating process (termed, somewhat counterintuitively, the ‘undergoer’) is established, and in ordinary transitive contexts moves on to [spec,initP], where its interpretation as an initiator is established. In this manner, the subject of ‘eat’ bears two thematic relations to the complex eating event, which consists of an initiating state and a process. The thing eaten is generated in the complement of Proc and plays the role of measuring out the process.

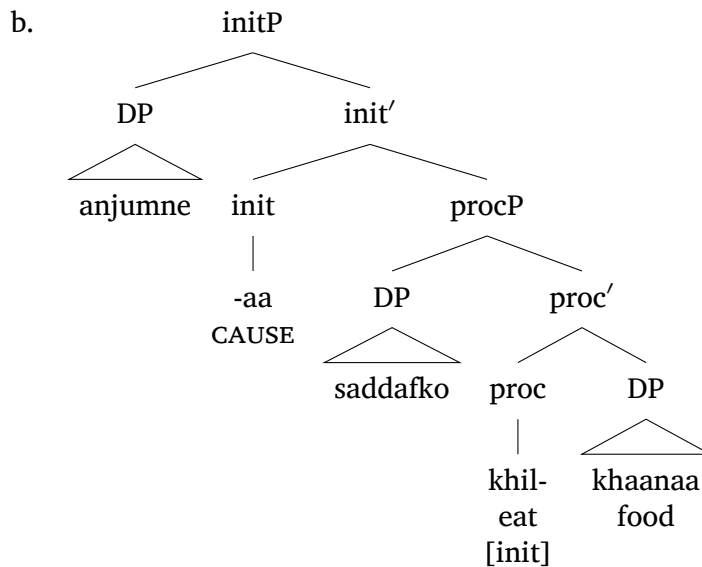
- (2) a. saddaf-ne khaanaa kha-yaa.  
 Saddaf-ERG food eat-PERF.M.SG  
 ‘Saddaf ate food.’



It is possible, also, for a verb to ‘underassociate’, that is, to fail to check one or more of its features by head movement. This happens when an independent morpheme occupies the relevant head position. In this case, the underassociated feature of the verb may be licensed by the independent morpheme under Agree, a non-movement dependency. In the causative *khil-aa* ‘cause to eat’, or ‘feed’, the causative suffix *-aa* monopolizes *init*, but the underlying verb’s [init] feature may be licensed under an agree relation with [init] that does not require head movement of the verb to *init*. In (3b), then, Anjum is the specifier of the *initP* projection that licenses the [init] feature of the verb stem *kha* ‘eat’ but yet is not interpreted as the eater (the subject of the process subevent), but rather as a causer of an event of Saddaf eating (the subject of the initiating state), by virtue of

occurring in *initP*. The food is interpreted as an incremental argument that measures out the eating event by virtue of occurring the complement position of *proc*.

- (3) a. *anjum-ne saddaf-ko khaanaa khil-aa-yaa.*  
 Anjum-ERG Saddaf-ACC food eat-CAUSE-PERF.M.SG  
 ‘Anjum fed Saddaf food.’



In the causative construction, the external argument of *kha* ‘eat’ is effectively ‘demoted’ from *initP* to *procP*, by virtue of failing to move from *procP* to *initP* as it does in the non-causative counterpart in (2b). This much is not dissimilar from the analysis I have proposed in the accompanying article, in which *AppIP* is inserted in the causative construction, and the arguments of the underlying transitive verb stem are saturated in the same order as in the transitive alternant, while a causer is added in the projection that would normally license the external argument of the underlying verb stem (*vP*). But in the analysis I have proposed, arguments are licensed directly by a verb stem, and receive a theta role that is determined not by their syntactic position in the argument structure (*initP* vs. *procP* or *vP* vs. *AppIP*) but by their order of combination with the verb stem. The external argument of the underlying transitive verb is as much an agent when it occurs in *AppIP* as when it occurs in *vP*.

However, Ramchand claims that ‘demotion’ of the erstwhile initiator of the eating event seen in (3b) is reflected in its thematic interpretation. Certainly, adding causativity deprives the agent of the underlying verb of a certain proto-agent property, namely volitionality. If someone is made to do something, they are arguably not the ultimate initiator of their act. Intuitively, one who is fed has less agency than one who eats. It is not evident at first glance, though, whether this means that the subject of a transitive verb like ‘eat’ has a different theta role than the corresponding argument in the causative derivative. One explanation for this intuitive difference is that the transitive structure in (2a) does not actually assert that Saddaf has volition; the appearance of volition arises through abductive reasoning: why else would he be eating if he hadn’t decided to eat and acted on his decision? That is, whatever volition we attribute to Saddaf in (2a) is a pragmatic inference that does not arise in causative (3a) because is not compatible with being caused to eat. However, Ramchand claims that the forces at work here are not pragmatic, and that causativization in Hindi in fact involves demoting the initiator of the underlying verb to an undergoer in the causative, as depicted in (3b). She supports this claim with

the examples in (4), cited from Saksena (1982) and Bhatt (2003). Both kites and birds can fly, as (4a) demonstrates, while only kites can be made to fly, as (4b) demonstrates (p. 174).

- (4) a. patang / chiriyaa uṛ rahii hai.  
kite / bird fly PROG.F be.PRES.SG  
'The kite/the bird is flying.'
- b. anjali patang / \*?chiriyaa uṛ-aa rahii hai.  
Anjali kite / \*?bird fly-CAUSE PROG.F be.PRES.SG  
'Anjali is flying a kite / \*?a bird.'

While suggestive of a contrast in proto-agency between the base verb and its causative derivative, it is not clear how the contrast in (4) fits into the picture in (2b) and (3b). It seems to mean that a bird cannot be the subject of a 'mere' flying process, it must be an initiator as well. But as an initiator it is still a subject of the underlying process according to the diagram for the parallel transitive structure in (2b). This analysis does not clarify what blocks the structure in (3b) when the subject of *proc* is a bird, since it must admit this subject in non-causative counterpart in (2b).

There are, in fact, two verbs in Arabic that seem to support the analysis in (2b)/(3b), but I suggest that this analysis predicts that the pattern they display should enjoy more generality than it in fact does, and therefore that these two verbs are best analysed in a different way. Before discussing them, I point out firstly that the asymmetry seen in (4) does not carry over to Arabic. As in Hindi, both kites and birds can fly:

- (5) a. kān-it ṣam t-ṭīr ṭajjāra wara?ijje fō? rās-na.  
be.PFV-3fs PROG 3FS-fly.IMPFV plane paper above heads-our  
'A kite was flying above our heads.'
- b. kān ṣam ji-ṭīr ṣuṣfūr fō? rās-na.  
be.PFV PROG 3MS-fly.IMPFV bird above head-our  
'A bird was flying above our heads.'

But also, both can be made to fly. Elihay's (2004) dictionary of Palestinian includes both example sentences in (6) in the entry for *ṭajjar* 'cause to fly' (p. 600). The Syrian speakers consulted for this work confirm these examples.

- (6) a. l-walad b-ji-ṭajjir ṭ-ṭajjāra l-wara?ijje.  
the-boy IND-3MS-fly.IMPFV the-plane the-paper  
'The boy flies the kite.'
- b. ṭajjar-t l-ṣaṣfūr!  
CAUSE.fly.PFV-2MS the-bird  
'You made the bird fly away!'

These data lend support to the view that in Arabic, there is no thematic difference between the subject of the underlying verb when it occurs as a subject and when it occurs as the indirect object of the causative derivative, though in the former case it is plausible that an interlocutor might make assumptions about the subject referent's volitionality that are not warranted in the latter case. However, as mentioned above, there are two verbs that do seem to differentiate between the selectional restrictions accruing to the subject of the underlying transitive verb and those accruing to the indirect object of its causative derivative. The two verbs are *libis* 'put on an article of clothing' (~ *labbas* 'dress someone in an article of clothing') and *falah* 'take off an article of clothing' (~ *fallaḥ* 'take

an article of clothing off someone’). While the base verb requires an animate subject, the corresponding causee may be inanimate, as the examples in (7) and (8) demonstrate.

- (7) a. *l-binit / #l-luʃbe libs-it d-dʒākēt.*  
 the-girl / #the-doll put.on.PFV-3FS the-jacket  
 ‘The girl / #the doll put on the jacket.’
- b. *labbas-na l-binit / l-luʃbe d-dʒākēt.*  
 CAUSE.put.on.PFV-1PL the-girl / the-doll the-jacket  
 ‘We dressed the girl / the doll in the jacket.’
- c. *labbas-na d-dʒākēt la-l-binit / la-l-luʃbe.*  
 CAUSE.put.on.PFV-1PL the-jacket to-the-girl / to-the-doll  
 ‘We dressed the girl / the doll in the jacket.’
- (8) a. *l-binit / #l-luʃbe ʃalh-it d-dʒākēt.*  
 the-girl / #the-doll take.PFV-3FS the-jacket  
 ‘The girl / #the doll took off the jacket.’
- b. *ʃallah-na l-binit / l-luʃbe d-dʒākēt.*  
 CAUSE.take.off.PFV-1PL the-girl / the-doll the-jacket  
 ‘We took the jacket off the girl / the doll.’
- c. *ʃallah-na d-dʒākēt la-l-binit / la-l-luʃbe.*  
 CAUSE.take.off.PFV-1PL the-jacket to-the-girl / to-the-doll  
 ‘We took the jacket off the girl / the doll.’

Like its English translation, (7a) with the subject *l-luʃbe* ‘the doll’ is only sensible in a cartoon context in which the doll is sentient. But the doll can nonetheless naturally function as the indirect object of the causative derivative *labbas* in both object frames (7b) and (7c). The same remarks apply to *ʃalah~ʃallah* in (8). Intuitively, a doll is too passive to perform a putting-on or taking-off act, but this passiveness is compatible with being dressed or undressed by a causer.

I note in passing at this point that in both sets of examples in (7) and (8), the two object frames of the causative derivatives do not differ in the selectional restrictions they place on the indirect object, which is the main empirical point that I endeavored to make in the accompanying article. There is no indication even here that the indirect object has fewer proto-agent properties in the prepositional frame than in the double object frame, unlike what the alternative projection view would lead us to expect. Nonetheless, the analysis spelled out there identifies that argument with the external argument of the underlying verb. From this perspective, the animacy contrast in (7a) and (8a) is unexpected, since it does not arise in the causative counterpart. In principle, this pattern aligns better with Ramchand’s analysis of Hindi causatives sketched in (3b) than the bird example in (4). The idea would be that the underlying external argument of *libis* is an undergoer base generated in ProcP, and only acquires the status of an initiator, which requires animacy, when no external causer is involved, by virtue of movement from ProcP to InitP, where the causer would otherwise appear.

While this analysis could be suitable for the *libis/ʃalah* pattern, that pattern does not seem to have much generality in Arabic. The other examples of causativization in Arabic discussed in *Argument Structure Hierarchies* do not display the animacy-contingent contrast between base transitives and their causative counterparts seen in (7) and (8). That is, there are no other cases known to me at present in which an inanimate indirect object is found in causatives that is not admissible as a subject in the underlying transitive construction. The analysis of *kha* ‘eat’ and *khilaa* ‘cause to eat’/‘feed’ gives complete generality to the loss of the initiator interpretation of the subject of the underlying transitive

in the derived causative. On this view, indirect objects of causative verbs should generally show lower agency than their counterparts in the non-causative construction. The Arabic data discussed in *Argument Structure Hierarchies* do not exemplify such a generalization. What, then, could explain the behavior of *libis/labbas* and *falaḥ/fallaḥ*?

One possible explanation for this pattern is that *libis* is ambiguous between a meaning corresponding to ‘put on’, whose proto-agent must be volitional, and a meaning corresponding to ‘wear’, whose proto-agent need not be volitional. Likewise, *falaḥ* is ambiguous between ‘take off’ and ‘not wear’. The examples in (7b)/(7c) and (8b)/(8c) show causativization of *libis* meaning ‘wear’ and *falaḥ* meaning ‘not wear’, which admit a non-human proto-agent, licensing *luṣbe* ‘doll’ as indirect object. If this is so, then some force must be at work blocking *libis* and *falaḥ* meaning ‘wear’ and ‘not wear’ respectively in the root environments in (7a) and (8a), where a non-human subject is not admissible. In fact, independently of causativization, finite verbs in Arabic are known to resist an atelic interpretation. As Boneh (2010) reports, verbs whose closest English counterparts are activity or state descriptions receive an inchoative interpretation in Arabic. For example, *nām* means not ‘sleep’ but ‘fall asleep’ and *ʔāman* not ‘believe’ but ‘come to believe’ (9). The atelicity reflected in the translations in (9) is more clearly evident in the progressive forms of these constructions, shown in (10) (Boneh’s example (14)), which do not entail that Sami is sleeping or believes in aliens.

- (9) a. *sāmi nām.*  
Sami sleep.PFV  
‘Sami fell asleep.’
- b. *sāmi ʔāman b-l-maxlūʔāt l-faḍāʔijje.*  
Sami believe.PFV in-the-creatures l-extraterrestrial  
‘Sami began believing in aliens.’
- (10) a. *sāmi ʔam ji-nām.*  
Sami PROG 3MS-sleep.IMPFV  
‘Sami is falling asleep.’ → He is not fully asleep yet.
- b. *sāmi ʔam ji-ʔāmin b-l-maxlūʔāt l-faḍāʔijje.*  
Sami PROG 3MS-believe.IMPFV in-the-creatures the-extraterrestrial  
‘Sami is starting to believe in aliens.’ → He is not fully convinced yet.

If *libis* is ambiguous between ‘put on’ and ‘wear’, we would not expect its atelic interpretation corresponding ‘wear’ to occur as a basic verb, which is what rules out the subject *luṣbe* ‘doll’ for *libis* in (7a), and similarly for *falaḥ* in (8a). This conclusion is supported by the behavior of active participles in Arabic. In Syrian and many other modern dialects, active participles receive a perfect interpretation (Wild 1964; Cowell 1964; Woidich 1975; Brustad 2000; Mughazy 2005; Boneh 2010). This phenomenon is cross-linguistically unusual but is also found outside Arabic (Haspelmath 1994). For basic verb stems, the participle is formed in the template  $C_1\bar{a}C_2iC_3$ ; for derived verbs it is formed by prefixing *m-* to the imperfective verb stem. For example, the active participle *kātib*, corresponding morphologically to ‘writing’, is interpreted as ‘have written’; *mḍajjiṣ*, morphologically ‘losing’ as ‘have lost’ (Boneh’s examples (1a) and (1b)).

- (11) a. *sāmi kātib r-risāle.*  
Sami PART.write the-letter  
‘Sami has written the letter.’

- b. sāmi m-ḍajjiḥ naḍḍārāt-u.  
Sami PART-lose glasses-his  
'Sami has lost his glasses.'

Boneh claims that in spite of appearances, this pattern extends to verbs like *nām* 'sleep' and *ʔāman* 'believe in'. The active participle *nājim* could be translated 'sleeping', but Boneh maintains that this is merely an entailment of the perfect interpretation seen clearly with the verbs in (11). According to her, the participle *nājim* means not 'be sleeping' but 'have fallen asleep' (which entails 'be sleeping'), and *mʔāmin* not 'believe' but 'have come to believe' (which entails 'believe').

- (12) a. sāmi nājim.  
Sami PART.sleep  
'Sami has fallen asleep.' → Sami is sleeping.  
b. sāmi m-ʔāmin b-l-maxlūʔāt l-faḍāʔijje.  
Sami PART-believe in-the-creatures the-extraterrestrial  
'Sami has come to believe in aliens.' → Sami believes in aliens.

However, the interpretation of the active participles of *libis* and *falaḥ* militates against the conclusion that participles always receive a perfect interpretation, and points instead to the conclusion that the interpretation of the participles depends on the lexical aspect of the underlying verb stem. These participles admit a non-human external argument, as (13) shows, which the corresponding finite verb does not admit (cf. (7a) and (8a)).

- (13) l-luḥbe lābs-e / ʃālḥ-a d-dʒākēt.  
the-doll PART.wear-3FS / PART.not.wear-3FS the-jacket  
'The doll is wearing / not wearing the jacket.'

This suggests *libis* and *falaḥ* are ambiguous between a telic interpretation ('put on/take off') and an atelic interpretation ('wear/not wear'), and that the atelic interpretation is the base for the participles in (13). When derived from an atelic base, the participle does not have a perfect interpretation but rather projects the atelicity of the base (Hallman 2017). This atelic base is blocked from finite contexts but emerges in participles.

It also, apparently, emerges in causative contexts, since the argument corresponding to the external argument of the underlying verb stem in (7b)–(7c) and (8b)–(8c) may be non-human. This suggests that the participles in (13) and the causative verbs in (7b)–(7c) and (8b)–(8c) share a root  $\sqrt{\text{WEAR}}/\sqrt{\text{NOT WEAR}}$  which admits a non-human external argument. This root is blocked in finite contexts because those contexts resist atelicity, which impedes the non-human subject *l-luḥbe* 'the doll' in (7a) and (8a). According to this analysis, the contrast in the acceptability of a human and non-human subject in (7a) and (8a) is not due to any extra agency imposed on the subjects of non-causativized verbs, but rather to a lexical ambiguity between a telic and atelic interpretation of the underlying verb stem together with a proscription on the atelic interpretation in finite contexts.

In the neoconstructionist approach to causativization advanced by Ramchand (2008), the demotion of the initiator of the underlying verb to an undergoer is a syntactic necessity. While it is true that the underlying proto-agent in a causative construction (the indirect object of the causative) is likely to have less volition in the matter at hand than it has in non-causative contexts, I claim that this is due to pragmatic forces, and that the pattern which seems to best exemplify Ramchand's claim, namely the behavior of *libis* and *falaḥ* in Arabic, can be reduced to a lexical ambiguity in those verb stems. I therefore conclude that Arabic does not provide any evidence for the core tenets of the neo-

constructionist view of the syntactic derivation of causative verbs, specifically the view that an argument's thematic relation to the event is restricted, or typed as 'initiator', 'undergoer', etc., by the projection it occurs in the specifier of. The analysis proposed here shares the three-tier template for argument structure inherent in the neo-constructionist view, but these tiers may function as syntactic placeholders, as in the VP-shell view. Yet, causativization cannot be stacked on top of just any full functional complex, but must be accommodated within the three tiers the grammar makes available for the licensing of arguments, as in the neo-constructionist view.

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