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Feature Distribution and Word Order Variation in Arabic Clauses: A Minimalist Account

Ali S. Ellafi [1*]

1 Department of English Language and Literature, University of Benghazi.

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ABSTRACT

Arabic subject-verb agreement is asymmetrical: in VSO order the verb agrees with the subject in person and gender (partial agreement), whereas in SVO order the verb exhibits number agreement as well (full agreement). This agreement asymmetry has received a lot of attention in the generative literature over the past three decades. In fact, more than twenty proposals have been put forward in a number of different theoretical frameworks. At the same time, there have been no attempts for a formal treatment of OVS word order constructions. With respect to agreement, the OVS verb exhibits both of the properties that exist in the other word order types (VSO and SVO): partial agreement with the post-verbal subject and full agreement with the pre-verbal DP. A more thorough consideration of the data reveals that pre-verbal DPs share a number of other rather interesting properties. Our empirical findings lead to the conclusion that pre-verbal DPs (i.e., the superficial subject and object of SVO and OVS, respectively) are actually topics. The real subject of SVO and, similarly, the object of OVS is in fact verbally bound pronominal clitics. Using a Merge, Move and Agree-based theory of phrase structure and feature checking; and a Multiple Spell-Out model of phasal derivation, we hope to demonstrate that the computational systems of Minimalist Syntax can provide an adequate treatment of seven constructions: VSO, SVO and OVS, as well as four related variants (ʔinna-headed SVO and OVS, and pro-drop SVO and OVS).

KEYWORDS: agreement, Arabic, case, topicalization, word-order.

1. INTRODUCTION

This paper examines the Arabic agreement-word order asymmetry (partial VS agreement vs. total SV agreement), taking into consideration OVS word order agreement as well. Significantly, the OVS-verb simultaneously hosts two verbally bound forms. We will argue that one is an affix, marking partial agreement with the post verbal Subject (vis-à-vis partial VS agreement); while the other is a pronominal clitic which is coreferential with the preverbal Object. Furthermore, the SV-subject and the OVS-object (i.e., preverbal DPs) are reanalyzed as discourse Topics. Theoretically, we will adopt a Minimalist Theory of phrase structure/feature checking; and a Multiple Spell-Out model of phasal derivation.

The aim of this work is to apply a Minimalist treatment to Arabic OVS, SVO and VSO word order constructions, taking into consideration a number of other related grammatical phenomena. These include agreement-word order co-variation (§2); the pronominal nature of the agreement marker and whether or not pro-drop is permissible (§3.1); the case properties of preverbal DPs in the absence and presence of the emphatic complementizer ʔinna (§3.2); and definiteness constraints (§3.3).

*Correspondence: Ali S. Ellafi

dr.ali.ellafi@gmail.com

We will attempt to explain the interaction of these phenomena in the light of developments in Minimalist Syntax. These developments include a Merge, Move and Agree-based theory of phrase structure and feature checking; and a Multiple Spell-Out model of phasal derivations, as argued for in Chomsky[1-6] and Uriagereka[7]. After outlining the basic theoretical assumptions in §3, a step-by-step derivation of the three constructions in question will be proposed in section in §4. We hope to demonstrate that the computational systems of Minimalist Syntax can adequately deal with the level of complexity exhibited by the three constructions. The paper will also identify what constitutes a phase in the syntax of these word order types. It will argue that OVS is derived in two phases (vP and CP), SVO in three (DP, vP and CP), and VSO in two (DP and TP).

2. EXPANDING THE DATA SET

In Arabic subject-verb agreement is asymmetrical. When the verb precedes the subject, as in VSO word order (1a), the verb agrees with the subject in person and gender but not in number. On the other hand, when the subject precedes the verb, as in SVO word order (1b), the agreement involves three morphosyntactic categories: person, gender and number:

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(1) a. ʃakar-a aṯ-ṯullaab-u al-muʕalim-aat-i
thank.PAST-3M.SG DEF-student.3M.PL-NOM DEF-teacher-3F.PL-ACC
'The students thanked the teachers.'
b. aṯ-ṯullaab-u ʃakar-uu al-muʕalim-aat-i
DEF-student.3M.PL-NOM thank.PAST-3M.PL DEF-teacher-3F.PL-ACC
'The students, they thanked the teachers.'

We will follow the established convention of referring to the latter type of agreement as *rich* agreement, a term that is used in contrast with *poor* agreement, the type exhibited by VSO word order.

There is an abundance of literature on the Arabic VSO-SVO agreement asymmetry, and it spans back more than fourty years. Proposals have been put forward in a number of different theoretical frameworks. In the Government and Binding era, the topic was addressed by a number of scholars[8-12]. Within the Principles and Parameters framework, proposals have been put forward by others[13-16]. More recently, Benmamoun[17] Mohammad[18], Mahfoudhi[19], Soltan[20-21] and Fehri[22] have provided a Minimalist treatment to the data in (1). For an LFG treatment of the Arabic VSO-SVO agreement asymmetry see Fehri[23]. At the same time, there have been no attempts for a formal treatment of OVS word order constructions, exemplified in (2):

(2) al-muʕalim-aat-u ʃakar-a-hun aṯ-ṯulaab-u
DEF-teacher-3F.PL-NOM thank.PAST-3M.SG-3F.PL DEF-student.3M.PL-NOM
'The teachers, the students thanked them.'

What makes Arabic OVS word order of particular importance to the study of agreement and word order co-variation in Arabic is that the OVS verb bears two affixes: in (2) the suffix *-a* shows poor verbal agreement with the postverbal subject (the same scenario as in (1a) with VSO order), but a second suffix *-hun* shows rich verbal agreement with the preverbal object (i.e., much like the scenario we observed with preverbal subjects in SVO (1b), only now it is with the preverbal object). When the agreement asymmetry data set is expanded to include OVS word order, a wider picture emerges in that (i) poor verbal agreement is a property of postverbal subjects (i.e., the subject of VSO order in (1a), and the subject of OVS order in (2)); and that (ii) rich verbal agreement is a property of preverbal DPs in general (i.e., the subject of SVO order in (1b), and the object of OVS order in (2)). A more thorough consideration of the data reveals that preverbal DPs share a number of other rather interesting properties, which will be discussed in §3.

3. MORE ON PREVERBAL DPS

As mentioned above, the rich verbal agreement associated with preverbal DPs seems to correlate with a number of formal and functional properties. These will be discussed in §3.1-3.3, and a summary of the empirical findings will be provided in §3.4.

3.1 Pro-drop and the pronominal nature of the agreement marker

In Arabic, there is a correlation between rich verbal agreement and pro-drop, as only preverbal DPs can be pro-dropped. In OVS constructions, when the preverbal object is pro-dropped (3a), the rich agreement marker (*-hun*) on the verb gets interpreted as a pronominal object. The example in (3b) demonstrates that the same relation holds with the preverbal subject and its corresponding rich agreement marker (*-uu*) in SVO constructions:

(3) a. ʃakar-a-hun aṯ-ṯulaab-u
thank.PAST-3M.SG-3F.PL DEF-student.3M.PL-NOM
'The students thanked them.'
b. ʃakar-uu al-muʕalim-aat-i
thank.PAST-3M.PL DEF-teacher-3F.PL-ACC
'They thanked the teachers.'

In contrast with the examples in (3), postverbal subjects cannot be pro-dropped. Even though (4a) is grammatically well-formed, it cannot be considered the prop-drop counterpart of the VSO sentence in (1a). This is because the subject in (1a) cannot be interpreted as the antecedent of the agreement marker on the verb. The two are incompatible in number: the subject is plural, while the agreement marker is singular in number. In fact, (4a) is the pro-drop counterpart of (4b), an SVO construction with a singular subject:

(4) a. ʃakar-a al-muʕalim-aat-i
thank.PAST-3M.SG DEF-teacher-3F.PL-ACC
'He thanked the teachers.'
b. aṯ-ṯaalib-u ʃakar-a al-muʕalim-aat-i
DEF-student.3M.SG-NOM thank.PAST-3M.SG DEF-teacher-3F.PL-ACC
'The student, he thanked the teachers.'

Pro-drop is possible with preverbal DPs because their corresponding rich verbal agreement marker is an argument of the predicating verb. Since the Theta Criterion requires that each thematic role be uniquely assigned, it is safe to assume that in OVS constructions the theme/object role is either assigned to the rich agreement marker or the

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preverbal DP, but not simultaneously to both. Similarly, in SVO constructions, the agent/subject role can be assigned either to the rich agreement marker or the preverbal DP, but not to both. We will take the position that the object of OVS and the subject of SVO are not the preverbal DP, as the superficial label suggests, but rather the bound pronominal clitics *-hun* and *-uu*, respectively. This position is supported by the fact that the preverbal DPs in these constructions can be pro-dropped and therefore cannot be considered as arguments of the verb. They are not assigned a thematic role or a grammatical function, but they function as discourse topics in the two topic-comment constructions, OVS and SVO. We shall provide more support for this analysis in §3.3.

3.2 Case properties: with and without *ʔinna*

In addition to the possibility of pro-drop, preverbal DPs share interesting case properties. In Arabic, objects typically receive the accusative case, as indicated by the pair of examples in (1). However, when an object is topicalized, it receives nominative case instead, as in (2). This is also a property shared by the topicalized subject (1b), though in the case of topicalized subjects the observation is obscured by the fact that nominative case is also assigned to postverbal subjects (1a).

A second case property shared by preverbal topic DPs is that they can be preceded by the emphatic complementizer *ʔinna*, which assigns accusative case to the topicalized DP. In (5a), *ʔinna* precedes the topicalized object of OVS, and in (5b) it precedes the topicalized subject of SVO. However, *ʔinna* is not permitted with VSO word order, hence the ungrammaticality of (6):

(5) a. ʔinna al-muʕalim-aat-u ʃakar-a-hun aṭ-ṭulaab-u
COMP DEF-teacher-3F.PL-ACC thank.PAST-3M.SG-3F.PL DEF-student.3M.PL-NOM
'That the teachers, the students thanked them.'

b. ʔinna aṭ-ṭulaab-u ʃakar-uu al-muʕalim-aat-i
COMP DEF-student.3M.PL-ACC thank.PAST-3M.PL DEF-teacher-3F.PL-ACC
'That the students, they thanked the teachers.'

(6) *ʔinna ʃakar-a aṭ-ṭullaab-u al-muʕalim-aat-i
COMP thank.PAST-3M.SG DEF-student.3M.PL-NOM DEF-teacher-3F.PL-ACC

3.3 Definiteness and topicalization

Another property shared by preverbal DPs is definiteness. The topicalized object of OVS and the subject of SVO are obligatorily definite, as in (2) and (1b), respectively. Replacing these definite DPs with indefinite ones would result in ungrammaticality, as demonstrated by the OVS-SVO pair in (7a-b):

(7) a. *muʕalim-aat-u ʃakar-a-hun aṭ-ṭullaab -u
teacher-3F.PL-NOM thank.PAST-3M.SG-3F.PL DEF-student.3M.PL-NOM

b. *ṭulaab-u ʃakar-uu al-muʕalim-aat-i
student.3m.pl-nom thank.past-3m.pl DEF-teacher-3F.PL-ACC

This definiteness constraint is a very compelling argument for analyzing preverbal DPs as topics. In fact, several typological studies (Li[24], Gundel[25]) have established a close relationship between topicalization and definiteness. We will therefore treat OVS and SVO word order constructions as topic-comment structures.

At the same time, notice that with VSO word order, this constraint does not apply. The postverbal subject can be definite, as in (1a), or indefinite, as in (8).

(8) ʃakar-a ṭullaab-u al-muʕalim-aat-i
thank.PAST-3M.SG student.3M.PL-NOM DEF-teacher-3F.PL-ACC
'Students thanked the teachers.'

In this regard, let us evoke that, compared to the OVS and SVO topic-comment constructions, the VSO construction is syntactically more basic, and it requires fewer mechanisms of interpretation and derivation. Also, this is the word order used in pragmatically neutral contexts. Topic-comment structures, on the other hand, can be used only in contexts that are pragmatically marked, where the topic DP must already be discourse active and therefore definite. The pragmatic factors (see Belnap[26], in particular, for a sociolinguistic study of agreement variation in Cairene Arabic) that affect a speaker's choice of agreement/word order pattern are independent of the syntactic mechanisms that license such configurations.

3.4 Summary of the empirical findings

In our suggestion, the superficial word order label OVS is misleading, as the OVS word order is actually a topic-comment structure. The preverbal DP (*al-muʕalim-aat-u*) is the discourse topic, and it can be pro-dropped. The rest of the sentence is the comment, i.e., what is said about the topic. The comment is a fully-fledged grammatical sentence consisting of a verb (*ʃakar*), a subject (the DP – *aṭ-ṭulaab-u*) and an object (the verbally bound pronominal clitic *-hun*). The pronominal object and the topic DP are coreferential. The verbal suffix *-a* is a marker of the grammatical agreement in person and gender with the postverbal subject. A multi-layered schematic representation of our analysis of the Arabic OVS word order is given in *Figure 1*:

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superficial order	(O)	V	S
	al-muʕalim-aat-u DEF-teacher-3F.PL-NOM	ʃakar-a-hun thank.PAST-3M.SG-3F.PL	aṭ-ṭulaab-u DEF-student.3M.PL-NOM
discourse function	*Topic*	*Comment*	
grammatical function	Ø	V+O	S
constituency	DP	VP+PRN^{clitic}	DP
semantic role	Ø	predicator + theme	agent

Figure 1: Schematic representation of OVS

The superficial word order label SVO is also misleading. Similar to OVS, the SVO word order is also a topic-comment structure. The preverbal DP (*aṭ-ṭulaab-u*) is the discourse topic that can be pro-dropped. The rest of the sentence is the comment. The comment is a fully-fledged grammatical sentence consisting of a verb (*ʃakar*), a subject (the verbally bound pronominal clitic -uu), and an object (the DP – *al-muʕalim-aat-i*). The pronominal subject and the topic DP are coreferential. A multi-layered schematic representation of our analysis of SVO is given in *Figure 2*:

superficial order	(S)	V	O
	aṭ-ṭulaab-u DEF-student.3M.PL-NOM	ʃakar-uu thank.PAST-3M.PL	al-muʕalim-aat-i DEF-teacher-3F.PL-ACC
discourse function	*Topic*	*Comment*	
grammatical function	Ø	V+S	O
constituency	DP	VP+PRN^{clitic}	DP
semantic role	Ø	predicator + agent	theme

Figure 2. Schematic representation of SVO

The VSO word order is the syntactically basic counterpart of the two topic-comment structures, OVS and SVO. The superficial word order label VSO and the actual order of grammatical functions coincide. The verb bears a suffix (*-a*), which marks the grammatical agreement in person and number with the postverbal subject (the DP: *aṭ-ṭulaab-u*). The object is formally realized by an overt DP (*al-muʕalim-aat-i*). Again, a multi-layered schematic representation of our analysis of VSO is offered in *Figure 3*:

superficial order	V	S	O
	ʃakar-a thank.PAST-3M.SG	aṭ-ṭulaab-u DEF-student.3M.PL-NOM	al-muʕalim-aat-i DEF-teacher-3F.PL-ACC
grammatical function	V	S	O
constituency	VP	DP	DP
semantic role	predicator	agent	theme

Figure 3. Schematic representation of VSO

4. THEORETICAL PRELIMINARIES

The syntactic model adopted in this paper is schematized in *Figure 4* below. In Minimalist Syntax (Chomsky[27] and subsequent work), the idiosyncratic properties of words, including their morphology, are relegated to the lexicon. In other words, when items are numerated from the lexicon and brought into the syntactic derivation, they are fully inflected, meaning that they are specified for their syntactic and morphological inflection features. Two types of features are distinguished: *interpretable*, which are meaningful and can be accessed by the Conceptual-Intentional (CI) and Articulatory-Perceptional (AP) computational systems at interface levels (LF and PF); and *uninterpretable*, which are non-meaningful features and are used for the theory-internal purpose of driving the derivation.

Feature interpretability collaborates with the Principle of Full Interpretation, which, in Minimalist terms, imposes "bare output conditions" on the derivation by requiring that only interpretable features be represented at the interface levels. In this context, the role of the syntactic operations Merge, Move and Agree is to rid the derivation of all uninterpretable features by checking and deleting them from the syntactic representation. The arrows forming the circle in *Figure 4* reflect the recursive nature of these syntactic operations. If at LF and PF the syntactic representation does not violate the Principle of Full Interpretation, the derivation is said to *converge* at that level; otherwise it is said to *crash*. Spell-out is the point in the derivation where the Phonetic Representation is separated from the Semantic Representation. In earlier versions of Minimalist Syntax (Chomsky[27-28]), Spell-Out was assumed to apply only once, at the end of the derivation. In more recent versions (Chomsky[1-6] and Uriagereka[7]), this assumption has been revised in favor of a Multiple Spell-Out model of phasal derivations. This will be discussed in §4.2, but first we shall turn to the syntactic operations Merge, Move and Agree.

superficial order	V	S	O
	ʃakar-a thank.PAST-3M.SG	aṭ-ṭulaab-u DEF-student.3M.PL-NOM	al-muʕalim-aat-i DEF-teacher-3F.PL-ACC
grammatical function	V	S	O
constituency	VP	DP	DP
semantic role	predicator	agent	theme

Figure 4. The Syntactic model.

4.1 The syntactic operations

Merge is a structure-building operation. Triggered by feature checking requirements, Merge builds new phrase-markers in a bottom-up fashion by taking two syntactic objects X and Z (either numerated from the lexicon or constructed previously during the syntactic derivation) and combining them to form a larger syntactic object XP. We are assuming here that X is the element that is responsible for the selection and is therefore the head of the newly built structure. The new syntactic object XP is said to contain the original syntactic objects X and Z, which are sisters but are not linearized. To trigger the syntactic

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operation, the two syntactic objects X and Z will have a matching feature. Typically, the matching features will be uninterpretable [uF] on the head and interpretable [F] on the object it selects. As a result of the Merge operation, the uninterpretable feature will be deleted [uF]:

(9) *Merge: complement*

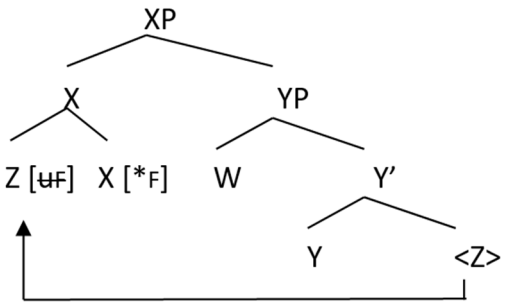
To Merge a specifier Y into (9), the feature that triggers the Merge operation would be allowed to percolate or trickle up to the node that immediately dominates the X-head from where it can check the matching feature of Y under sisterhood:

(10) *Merge: specifier*

In Minimalist Syntax (see Chomsky[28]), the X-bar schema is abandoned and replaced by the structural building operation Merge and the notion of bare phrase structure. So, although the structure built by the successive applications of Merge resembles the earlier Spec-Head-Comp structure of the X-bar schema (see Kayne[29]), Merge does not actually distinguish the X-bar and XP levels of projection. Each node receives the label of its projecting sub-node, and a maximal projection is simply the highest projection of a specific category. We are using the X-bar notation here only for its expository convenience.

Move is also a structure-building operation. Move takes a syntactic object Z, makes a copy of it, and moves it to a position higher up in the tree where it is adjoined to another syntactic object X. Move is triggered by feature strength: the syntactic object X contains in its feature specification a strong feature [*F], which attracts the closest constituent with a matching feature [uF]. Strong features must be checked locally under sisterhood:

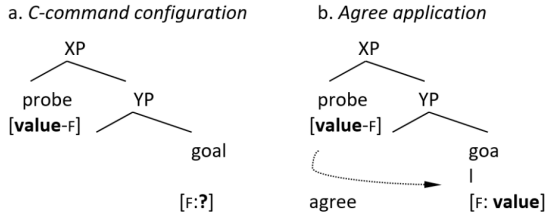
(11) *Move and adjoin*



Chomsky[2] treats movement simply as a form of Merge. He distinguishes External Merge, which involves taking an item from a lexical array and merging it with some other constituent, and Internal Merge, where an item contained within an existing structure is moved to a new position. An example of the latter would be V-raising, where the lexical V-head raises and adjoins to little *v* – see Step 2 of the OVS, SVO and VSO derivations in §5. An example of External Merge would be the head movement V to T to derive VSO word order – see Step 4 in §5.3.

Agree is a feature checking operation. It is responsible for structural dependency relations such as phi-feature (person, gender and number) agreement between DP controllers and verbal targets, and case assignment by a verbal controller to a DP target. The terms *controller* and *target* are used in the sense introduced in typology by Corbett[30], where agreement relation is seen to hold between a controller and a target within an *agreement domain*, and is said to involve *features* and *values* and be subject to *conditions*. The operation Agree allows features to be checked in situ without the need for movement. It establishes a c-command relation between an element (the *probe*) containing a valued feature [value-F] and another element (the *goal*), which bears a matching feature but which is unvalued [F: ?]: the goal is commanded by the probe. Under Agree, the unvalued feature on the goal is valued by the matching feature of the probe:

(12)



4.2 Phases and multiple spell-out

As we mentioned before, Chomsky[2,5] and Uriagereka[7] argue that Spell-Out and LF/PF convergence need not necessarily apply only once to the final syntactic object at the end of the derivation. Instead, during the course of the derivation, any "well-defined" sub-part, whose derivation is complete and whose presence/absence will have no consequence on the rest of the derivation, can be spelt out. The derivational complexity, therefore, can be reduced by dividing the lexical array that is numerated from the lexicon into sub-arrays, which are fed into the computational system to derive a particular phase. Upon the completion of the derivational cycle, each phase is separately transferred to the interfaces. This, of course, entails Multiple Spell-Out.

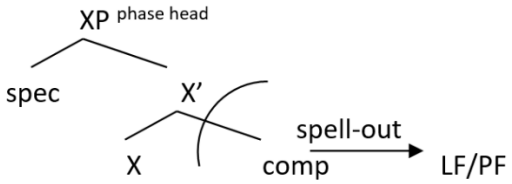
In our analysis, the syntactic objects that qualify as phases are CPs, TPs, *v*Ps and DPs (see Chomsky[4] for DPs being considered as phases). Chomsky[5] argues that phases are propositional in nature. By this criterion, CPs and transitive *v*Ps are ruled in, but TPs are not. CPs are complete clausal complexes containing full propositions, and transitive *v*Ps are complete thematic complexes. Along the same lines, there is evidence to support that in Arabic TPs also qualify as phases. We shall see that the maximal

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projection for the derivation of VSO word order, a complete clause that contains a full proposition, is TP (not CP) – see Step 4 in §5.3. Likewise, the maximal projection for the derivation of the pro-drop variants of OVS and SVO, both of them being complete clauses that contain full propositions, is TP (not CP) – see Step 4 in §5.1 and §5.2.

The spell-out of a phase head XP only triggers the LF/PF interpretation of the complement, but not the head and the specifier. The Phase Impenetrability Condition renders the complement of XP inaccessible to further operations in the syntax. The head and specifier – the edge of the phase – will remain accessible to further operations in the syntax, and ultimately, they will be spelt-out only at the next higher phase:

(13)



5. TREATMENT OF THE DATA

In what follows, we shall apply to our data (described in §2-3) the theoretical constructs of Minimalist Syntax explicated in §4 above. For expository convenience, we shall deal with the three constructions in descending order of complexity. This way, the derivational tools deployed to deal with the most complex of the three constructions (OVS in §5.1) can be redeployed to deal with the syntactically more basic word orders (SVO and VSO in §5.2 and 5.3, respectively). In other words, the derivation of the simpler constructions will largely follow from the derivation of the more complex one.

5.1 Deriving OVS

In order to derive the example sentence in (2), repeated here as (14), a lexical and functional array with the feature specification presented in *Table 1* would need to be numerated from the lexicon:

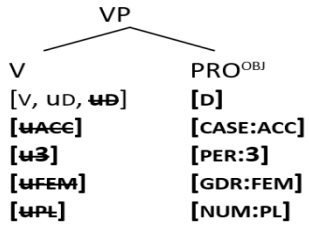
Table 1: Numeration for deriving OVS

Features	Lexical and Functional Categories						
node	(C)	(DP^{TOP})	T	DP^{SUBJ}	*v*	V	PRO^{OBJ}
category	[C]	[TOP]		[D]	[*V]	[V]	[D]
c-selection			[uTOP]			[uD, uD]	
tense			[PAST]		[INFL: ?]		
case	[uACC]	[CASE: ?]	[uNOM]	[CASE: ?]		[uACC]	[CASE: ?]
person		[3]		[3]	[PER: ?]	[u3]	[PER: ?]
gender		[FEM]		[MASC]	[GDR: ?]	[uFEM]	[GDR: ?]
number		[PL]		[PL]		[uPL]	[NUM: ?]

(14) al-muʕalim-aat-u ʃakar-a-hun aṭ-ṭulaab-u
DEF-teacher-3F.PL-NOM thank.PAST-3M.SG-3F.PL DEF-student.3M.PL-NOM
'The teachers, the students thanked them.'

The derivation would then proceed in two phases: the *v*P phase (Steps 1-4) and the CP phase (Steps 5-6):

(15)

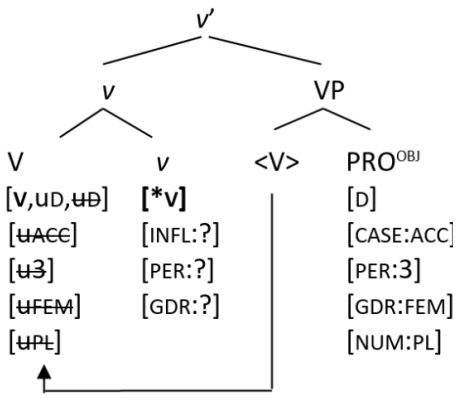


Step 1.1: Merge the verb (V – *ʃakar-a-hun*) with the null object (PRO^{OBJ}), satisfying the uninterpretable c-selection feature [uD] associated with the object argument. The unvalued case feature [CASE: ?] of PRO^{OBJ} and the uninterpretable case feature [uACC] of V agree. As a result, the case feature of PRO^{OBJ} is valued as [CASE: ACC] and the uninterpretable case feature of V is deleted [uACC]. The unvalued person [PER: ?], gender [GDR: ?] and number [NUM: ?] features of PRO^{OBJ} are treated in the same way: they are valued by their corresponding uninterpretable features on V via operation Agree. This configuration checks the rich agreement features of the verbally bound pronominal clitic *-hun*.

In dealing with the VSO-SVO agreement asymmetry, Soltan[20] claims that the difference is simply a consequence of whether the structure contains a PRO or not: the presence of PRO always requires rich agreement at the interface. This suggestion is extended here to tackle rich agreement with a topicalized object.

Step 1.2: Though the PRO^{OBJ} now contains only interpretable features, it cannot be spelt-out as it is a null category that lacks a phonological form and therefore would be uninterpretable at PF. It will remain in the derivation together with the lexical V-head, which still contains an uninterpretable c-selection feature [uD].

(16)

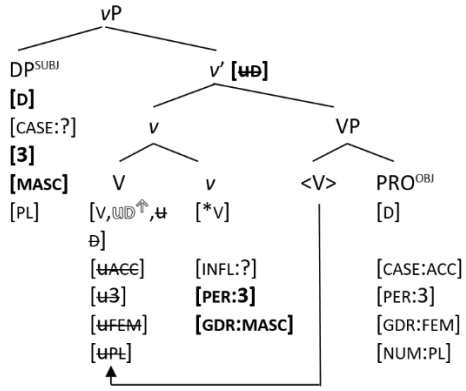


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Step 2.1: Merge the null functional head, little *v*, with the output of Step 1. Attracted by the strong verb feature [*V], the lexical head V raises and adjoins to little *v*. Little *v* hosts the tense feature of the verb [INFL: ?], as well as the person [PER: ?] and gender [GDR: ?] features responsible for the poor verbal agreement with the subject. For now, they will remain unvalued. Poor agreement is accounted for simply by not specifying little *v* with a number feature.

Step 2.2: In addition to the uninterpretable c-selection feature [uD] hosted by V (carried over from Step 1), the syntactic representation of the verb complex [*v*'[*v*][VP[V][PRO^{OBJ}]]] now contains an unvalued tense [INFL: ?], as well as person [PER: ?] and gender [GDR: ?] agreement features hosted by little *v*:

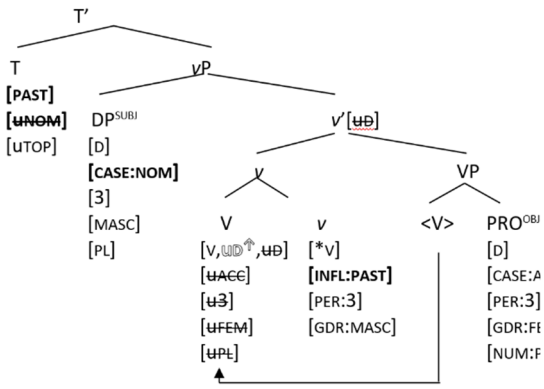
(17)



Step 3.1: Merge the subject (DP^{SUBJ} – *aɬ-ɬulaab-u*) with the output of Step 2. The uninterpretable c-selection feature [uD] on the V-head percolates up to the little *v*-bar node, where it is checked under sisterhood against the category feature [D] of the DP^{SUBJ}. The unvalued person [PER: ?] and gender [GDR: ?] agreement features on the little *v*-head are valued by the interpretable person [3] and gender [MASC] features of the DP^{SUBJ} under command via operation Agree.

Step 3.2: Little *v*-head still contains an unvalued tense feature [INFL: ?], while the DP^{SUBJ} contains an unvalued case feature [CASE: ?]:

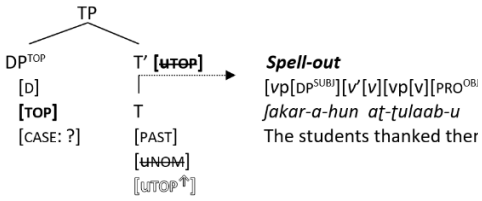
(18)



Step 4.1: Merge the functional head of the sentence, the null T, with the output of Step 3. The unvalued tense feature [INFL: ?] on little *v* is valued under c-command by the interpretable tense feature [PAST] of T via operation Agree. The unvalued case feature [CASE: ?] on the NP^{SUBJ} is treated in the same way, as it is valued by the uninterpretable case features [uNOM] of T.

Step 4.2: The syntactic representation of the little *v*P does not contain any uninterpretable or unvalued feature. The little *v*P complex [*v*P[DP^{SUBJ}][*v*'[*v*][VP[V][PRO^{OBJ}]]]] can now be spelt-out. This marks the end of the *v*P derivational phase. The phase is transferred to the interfaces and thus no longer bothers the computation with its weight. The Phase Impenetrability Condition renders the *v*P complex inaccessible to further operations in the syntax. This conceptual advantage is supported by empirical data. Step 4 seems like a natural place to end a phase. The difference between the pro-drop variant of OVS – see example (3a) – and the OVS topic-comment structure in (2), repeated as (14), hinges on whether the numerated T-head contains the discourse feature [uTOP] or not. If the T-head does not contain the discourse feature [uTOP], the derivation ends at Step 4 and the pro-drop variant of OVS is generated. In that case, the need to spell-out the *v*P phase separately could be alleviated, and the entire structure represented in Step 4 would simply be spelt-out as a TP. On the other hand, if the T-head contains an uninterpretable discourse feature [uTOP], the derivation will continue until ultimately the OVS topic-comment structure is generated. In this case, the T-head is a phase edge, accessible to further syntactic operations:

(19)

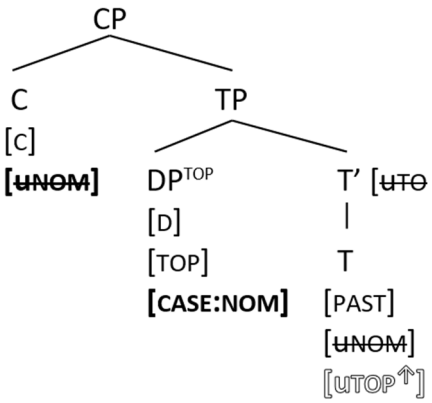


Step 5.1: Merge the topic (DP^{TOP} – *al-muʕalim-aat-u*) with the output of Step 4. The uninterpretable c-selection feature [uTOP] of T percolates up to T-bar, where it is checked under sisterhood by the category feature [TOP] of the DP^{TOP}. We shall account for the definiteness constraint discussed in §1.3 simply by postulating that the category feature [TOP] on the DP^{TOP} will ensure that it is definite.

Step 5.2: The syntactic representation of the DP^{TOP} still contains an unvalued case feature [CASE:?] and will therefore remain in the syntactic derivation:

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(20)



Step 6.1: Merge the null C-head with the output of Step 5. The unvalued case feature [CASE:?] on the DP^{TOP} is valued under command by the uninterpretable case feature [uNOM] of C via operation Agree. This checking configuration accounts for the fact that topicalized objects are assigned nominative case.

Step 6.2: To account for the fact that the topicalized object may be assigned accusative case by the emphatic complementizer *ʔinna* (see (5a)), we could simply assume that when *ʔinna* is numerated in place of the null C-head, it is specified for an uninterpretable case feature [uACC].

Step 6.3: The syntactic representation of the CP has been rid of all uninterpretable features, and all unvalued features have been valued. The CP complex [CP[TP[DP^{TOP}][T'[T]]]] can now be spelt-out, marking the end of the CP derivational phase and the end of OVS derivation.

At this stage, there is no further syntactic operation that can apply. The derivation has "run out of fuel", meaning that all of the uninterpretable features have been checked and deleted, and all unvalued features have been correctly valued. All of the properties of OVS word order discussed in §3.1-3.3 and summarized schematically in *Figure 1* have been adequately accounted for. These include verbal agreement by multiple controllers (subject and object), case properties of the topicalized object (nominative and accusative), and the possibility of pro-dropping the topicalized object.

5.2 Deriving SVO

In order to derive the example sentence in (1b), repeated here as (21), a lexical and functional array with the feature specification presented in *Table 2* would need to be numerated from the lexicon:

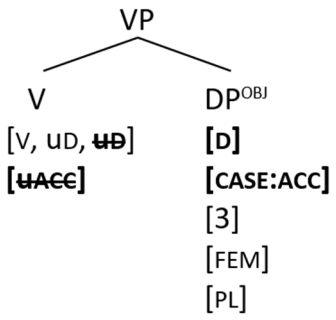
Table 2: Numeration for deriving SVO

Features	Lexical and Functional Categories						
node	(C)	(DP^{TOP})	T	PRO^{SUBJ}	*v*	V	DP^{OBJ}
category	[C]	[TOP]		[D]	[*V]	[V]	[D]
c-selection			[uTOP]			[uD, uD]	
tense			[PAST]		[INFL: ?]		
case	[uACC]	[CASE: ?]	[uNOM]	[CASE: ?]		[uACC]	[CASE: ?]
person		[3]	[u3]	[PER: ?]			[3]
gender		[MASC]	[uMASC]	[GDR: ?]			[FEM]
number		[PL]	[uPL]	[NUM: ?]			[PL]

(21) aʈ-ʈulaab-u ʃakar-uu al-muʕalim-aat-i
DEF-student.3M.PL-NOM thank.PAST-3M.PL DEF-teacher-3F.PL-ACC
'The students, they thanked the teachers.'

The derivation of SVO would involve three phases: the DP phase (Step 1), the *v*P phase (Steps 2-4) and the CP phase (Steps 5-6):

(22)

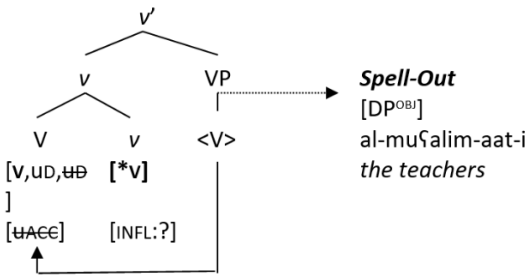


Step 1.1: Merge the verb (V – *ʃakar-uu*) with the object (DP^{OBJ} – *al-muʕalim-aat-i*), satisfying the uninterpretable c-selection feature [uD] associated with the object argument. The case feature of DP^{OBJ} is valued as [CASE: ACC] and the un-interpretable case feature is deleted [uACC].

Step 1.2: Unlike the PRO^{OBJ} of OVS, the object of SVO is an overt DP, which can be spelt-out at this stage. The DP derivational phase is transferred to the interfaces, and the computation is no longer bothered with its weight.

Step 1.3: The lexical V-head, which still contains an uninterpretable c-selection feature [uD], is a phase edge, accessible to further syntactic operations:

(23)

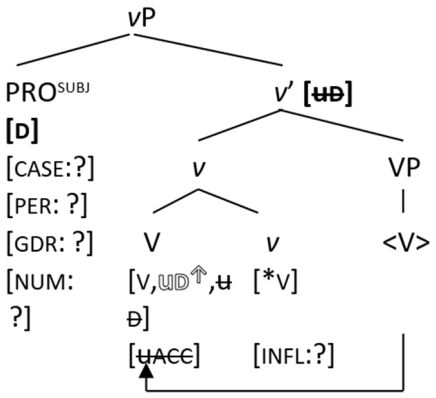


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Step 2.1: Merge the null functional head, little *v*, with the output of Step 1. The lexical head V raises and adjoins to little *v*. Little *v* hosts the tense feature of the verb [INFL:?], which for now will remain unchecked.

Step 2.2: In addition to the uninterpretable c-selection feature [uD] hosted by V (carried over from Step 1), the syntactic representation of the verb complex [*v*'[*v*][VP[V][DP^{OBJ}]]] now contains an unvalued tense feature [INFL: ?] hosted by little *v*:

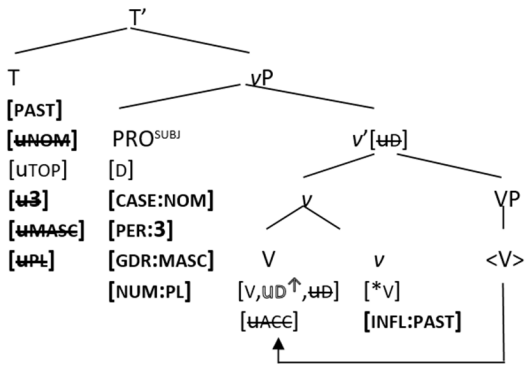
(24)



Step 3.1: Merge the null subject (PRO^{SUBJ}) with the output of Step 2. The uninterpretable c-selection feature [uD] on the V-head percolates up to the little *v*-bar node, where it is checked against the category feature [D] of the PRO^{SUBJ}.

Step 3.2: The little *v*-head still contains an unvalued tense feature [INFL: ?], while the PRO^{SUBJ} contains an unvalued case feature [CASE: ?], as well as the unvalued person [PER: ?], gender [GDR: ?] and number [NUM: ?] features responsible for rich verbal agreement with the topicalized subject:

(25)



Step 4.1: Merge the functional head of the sentence, the null T with the output of Step 3. The unvalued tense feature [INFL: ?] on little *v* is valued under command by the interpretable tense feature [PAST] of T via operation Agree. Similarly, the unvalued person [PER: ?], gender [GDR: ?] and number [NUM: ?] features, and the unvalued case feature [CASE: ?] of the PRO^{OBJ} are valued by their corresponding uninterpretable features of T.

Step 4.2: As with Step 4 of OVS (§5.1), at this stage in the derivation, the syntactic representation of the little *v*P does not contain any uninterpretable or unvalued feature. The little *v*P complex [*v*P[PRO^{SUBJ}][*v*'[*v*][VP[V]]]] can now be spelt-out. The *v*P derivational phase is transferred to the interfaces, and the computation is no longer bothered with its weight.

Step 4.3: Again, as with Step 4 of OVS, the difference between the pro-drop variant of SVO in (3b) and the SVO topic-comment structure in (1b), repeated as (21), hinges on whether the numerated T-head contains the discourse feature [uTOP] or not. If the T-head does not contain the discourse feature [uTOP], the derivation ends at Step 4 and the pro-drop variant of SVO is generated. As with OVS, Step 4 would simply be spelt-out as a TP. If the T-head contains an uninterpretable discourse feature [uTOP], the derivation will continue until ultimately the SVO topic-comment structure is generated. The T-head is a phase edge, accessible to further syntactic operations.

Steps 5 and 6: The rest of the derivation proceeds in the same manner as Steps 5 and 6 of the derivation of OVS, the only difference being that here the DP^{TOP} that is Merged in as a specifier of T is the topicalized subject *aṭ-ṭulaab-u*, rather than the topicalized object *al-muʕalim-aat-i*. Also, the case properties of the DP^{TOP} in the absence and presence of *ʔinna* are accounted for in the same way. Finally, the syntactic representation of the CP has been rid of all uninterpretable features, and all unvalued features have been valued. The CP complex [CP[TP[DP^{TOP}][T]]] can now be spelt-out, marking the end of the CP derivational phase and the end of the SVO derivation.

5.3 Deriving VSO

In order to derive the example sentence in (1a), repeated here as (26), the lexical and functional array with the feature specification presented in *Table 3* would need to be numerated from the lexicon:

Table 3: Numeration for deriving VSO

Features	Lexical and Functional Categories				
node	**T**	**DP^{SUBJ}**	***v***	**V**	**DP^{OBJ}**
category		[D]	[*V]	[V]	[D]
c-selection				[**u**D, **u**D]	
tense	[*PAST]		[INFL: **?**]		
case	[**u**NOM]	[CASE: **?**]		[**u**ACC]	[CASE: **?**]
person		[3]	[PER: **?**]		[3]
gender		[PL]	[NUM: **?**]		[PL]
number		[MASC]			[FEM]

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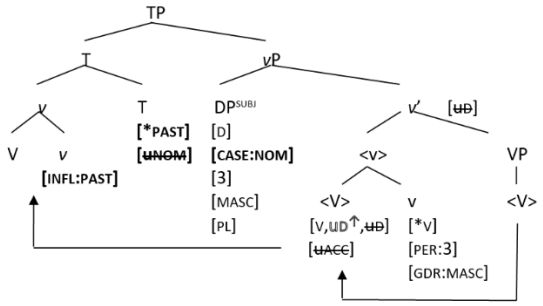
(26) ʃakar-a aṯ-ṯullaab-u al-muʕalim-aat-i
thank.PAST-3M.SG DEF-student.3M.PL-NOM DEF-teacher-3F.PL-ACC
'The students thanked the teachers.'

The derivation would involve two phases: the DP phase (Step 1) and the TP phase (Steps 2-4).

Step 1: Repeat Step 1 of the derivation of SVO, only this time it is the verb *ʃakar-a* (not *ʃakar-uu*) that is merged.

Steps 2 and 3: Repeat Steps 2 and 3 of the derivation of OVS.

(27)



Step 4.1: Merge the functional head of the sentence, the null T, with the output of Step 3. The unvalued case feature [CASE:?] of the DP^{SUBJ} is valued under command by the uninterpretable case feature [uNOM] of T via operation Agree. The unvalued tense feature [INFL: ?] of little *v* is attracted by the strong tense feature [*PAST] of T: little *v* raises and adjoins to T for local checking under sisterhood, thus deriving the superficial VS order.

Step 4.2: The syntactic representation of the TP has been rid of all uninterpretable features, and all unvalued features have been valued. The TP complex [TP[T][*v*P[DP^{SUBJ}][*v*'[*v*][VP[V]]]]] can now be spelt-out, marking the end of the TP derivational phase and the end of the VSO derivation.

6. SUMMARY AND CONCLUSION

The derivations of the word order types OVS, SVO and VSO in §5 account for a total of seven constructions. In addition to the topic-comment OVS and SVO constructions schematized in *Figure 1* and *Figure 2*, we have also accounted for their corresponding *ʔinna*-headed and pro-drop variants. *Table 4* summarizes the derivational phases involved in each construction and accentuates the key properties that distinguish the constructions from each other:

Table 4: Summary of the derivational phases

Construction	Derivational Phases	Distinctive Properties
OVS [topic-comment]	CP > *v*P	T [uTOP], null C [uNOM]
OVS [*ʕinna*-headed]	CP > *v*P	T [uTOP], overt C [uACC]
OVS [pro-drop]	TP	T without [uTOP]
SVO [topic-comment]	CP > *v*P > DP	T [uTOP], null C [uNOM]
SVO [*ʕinna*-headed]	CP > *v*P > DP	T [uTOP], overt C [uACC]
SVO [pro-drop]	TP > DP	T without [uTOP]
VSO	TP > DP	T [*PAST]

OVS is distinct from the other two-word orders in that it does not involve a DP phase. The justification for this is that the object that is base-generated as a complement of the lexical V-head is a PRO, a null category which lacks phonological form and therefore would not be interpretable at PF. In contrast to this, the object of SVO and VSO word orders is an overt DP, which would be interpretable and therefore can be spelt-out.

The highest derivational phase for the pro-drop variants of OVS and SVO word orders, and also for VSO word order is TP, not CP. This claim is empirically supported by the fact that at this stage of the derivation the structural representation of these constructions constitutes a full clause/thematic complex.

In the derivation of the OVS and SVO constructions the difference between the pro-drop variant and the non-pro-drop variants, in other words the OVS [topic-comment] and OVS [*ʔinna*-headed] structures, is that in the case of the latter the T-head is specified for a c-selection feature [uTOP] which forces a DP^{TOP} to Merge into the specifier position of the T-head and ensures that the DP^{TOP} is definite. Since the pro-drop variant does not allow a DP in that position, it is not specified for such a feature.

In relation to the same constructions (OVS and SVO), the difference between the *ʔinna*-headed and the non-*ʔinna*-headed variants is that in the case of the latter the C-head is a null category which assigns nominative case [NOM] to the DP^{TOP}. However, in the case of the *ʔinna*-headed variants the DP^{TOP} is assigned accusative case [ACC] by an over C-head, the emphatic complementizer *ʔinna*.

In the derivation of the VSO construction, the superficial VS word order is achieved by means of a strong tense feature [*past] on the T-head. This feature forces the verb to raise and adjoin to the T-head, where it can be checked in a local configuration under sisterhood.

To conclude, *Table 5* summarizes the mechanisms used to check verbal phi-feature agreement, and *Table 6* the checking mechanisms used to account for the various types of case assignment:

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Table 5: Checking mechanism for verbal phi-feature agreement

Agreement Type	Syntactic Configuration	Checking Configuration	
Rich – Topic of OVS	[VP[**V**][**PRO**^{OBJ}]]	**V** [~~u3~~] [~~uFEM~~] [~~uPL~~]	**PRO**^{OBJ} [PER: 3] [GDR: FEM] [NUM: PL]
Poor – Subject of OVS/VSO	[*v*P[**DP**^{SUBJ}][*v*′[***v***]]]	**DP**^{SUBJ} [3] [MASC]	***v*** [PER: 3] [GDR: MASC]

Table 6: Checking mechanism for case feature assignment

Case Recipient	Syntactic Configuration	Checking Configuration	
Topic of OVS/SVO (by null C)	[CP[**C**][TP[**DP**^{TOP}][T]]]	**C** [~~uNOM~~]	**DP**^{TOP} [CASE: NOM]
Topic of OVS/SV (by overt C)	[CP[**C**][TP[**DP**^{TOP}][T]]]	**C** [~~uACC~~]	**DP**^{TOP} [CASE: ACC]
Subject of SVO (clitic *-uu*)	[TP[**T**][*v*P[**PRO**^{SUBJ}][*v*′]]]	**T** [~~uNOM~~]	**PRO**^{SUBJ} [CASE: NOM]
Subject of VSO	[TP[**T**][*v*P[**DP**^{SUBJ}][*v*′]]]	**T** [~~uNOM~~]	**DP**^{SUBJ} [CASE: NOM]
Object of OVS (clitic *-hun*)	[VP[**V**][**PRO**^{OBJ}]]	**V** [~~uACC~~]	**PRO**^{OBJ} [CASE: ACC]
Object of SVO/VSO	[VP[**V**][**DP**^{OBJ}]]	**V** [~~uACC~~]	**DP**^{OBJ} [CASE: ACC]

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