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On some properties of nominals in Hebrew and Arabic: The 'construct-state' and the mechanisms of AGREE and MOVE

Ur Shlonsky

Phrasal roll-up movement in DP has been shown to account for the mirror-image effect in the order of post nominal modifiers in Arabic and Hebrew. In a model in which features can be valued without movement, through AGREE, the question arises as to why movement must occur in the first place in the Semitic DP. We relate movement to a morpho-syntactic property of the Semitic determiner, namely, the absence of φ features. Consequently, SEARCH initiated by the clausal probes *v* and T for a goal with valued φ features cannot succeed in the absence of some mechanism bringing DP-internal φ features at the edge of DP. This is accomplished in Semitic by movement, subject to familiar economy guidelines. The landing site of NP movement inside DP varies: No movement takes place when no material intervenes between the determiner and the noun or when intervening modifiers do not bear φ features. When agreeing modifiers intervene, NP raises above them, while remaining below D. Finally, construct state nominals raise as high as they can, to Spec/D. These different trajectories are justified empirically and grounded theoretically.

1. Introduction: Evidence for (phrasal) NP raising and snowball movement within DP

The research of the 80s and 90s established that in Hebrew and in many, if not all the varieties of Arabic, N(oun) moves fairly high up within the D(eterminer) P(hrase) projection (see Ouhalla & Shlonsky 2002 for an overview and the detailed studies of Fassi Fehri 1989; 1993, Longobardi 1996; 2001, Mohammad 1988; 1999, Ritter 1987; 1991, Siloni 1991; 1997.) In particular, N must precede all depictive adjectives, regardless of class, as well as the possessive PP. This is illustrated in (1) and (2).

(1) a. volvo xadaša
Volvo new.F.S
'a new Volvo'

b. *xadaša volvo
new.F.S Volvo

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(2) a. volvo šel-a
Volvo of-3.F.S
'her Volvo'

b. *šel-a volvo
of-3.F.S Volvo

Fassi Fehri (1997; 1998; 1999) and, following him, Shlonsky (2004) observe that (the post-nominal) adjectives in Arabic and Hebrew are arrayed from left to right in exactly the reverse order from the one that characterizes languages in which adjectives precede N, like English, (see Cinque 2000 for discussion). Unless *naknikiya ostrit* 'Austrian sausage' is taken to be a lexicalized form (which it is not) or unless *ostrit* 'Austrian' is assigned contrastive or corrective focus, the DP [a Kosher Austrian sausage] must be rendered in Hebrew as in (3b), with the qualitative adjective (Kosher) following the nationality one (Austrian), reversing the order natural in English.

(3) a. *naknikiya kšera ostrit
sausage.F.S Kosher.F.S Austrian.F.S
'An Austrian Kosher sausage'

b. naknikiya ostrit kšera
sausage.F.S Austrian-.F.S Kosher.F.S

When more than two adjectives are merged into the structure, the English order Adj1>Adj2>Adj3>N is reversed in Hebrew, yielding N>Adj3>Adj2>Adj1, as illustrated by the differences in acceptable word orders in (4). Note that the order is rigid, Adj3>Adj2>Adj1 as in (4f) is the only acceptable order in Hebrew. The unmarked order in English is as in the translation.

(4) a. *hafgaza efšarit masivit israelit
bombardment possible massive Israeli
'a possible massive Israeli bombardment'

b. *hafgaza efšarit israelit masivit
bombardment possible Israeli massive

c. *hafgaza masivit efšarit israelit
bombardment massive possible Israeli

d. *hafgaza masivit israelit efšarit
bombardment massive Israeli possible

e. *hafgaza israelit efšarit masivit
bombardment Israeli possible massive

f. hafgaza israelit masivit efšarit
bombardment Israeli massive possible

There is more variation across Arabic dialects and among registers of Hebrew when it comes to the positioning, relative to N, of higher material in DP - ordinal and cardinal numerals, demonstratives and weak quantifiers such as *many* and *few*. Cinque (2000), citing data from Fassi Fehri (1998), shows that in Standard Arabic, material to the left of N is arrayed in the canonical (English-like) order, while material to the right of N appears in a reverse, mirror-image order. Thus, the numeral precedes the demonstrative in (5a), while following it in (5b). Similar patterns are found in Hebrew and in the overwhelming majority of Arabic dialects.

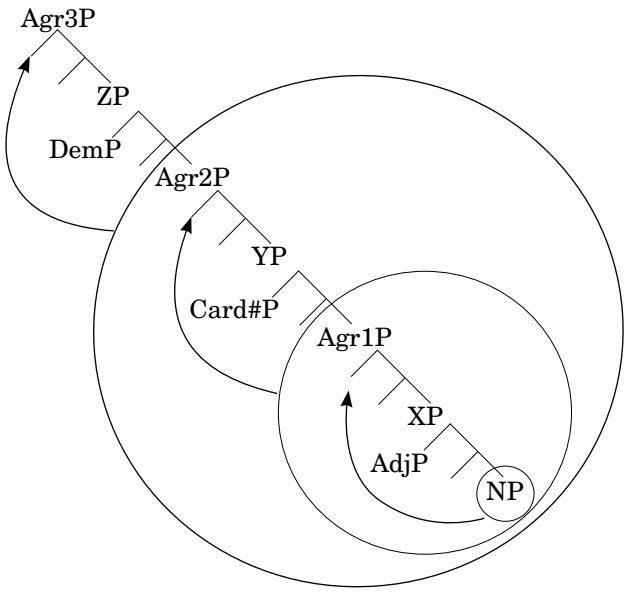
(5) a. ṣ-ṣuħuf-u t-talaat-u haaðihi
the-newspapers-NOM the-three-NOM these.F.S

b. haaðihi t-talaat-u ṣ-ṣuħuf-u
these.F.S. the-three-NOM the-newspapers-NOM
'these three newspapers'

Following Cinque (1996; 2000; 2005), Shlonsky (2004) argues that such ordering patterns can be derived if NP, rather than N, is targeted for MOVE and at every step of movement, it pied pipes all the material it c-commands. Movement takes the form of a snowball, gathering material as it rolls up the syntactic tree. In (5a), this sort of phrasal pied-piping raises NP above AdjP and the result is then raised above DemP. In (5b), phrasal movement stops below the demonstrative.

Snowball movement is implemented in Shlonsky (2004) by taking every 'substantive' functional head inside DP (e.g., those housing AdjPs, cardinal numeral phrases, demonstrative phrases, etc. in their specifiers) to be c-commanded by an Agr head which attracts the complement of the substantive head to its specifier. The derivation is schematized in (6).

(6)



Several questions were left unresolved in Shlonsky (2004) and the purpose of this contribution is to address them.

(i) Why does movement occur internally to DP or, conversely, what would happen in Arabic/Hebrew if NP failed to raise above AdjPs?

(ii) What 'forces' category movement as opposed to head movement and, in particular, why is movement of the roll-up and not of the splitting variety, in the terminology introduced by Koopman & Szabolsci (2000)?

In a nutshell, we argue that movement internal to DP is deployed as a last resort, when AGREE is blocked by an intervening feature. We show that NP raises above all agreeing modifiers but stops below non-agreeing ones. Agreeing adjectives are intervenors to AGREE and block successful PROBE of the noun by a higher head. Movement of NP above agreeing adjectives places it in an accessible position to PROBE. Two probing heads are relevant to this discussion. The determiner (henceforth Det) probes for a [D] feature on N and the clausal heads T and *v* probe for φ features, the valuation of which Case-licenses N.

These ideas are developed in sections 3 and 4. Section 5 addresses the second issue, that of snowballing phrasal movement and the absence of N-movement.

2. Setting the stage

A useful starting point for addressing both questions is the following comparative observation: Hebrew and Arabic are similar to Romance and some Germanic languages in that adjectival modifiers agree with the noun in φ features (and Case in Standard Arabic) while radically different from these European languages in manifesting no concord or agreement features whatsoever on their determiners. The DPs in (7) manifest number/gender concord between a noun and an adjective in Hebrew and French, and the paradigm in (8) shows that the definite determiner (*ʔal* in Arabic, *ha* in Hebrew (not illustrated here)) is not inflected, neither for φ features, nor for Case.[1]

(7) a.
un	enfant	géant
a.M.S	child.M.S	giant.M.S

b.
une	erreur	gigantesque
a.F.S	error.F.S	gigantic.F.S

(8) a. ʔal walad-u — the boy.M.S-NOM; ʔal ʔawlaad-u — the boy.M.PL-NOM

b. ʔal walad-a — the boy.M.S-ACC; ʔal ʔawlaad-a — the boy.M.PL-ACC

c. ʔal walad-i — the boy.M.S-GEN; ʔal ʔawlaad-i — the boy.M.PL-GEN

Unlike English, Arabic and Hebrew are languages with rich agreement in both the nominal and the clausal systems. The absence of φ/Case features on Det is thus not just another instantiation of a general tendency or property of the language. It is worthwhile, we think, to take seriously the idea that in Hebrew and Arabic, those features are literally absent, rather than simply non-overt.

The other relevant morphosyntactic difference between Semitic and Romance is that adjectives agree with N not only in φ features but

also in definiteness. This is manifested by the appearance of a definite determiner on the AdjP, as illustrated by the Hebrew DPs in (9).[2]

(9) a. ha yeled ha anaq-i
the boy.M.S the gigantic-.M.S
'the gigantic boy'

b. ha šgi'a ha 'anaq-it
the error.F.S the gigantic-F.S
'the gigantic error'

An important observation, in this context, is due to Sichel (2002; 2003), who provides the following examples of DPs in which the definite article preceding the adjective is separated from it by (phrasal) negation.

(10) a. ha misada ha lo kšera
the restaurant the not Kosher
'the non-Kosher restaurant'

b. ha yalda ha bilti memušma'at
the girl the not polite
'the impolite girl'

On the basis of these data, Sichel concludes that the determiner in AdjPs is not a feature of the adjective, but a head in its own right, projecting a DP.

To close this section, let us note that a D feature should not to be equated with the semantic property of definiteness, as Danon (2008) and Winter (2005) have argued. We take it to be (merely) a computationally-active formal feature (and see Delfitto *et al.* (2009) for some recent discussion.)

With this background in mind, consider first the first question of this contribution, that is, the reasons for movement within the Semitic DP.

3. Movement internal to DP

We assume that the only instance of an interpretable [D] is on N. [D] on Det or [D] associated with adjectives are instances of an uninterpretable D feature. These occurrences of [*u*D] must enter into an AGREE relation with N, the bearer of [*i*D]. While AGREE without MOVE is generally sufficient to establish the required relation between the probe and the goal, MOVE nevertheless seems to apply in the Semitic DP, raising the N or NP above AdjP, as shown in section 1.

We assume that movement here, as elsewhere, is more costly than simple AGREE because it involves an extra computational step. It is therefore implemented only as a last resort. In the case at hand, movement of NP above the adjective is the only way to bring N's [*i*D] into a position accessible to Det. The [D]-bearing AdjP (or the DP encasing it) lies in Det's search domain, blocking access to N.

While NP movement above all depictive APs is the rule in Arabic and Hebrew, Shlonsky (2004) observes that movement may stop, as it were, below certain DP-internal material. Consider (11a) from Beiruti Arabic with a cardinal numeral *tleet* 'three' and (11b) from Hebrew with the quantifier *me' at* 'few'.

(11) a. t-tleet kitub
the-three book-PL
'the three books'

b. ?ha me'at rabanim še od maxziqim b 'araxim
the few rabbis that still hold.PL to values
universalim...
universalim...
'the few rabbis that still hold universal values…'

The examples in (11) alternate with those in (12), the difference being that the pre-nominal modifier does not agree with the noun (neither in [φ] nor with respect to [D].)

(12) a. l-kitub t-tleet-e
the-book-PL the-three-'F'[3]

b. ha rabanim ha me'at-im še od maxziqim b 'araxim
the rabbis t he few-PL that still hold-PL to values
universalim...
universal...
'the few rabbis who still hold universal values…'

Since the modifiers in (11) are bereft of a D feature, probe from Det can target N directly, without forcing it to move.

The data in (11) might suggest a stronger conclusion, namely, that N (or, rather, NP) does not move at all when there is no material intervening between it and Det. Some degree of movement, however, seems necessary in order to account for the fact that possessor PPs must follow N in Hebrew and may not precede it.

(13) ha xatul šel ha rav
the cat of the Rabbi
'the Rabbi's cat'

However one analyzes the derivation of the noun-possessive PP order (see Sichel 2002 for a concrete proposal), it is clear that for the noun to get to be above its possessor, some sort of movement must take place.

We have sketched the implementation of D-agreement internally to the Semitic DP but have ignored the issue of how the proposed system deals with agreement in φ features. Ritter (1991) was the first to argue that the number feature is not an intrinsic or lexical feature of nouns but is contributed by an independent functional head, Num^0, to which, in Hebrew, N must incorporate. If so, then (some) movement of N or NP occurs even in simple, unmodified nouns.

Romance Det typically displays φ features. Let us say that Det in Romance has [*u*φ] and probes for [*i*φ]. Semitic Det, we argued above, has no φ features and does not probe for [φ] (but only for [D]).

This difference has several consequences. The most important one is that probe for [φ] by the clausal probes T or *v* in Semitic is apparently able to penetrate into DP in order to access φ features on Num (or N). Of course, if Num (or N(P)) were to move to Det, probe by T/*v* could stop at Det. However, the cases we have examined till now give us no reason to believe that N/NP moves as high as Det (see, in particular, the examples in (11)).

Probe into DP is problematic if DP is a phase, as Gutiérrez-Bravo (2001), Svenonius (2004) and others have argued. The edge of DP, that is, its spec or its head, namely Det, are accessible to PROBE but not Num or N embedded within DP. Successful probe by T/*v* thus requires the φ features internal to DP to somehow get onto its edge. We suggest that N's (or Num's) φ features are parasitic on N's [D] feature and are carried along with it, so to speak.

Concretely, we assume that fruitful probe or search is followed by copying the value of the relevant feature from the goal onto an empty feature slot on the probe. The interpretation of AGREE as copying of a feature value is reminiscent of feature movement in the sense of Chomsky (1995), differing from it only insofar as a feature value is copied, not the feature itself.[4] A [*u*F], under this implementation, is a feature slot without a value and an [*i*F] is a feature slot endowed with a value.

In the case at hand, [D] on Det is matched with [D] on N and the value of the latter is copied onto the former. φ features are not probed by Semitic Det, but their values, we assume, are automatically copied along with N's [D]. This is what is meant by a feature *bundle*. This specific implementation of Chomsky's (2000; 2001) notion of '*φ*-completeness' makes it possible to raise N's φ features to Det, thus rendering them accessible to probe by a phase-external head. Recall from the contrast between (11) and (12) that the categories that may

legitimately intervene between Det and N bear neither [φ] nor [D]. Thus, as long as N's [D] can be probed by Det, [φ] values can tag along. Probe by T/*v* can now proceed unhindered.

In Romance, Det is endowed with φ features and independently probes for N's [*i*φ]. Following Roberts' (2010) implementation, their values are copied onto the relevant slots on Det and hence become accessible to probe by T/v.[5]

The question arises as to why Romance N(P) fails to always raise above all (agreeing) AdjPs as it must in Semitic. Romance nouns raise a bit, but all Romance languages allow agreeing adjectives to precede a noun (for further discussion, see Cinque 2010; Laenzlinger 2005, a.o.) This has to do with the adjectival D-probe in Semitic, absent in Romance. If Sichel (2002; 2003) is correct in interpreting the examples in (10) as illustrating a Det head on top of AP, then one may hypothesize that even when its [*u*D] feature is valued, this Det remains active (features can be 'erased' upon valuation but if a head dominates a single feature, valuation of that feature cannot lead to the erasure of the head itself, namely, the label).

The adjectival Det therefore intervenes for probe by the 'main' Det of DP. To overcome this, N's [D] must be moved to a position above the intervening adjectival Det. This is implemented by phrasal movement to the specifier of the adjectival Det. In Romance, AGREE can be established between D and Adj and between Adj and N because there are no intervenors of the Semitic sort; the adjectival φ features on Det or on the adjective become inactive or are simply erased once agreement is established (but see Danon 2011 and Carstens 2000, 2001 for a different view.)

We have suggested that N(P) in Semitic must raise to access Num and argued that it must move to a position where its features are accessible to probe by Det. However, N(P) does not need to move to Det itself, since, in the absence of any intervenors, AGREE can be implemented for [D] without requiring MOVE. There is, however, one type of NP in Semitic that does raise to the 'main' Det, in fact, to Spec/Det. This is the type of nominal known as 'construct state', to the discussion of which we now turn.

4. Semitic construct state nominals and movement to Spec/Det

Let us briefly summarize the relevant characteristics of this kind of nominal expression (see Shlonsky 2004 and the (many) references cited therein for a more thorough description.) Basically, this kind

of NP consists of a N to which its (preposition-less) DP complement is strictly adjacent. The nominal head has φ features (number and gender) but cannot be preceded by a determiner, as illustrated by the Hebrew DP in (14).

(14) (*ha) gur-ey ha kalb-a
the puppy-M.PL the dog-F.S
'the bitch's puppies'

In the following Standard Arabic example, the head noun bears nominative case and the complement manifests genitive. Genitive case is manifested in Arabic on the complement of head nouns in the construct state and on objects of prepositions. The case on the nominal head, nominative in (15), is 'structural' in the sense that it varies with the nominal's role and position.

(15) daar-u r-ražul-i
house.M.S-NOM the-man-GEN
'The man's house'

The definiteness of the construct state DP depends entirely on the presence or absence of a definite determiner on the noun's complement, as illustrated in (16).

(16) a. xatul-at ha rav
cat-F.S the rabbi
'The cat of the Rabbi'

b. xatul-at rav
cat-F.S Rabbi
'a cat of a Rabbi'

The phonological word boundary between the nominal head of the construct state and its complement are obliterated. This results in the non application of the word-final deletion of the feminine suffix /-t/, as shown in (17). Various other phonological modifications occur in the nominal stem (not shown here), due, principally, to its de-stressing and to rightwards stress shift.

(17) xatul xatul-a xatul-at-i xatul-at ha rav
cat.M.S cat-F.S cat-F.S-my cat-F.S the Rabbi
'male cat' 'my female cat' 'female cat' 'the Rabbi's female cat'

No lexical material (e.g., parentheticals,) can appear between the construct-head and its DP complement. The noun *xulcat* 'shirt' in (18a) is a construct state head (as witnessed by the occurrence of the word-final feminine suffix /-t/) and the parenthetical cannot appear between it and 'corduroy', its complement. No such constraint holds of non-construct noun-adjective sequences, as illustrated in (18b).

(18) a. *xulcat ya'ani corduroy
shirt ya'ani corduroy
'an, I mean, corduroy shirt'

b. xulca ya'ani aruka
shirt ya'ani long
'an, I mean, long shirt'

Construct states can be recursive.

(19) kis xulc-at menahel-et beit ha rav ha civ'oni
pocket-M shirt-F.S manager-F.S house.M.S the Rabbi.M.S the colorful.M.S
'the colorful pocket of the shirt of the Rabbi's house manager'
'the pocket of the shirt of the manager of the Rabbi's colorful house'
'the pocket of the shirt of the manager of the house of the colorful Rabbi'

Shlonsky (2004) argues that the construct state is the binary tree formed by merging a noun and its sister. The derivation might actually be more complex, since the noun bears number features. [Number] is either associated with a Num head – see the discussion in the second paragraph following (13) - or, perhaps, it is a feature of *n* ('little n') to which N (maybe only a root) moves.

In non-event nominals, the complement to the nominal head of the construct state must be the first argument the noun is merged with, the Theme, that is, rather than the Agent or the Possessor.[6] In (20), only the Theme can appear in construct with the noun *tmunat* 'painting'; the Agent must be configured as a complement of the genitive preposition *šel*. (21) has only prepositional genitives and the Theme can freely precede or follow the Agent/Possessor.

(20) a. tmunat ha xamanyot šel vangox
painting the sunflowers of Van Gogh
'the painting of the sunflowers by Van Gogh'

b. *tmunat vangox šel ha xamanyot
painting Van Gogh of the sunflowers
'the painting of Van Gogh of the sunflowers'

(21) a. ha tmuna šel ha xamanyot šel vangox
the painting of the sunflowers of Van Gogh
'the painting of the sunflowers by Van Gogh'

b. ha tmuna šel vangox šel ha xamanyot
the painting of Van Gogh of the sunflowers
'Van Gogh's painting of the sunflowers'

Under Shlonsky's (2004) analysis, this pattern has a natural explanation, since the Theme is the noun's sister (see Shlonsky 1988). Under the alternative (nominal root → Num/n) view, the pattern displayed in (20) and (21) is derived on the assumption that the Theme is merged below Num/n and the Agent/Possessor above it.

The nominal head of the construct-state bears φ features (it has [*i*φ]) but lacks [D]. Updating Borer (1999), let us assume that it lacks a D feature altogether. Hence, the main Det of DP cannot find a match on the noun. The closest occurrence of [*i*D] is on the noun embedded within the complement of the construct head. However, this target is inaccessible to probe, precisely because it is embedded inside DP.

The implementation of AGREE which we have adopted, involving the copy of feature values from goal to probe, resolves this problem. Although the main Det cannot probe 'inside' the DP of the complement to the construct head, it can unproblematically probe the complement Det itself, namely, the edge of the complement DP. At the point at which probe by the main Det is executed, the complement Det has a valued [D] feature and can, itself, serve as a legitimate goal. Recall that the noun head of the construct is, by assumption, bereft of a [D] feature and hence does not intervene in the search for [D]. In other words, AGREE for [D] is implemented in two stages, as it were. First, internal to the complement DP, Det probes for [D] on the (complement) N. Then, when the main Det is merged, it probes the complement Det which carries the appropriate valued feature. This kind of cyclic AGREE may be independently necessary as Legate (2005) has argued (see the discussion in Danon 2011, Frampton & Gutmann 2006 and Pesetsky & Torrego 2007, inter alia).

The implementation of AGREE in construct state nominals, sketched in the preceding paragraphs, leads to a problem, though. If probe by the main Det is realized by copying the value of the [D] feature from the complement Det, and if φ features are copied along with [D], then we expect the main DP to manifest the φ features of the complement noun. What we find, however, is that the main DP bears the φ features of the construct head noun and not those of its complement. The main verb 'buy' in (22) agrees with 'sons' and not with 'Rabbi's wife'.

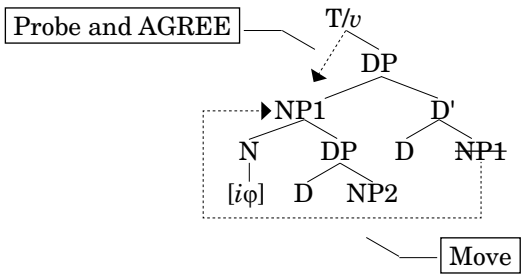
(22) bnei ha rabanit kan-u / *kan-ta volvo
sons the Rabbi's wife bought-PL / bought-F.S Volvo
'The Rabbi's wife's sons bought a Volvo.'

There is a formal reason for this. The complement of Det acquires the values of the φ features embedded in its complement (originating in the complement N and/or Num/*n*) via probe and valuation for [D] and should presumably be able to transmit them further to the main Det. However, the φ features of the construct head N are actually closer to the main Det than those accumulated on the complement Det and although N's φ features are not probed by main Det (which only probes for [D]) they constitute a (perhaps defective) intervenor for AGREE between the main Det and the complement Det.

The solution that Arabic and Hebrew have found to this problem lies in moving the entire construct state NP to the specifier of the main Det. The technical problem of intervention is circumvented because at no point do the φ features of the complement noun, accumulated on the complement Det, ever move across those of the head noun. The outcome of this movement operation is that the φ features of the head noun end up actually closer to the external probes T/*v* than those of the complement N (or Det) as they lie on the extreme left-edge of DP.

The relevant aspects of this derivation are sketched in (23). Movement of NP1 (the entire construct state nominal) brings the head noun of the construct state to a position where it can be directly probed for [φ] by the clausal probes T/*v*.

(23)



The following examples provide the necessary empirical evidence for (23). They show that the construct state nominal moves higher than a non construct N(P). In Standard Arabic, the demonstrative can either precede Det or follow the noun. Shlonsky (2004) argues that the demonstrative is merged below Det and undergoes head-movement, adjoining

to it. This yields the order Dem > Det, as in (24a). Alternatively, the complement of Dem is raised above it, as in the last step of the derivation schematized in (6). This option is illustrated in (24b).

(24) a. haaða l-walad-u
this.M.S the-boy-NOM
'this boy'
b. l-walad-u haaða
the-boy-NOM this.M.S
'this boy'

The pair in (25) demonstrates that only the raising option is available when the complement of Dem is or contains a construct state.

(25) a. *haaða ʔibn-u ražul-i
this.M.S son-NOM man-GEN
'this man's son'
b. ʔibn-u ražul-i haaða
son-NOM man-GEN this.M.S
'this man's son'

If movement over Dem in (24b) can target Spec/Agr3 and remain below Det, we take movement of a construct state in (25b) to land in Spec/Det. The contrast between (25a) and (25b) shows that movement of the construct state above Dem is obligatory. This has nothing to do with the demonstrative, the presence of which is merely an indication of where the construct state nominal lands. Rather, it is driven be the need to render [*i*φ] accessible to the clausal probes. These features, which originate internally to DP, are not probed by Det but, as we argued, piggy-back on Det's probe for [D]. Construct states are characterized by a head noun which lacks [D] and is therefore not a goal for probe by Det. Movement of the construct state nominal to the edge of DP – conditioned by the successful probe by Det for [D] on the complement Det, is how Semitic makes possible successful probe by T/*v*.

There is a further issue concerning (25b). If *ʔibn-u ražul-i* 'the man's son' is in Spec/Det, where is the determiner itself? Presumably, it should appear either between the fronted construct state nominal and Dem, as in (26a), or if Dem adjoins to Det, immediately to its right, as in (26b). Neither one is possible.

(26) a. *ʔibn-u ražul-i l haaða
son-NOM man-GEN the this.M.S
'this man's son'

b. *ʔibn-u ražul-i haaða l
son-NOM man-GEN this.M.S the

The general rule in Arabic and Hebrew is that post-nominal material (in DP) can only be realized if it contains φ-features. Thus, for example, the φ-less quantifier *me'at* 'few' precedes NP in (11b) but only the φ-bearing one *m'eatim* can follow it, as in (12b) (both repeated below). (27), with a postnominal φ-less *m'eat,* is completely unacceptable, with or without an adjectival Det.

(11) b. ?ha me'at rabanim še od maxziqim b 'araxim
the few rabbis that still hold.PL to values
universalim...
universal...
'the few rabbis that still hold universal values…'

(12) b. ha rabanim ha me'at-im še od maxziqim b 'araxim
the rabbis the few-PL that still hold-PL to values
universalim...
universal...
'the few rabbis who still hold universal values…'

(27) *ha rabanim (ha) me'at
the rabbis (the) few
'the few Rabbis'

In non-construct nominals, both [φ] and [D] come from the noun and get copied onto Det but precisely in the case of construct state nominals, the φ features of N are not copied onto Det. Rather, NP as a unit moves to the left of Det and the φ features of the noun are simply carried along via phrasal movement. Hence, Det never has φ features and cannot be phonetically realized.

5. Why phrasal movement?

In the preceding section, we argued that a construct state NP moves as a unit. This is surely due to the peculiar state of affairs that arises in this construction, whereby features located on two different heads must appear on Det or on the edge of DP. Specifically, the main Det probes for [D] on the complement DP but it is the [φ] of the nominal head which ends up in the search domain of the clausal heads T and *v*. The only way to satisfy both conditions is for Det to agree with

the complement D for [D] and to trigger movement of the entire NP to Spec/Det for [φ].[7]

Phrasal movement, however, takes place even when the construct state is absent. In particular, it arguably occurs whenever an adjective stands in the way of successful probe of N's [*i*D] by Det. In section 1 above, we described movement above adjectives as involving NP raising to the specifier of the adjectival Det and subsequent snowballing above other adjectives, yielding inverse adjective ordering. The question is why head movement of N is never an option in Arabic or Hebrew.

Note that head movement is indistinguishable, in terms of the word order it generates, from remnant category movement. It could just be that many, perhaps all cases of putative head movement, discussed in the literature in reality manifest phrasal remnant movement, as Kayne (1994) and Koopman and Szabolsci (2000) have pointed out. The two configurations discussed in this paper, namely, inverse adjective ordering and the construct state provide positive evidence for phrasal movement. Let us then ask the more specific question of why phrasal movement takes the form of snowballing, as opposed to, say, movement from one specifier to another ('splitting' as opposed to 'roll up'). We believe the answer might lie in the properties of the specifier positions targeted by phrasal movement.

Among the notable differences between Hebrew/Arabic and Romance is that extraction from DP is possible in the latter but banned in the former, a fact noted originally in Borer (1984), and discussed in some detail in Shlonsky (1988). Consider the contrast between French and Hebrew in (28).

(28) a. De qui as tu vu une photo?
of whom have you seen a photo
'Whose photo have you seen?'

b. *šel mi ra'ita cilum?
of whom (you) saw photo
'Whose photo have you seen?'

If movement out of DP must proceed through the edge of DP, namely, its specifier, as Cinque (1980; *to appear*) argues, it follows that material that ends up in that position in Hebrew and Arabic cannot undergo further movement. In Hebrew, the only way to move something out of DP is to pied-pipe the entire DP. Compare (28b) and (29).

(29) cilum šel mi ra'ita?
photo of whom (you) saw
'Whose photo have you seen?'

Thus, at the point in the derivation where NP moves to the specifier of the adjectival DP, it can either remain there or, if there is an AdjP higher up that it must move over, the only option for NP is to pied pipe the entire adjectival DP. The result, of course, is snowballing, as the data described in (3) and (4) plainly demonstrates.

6. Summary and Conclusion

Probe-goal AGREE is the fundamental mechanism used by natural languages to value features and ensure legibility at the PF interface. When category movement occurs in addition to AGREE, it is deployed as a means of last resort, to circumvent obstacles to the implementation of AGREE.[8]

The thrust of this contribution has been to describe and motivate various instances of movement within the Semitic (Arabic and Hebrew) DP and to consider them in a comparative, cross-linguistic perspective. We have attempted to show how the distribution of [D] and [φ] features on the lexical and functional heads that constitute the DP phase, coupled with technical constraints on the application of AGREE, yield the intricate range of observed movement options. In addition, we have tried to explain why phrasal snowballing movement trumps head movement in the Semitic DP. In sum, we hope to have provided a useful updating of the analysis developed in Shlonsky (2004) and a principled set of answers to some of the issues that it raised but left for future research.

Address of the Author

Ur Shlonsky, Département de Linguistique, Université de Genève, 1211 Genève 4
< ur.shlonsky@unige.ch >

Notes

[1] The citation form of the Arabic determiner, *ʔal*, is reduced to *l* in non-pausal contexts. This *l*, in turn, undergoes full assimilation with a following coronal, e.g., in the examples in (5). This process of assimilation is found in all the varieties of Arabic discussed in this contribution.

[2] Hebrew and dialectal Arabic lack an indefinite determiner. We do not address either the question of how indefiniteness is encoded in these languages or the role of Standard Arabic 'nunation' (the occurrence of a suffixal /-n/).
[3] In Arabic and formal Hebrew, agreeing numerals between 3 and 10 manifest the opposite gender of the nouns they modify. 'Books' in (12a) is masculine but 'three' is morphologically feminine. Gender polarity is quite common in Afroasiatic.
[4] See Roberts (2010) for development of this implementation of AGREE.
[5] Note that this implementation weakens to a significant extent Danon's (2011) arguments against Chomsky's (2000, 2001) version of AGREE and in favor of its implementation in terms of feature sharing. On AGREE within DP and some of its theoretical consequences, see also Carstens (2000; 2001).
[6] Event nominals, in this approach, are syntactically derived from verbs; see Hazout (1995) for an early discussion.
[7] The word-like properties of the construct state NP thus reflect the fact that the complement of N is probed but when moved, it pied pipes its containing NP.
[8] The motivation for so-called 'EPP-driven' movement is legibility at the semantic/conceptual interface. Such movement can be conceptualized in terms of the 'criteria' proposed in Rizzi (2006). See Rizzi and Shlonsky (2007) and Shlonsky (*to appear*) for discussion of movement to the canonical subject position.

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