

The form of Semitic noun phrases

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Abstract

I propose a phrasal-movement analysis of word order in Hebrew and Arabic noun phrases. I argue that the positioning of nominal modifiers with respect to the head of simple nouns cannot be adequately handled by an N-raising derivation. This is so because nouns fail to move as heads in the grammars of Hebrew and Arabic. The only heads that seem to be able to move are those which do not assign genitive case. When modifiers (adjectives, numerals, demonstratives, etc.) appear to the right of the noun, it is the noun phrase itself which has raised to the left of the modifier, moving from specifier to specifier and pied piping all the material on its right. In this manner, inverse or mirror image ordering of post-nominal material is accounted for.

Some modifiers have the option of appearing pre-nominally as well as post-nominally. I argue that these elements can be merged either as heads governing their complement and assigning genitive case to their sister or to the specifier of their sister, or as specifiers of projections containing a phonetically null head. In the former case, the modifier's sister is frozen in position, being licensed by genitive case. In the latter case, XP-movement of the sister of the null head is triggered, and agreement or concord is manifested on the modifier. I develop a configurational theory of agreement, which accounts for these phenomena. Many of the signature properties of the Semitic Construct-state fall out from the phrasal movement analysis.

Finally, action nominalizations are dealt with. I provide arguments for a syntactic derivation in which a VP is associated with a nominalizing head configured in the clausal hierarchy as a functional head. I show that the position of the nominalizing head is above certain aspectual projections and lower than others. This explains why some adverbials, but not others, may occur inside a derived nominal.

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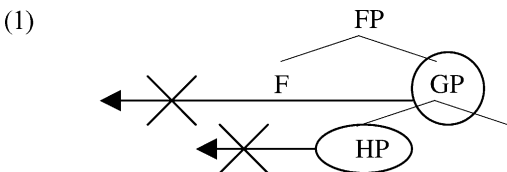
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1. Introduction

It is recognized by now that one of the most fruitful methods to uncover general principals of universal grammar is to study their variation within a class of closely-related languages. This research methodology lies at the heart of what has come to be known as ‘comparative syntax’ in generative grammar.

This paper is conceived as a case-study in comparative syntax and is primarily concerned with the principles which govern the syntax of nominal expressions. Its empirical goal is to elucidate the interrelationship of the form or architecture and the syntactic derivation of noun phrases in several modern Semitic languages. In particular, this study is concerned with Hebrew and some spoken dialects of Arabic. Hebrew and Arabic varieties are remarkably similar in the form and syntax of their nominal expressions, a good reason for studying them together. There are, nonetheless, areas of nominal syntax where differences do emerge, both between Hebrew and Arabic as well as among the Arabic varieties themselves. One objective of this study is to characterize and provide a formal framework in the context of which these differences can be examined.

Many aspects of the Semitic noun phrase have been studied before and this body of work is referred to throughout this paper. The novel idea pursued here is that there is virtually no movement of lexical X^0 categories internally to DP (and a fortiori, no Noun movement). The only attested cases of head movement are restricted to some functional heads. I argue that the smallest lexical unit which is displaced is a XP, for example, NP. It is further argued that XP or phrasal movement is characteristic of the nominal domain and does not extend to the clausal or verbal one. The (Semitic) DP is thus plausibly similar to the clausal DP in that a lexical kernel is embedded within a functional one, see Szabolcsi (1994), *inter alia*. DP differs from CP, however, in that the heads of most of the internal projections within DP are subject to the following constraints: They do not move independently as heads (e.g. there is no N-to-D movement) and they 'freeze' their complement or the specifier of their complement in its position. This is illustrated schematically in (1). I argue that this fundamental difference between nominal heads and non-nominal ones is due to the availability and assignment of genitive Case in a government configuration.



One manifestation of the freezing of nominal heads is the phenomenon of *Construct state* (henceforth CS). The Semitic noun phrase comes in two forms or *states* as they are often referred to, the free state (henceforth FS) and the construct state (in some varieties, only one of the two forms is attested). The free state is illustrated in (2a, b) for Hebrew and Moroccan Arabic, respectively. The construct state is exemplified in (3).

- (2) a. ha-dira šel ha-sar
 b. d-dar dyal l-wazir
 the-apartment of the-minister
 ‘the minister’s apartment’
- (3) a. dirat ha-sar
 b. dar l-wazir
 apartment the-minister
 ‘the minister’s apartment’

The free state is rather familiar cross-linguistically, bearing a strong resemblance to the prepositional genitive construction of, e.g. the Romance languages. The construct state, on the other hand, looks quite exotic to speakers of familiar European languages. One can immediately see why: The head noun does not (and cannot) be preceded by a determiner. But as the English translation of (3a, b) shows, it is as if the definite article preceding the adnominal complement has scope over the entire noun phrase.

While modifiers appear between the noun and the prepositional genitive (in the FS), no modifier can intervene between the noun and its complement in the CS. Strict adjacency between the two members of the CS must be respected, as shown by the impossibility of parenthetical intervention in (5b).

- (4) a. ha-dira ha-gdola šel ha-sar
 the-apartment the-big of the-minister
 ‘the minister’s big apartment’
- b. dirat ha-sar ha-gdola
 apartment the-minister the-big
 ‘the minister’s big apartment’
- cf. c. *dirat ha-gdola ha-sar
 apartment the-big the-minister
 ‘the minister’s big apartment’
- (5) a. xulca ya’ani aruka
 shirt ya’ani long
 ‘a long-sleeved ya’ani shirt’
- b. *xulcat ya’ani corduroy
 shirt ya’ani corduroy
 ‘a corduroy ya’ani shirt’

Another remarkable difference between the two states is easier to see in the Hebrew examples (2a) and (3a). The initial noun in the construct state ends with [t], absent in the free state form. This consonant forms part of the noun’s inflectional complex ([at] ‘fs’, [ot] ‘fpl’) and is obligatorily deleted (with some lexically-marked exceptions) in word-final

contexts. Thus, [t] is absent in the free-standing noun in (6a) but must be realized when the noun carries a possessive suffix, as in (6b).

- (6) a. xatul-a
 cat-fs
 ‘female cat’
- b. xatul-at-i
 cat-fs-1poss
 ‘my female cat’

Traditional Semitic scholars recognized very early that the phonological boundaries between the noun and its complement in the construct state are weak and that phonotactic as well as metrical processes sensitive to word boundaries take the CS nominal to be a single phonological word.

I argue that the phonological properties of the CS and the required linear adjacency between the noun and its complement are a phonological manifestation of the assignment of genitive case (see also Siloni, 2002). The absence of a definite article to the left of the construct noun and the ‘spread’, as it were, of the definiteness features of the adnominal complement, follow from the way the syntax handles the CS NP. I argue that, barring N-movement, the CS NP as a whole is moved to Spec, DP, precluding the realization of the definite article, while the ‘spread’ itself is a typical byproduct of phrasal pied piping.

Adjectival modifiers invariably follow the noun in the Semitic noun phrase, and may not precede it, as the contrast in (7) makes adamantly clear.

- (7) a. Volvo xadaš
 Volvo new
 ‘a new Volvo’
- b. *xadaš Volvo
 new Volvo
 ‘a new Volvo’

When the noun is preceded by the definite determiner *ha* (there is no indefinite determiner in Hebrew and in practically all varieties of Arabic), adjectives—which ‘concord’ with the definiteness of the noun and are hence also preceded by a determiner in (8a)—must follow the noun and cannot appear between the determiner and the noun (as they do in English, for example). Thus, where English observes the order Determiner–Adjective–Noun, as in *the new Volvo*, the Semitic noun phrase has the noun preceding the adjective.

- (8) a. ha-Volvo ha-xadaš
 the-Volvo the-new
 ‘the new Volvo’
- b. *ha-xadaš ha-Volvo
 the-new the-Volvo
 ‘the new Volvo’

This fact about the order of constituents is hardly unique to the Semitic languages under discussion. For example, in many Romance languages (e.g. Spanish), some adjectives follow the noun while others precede it, appearing between the determiner and the noun as in (9).

- (9) las hojas verdes
 the leaves green
 ‘the green leaves’

The hypothesis underlying the comparative methodology employed in this paper is that the principles of systematic organization, or phrasal architecture, are fixed by Universal Grammar and are not subject to cross-linguistic variation. This view is pretty standard in current research in comparative syntax but is hardly undebatable. Various scholars have argued, for example, that the hierarchical order of functional categories is governed by a parameter.¹ From a conceptual standpoint, and taking learnability into consideration, I believe that such a view should be rejected. This is so since it substantially increases the options open to the learner and fails to take into sufficient account the fact that the language faculty disposes of a very powerful and in any event, necessary tool which manipulates word order, namely movement.

By imposing a particular order on the hierarchy on phrasal constituents (and perhaps their linear order as well, cf. Kayne’s (1994) Linear Correspondence Axiom), the number of base grammars admitted by UG is substantially reduced. Indeed, with respect to constituent order, the number of possible grammars is just one. This means that when word-order deviates from the UG base line, the transformational component must be appealed to in order to explain the displacement of constituents. The researcher (and the child learning a language) must then search for formal cues and reasons that underlie and motivate the displacement. If the order Determiner–Adjective–Noun is taken to be basic, as I assume below, then the order displayed by the constituents of the Semitic and Romance noun phrase must be (transformationally) derived. In particular, there must be a movement operation yielding as its output the order Determiner Noun Adjective.

2. Head Raising in the Semitic noun phrase

This section presents the arguments and empirical data, which have led many researchers to espouse, erroneously in my view, an N-raising analysis.

Arabic and Hebrew event or argument-taking nominals manifest a rigid Noun–Subject–Object (NSO) constituent order. In (10), the noun *hafgaza* ‘bombardment’ precedes the subject of the event nominalization (appearing as the object of the genitive preposition *šel*) which, in turn, precedes the nominal complement (introduced by the accusative preposition *et*). No permutation of this order is permissible, even conceivable.

¹ See, for example, Ouhalla (1991), who explicitly defends such a model of grammar and Shlonsky (1997) for a defense of a rigid hierarchy. In this context, Cinque’s (1999) study of adverb order and functional projections is particularly relevant.

- (10) ha- hafgaza šel xel ha-‘avir ‘et ha kfar
 the bombardment of the air force ACC the village
 ‘the bombardment of the village by the airforce’

This property has been explained in much the same way as Verb–Subject–Object (VSO) constituent order in the clausal system, by taking the base order to be “Subject” Noun “Object” (SNO) and by moving the head noun leftwards over the subject as in (11). Let us call this analysis Head Raising (HR):

- (11) N [S t_N O]

Like event nominals, common or object-referring nouns precede their genitive complements.

- (12) ha Volvo šel Schneider
 the Volvo of Schneider
 ‘Schneider’s Volvo’

Nouns also precede adjectival modifiers and may not follow them, as in (13), and the latter must precede genitive complements, as shown in (14).^{2,3}

- (13) a. Volvo xadaš
 Volvo new
 ‘a new Volvo’
 b. *xadaš Volvo
 new Volvo

² The pattern of adjectival concord and, in particular, the agreement in definiteness manifested in, e.g. (14a) is briefly taken up in footnote 30 and in the text discussion surrounding it.

³ The restriction on the order of genitive PPs and adjective phrases is weakened in Hebrew, albeit not entirely overcome, by phonologically heavy or structurally complex APs, as with the co-ordinate AP in (i).

- (i) (?)(?)ha Volvo šel Schneider ha xadaš ve ha mruvax
 the Volvo of Schneider the new and the spacious
 ‘Schneider’s new and spacious Volvo’

The ordering constraints are reversed when the modifier is a relative clause. In the unmarked case, relative clauses follow the genitive PP. Positioning them between the noun and the genitive is marginally accepted if the relative clause is short. For a recent discussion of the syntax of genitive PPs in Hebrew, see Sichel (2002).

- (ii) a. ha seret šel Hitchcock še ra’inu ‘etmol
 the film of Hitchcock that (we) saw yesterday
 ‘Hitchcock’s movie that we saw yesterday’
 b. *ha seret še ra’inu ‘etmol šel Hitchcock
 the film that (we) saw yesterday of Hitchcock
 c. (?)(?)ha seret še ra’inu šel Hitchcock
 the film that (we) saw of Hitchcock

- (14) a. ha Volvo ha xadaš šel Schneider
 the Volvo the new of Schneider
 ‘Schneider’s new Volvo’
- b. *ha Volvo šel Schneiderha xadaš
 the Volvo of Schneiderthe new

Since both simple and event noun phrases are ‘head-initial’, it is natural to try and extend the HR analysis to non argument-taking nominals, and derive the observed word order as in (15) by raising the noun out of NP to a position to the left of and above the adjectival field.

- (15) AP* > ... > [NP [N]
 ↑ |
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This approach is extensively adopted in Semitic syntax research and its a priori merit is clear: It derives the noun-initial configuration of noun phrases by the same mechanism which derives VS word order in clauses.⁴

The HR analysis postulates a head position above NP, identified with Abney’s (1987) D⁰. Some of the more recent work, nourished by the discovery of a CP- or IP-like layered functional structure in nominals (see, e.g. Szabolcsi, 1994, 1996), argues that HR first targets an intermediate position between D and N, before raising to the highest nominal internal head position (Ritter, 1991; Siloni, 1997). Some authors, notably Longobardi (1996a,b, 2000), have argued that N → D is a universal operation which applies in the visible syntax in Semitic, in a more restricted manner in the Romance languages (in particular, Longobardi argues that N → D applies to singular proper names and a subset of kinship nouns) and in Logical Form in other grammars.

3. Objections to Head Raising

This section elaborates a number of essentially empirical objections to the head-raising analysis.

The N → D theory fails to take into consideration the definite determiner, *ha* in Hebrew, (?)*al* and its phonetic alternants in Arabic. Since these determiners are

⁴ The skeleton of Ritter’s (1987) original HR proposal has been adopted and extended by many Hebrew linguists. See, in particular, Hazout (1991, 1995), Ritter (1988, 1991) and Siloni (1996, 1997). Borer (1996) adopts HR for argument-taking nominals but rejects it for the derivation of simple nominals. HR is also widely adopted in work in Arabic linguistics, e.g. Benmamoun (1992, 2000b), Fassi-Fehri (1989, 1993, 1999), Mohammad (1988), Ouhalla (1991). Duffield (1995) and Rouveret (1994) employ HR to derive head-precedence in Celtic noun phrases.

invariably pre-nominal, Hebrew and Arabic NPs are, strictly speaking, not N-initial but $\text{Det}_{[+\text{def}]}$ -initial.⁵ But then, one might ask, why doesn't the mere presence of a lexically-filled D^0 block HR just as the presence of a lexical complementizer in C^0 blocks $I \rightarrow C$? In particular, why does the impossibility of say, $I \rightarrow C$ in English conditionals in the presence of 'if', illustrated in the contrast in (16), not extend to the formally similar case of Semitic $N \rightarrow D$?

- (16) a. Had he done this, we would have been happy. ($I \rightarrow C$)
 b. If he had done this, we would have been happy.
 c. *If had he done this, we would have been happy.

When not simply ignored, this difficulty is dealt with by exploiting the graphically manifest fact that the phonological boundary between the definite article and the noun it determines is similar to that found between inflectional prefixes and verbs. Siloni (1997: 31), to cite a recent example, argues that D is an affix with strong features that attracts the noun.⁶

⁵ Indefinite NPs in Hebrew and in practically all varieties of Arabic are morphologically unmarked, compare (ia) and (ib).

- (i) a. Volvo
 Volvo
 'a Volvo'
 b. ha Volvo
 the Volvo
 'the Volvo'

It is, hence, difficult to establish whether indefiniteness is represented by a phonetically unpronounced indefinite determiner, a phonetically unrealized quantifier in a (nondeterminer) position, or whether indefinite NPs are unmarked syntactically and are interpreted as such by a default semantic mechanism. Not daring to enter this thicket of questions, I put further discussion of indefinites aside.

It is clear that Standard Arabic nunation marks indefiniteness but it is not obvious that the *tanwiin* is the indefinite article. For some recent discussion see Ayoub (1991).

⁶ Ritter's contention that Hebrew *ha-* is a syntactic clitic which lowers and attaches to N is, apart from the difficulties associated with a lowering derivation, hard to maintain in the absence of typical clitic properties such as the association with or attraction to a unique host—see the discussion of the examples in (21)—or the absence of stress. Although monosyllabic functional words are not typical bearers of neutral phrasal stress, focal stress on *ha* in (i) is perfectly acceptable.

- (i) Volvo zot IIA mxonit.
 Volvo it THE car
 'Volvo is THE car.'

Moreover, it has been pointed out that Ritters' claim to the effect that the determiner preceding the *annex* of a construct state nominal is the lowered 'main' D^0 is hard to maintain in the face of a recursive construct state nominal with *ha* not on the second, but on the linearly last and hierarchically the most embedded *annex*, see (ii).

- (ii) kis xulcat mənəhelet mešek beit **ha** rav
 pocket shirt manager affair house the Rabbi
 'the pocket of the Rabbi's household manager's shirt'

If N were adjoined or incorporated to D, one might reasonably expect the complex head to exhibit the linear order $N^{\wedge}D$, which is the only possible output of $N \rightarrow D$ under Kayne's (1994) extension of Williams' (1981) Right Hand Head Rule to syntactic incorporation.

"Left" adjunction is manifested in other documented cases of head incorporation in Semitic, e.g. adjunction of a Hebrew participle to a habitual auxiliary, Borer (1995), illustrated in (17b), and incorporation of Arabic lexical heads to Agr, Roberts and Shlonsky (1996), shown in (18) (see also Shlonsky, 1997, Chs. 2, 3 and 9).⁷

- (17) a. kše hu haya ca'ir Dani haya kotev šira.
when he was young Dani was writing poetry
'When he was young, Dani used to write poetry.'
- b. kše hu haya ca'ir Dani kotev haya šira.
when he was young Dani writing was poetry
'When he was young, Dani used to write poetry.'

- (18) a. hi šaafat o
she saw 3ms
'She saw him.'

Consequently, the fact that the linear order of the determiner and the noun is $D^{\wedge}N$ requires an explanation. One could simply dispute the generality of Kayne's proposal, but then the question would arise as to why some heads adjoin to the left while others incorporate to the right. Alternatively, one could claim that the syntactic output of head adjunction is subjected to a morphological reordering (or readjustment) rule, in the sense of Anderson (1992) or Halle and Marantz (1993). But these rejoinders constitute ad hoc solutions, not principled explanations.

One principled explanation for the order $D^{\wedge}N$ consists of denying that N incorporates to D. If N systematically failed to raise to D in Arabic and Hebrew, but rather remained below the definite determiner, it would perforce follow the determiner. The simplicity of this hypothesis renders it worthy of further exploration.

The $N \rightarrow D$ analysis entails the prediction that no lexical material should intervene between the determiner and the noun. Indeed, neither adjectives nor genitive PPs can be wedged in between D and N, as is clear from the ungrammaticality of the Hebrew (b) examples in (19) and (20).⁸

⁷ Rumanian possesses an enclitic definite article which Dobrovie-Sorin (1987) and Grosu (1988) argue to incorporate the noun. The Scandinavian languages also make abundant use of enclitic articles, see Delsing (1993) and Taraldsen (1990). For further discussion, see Giusti (1994) and Dimitrova-Vulchanova and Giusti (1998). The Semitic languages of Ethiopia possess enclitic articles, the distribution of which recalls the Rumanian paradigm. See, in particular, Halefom (1994).

⁸ The contrast in (19) and (20) is not unique to Hebrew. The order DETERMINER > ATTRIBUTIVE ADJECTIVE > NOUN is, to my knowledge, exceedingly rare across Arabic dialects (Maltese being an exception, see, e.g. Fabri, 1993). Similarly, in those dialects in which genitive ('of') phrases constitute a productive strategy of genitive formation (e.g. North-West African varieties, see Harning Eksell, 1980; Eksell, 1984), the genitive PP cannot appear between the determiner and the noun.

¹⁰ These so-called *relative* adjectives preclude the appearance of the definite article in most Arabic varieties. Compare (22) with Damascene (ib) of footnote 18.

phrases: *me'od* ‘very’ appears between the determiner *ha* and the adjective in (23a), while ‘more’ and ‘less’ disrupt the adjacency between D and A in (23b).


- (23) a. *ha haca'a ha me'od svira*
 the decision the very reasonable
 ‘the very reasonable decision’
- b. *ha haxlata ha yoter /ha paxot btuxa*
 the decision the more /the less sure
 ‘the more/the less sure decision’

The $N \rightarrow D$ incorporation theory is thus not only vitiated by theory-internal considerations but invalidated by the absence of string adjacency between the two heads. I am led to conclude that despite the permeable or weak phonological boundary between the determiner and the following lexical element, the two are not in the same syntactic head position at S-structure.

3.1. ‘Partial’ N-movement?

The fact that adjectives and genitive phrases cannot intervene between the determiner and the noun, but that cardinal numerals can split the linear adjacency between these two heads can be naturally interpreted in terms of partial N-movement.

Supposing that the Semitic DP is configured roughly as in (24), where AP, Card#P and PP_{gen} are specifiers of functional heads (the former an abbreviation for a cline of adjective phrases, see, e.g. Bouchard, 2002), then N might be taken to obligatorily raise to a head position above AP and below Card#.

- (24) D...>...Card#P.....>...AP...>...PP_{gen}...>.. N
- 

The hypothesis that N never raises as high as D in Semitic has an additional advantage. It trivializes the explanation for why N never raises *above* D. In other words, nothing beyond what has already been claimed needs to be added to explain why quantifiers such as ‘all’ and ‘most’, configured higher than D, invariably precede it in Hebrew and in all varieties of Arabic.¹¹

¹¹ In examples such as (i), the maximal projection under Q is moved above Q to its left, deriving, as argued in Shlonsky (1991), a structure of ‘quantifier float’ in the sense of Sportiche (1988) (but see Benmamoun, 1999, for a different view).

- (i) *ha- rabanim 'axlu kul-am txina.*
 the rabbis ate all-[3mpl] Tahini
 ‘The Rabbis all ate Tahini’

The position of partitive quantifiers is higher than D in Hebrew (cf. (25a) and (26a)) and should not be identified with Card#, the pre-nominal position of count numerals, which is lower than D, as illustrated in (21).

- (25) a. kol ha- rabanim
 all the Rabbis
 ‘all the Rabbis’
- b. *ha kol rabanim
 the all Rabbis
- (26) a. rov ha m^oxoniyot
 most the cars
 ‘most (of the) cars’
- b. *ha rov m^oxoniyot
 the most cars

If (24) represents a fragment of the universal hierarchy of projections within DP—a hypothesis sustained by typological research into the order of constituents within NP, see Cinque’s (1996) discussion of Greenberg (1966) and Hawkins (1983) as well as Section 4—one might, following Longobardi (1996a,b), express the difference between Hebrew and say, French or Italian in terms of the degree of movement undertaken by the noun. If the noun in Central Romance raises to some position within the adjectival field (as Cinque, 1994 has explicitly argued, see also Crisma, 1990), then the Semitic noun can be construed as raising higher, above the adjectival field but below the position occupied by cardinal numerals.

Interesting and revealing differences between Arabic and Hebrew become apparent when the finer structure of the Semitic NP is examined. The attempt to provide a unified description or analysis of these data calls into question the partial N-raising perspective. Consider cardinal numerals. In (Modern¹²) Hebrew, the head noun must follow the numeral so that, e.g. (27), is unacceptable.¹³

¹² The indefinite variant of (27) is attested in literary texts and in Biblical Hebrew (Gesenius, 1985, Section 134). My own Modern Hebrew judgement is that (27) is marginal in a literary register but only with indefinite nouns: *ganavim šloša* ‘three thieves’, but **ha-ganavim hašloša* ‘the three thieves’.

¹³ The numeral ‘one’ differs from the cardinal numerals in that its appearance pre-nominally forces a partitive rather than a count interpretation.

- (i) ’exad ha yladim
 one the children
 ‘one of the children’

In its non-partitive, count use, ‘one’ must appear after the noun, i.e. in a configuration which is ungrammatical for numerals other than 1 (cf. (27)).

- (ii) a. yeled ’exad
 child one
 ‘one child’
- b. ha yeled ha ’exad
 the child the one
 ‘the one child’

- (27) **(ha) yladim (ha) šloša*
(the) children (the) three

But (21d), repeated below, is not the only ordering possibility of cardinal numerals in Hebrew.

- (21) d. #*ha xamišim škalim*
the fifty Shekels

As if to complicate matters, Hebrew numerals avail themselves of another configuration, in which they precede the definite determiner. (28), in fact, constitutes the normative form for definite cardinal noun phrases.¹⁴

- (28) *xamišim ha škalim*
fifty the Shekels

The position of the numeral in (28) should not, however, be identified with the post-determiner Card#, because it is situated above D and below Q, as shown in (29). A more articulate architecture of the Hebrew DP is thus called for, one in which two Card# phrases are configured, one above and one below D, in addition to a (probably distinct) position for partitive quantifiers.

In the context of the present discussion, it is clear that numerals which appear in this high position do not interfere with N-raising and consequently tell us little about its scope.¹⁵

Crucially, ‘one’ lacks the option illustrated in (21d) for cardinals, as shown by the ungrammaticality of (iia, b).

- (iii) a. **ha ʿexad yeled*
the one child
- b. **ʿexad yeled*
one child

In other words, ‘one’ is barred from Card# and is generated either in the domain of partitive quantifiers which I take to be configured above D, or lower than Card#, in an AP-like position.

This post-nominal *adjectival* ‘one’ does not only express cardinality, but also indefiniteness. (iia) is hence ambiguous between a count interpretation (the one appearing in the translation) and a non-specific indefinite interpretation, translatable by ‘a boy’ or ‘some boy’. See Givón (1976, fn. 3).

¹⁴ See Danon (1997), who discusses the differences between (28) and (i), which is like (21e) without the definite article.

- (i) *xamišim škalim*
fifty Shekels

He develops the traditional view, according to which *xamišim* ‘fifty’ in (28) is a noun, and argues that it is raised to D⁰, while *xamišim* in (i) is an XP in Spec/D. See also Danon (1996).

¹⁵ The reason for positing a distinct position for partitives, in addition to a ‘high’, pre-D position for numerals in Hebrew is the following. The occurrence of the numeral ‘one’ in a pre-determiner position forces a partitive interpretation, see footnote 13, while numerals other than ‘one’ are interpreted as count numerals, not as partitives.

In Moroccan, on the other hand, where the regular (productive) numeral + noun phrase is expressed analytically, that is, with a genitive preposition, a partitive reading is salient if not obligatory, Harrell (1962):

- (i) *tłata de lə ktub*
three of the books

- (29) a. kol/rov `aseret ha dibrot
all/most ten the commandments
 ‘all/most (of the) ten commandments’
- b. *`aseret kol/rov ha dibrot
ten all/most the commandments

Contrary to cardinal numerals, Hebrew ordinal numerals cannot precede the noun and must follow it, as in (30).

- (30) a. (ha) `iš (ha) šliši
the man the third
 ‘the third man’
- b. *(ha) šliši `iš
the third man

Under a partial N-raising approach, one could say that the Hebrew noun raises obligatorily above ordinal numerals but cannot raise higher than cardinal ones. When a noun phrase contains both a cardinal and an ordinal numeral, the former precedes the noun and the latter follows it.

- (31) šaloš simfoniot rišonot
three symphonies first
 ‘first three symphonies’


In other words, if numerals occupy specifier positions, then cardinal numerals are specifiers of a higher head than ordinal ones. In the diagram in (32), and putting aside the ‘high’ Card#P projection, Ord#P is in Spec/Z and Card#P in Spec/X. N can be taken to raise to the head position of a maximal projection YP, lying between XP and ZP.¹⁶

See also the first of the two formats for ordinal numerals in Damascene, from Cowell (1964: 316–317), where the numeral *must* be interpreted partitively; compare (iia) and (iib).

- (ii) a. taalet ər r3aal
third the men
 ‘the third (one) of the men’
- b. taalet rə33aal
third man
 ‘the third man’

¹⁶ Under the most natural reading of (31), ‘first’ has scope over ‘three’. The opposite scope reading is possible, for example, in the context of a concert in which the program includes first symphonies of three different composers. Under this reading, ‘first symphony’ is an object-referring noun and not a quantized one.

Under the partial N-movement approach, the clear preference of the inverse scope reading is a mystery. In the terms of the phrasal movement approach developed in the present study, Ord#P is configured higher than Card#P and it is the constituent [three symphonies] and not the noun ‘sympohnies’ which is raised above it.

- (32) [XP Card#P X⁰ [YP N⁰+Y⁰ [ZP Ord#P Z⁰ [NP t_N]]]]
- 

Numerals are configured differently in the Arabic dialects. Cardinal numerals can, by and large, precede the noun, as in Hebrew, or follow it. The alternation between a post-nominal and pre-nominal position holds robustly across many dialects, at least in definite noun phrases. Consider the pairs in (33) and (34).

- (33) a. t tleet kitub Beirut
 the three books
 b. l kitub t tleet
 the books the three
- 34) a. θ θamaan diyaayat Gulf: Qafisheh (1977:126)
 the eight chickens
 b. d diyaayaat θ θamaan
 the chickens the eight

The difference between Hebrew and Arabic can, it seems, be expressed in terms of different degrees of N-raising. Hebrew nouns cannot raise above Card#P while Arabic ones can.¹⁷

¹⁷ Although Cowell (1964: 472) claims that the pattern illustrated by the (b) examples in (33) and (34), namely N⁰Card#, is only possible with definite nouns in Damascene (as does Cantineau, 1934: 214, for the closely related Syrian variety from Palmyre), Holes (1984: 54) and Johnstone (1967: 234) cite the following examples of indefinite Noun Phrases from varieties spoken in the Gulf.

- (i) a. niswaan θalaaθ Bahrain
 women three
 b. biyuut arba^ca Dubai
 houses four

The acceptability of this ordering pattern with indefinite nouns seems to vary from dialect to dialect but given the fact that examples in grammars are often cited out of context, one wonders whether the factor underlying the variation in acceptability is the degree of specificity of the noun. Morth (p. 166) cites the following contrast elicited from a Kurdufani speaker.

- (ii) a. *^cand-i kutub talaata.
 chez-me books three
 ‘I have three books.’
 b. ^cand-i kutub talaata min an noo^c da.
 chez-me books three of the type this
 ‘I have three books of this type.’

It appears that, at least in certain Arabic varieties, only nouns interpreted specifically can raise over Card#P.

This state of affairs is extremely reminiscent of what is manifested much more robustly in Bangla nominals, as Bhattacharya (1998) shows; compare the nonspecific (iiia) with the specific (iiib).

Optional movement is also manifested with ordinal numerals, as Cowell (1964: 316) shows for Damascene.¹⁸

- (35) a. [◌]aašer səne
 tenth year
 ‘the tenth year’
- b. s səne l [◌]aašra
 the year the tenth
 ‘the tenth year’

The picture that emerges from this discussion is that Hebrew nouns raise and stop above the position of ordinal numerals while Arabic nouns have three options: They may remain lower than ordinal numerals, they may raise over them as in Hebrew and they may also raise over cardinal numerals.

This conclusion is descriptively adequate and consistent with the discovery that even closely-related languages may differ in the extent to which lexical heads raise obligatorily and optionally above relatively stationary material such as adverbs (Cinque, 1999) and adjectives (Cinque, 1994).

There is, nonetheless, a major empirical problem even with a partial N-movement analysis. The pattern of alleged N-raising in Hebrew conforms to a hierarchy of positions in which Card#P lies higher than Ord#P. Applied to Arabic, the cline in (32) entails the prediction that when N remains below Ord#P—since movement over it is optional—the order of constituents should be Card# > Ord# > N. This turns out to be false. Discussing Standard Arabic, Fassi-Fehri (1999) affirms explicitly that when numerals occur pre-nominally, ordinals must precede cardinals.

-
- (iii) a. oi duTo lal boi
 those two-CLASSIFIER red book
 ‘Those two red books’
- b. oi [lal boi] duTo
 those [red book] two-CLASSIFIER
 ‘Those two red books’ (specific)

¹⁸ Arabic ordinal numerals are constructed on the same morphological template as elative (comparative/superlative) adjectives. Unlike post-nominal ordinals, however, the Damascene elative adjectives as in (i) do not have to agree with a preceding noun (but see Nishio, 1994, for examples of non-agreeing post-nominal ordinals in some Upper Egyptian (Sa^cidi) varieties).

- (i) a. ?uuda ?ahsan
 room better/best
 ‘the best room’
- b. ?ahsan ?uuda
 better/best room

Pre-nominal ordinal numerals cannot be preceded by the definite article even though their base position is lower than D. In this respect, they are like construct state nominals, discussed in Section 8.

- (36) a. ʔawwal-u xams-i muhaadaraat-in
first-NOM five-GEN lectures-GEN
 ‘the first five lectures’
- b. *xams-u ʔawwal-i muhaadaraat-in
five-NOM first-GEN lectures-GEN

One might approach the problem by invoking, in addition to a family of N-raising parameters, an additional parameter, governing the hierarchy of functional categories in the base (as in [Ouhalla, 1991](#)). In this way of seeing things, the functional projection lodging Card#P in its Spec in Hebrew is higher than the projection housing Ord#P, and N moves to a position between them (as diagrammed in (32)). In Arabic, ordinal numerals precede cardinal ones and noun-movement above them is optional.

While a parameter regulating the range of head movement plays a major role in expressing cross-linguistic differences and is independently necessary, one which governs the hierarchy of base positions can be dispensed with in favor of a more elaborate system of universal functional projections and a resultant fine-tuning of head-movement options, as Cinque shows (see also [Shlonsky, 1997](#) on the positions of Neg(ation)P, T(ense)P and Agr(eement)_{Subj}P in Arabic and Hebrew). It is thus tempting to approach the problem posed by the conflicting data of Hebrew and Arabic numeral ordering by exploring the movement options, without tinkering either with the hierarchy of the base component or—and this constitutes a further ‘minimalizing’ step, in the sense of [Chomsky \(1995\)](#)—with the left/right attachment parameters of the relevant specifiers.

This approach to word order variation is inspired by the conceptual considerations which underpin and motivate the Antisymmetry research program initiated in [Kayne \(1994\)](#). Put in the terminology of classical generative syntax, the Antisymmetry program is an attempt to reduce variation in the base component by enriching the transformational one. Stripped to its skeleton, it contends that while some variation in word order can be expressed by parametrizing the base component and permitting more than one base order of specifier, head and complement, the same variation can be explained by the application of Move α on a unique base representation. Move α is independently required by the system. Hence, it is tempting to see to what degree we can eliminate variation in the base altogether and let Move α do all the work.

According to Kayne, the base component is universally configured as $[_{XP} YP [X ZP]]$, where YP is a specifier and ZP a complement. UG prohibits specifiers on the right of heads. The consequence of this restriction on the base is that an S-structure in which a specifier follows its head linearly is derived by moving the head (and its complement, if there is one) to the left of and above the specifier.

4. Phrasal movement as massive Pied piping

This section develops a phrase-movement analysis of word order in Semitic nominals, demonstrating its empirical adequacy and grounding it theoretically.

Relevant to the analysis of (Semitic) NPs is Cinque's (1996) demonstration of the explanatory power and predictive capacities of the Antisymmetry approach in the domain of noun phrase word order generalizations such as Greenberg's (1966: 87) Universal #20:

When any or all of the items (demonstrative, numeral and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite.

Assuming (but see Bernstein, 1992, 1993, 1997, the construct adjectives discussed in Fassi-Fehri, 1999, in Borer, 1999a and, in greater detail, in Hazout, 2000 and Siloni, 1991, 1996, 1997) that not only adjectives, but demonstratives, Brugé and Giusti (1996), and numerals are configured as specifiers, (37) is a plausible working hypothesis for the unique universal base order, realized in the S-structures of English-type NPs, where no overt movement has taken place.

(37) $[_{XP} \text{Dem } [_{YP} \text{Num } [_{ZP} \text{Adj } [_{NP} \text{N}]]]]$

The two post-nominal options Greenberg describes manifest two alternative derivations from (37). The first, or 'direct' ordering, schematized in (38a), can be derived either by moving N qua head all the way up to a head position above Dem or by moving NP, via specifier positions, to the specifier position above the category housing Dem. Both derivations result in the correct order; the first involves head movement while the second only phrasal movement.

(38) a. N Dem Num Adj
b. N Adj Num Dem

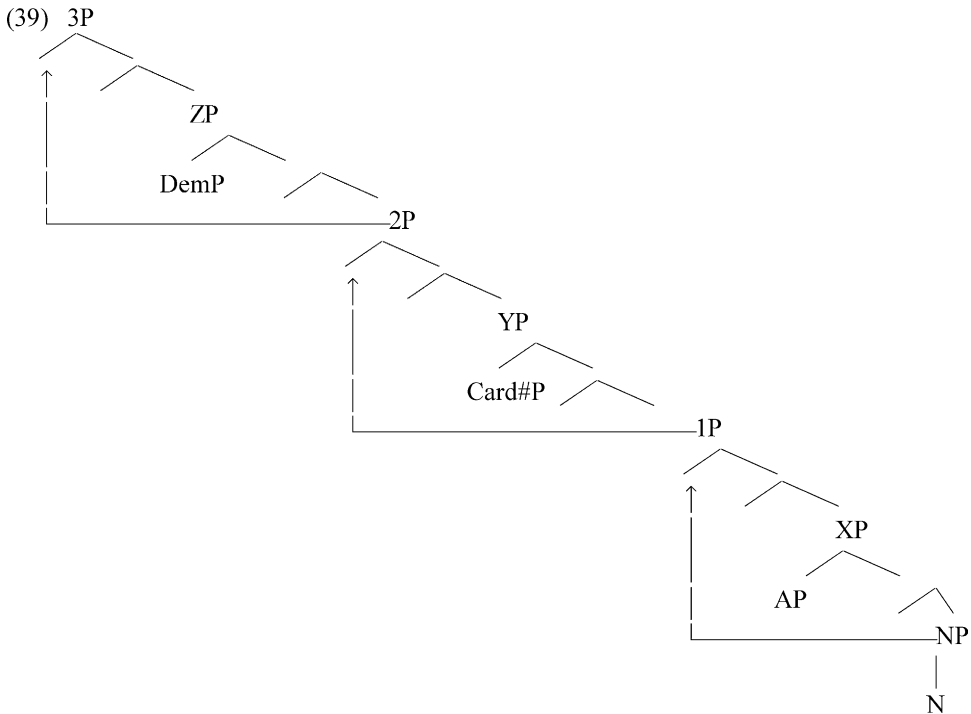
The derivation of (38b), on the other hand, *cannot* involve (only) N-raising because the reversal in the order of Dem, Num and Adj can only be brought about by phrasal displacement, as diagrammed in (39).

Let us begin our discussion of this derivation from the point in which NP is formed and a head X is merged, projecting XP. AP is then merged in Spec/X. Next, a head is merged above XP—call it 1. (In Section 6, the numbered phrases 1P, 2P and 3P are replaced by AgrPs, see (67).) Then, X is raised to 1. (This kind of local head movement of functional elements is the only kind of head-movement tolerated internally to DP; see also the derivation of demonstratives in Section 7.) Finally, NP moves to the specifier of 1P.¹⁹

The derivation which follows the merge of the higher heads, Card# and Dem, proceeds in the same fashion. Y is merged above 1P and Card#P is merged in Spec/Y. Then, 2 is merged and its complement, namely 1P is targeted and raised above Card#P into the specifier of 2P. We see that as a rule, NP movement pied-pipes all the material it acquires along the

¹⁹ It is conceivable that the target of phrasal movement is the second or outer specifier of XP. The most straightforward advantage of the multiple specifier approach is that it vitiates the need to postulate an additional maximal projection, namely 1P. The advantage of the single specifier mode, on the other hand, is that no special mechanism needs to be postulated when, in the following cycle, XP rather than 1P are moved, an option which must clearly be allowed for.

derivation, so we get the effect of a snowball, gathering weight and size as it rolls to its target.²⁰



(39) thus yields the order in (38b) by means of consecutive applications of phrasal movement. If it could be shown that the order in (38a) must also be derived by phrasal movement (note that it *can* be so derived), it would transpire that N-movement in noun phrases is redundant, at least insofar as word order is concerned. The two orders expressed by Greenberg's Universal 20 (and the variations on these orderings discussed by Hawkins, 1983) would then arise as an interplay of essentially two derivational strategies. In the first,

²⁰ Phrasal movement can take a different route, eschewing pied-piping and deriving the same, i.e. mirror-image ordering of the post-nominal material: If instead of moving IP to Spec/2P, XP is targeted and raised to Spec/Agr2P followed by remnant movement of AgrIP to the specifier of yet a higher projection. This kind of splitting derivation, advocated by Koopman and Szabolcsi (2000) for some verbal complexes in Hungarian and Dutch, is more complex and involves the introduction of further structure. There seems to be no empirical or analytic justification for remnant movement in the syntactic domain studied in this paper.

A *Lingua* reviewer wonders what principle forces pied piping as opposed to a derivation where all the functional structure is merged first and the NP raises to the highest Spec, followed by the roll-up of AP, Card#P and DemP. Clearly this derivation must be ruled out since the resulting order—NP on the right and a mirror-image ordering of functional material to its left—is unavailable in Hebrew and conflicts with Greenberg's generalization. Suppose that movement is constrained by a version of strict cyclicity, in which the merge of a functional projection defines a cycle. This would have the result of blocking any derivation in which the entire tree is projected prior to the application of movement operations. This cyclicity principle should, however, permit head movement and adjunction of a head to the immediately higher head, prior to the movement of the pied/piped constituent in its Spec.

only N(P) would move, first across AP, then across NumP, etc., and give rise to a post-nominal order, as in (38a), the ‘direct’ order, in Pearson’s (2000) apt terminology. The ‘inverse’ or ‘mirror image’ order is manifested whenever the target of movement is not N(P) as such but categories containing it, either via massive pied piping or via remnant movement.

Head movement can, as a general rule, be reduced to phrasal or remnant movement (movement of an XP which contains only X). This being the case, the question arises as to whether genuine N-movement is at all necessary, indeed, whether there is any argument, conceptual or empirical, to the effect that N-movement must be posited in the syntax of (Semitic) noun phrases or whether N-movement is always disguised as phrasal movement.

In the rest of this section, I demonstrate that the head-movement derivation, hitherto assumed to explain the displacement of the noun within the Semitic extended noun phrase, is, in fact, *unable* to explain the constraints on word order without a substantial number of auxiliary ad hoc assumptions. Phrasal movement, on the other hand, of the sort illustrated in (39), is not only theoretically more restrictive and thus approaches further the goal of explanatory adequacy, but provides a descriptively adequate, unified and elegant solution to the major word order problems which arise in the domain of nominal syntax.²¹

Let us return to the problem posed by the configuration of numeral phrases in the Hebrew example in (31) and the Arabic (36a), both repeated below.

- (31) šaloš simfoniot rišonot
 three symphonies first
 ‘first three symphonies’

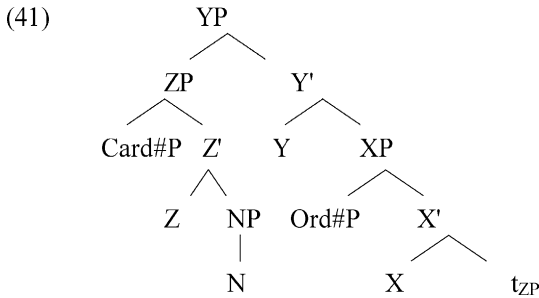
- (36) a. ?awwal-u xams-i muḥaadaraat-in
 first-nom five-GEN lectures-GEN
 ‘the first five lectures’

Considerations of theoretical restrictiveness of the sort discussed in the preceding paragraphs all but force the conclusion that the base hierarchy of projections housing cardinal and ordinal numerals is (40a), which also represents the unmarked order of constituents when both numeral phrases precede the noun, a situation which only arises in Arabic. The surface order manifested in Hebrew must thus be *derived* from (40a).

- (40) a. Ord#P > Card#P > N Base order
 b. Card#P > N > Ord#P Hebrew surface order

N-movement is of no help here, for it simply cannot derive (40b) from (40a). Phrasal movement, however, is perfectly adequate to express the required transformation, as illustrated by the derivation in (41).

²¹ Cinque (2000) puts forward a proposal very similar in spirit to my own. This work became available as I was writing the present article.



In (41), Move α applies to the maximal projection of which Card#P is the specifier, displacing it to the specifier of the category dominating the category of which Ord#P is the specifier.

The natural question to ask at this point is why XP movement does not apply to NP, moving it above ZP and giving rise to the (unattested) order NP^Card#^Ord#. In other words, what rules out cyclic movement of NP from Spec to Spec. I return to this question in Section 5, after introducing the material on adjective order.

4.1. The distribution of adjectives in Hebrew and the mirror image effect

The distribution of adjective phrases is another empirical domain resisting analysis in terms of N-movement and arguing strongly in favor of phrasal movement of NP.

Let us reflect on examples (42)–(50). The nominals in the left hand column illustrate the unmarked, often unique order of pre-nominal adjectives in English. Most of the examples are preceded by a category cline, which I have taken and adapted from the following sources: Cinque (1994), Dixon (1982), Hetzron (1978), Scott (1998) and Sproat and Shih (1988) (see also Bouchard, 2002, for a semantic grounding of the observed ordering). The nominals in the right hand column are the Hebrew translations of the English NPs.

What can be observed in (42)–(50) is that in addition to the post-nominal, as opposed to the impossible pre-nominal position of the APs (viz. (13), the order of APs in Hebrew is systematically reversed with respect to English. It should be added that this reversal is quite robust both in Hebrew and in all varieties of Arabic.²²

- | | | |
|------|--------------------------------------|--------------------------------------|
| (42) | COLOR > NATIONALITY/ORIGIN | NATIONALITY/ORIGIN > COLOR |
| a. | a brown Swiss cow | c. *para xuma švecarit |
| b. | *a Swiss brown cow | d. para švecarit xuma |

²² The order of adjectives and other NP material in Standard Arabic is the main focus of discussion of Fassi-Fehri (1999), where an approach similar to the one developed here is explored and rejected. See also Hassan (1995). Sproat & Shih's occasionally-cited (e.g. Androutsopoulou, 1995; Scott, 1998) claim that Arabic adjectives do not observe any ordering restrictions (p. 584) is not corroborated in the literature. Gil's (1983: 143) similar contention about Hebrew (based on two examples) cannot be maintained when a larger array of data is taken into consideration. A Lingua reviewer notes that in some Arabic dialects, the sequencing of nationality and origin adjectives is free. This is also true in Hebrew and might suggest that they belong to the same category and that adjective sequencing holds only across categories but is free internally to each category.

- (43) **SHAPE > COLOR**
 a. the long black table
 b. *the black long table
- COLOR > SHAPE**
 c. *ha-šulxan ha-’arox ha-šaxor
 d. ha-šulxan ha-šaxor ha-’arox
- (44) **AGE > SHAPE**
 a. the old round hat
 b. *the round old hat
- SHAPE > AGE**
 c. *ha-kova ha-yašan ha-’agol
 d. ha-kova ha-’agol ha-yašan
- (45) **EVALUATING COMMENT > AGE**
 a. the average/typical young voter
 b. *the young average/typical voter
- AGE > EVALUATING COMMENT**
 c. *ha-boxer ha-memuca/ha-tipusi ha-ca’ir
 d. ha-boxer ha-ca’ir ha-memuca/ha-tipasi
- (46) **EVALUATING COMMENT > NATIONALITY**
 a. excellent Thai workmanship
 b. *thai excellent workmanship
- NATIONALITY > EVALUATING COMMENT**
 c. *’avoda mešubaxat tailandit
 d. ’avoda tailandit mešubaxat
- (47) **QUALITY > NATIONALITY**
 a. a Kosher Austrian sausage
 *an Austrian Kosher sausage
- NATIONALITY > QUALITY**
 c. *naknikiya kšera ’ostrit
 d. naknikiya ’ostrit kšera
- (48) **MANNER > NATIONALITY**
 a. far-reaching ideological importance
 b. *ideological far-reaching importance
- NATIONALITY > MANNER**
 c. *xašivut marxikat lexet haškafatit
 d. xašivut haškafatit marxikat lexet
- (49) **MODALITY > SIZE/MANNER > NATIONALITY** **NATIONALITY > SIZE/MANNER > MODALITY**
 a. a possible massive Israeli bombardment
 b. *a possible Israeli massive bombardment
 c. *a massive possible Israeli bombardment
 d. *a massive Israeli possible bombardment
 e. *an Israeli possible massive bombardment
 f. *an Israeli massive possible bombardment
- g. *hafgaza ‘efšarit masivit ‘isra’elit
 h. *hafgaza ‘efšarit ‘isra’elit masivit
 i. *hafgaza masivit ‘efšarit ‘isra’elit
 j. *hafgaza masivit ‘isra’elit ‘efšarit
 k. *hafgaza ‘isra’elit ‘efšarit masivit
 l. hafgaza ‘isra’elit masivit ‘efšarit
- (50) a. severe personal problems
 b. *personal severe problems
- c. ba’ayot ‘išiyot xamurot
 d. *ba’ayot xamurot ‘išiyot

The mere existence of adjective serialization, that is, of ordering restrictions on APs, argues against an adjunction analysis of adjectives, of the sort proposed by Picallo (1991) and Valois (1991, 1996) and in favor of an approach according to which APs are lodged in

hierarchically ordered functional projections, as specifiers: Cinque (1994), Crisma (1990, 1996), Giusti (1993), or heads, Bernstein (1992, 1993).

If APs are in left-hand specifier positions, the only way to derive the inverse order of post-nominal APs in (42)–(50) is by raising NP to a specifier position preceding the XP which harbors the lowest AP, merging the next AP in the next specifier up and then snowballing upwards the entire phrase below the merged adjective. In this system, N is at no point extracted from NP and moved *qua* head.^{23,24}

5. The Freezing effect on phrasal movement

Whereas attributive adjective phrases must appear to the right of the noun in Hebrew and in practically all varieties of Arabic, other functional material such as numerals, demonstratives, quantifiers, etc., is either exclusively pre-nominal (like the definite determiner) or is subject to dialectal variation as to its position relative to the head noun. This fact, well illustrated by the pattern of numeral configuration in Hebrew, discussed in Section 4, poses the question of how to determine and in what terms to characterize the choice between pre-nominal and post-nominal modification. Consider (51).

- (51) šaloš parot švecariyot xumot rišonot
 three cows Swiss brown first
 ‘the first three brown Swiss cows’

Assuming the hierarchy in (40a), phrasal movement must take place up to the Spec position below the cardinal numeral in order for the inverse order of the adjectives to come about. The merger of an AP is followed by movement of the entire phrase under the AP to a higher specifier position. But following the merge of the cardinal numeral phrase, the

²³ For an analysis along these lines of Gungbe nominals, see Aboh (1997). See also Laenzlinger (to appear) for a study of French adjectival order.

²⁴ The system must allow some deviation from the derivational format described in the text, to account for the scope ambiguity manifested in (i) (Borer, 1996: 49 fn. 1).

- (i) ha mu’amedetha šniya ha muclaxat (zaxta ba misra.)
 the candidate the second the successful (won the position)
 a. ‘The second successful candidate won the position.’
 b. ‘The successful second candidate won the position.’

(i) is a marked order. The unmarked order is in (ii), in which the numeral has unambiguous scope over the adjective, as expected.

- (ii) ha mu’amedetha muclaxat ha šniya (zaxta ba misra.)
 the candidate the successful the second (won the position)
 a. ‘The second successful candidate won the position.’
 b. *‘The successful second candidate won the position.’

Cases like (i) are rare but not unique to Hebrew. French *un bon cuisiner français* ‘a good French cook’ is ambiguous in a way that *un cuisinier français excellent* ‘an excellent French cook’ is not. See Laenzlinger (to appear) for discussion.

phrase beneath the numeral is frozen, as it were, and moves neither as a single entity (pied piping) nor in chunks (remnant movement). Rather, it is the higher phrase, the one containing the cardinal numeral, ZP in (41), which is targeted by Move and displaced above the ordinal numeral. This derivation then yields the order we observe in (51). If the material under the cardinal numeral were not frozen, we would end up with the order $N > AP^* > Card\#P > Ord\#P$, a valid option in Arabic, though not in Hebrew, where cardinal numerals, with the exception of ‘one’ (viz. footnote 13), can only appear pre-nominally.

Given the obligatory nature of XP movement to the left above the AP-containing maximal projection, the question arises as to why some of the higher nominal modifiers can, or must be pre-nominal, while others are exclusively post-nominal. While the Freezing effect is mandatory under Hebrew cardinal numerals, it is optional in the presence of Arabic ordinal and cardinal numerals (recall the discussion surrounding examples (33)–(35)).

Optional positioning is, however, not absent from Hebrew; it is manifested by two semantically weak quantifiers, or measure phrases, ‘many’ and ‘few’, which, for the sake of the discussion, I assume to be associated with the same functional projection housing the cardinal numerals.²⁵ These quantifiers can appear either pre-nominally, as in (52a) or post-nominally, as in (52b), with no detectable interpretative (scope) difference, as indicated by the bracketed translations.

- (52) a. harbe/məʔat rabanim fanatim
 many/few rabbis fanatic
 ‘[many/few [fanatic rabbis]]’
- b. rabanim fanatim rabim/məʔatim
 rabbis fanatic many/few
 ‘[many/few[fanatic rabbis]]’
- c. *rabanim rabim/məʔatim fanatim
 rabbis many/few fanatic

(52a) exemplifies the order familiar from cardinal numerals. As in (51), the adjective is positioned to the right of the noun while the quantifier is found on its left. The order displayed in (52b), however, is not found with (Hebrew) cardinal numerals, which are restricted to appear pre-nominally. In (52b), the quantifier follows the noun and, as the ungrammaticality of (52c) clearly shows, it may not precede the AP. (52b) thus exemplifies the pattern of snowball-like phrasal movement over modifiers, yielding post-nominal inverse order.

The Freezing effect becomes apparent once we add a demonstrative to (52a), yielding (53).

²⁵ Like cardinal numerals and at roughly the same stylistic level—see (21d)—*meʔat*, though not *harbe*, can be preceded by the definite determiner, as in (i).

(i) #ʔha meʔat rabanim še ʔod maʔamin(im) bə ʔaraxim ʔuniversalim...
 the few rabbis that still believe(-PL) in values universal
 ‘the few rabbis who still believe in universal values...’

- (53) harbe/məʿat rabanim fanatic ʿelu
many/few rabbis fanatic these
‘[these [many/few [fanatic rabbis]]]’

Assuming that demonstratives are configured higher than ‘many/few’ (viz. (37) and the discussion in Section 7), the derivation of (53) consists of moving the constituent [_{NP} many/few [_{NP} rabbis] [_{XP} [_{AP} fanatic] [_{NP} t]]]—internally to which phrasal movement has occurred—to the specifier of the phrase immediately above the demonstrative. Just as in the interaction between Hebrew ordinal and cardinal numerals, there is a point in the derivation at which the merge of a new element does not trigger phrasal movement above it but freezes it in position, namely to the right of the newly-merged constituent. However, the category containing the freeze-inducing cardinal numeral or weak quantifier can, itself, be subjected to phrasal movement, whence the ‘mixed’ direct and inverse orders in (51) and (53).

Cardinal numerals in Hebrew obligatorily induce freezing while ‘few’, ‘many’ and Arabic cardinal and ordinal numerals do so optionally. The problem is, to state it once again, to discover the formal property which determines whether phrasal movement takes place, or whether it is ‘frozen’.

Consider the morphological form of the Hebrew quantifiers in the two positions relative to the noun. Pre-nominally, we have *harbe* and *meʿat*, while *rabim* and *meʿatim* occur post-nominally. The existence of two distinct forms for the pre and post-nominal positions, essentially a short form and a long form, is not a peculiarity of these quantifiers, but a pervasive property of nominal material in Arabic and Hebrew. We can see this pattern manifested for example, in the domain of morphologically feminine (see footnote 31) cardinal numerals in the Syrian dialect spoken in Palmyre in (54) (Cantineau, 1934: 213–215) and in the form of proximate demonstratives in Moroccan, (55a, b), from Benmamoun (2000b), to which I return in Section 7.

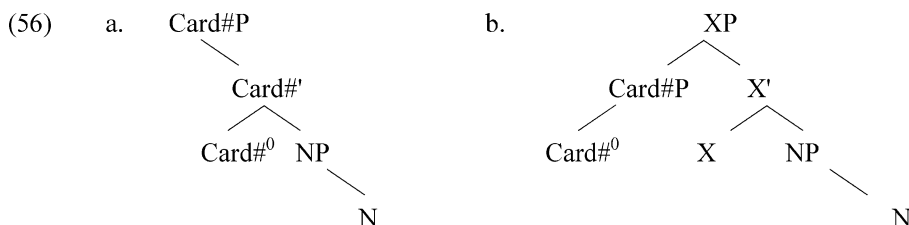
(54)

PRENOMINAL FORM	POST-NOMINAL FORM	NUMERAL
θelθθ	θeleeθe	'three'
ʿarbaʿt	ʿarbaʿa	'four'
xamst	xamse	'five'
ʾθment	ʾθmeenyε	'eight'

- (55)
- | | | | |
|----|--------------------------------|---------------------------------|---------------------------------------|
| a. | had l wəld
this the boy | had l bənt
this the girl | had lə wlad
this the boys |
| b. | l wəld hada
the boy this-MS | l bənt hadi
the girl this-FS | lə wlad hadu
the children this-MPL |

In the descriptive tradition of Semitic linguistics, the pre-nominal form is often labeled the ‘construct-state form’, implying a formal affinity with the more familiar nominal construct state, studied in Section 8, and the post-nominal one is frequently referred to as the ‘attributive form’.

I would like to put forward the thesis that in the general case, the pre-nominal forms are heads, in the X-bar sense, while the post-nominal, or ‘attributive’ modifiers are XPs. A cardinal number can be merged either as a head *governing* its NP complement (as in both Hebrew and Arabic), or as the head of a specifier XP which c-commands, but does not govern NP. The former configuration, schematized in (56a), is available both in Hebrew and in Arabic numerals, while the latter, shown in (56b), is possible only in Arabic. Freezing is attested when the modifier is merged as a head, i.e. in (56a), and phrasal movement is induced whenever a modifier is merged as a specifier (of some maximal projection XP). Phrasal movement triggers agreement, in the manner discussed in the next section.²⁶



The crucial formal relation in (56a) is *government*, defined in (57).²⁷ It incorporates two conditions, a c-command condition in the precise sense of Reinhart (1976: 32) and a minimality condition in the sense of Rizzi (1990).²⁸

- (57) X governs YP iff
- a. X c-commands YP and
 - b. there is no head Z such that Z c-commands YP but does not c-command X.

This notion of government expressed by (57) defines a local relation between a head and a complement or the specifier of its complement. I contend that this relation is independently needed to limit certain instances of (non-specifier-head) Case assignment as in, e.g. English *for*-infinitives, see Rizzi, (1998), and to constrain incorporation to the minimal c-command domain of the hosting head, Baker (1988), the former phenomenon perhaps reducible to the latter, if Case assignment by a head can be thought of as movement of features from the governed XP to the governing head, cf. Chomsky (1995, Ch. 4). Since *government* is defined in terms of c-command and a notion of locality—both independently necessary concepts in other domains of syntax—it comes for free.

My contention is that government of YP by X⁰ is a formal licensing condition operative internally to the Semitic DP. The idea is that an XP governed by an appropriate head is licensed and it is hence unnecessary to move it any further. The Freezing effect illustrated above reduces to Chomsky's (1991) constraint barring superfluous movement. One might

²⁶ Sichel (2002), which has only become available to me recently, develops an interesting alternative. Sichel argues that Semitic adjectives are heads which block the movement of N to D and force phrasal movement. Furthermore, she analyzes the construct state as involving head movement of N to D.

²⁷ The definition in (57) recalls the definition proposed in Chomsky (1986) and incorporates the locality condition of *proper* government in the ECP literature of the 1980s: see, in particular, Saito (1984) and Rizzi (1990: 31–32).

²⁸ I eschew the highly theory-internal question of whether the ‘minimality’ clause (56b) should be stated in terms of the Minimal Link Condition of Chomsky (1995) and Collins (1997).

also think of the Freezing effect as the result of a *riterial* relationship (in the sense of Rizzi, 1996), whereby the satisfaction of a particular checking or licensing condition precludes further movement of either the licensing head or of the licensed XP. Although Rizzi's *Wh-Criterion* is satisfied in a specifier-head configuration, it could be generalized to the government-type licensing which underlies the assignment of genitive Case in Semitic.

Thus, the cardinal numerals in Hebrew, the pre-nominal quantifiers of both the 'few'/'many' variety and of the universal and partitive varieties discussed in Shlonsky (1991) and footnotes 11 and 15 above, are all heads of functional projections that govern their complement. (The phrase markers in (41) should be modified accordingly.)²⁹

Can we be more precise about the licensing in question? Consider the case alternations in the Standard Arabic examples in (58) (adapted from Fassi-Fehri, 1988, 1997, 1999). In particular, note that whatever the case borne by the noun when it linearly precedes the numeral (in (58a), it bears nominative, the citation form), the noun is marked for genitive when it follows the numeral.

- (58) a. ş-şuḥuf-u t-talaat-u
 the-newspapers-NOM the-three-NOM
 'the three newspapers'
- b. t-talaat-u şuḥuf-i
 the-three-NOM newspapers-GEN

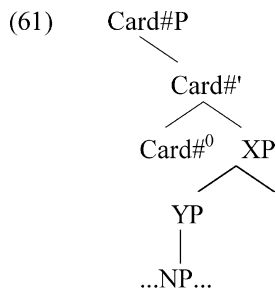
The pre-nominal numeral is traditionally taken to be a 'noun', because like nouns, it determines genitive Case on its complement. Compare the string 'three newspapers' in (58b) with a Standard Arabic construct-state nominal in (59).

- (59) daar-u r-rajul-i
 apartment- NOM the-man- GEN
 'the man's apartment'

In addition to nouns, pre-nominal quantifiers and numerals, prepositions also determine genitive case in Standard Arabic. The generalization that emerges is that genitive Case is determined by non-verbal heads [−V], in the sense of Chomsky (1970) and related work. The only exception is D and Dem heads, which share the feature [+Det]. When configured as heads, such non-verbal elements enter into a formal relationship either directly with their complements, in the case of, say, a numeral followed by a Noun Phrase, or with the specifier of their complement, as in, e.g. (60), where the relevant structure is that of (64). Both of these formal relations are subcases of government, as defined in (57). It is therefore confusing to call pre-nominal modifiers 'nouns'. The only *nouny* property of the pre-nominal heads is that they are heads which, by locally governing an XP, suffice to case-license this XP, making further movement unnecessary.

²⁹ Complex pre-nominal numerals or quantifiers *paxot mi-šlošim* 'less than thirty', *paxot o yoter* 'more or less', *harbe me'od* 'very many', *me'at midai* 'too little', etc., should probably be represented as a sequence of (heads of) maximal projections, as the system of morphological case on numerals in Classical Arabic would seem to suggest.

- (60) harbe/məʔat rabanim fanatim
many/few rabbis fanatic
 ‘Many/few fanatic rabbis’



6. Agreement inside the noun phrase

I have proposed that all modifiers of N are merged to its left. Therefore, when modifiers appear to the right of noun, it is the noun phrase or the noun phrase with pied piped material, which is raised over the modifiers. Most post-nominal modifiers agree with the noun in this configuration, as shown in (62a), from Hebrew.³⁰ The example in (62b) illustrates case agreement in Standard Arabic.

³⁰ Some Arabic exceptions to this generalization are mentioned in footnote 18.

Concord also requires *definiteness spreading*, as Androutsopoulou (1994) has termed a similar phenomenon in Modern Greek, namely, the repetition of the definite article in front of every adjective. However, Greek determiner spreading is restricted to predicative adjectives, as shown in Alexiadou and Wilder (1998) and Alexiadou (2001). In Arabic and Hebrew, on the other hand, there is no such restriction; determiner spreading is obligatory with the nonpredicative adjectives in (i), so that Alexiadou's (2001) proposals for Greek and Romance cannot be extended to Semitic.

- (i) a. ha-sar ha-kodem
 the-minister the-former
 ‘the former minister’
 b. ha-sar ha-falastini
 the-minister the-Palestinian
 ‘the Palestinian minister’
 c. ha-rakevet ha-xašmalit
 the-train the-electric
 ‘the electric train’

For the purposes of the present paper, it suffices to consider [\pm definite] on adjectives to be a nominal phi-feature, as in Borer (1996) and Siloni (1996, 1997), included in the adjective's bundle of agreement features, gender, number and case (in Standard Arabic); see also Dimitrova-Vulchanova and Giusti (1998) on Balkan languages other than Greek. Related to this is Androutsopoulou's, Fassi-Fehri's (1999) and recently Sichel's (2002) idea that adjectives are complements of a D head.

- (62) a. haca'ot amerikayot xašuvot
 proposals-fpl American-fpl important-fpl
 ‘important American proposals’
- b. ş-şuḥuf-u t-talaat-u
 the-newspapers-NOM the-three-NOM
 ‘the three newspapers’

Observing the Hebrew quantifiers ‘many’ and ‘few’, one immediately notices that the difference between the two forms is that the post-nominal form obligatorily agrees with the noun which precedes it (cf. also the pattern of demonstratives in Moroccan Arabic (55b)). It varies in gender and definiteness in strict accordance with the preceding noun. In their agreeing forms, these quantifiers are therefore like attributive adjectives, which manifest the gender, number and definiteness properties of the noun they modify. The pre-nominal form of the quantifier, like that of the Moroccan demonstrative in (55a), is a ‘bare’ form; agreement is not possible in (63) when the quantifier precedes the noun.

- (63) *rabim/mə'atim rabanim fanatim
 many/few rabbis fanatic

The generalization that emerges is that post-nominal modifiers, adjectives, numeral phrases, quantifiers and demonstratives must agree with the noun. When these phrases precede the noun, however, fairly arbitrary variation is manifested. To mention some examples, pre-nominal feminine cardinal numerals in Card#P in Hebrew manifest the

Some thought should be given, in this context, to the fact that adjectives of non-Semitic origin in Maltese *cannot* bear the definite article. This restriction, illustrated in the contrast in (i) from Borg (1996), might conceivably be interpreted to mean that the feature [\pm definite] is simply absent from adjectives derived from non-Semitic borrowed adjectives such as *grammatikali*, i.e. as a fact about the Maltese lexicon, under the assumption that (in)definiteness is lexically encoded on adjectives.

- (i) a. l istudiu (*l) grammatikali mhux faċli.
 the studies (the) grammatical NEG easy
 ‘The study of grammar is not easy.’
- b. il kelb l iswed iġġielel ma-l qattusa l bayda
 the dog the black fought with-the cat the white
 ‘The black dog fought with the white cat.’

Alternatively, if definiteness on adjectives signals the presence of a DP projection, then the class of Maltese non-native adjectives must be taken to be configured as ‘less than’ DPs. It is not clear to me how this extends to the adjectives of native (Semitic) origin which fail to agree in definiteness, viz. the examples in Fabri (1993), cited in Duffield (1995: 300–303).

‘attributive’ form, although agreement with a following noun is optional for many speakers.³¹

- (64) a. xamiša yladim
 five-“F” children-MPL
- b. xameš yladim
 five-“M” children-MPL

Arabic dialects vary as to whether and to what degree pre-nominal cardinal numerals agree with the noun they determine. Some systems only have a single form for most or all the cardinal numerals (e.g. Cypriot Arabic, Tsiapera, 1969: 56; Borg, 1985: 127–128) so that the question of agreement or non-agreement cannot be stated. In those systems that exhibit both a ‘long’ and a ‘short’ form, and where the choice cannot be stated in purely phonotactic terms (as it is in, e.g. Sudanese; Kaye, 1976), it seems to be overwhelmingly the case that the short form cannot follow the noun it modifies.³²

The pre-determiner numerals in Hebrew, housed in the high Card#P projection mentioned in Section 3, display the ‘construct state form’, as is clear from the realization of the feminine suffix /-t/.

- (65) xameše-t ha yladim
 five-“F” the children

Pre-nominal proximate demonstratives in the Moroccan examples in (55a) manifest the bare ‘non-agreeing’ form while Classical, Wright (1933), and Standard Arabic demonstratives have a unique, agreeing form in both positions, as (66) illustrates. (This is also true for distal demonstratives in Moroccan Arabic, as a *Lingua* reviewer points out.)

- (66) a. haaðihi l jaami^cat-u
 this-3FS the university-NOM
 ‘this university’
- b. l jaami^cat-u haaðihi
 the university-NOM this-3FS
 ‘this university’

³¹ I abstract here, as throughout, from the little understood phenomenon of gender polarization in Semitic and, more generally, in Afro-Asiatic, whereby the feminine form of the numeral quantifies a masculine noun and vice versa (see Hetzron, 1967, and recently, Lecarme, 1998). There is, one should add, a clear tendency towards regularization and neutralization of the marked form of the numeral in pre-nominal position (in Hebrew) and in the post-nominal one (e.g. Lebanese). See Bolozky and Haydar (1986) for some discussion and references. When referring to agreement between numerals and nouns, therefore, inverse gender agreement is implied and the symbols ‘M’ for ‘masculine’ and ‘F’ for ‘feminine’ appear in quotes in the glosses.

³² Bloch’s (1971) prosodic account is called into question by Kaye’s findings from Sudanese. An analysis in terms of syllable number cannot, in my judgment, capture the full generality of the phenomenon. For example, it misses the formal affinity with the Standard Arabic pattern of full agreement on verbs with preverbal subjects and non (or partial) agreement with post verbal ones, see main text ahead.

Borg (1996) notes that the Maltese pre-nominal quantifier *ċertu* ‘certain’ occurs as an invariable form in his Maltese idiolect, “... but it can display the nominal adjectival inflection in other dialects”.

The agreement patterns discernible inside Semitic noun phrases recall patterns of subject–verb agreement in the clausal system. It is frequently the case, both cross-linguistically as well as within a single grammar, that non-agreement or partial agreement are manifested when a noun phrase does not stand in the canonical agreement configuration with the inflectional head.

Confining ourselves to the Semitic *Sprachbund*, we see that when clausal subjects occupy the specifier position of an agreement-bearing head, they invariably trigger agreement on the verb. When subjects occur in a post-verbal position, however, agreement is unstable, varying from impossibility in normative Standard Arabic, optionality with a variety of existential predicates in both Hebrew, Doron (1983), and the Arabic dialects, Mohammad (1989, 1999), to obligatoriness in Hebrew ‘triggered’ inversion, Shlonsky (1997).

The generalization governing the distribution of subject–verb agreement is the following:

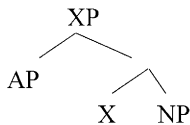
Agreement morphology is *obligatorily* manifested when the subject is in Spec/Agr (or Spec/T) at Spellout, whereas agreement *may or may not* be displayed on the verb when the clausal subject or agreement trigger is not in that position at Spellout (see Guasti and Rizzi, 2000, for further evidence and elaboration).

The formal configuration of obligatory agreement in clauses is met when a nominal expression bearing agreement features occupies the specifier position of an Agr-bearing head. The question arises whether a similar structural condition holds of nominal concord or agreement internal to DP. From a theoretical point of view, we clearly want this to be the case since it would unify subject–verb agreement and nominal concord. Nevertheless, there does not seem to be any point in the derivation of a NP AP sequence in which these two elements or their heads realize the required configuration.

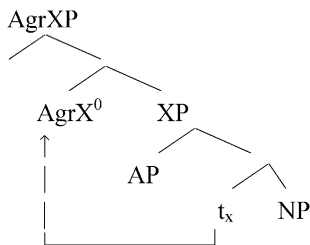
There is, however, an indirect way of establishing agreement between them which exploits the requisite formal condition. Taking as a starting point the derivation in (39), some modifications need to be introduced. First the categories labeled 1P, 2P and 3P in (39) should be replaced by AgrPs which are paired with the functional projections which contain the modifiers.³³ Thus, the AgrP associated with an XP which hosts adjective phrases of a certain class, or numeral phrases, is AgrXP, etc. Second, these AgrPs are projected from X, which moves and merges above XP. A step-by-step derivation is described in (67).

³³ Ritter (1993) argues that gender is an inherent category of nouns in Hebrew while number is contributed by an independent NumberP positioned on the movement path of N to D, see Ritter (1991). It makes sense to identify her NumberP with the agreement phrases proposed in the text.

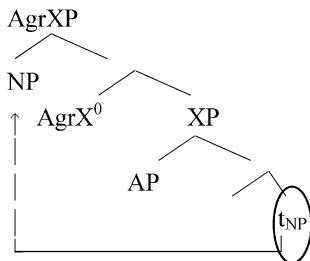
- (67) Starting from the formation of NP,
 a. X is merged, XP is projected and AP is merged in Spec/X. I assume that X is the functional head bearing the semantic features associated with the particular adjective or modifier phrase. Moreover, it bears phi features.



- b. X is moved and projects AgrP1. AgrP is the domain in which the agreement relationship is established.



- c. NP raises to Spec/AgrIP.



The next modifier is introduced as the specifier of YP, Y^0 raises and projects AgrYP, following which AgrXP moves to Spec/AgrYP. This cycle essentially repeats itself with the introduction of every new modifier.

The obligatory agreement of noun phrases and post-nominal modifiers is brought about by means of spec/head agreement: A functional head bearing phi features attracts a nominal expression into the specifier of an immediately dominating AgrP. This derivation resembles the way clausal T attracts a nominal, i.e. the clausal subject, into the specifier of AgrSP, to the head of which T adjoins. There is, however, a crucial difference between clausal agreement and nominal concord. In the latter, but not in the former, overt or visible agreement is manifested between the specifier of X and the nominal initially governed by X. This difference should be attributed to the fact that T and clausal Agr mediate between a nominal argument and a verbal category. Nominal concord, on the other hand, is a relationship between two or more nominal categories. My claim is that this relationship is mediated by a functional head, which bears the semantic features associated with specifier in its spec *and* agreement features which trigger movement of its complement.

Turning now to pre-nominal modifiers, we note that these are never in a Spec-head relationship with an Agr-bearing head, neither directly nor indirectly. This is the reason for which obligatory agreement is not required. Note that agreement is not precluded in such a configuration, it is simply not obligatory (see Guasti and Rizzi, 2000).

In a structure like (56b), Card#⁰ is configured in a Spec position and hence does not govern NP or the category of which NP is a specifier. Under these circumstances, NP cannot get genitive Case from Card#⁰. The alternative derivational strategy, involving agreement, is induced, in the manner illustrated in (67).

The Semitic nominal system can thus be taken to manifest the dual nature of licensing, originally proposed for nominative Case assignment by Koopman and Sportiche (1991). DP-internal constituents are licensed either by government or through agreement. Government licensing is morphologically visible by a genitive case suffix on the head of the governed element (in a language with overt case morphology) while agreement licensing takes the form of grammatical concord as described in the preceding paragraphs.

The variability observed across Semitic in the positioning of numerals, quantifiers, etc. to the left or to the right of the noun results from a choice made by the particular grammars whether to configure a head bearing a particular functional feature as in (56a) or as in (56b), with the appropriate changes of category labels. The choice has to be made for each head individually.

Mixed cases are therefore expected. In (53), for example, the quantifiers ‘many’ and ‘few’ are configured as in (56a), inducing freezing. The demonstrative, on the other hand, is merged in the specifier of a higher projection, inducing phrasal movement above it. If the quantifiers are configured as in (56b)—the choice between the two options being essentially free—we get (68), with systematic phrasal movement and no freeze.

- (68) rabanim fanatim rabim/mə’atim ’elu
 rabbis fanatic many-MPL/few-MPL these
 ‘[these [many/few [fanatic rabbis]]]’

7. The demonstrative twist

Hebrew demonstratives are obligatorily post-nominal.³⁴ They follow all adjectival and numeral modifiers (although they precede genitive PPs; Brugé, 1996) and agree with the noun like an adjective. The three forms of the demonstrative are tabulated in (69), (the plural form is suppletive).

(69)		singular	plural
	masculine	ze	’elu
	feminine	zot	’elu

³⁴ I am grateful to Giuliana Giusti and Tabea Ihsane for discussion of the issues raised in this section. For related discussion, see Ihsane (2003).

Some Arabic dialects are similar to Hebrew in that their demonstratives can only appear in a post-nominal position. (70) is an urban Egyptian example; the three forms (masculine singular, feminine singular and plural) are provided in (71).

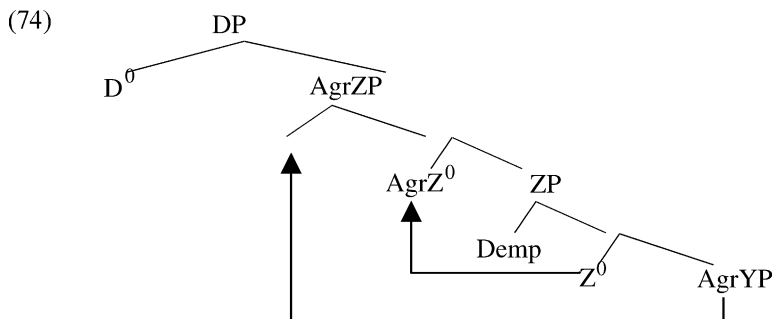
- (70) l bi(n)t di
 the girl this-F

(71)		singular	plural
	masculine	da(h)	dool
	feminine	di	dool

One of the main thrusts of this paper is to argue that post-nominal DP material is configured to the *left* of NP, which raises leftwards, yielding the appropriate word order. Thus, I take Hebrew and Egyptian demonstrative phrases to be configured in the specifier position of a projection—call it ZP—which is located below D^0 . In the variant of (68), repeated below, (72), in which the definite article precedes NP, (72), phrasal movement displaces the entire constituent from below the demonstrative, namely AgrYP in (74), to the specifier position of a projection above it, labeled AgrZP. The determiner *ha* in (73) appears positioned immediately above AgrYP, as required. (The occurrence of *ha* on the post-nominal material is a reflex of agreement between the noun and its modifiers, viz. Section 6.)

- (72) rabanim fanatim rabim/mə'atim 'elu
 rabbis fanatic many-MPL/few-MPL these
 ‘[these [many/few [fanatic rabbis]]]’

- (73) ha rabanim ha fanatim ha rabim/mə'atim ha 'elu
 the rabbis the fanatic the many-MPL/few-MPL the these
 ‘[these [many/few [fanatic rabbis]]]’



Many Arabic dialects differ from Hebrew and Egyptian, and manifest demonstratives which can appear either pre-nominally or post-nominally. The cases of Moroccan and

Standard Arabic have already been mentioned; see (55) and (66) above. The Moroccan examples are particularly revealing because they show that the pre-nominal form is the uninflected one and the post-nominal one is the longer or agreeing form.

It is natural to extend the analysis developed in the preceding sections and argue that the varieties which have both pre-nominal and post-nominal demonstratives allow demonstratives to be configured either as heads or as specifiers (recalling a similar proposal of Cornilescu (1992) for Rumanian demonstratives). When the demonstrative appears in a specifier position, phrasal movement is triggered, as in Hebrew and Egyptian Arabic and the order $D^{\wedge}[_{AgrYP} \dots N \dots]^{\wedge}Dem$ is derived, as in (74).

When the demonstrative is configured as a head and governs its complement, the complement (e.g. AgrYP), is ‘frozen’ in the sense of Section 5 and the order which should obtain is $D^{\wedge}Dem^{\wedge}[_{Agr2P} \dots N \dots]$. However, this word order is never attested; rather, the (pre-nominal) demonstrative invariably *precedes* the definite article. Beirut Arabic, by way of example, admits both (75a) and (75b), but rejects (75c) entirely.

- (75) a. l bint haydi
the girl this-F
- b. haydi l bint
this-F the girl
- c. *l haydi bint
the this-F girl

The non-existence of the order $D^{\wedge}Dem^{\wedge}[_{AgrYP} \dots N \dots]$ shows that demonstratives are different from other functional heads in the nominal domain. They undergo *obligatory* movement.³⁵ This hypothesis, as opposed to a conceivable alternative whereby demonstratives are always configured in specifier positions and (75b) derived by XP movement of DemP to Spec/D (cf. Brugé and Giusti, 1996) is supported by the following consideration.

Alongside the full (agreeing) demonstratives which can occur either before or after the noun, Levantine Arabic possesses a non-agreeing deictic demonstrative, *hal*, which may only appear pre-nominally, as attested by the unacceptability of (76b), with or without the determiner.³⁶

³⁵ The difference between Arabic and Romance (i.e. Spanish, Brugé, 1996; Rumanian, Dimitrova-Vulchanova and Giusti, 1998), where pre-nominal demonstratives and determiners are in complementary distribution (cf. Spanish *el hombre este* versus *este (*el) hombre* ‘this man’) can perhaps be stated in terms of adjunction to D^0 in Semitic as opposed to substitution into D^0 in Romance. This would render the present analysis consistent with Bernstein (1993). Alternatively, if the Romance demonstrative is uniquely an X^{max} , then the non co-occurrence of the demonstrative and the determiner might be attributed to a ‘doubly filled’ DP filter, as Giusti (1993) proposes. In this context, see also Carstens (1991, Section 3.5).

³⁶ Lebanese *hal* is shown by Aoun and Choueiri (2000) to have two uses. First, it can appear in the guise of a reduced (deictic) demonstrative, as a short form of the *haydi* series. Second, it has an anaphoric use; similar to *the* in *Johnson didn’t pass this year. The kid has a problem*. Aoun & Choueiri relate the anaphoric use of *hal* to the (person) morpheme *ha* and to the simultaneous absence of the deictic morpheme *da* (compare Rumanian *acest* and *acesta*, as per Cornilescu, 1992: 207).

- (76) a. hal bint
 this girl
- b. *(**l*) bint hal
 (*the*) *girl this*

It is clear that *hal* is bi-morphemic, and consists of half of a ‘demonstrative’, procliticized onto the definite article *l* (cf. *ha* in the long form *haydi* in (75)). There is hardly a doubt that the final [l] of *hal* is the definite determiner, since it assimilates to a following (i.e., nouninitial) coronal, just like the definite article. Compare (77) and (78) below with (79): Only the [l] of the definite article and of the proclitic demonstrative assimilate to a following [z]; the final [l] of *kul* ‘every’ does not, since assimilation here is a lexical property of the determiner morpheme and not a general property of the phoneme [l].

- (77) a. l bint
 the girl
- b. hal bint
 this girl
- (78) a. z zalame
 the man
- b. haz zalame
 this man
- (79) a. kul zalame
 every man
- b. *kuz zalame
 every man

Many dialects allow *da* to be split off and be used independently, e.g. in the dialect spoken in Shirqaat, 100 km south of Mosul, Iraq, where, apparently, the use of the *da* form is ‘less formal’ than the use of the full demonstrative, not to speak of Egyptian where *da* is the only synchronically surviving demonstrative. It remains to be determined whether the *da* systems uniformly resist the ‘anaphoric’ use, as does, e.g. Moroccan, as Aoun & Choueiri point out. Borg (1985: 142) writes about Cypriot Arabic:

“Highly noteworthy...is the occurrence of the shorter [demonstrative (US)] allomorphic variants *ak*, *ayk* (that, M and F, both singular). Their principal function is to implement anaphoric reference, or to express metaphorical distance, as when reference is made to an entity that is physically absent or temporally remote. Note...the contrast:

aḏak l-insan	ak l-insan
‘that man (over there)’	‘the aforementioned man’”

One should therefore think of *hal* as the lexicalization of a head in which the demonstrative is fused with the determiner. We can assume that *hal* is base-generated in D^0 . The reason for which it cannot follow the noun but can only precede it must be the same for which the definite determiner in Arabic invariably precedes the noun, a matter I turn to in Section 8.

The sequence *hayd^l* in (75b) unlike *hal*, is not a lexical word. Take it to be derived by syntactic head movement of Dem^0 to D^0 .³⁷ Pushing this idea, let us hypothesize that in general, pre-nominal demonstratives are heads which undergo movement to D^0 (see Brugé, 1996; Giusti, 1993).

The absence of any agreement morphology on *hal* is consistent with this analysis because at no point in the derivation does it enter into a specifier-head relationship with a NP or an NP-containing specifier. This is so because *hal*, to recall, is directly merged in D^0 and the configuration required for obligatory agreement is never established.

Conversely, the obligatory exponence of agreement on the pre-nominal full demonstrative *haydi* in (75) (and *hayda*, *hool* for the masculine singular and plural forms) is due to the fact that, contrary to *hal*, it occupies a head position lower than D and enters into a specifier-head relation with a (noun-containing) XP in Spec/Dem (or in Spec/AgrDem). This is followed by further movement of Dem to D.

Let us consider in more detail the derivation of full pre-nominal demonstratives such as *haydi*. Consider the schema in (80), in which the arrows indicate movement. Dem^0 moves and projects AgrDemP, NP (or an AgrP containing it) is then raised to Spec/AgrDem. Finally, $AgrDem^0$ undergoes head movement and adjunction to D^0 . The movement in ❶ is of the sort postulated for other agreement-inducing functional heads in the nominal domain. The movement in ❷ is unique to demonstrative heads. In many languages, the presence of a pre-nominal demonstrative precludes the appearance of a definite determiner. Such demonstratives are akin to Levantine *hal*: They are base-generated in D.

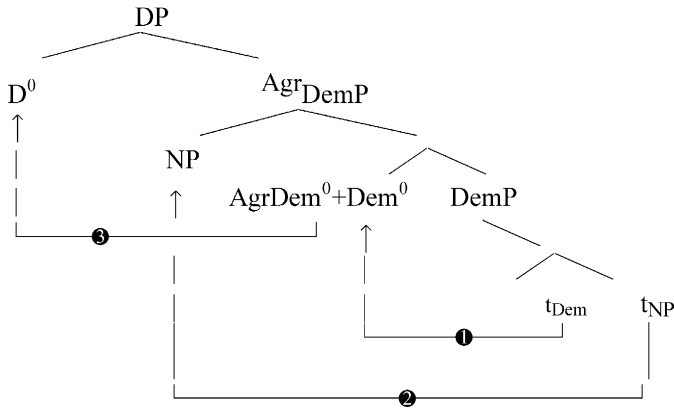
³⁷ Similarly, the difference between Standard Arabic pre-nominal demonstratives, illustrated in (66a), repeated in (i) below, and Lebanese Arabic (76a), manifests a familiar diachronic situation in which a regular syntactic operation characteristic of the more conservative variety is lexicalized in the more innovative one.

- (ii) *haaḍihi l jaamiʿat-u*
this-3FS the university-NOM
 ‘this university’

The post-nominal demonstrative of Standard Arabic, repeated below in (ii) should nevertheless be taken to manifest the occurrence of *haaḍihi* in a specifier position.

- (ii) *l jaamiʿat-u haaḍihi*
the university-NOM this-3FS
 ‘this university’

(80)



In the post-nominal positioning of *haydi*-like determiners, DemP is configured in the specifier of ZP and the derivation proceeds as in (74).

The derivation schematized in (80) appears to be inconsistent with the generalization on freezing formulated in Section 5. This is so since Dem⁰ is a head governing its complement and not a specifier (it corresponds to the schema in (56a)). This is precisely the context in which Construct-State effects, namely freezing of the governing head and of the governed XP are to be expected. Recall, however, that what induces freezing is not the realization of a government configuration per se but rather the assignment of genitive Case in that configuration. The possibility of movement in (80) should be related to the fact that demonstratives, differently from other heads such as nouns, quantifiers, prepositions or numerals, do not assign genitive Case (they are [+det] and only [–V, –Det] heads assign genitive in Semitic). This is evident in an overt Case language such as Standard Arabic, where a noun preceded by a demonstrative does not bear a genitive suffix but displays whatever Case is assigned to the DP as a whole. This is evidenced by the ungrammaticality induced by suffixing the genitive marker [-i] in (81).

- (81) a. haaðihi l jaami^cat-u /*-i
 this-3FS the university-NOM GEN
 ‘this university’

To end this section, consider the following reasoning. Since *hal* is a demonstrative *cum* determiner merged in D⁰ and post-nominal (as opposed to pre-nominal) *haydi* is the specifier of a lower projection, it should come as no surprise that two may co-occur. Consider, then, the Damascene example in (82) (in which the full demonstrative has a long vowel instead of the Beiruti diphthong), which gives rise to the focus interpretation associated with ‘reinforcers’ in Romance, of the sort discussed in Bernstein (1997, 2001); see Cowell (1964: 58).³⁸

³⁸ The full pre-nominal demonstrative, i.e. the form which is moved from Dem⁰ to D⁰ cannot co-occur with the post-nominal one. The reason for that might plausibly be a ‘doubly-filled’ XP filter, operative on the level of DemP. Such a constraint would bar the lexicalization of both Dem⁰ and Spec/Dem.

- (82) haš šaher haada šaher šete.
this month this-M (is) month winter
 ‘this month is a winter month.’

8. The nominal construct state

The phrasal movement approach provides a simple and straightforward account for some of the salient properties of the Semitic asyndetic genitive construction, known in the literature as the ‘construct state’. (The Arabic and Hebrew terms *ʿal ṭāaʿfa* and *smixuut* are better rendered by the term ‘annexation’ which is employed in this paper interchangeably with the term *construct state*.) In this configuration, a noun or *CS-head* is left-adjacent to a noun phrase or *annex*.³⁹ The *annex* manifests morphological genitive Case in Standard Arabic, and, I assume, abstract genitive case in other Arabic/Hebrew varieties. (The nominative case suffix on the CS-head is the citation case in Arabic.)

- (83) daar u r raʒul i
house NOM the man GEN
 ‘the house of the man’ or ‘the man’s house’

In the presence of complements—and only in non event noun phrases—the CS form is unacceptable in Hebrew when the annex is an agent or a possessor. Only the theme, or ‘depicted’ argument can appear in construct with the CS-head in (84b), the agent or

³⁹ Classical Arabic and Syriac both apparently allow parenthetical material to occur between the CS-head and the annex, a matter discussed in Kihm (1999), citing Bohas and Al-Qaadiriy (1988), *inter alia*, and illustrated by the following classical Arabic example from Al-Aboudi (1987: 59).

- (i) haaḍa saaḥib-u [ya- ʿab-a ʿiṣaam-i] zayd-in
this friend-NOM[O father-ACC Isaam-GEN] Zayd-GEN
 ‘This is a friend of Zayd, o father of Isaam.’
 Lit: ‘This (is) a friend [o father of Isaam] of Zayd’

This observation casts some doubt on the validity of Borer’s (1996) and Benmamoun’s (2000a) claim that construct formation is a morphological (i.e. word-formation) operation, a claim independently questioned by Siloni’s (1997) demonstration that the annex of the CS-head can be a conjunction of DPs, as in (ii), and Mohammad’s (1999: 6) examples of clausal, as opposed to nominal annexes in some Arabic varieties, exemplified by Palestinian (iii, b).

- (ii) dirat ha rav ha raši ve raʾayat-o
apartment the rabbi the chief and wife-his
 ‘The apartment of the Chief Rabbi and his wife’
- (iii) a. saaʿet maa šuft-ak
hour that (I) saw-you
 ‘The hour when I saw you’
- b. xabariyyet ʿeno Mona naʒḥat
news that Mona succeeded
 ‘the news that Mona succeeded’

possessor are unacceptable as construct annexes and can only appear as prepositional complements (Borer, 1996: 41; Ouhalla, 1991; Siloni, 1997: 96–98). No such restriction is exhibited in the syndetic genitive or free state form, as shown by the acceptability of both (84a) and (85b).

- (84) 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
- (85) a. *ha tmuna šel vangox*
the painting of Van Gogh
 ‘Van Gogh’s painting’
- b. *ha tmuna šel ha xamanyot*
the painting of the sunflowers
 ‘the painting of the sunflowers’

A second, much more well-known fact about CSNs is that adjectival modifiers cannot be positioned in-between the CS-head and the annex, but must follow the annex. In (86), the masculine adjective ‘colorful’ is positioned, and can only be positioned, on the right edge of the chain of construct nouns. It can be interpreted, however, as modifying any one of the masculine nouns in the phrase.

- (86) *kis xulcat menahelet beit ha rav ha civ’oni*
pocket-M shirt-F manager-F house-M the Rabbi-M the colorful-M
 ‘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’

If more than one noun is modified by an adjective, the configuration is nested so that the adjective phrase modifying the ‘inner’ noun ‘shirt’ in (86) is more deeply embedded than the adjective modifying the ‘outer’ noun ‘pockets’.

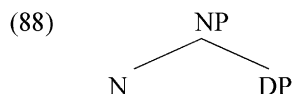
- (87) a. *kisey ha-xulca ha-xadaša ha-civ’onim*
pockets-M-PL the shirt-F the new-F the colorful-M-PL
 ‘the colorful pockets of the new shirt’
- b. **kisey ha xulca ha civ’onim ha xadaša*
pockets-M-PL the shirt-F the colorful-M-PL the new-F

Both the thematic restrictions and the constraint on AP placement receive an immediate explanation in the framework of the phrasal movement hypothesis defended in the present study. Two assumptions need to be made: First, that N never moves as a head in Semitic.

This hypothesis is defended throughout this paper and need not be justified again in this context. Second, assume that the head noun of a CS nominal is a genitive Case-assigning head, of the sort discussed in Section 5 (see, in particular, the discussion surrounding example (59)). This assumption derives the ‘freezing’ effect of CS nominals, namely, the fact that the complement of N is never moved away from the head. The lack of adjectival intervention, that is, the impossibility of positioning an adjective immediately following the head noun, is a direct consequence of this.

Adjectives follow the complement in CS nominals. This should be interpreted to mean that the NP in the construct state obligatorily raises above the adjectival field. The nesting effect of adjective phrases (and other post-nominal modifiers) is a direct result of the constituent structure. The AP ‘new’ in (87a) modifies ‘shirt’ internally to DP which itself is the construct annex of ‘pockets’. Phrasal movement targets the entire construct state NP, namely $[_{NP}[_{N} \text{ pockets}] [_{DP} \text{ the shirt } [_{AP} \text{ the new}]]]$, raising it above the AP ‘colorful’.

To explain the thematic restriction, a further assumption must be made, namely, that the CS nominal is formed by merging N and its complement DP (or N^{\max}), as in (88).



In other words, the restriction to the effect that the theme rather than the agent or possessor appears in construct is an expression of the order in which arguments in nominals are merged into the structure. In the presence of both a theme and an agent or possessor, the theme is merged as the complement (sister) of N^0 . The agent or possessor is merged higher, in say, Spec/N.⁴⁰ Crucially, CS formation, namely, the freezing of head and

⁴⁰ T. Siloni has drawn my attention to examples such as (i) and (ii) with an object denoting nominal head, in which the construct annex is an agent and c-commands a second nominal argument.

- (i) *mixtav ha-yeled el acmo.*
letter the-child to himself
 ‘the child’s letter to himself’
- (ii) *mixtav kol iša le-ba’al-a*
letter every woman to-husband-her
 ‘every woman’s letter to her husband’

Apart from action nominalizations (discussed in Section 9), where the annex is always the subject or agent of the nominalization, cases like this only arise with simple nouns when the second argument is a PP. Contrast (i) and (ii) with the unacceptable examples in (iii) and (iv), in which the second (lower) argument is introduced by the accusative marker *et*.

- (iii) **cilum ha-yeled 'et acmo*
photo the child acc himself
 ‘the child’s photo of himself’
- (iv) **zikaron kol iša 'et ba’al-a*
memory every woman acc husband-her
 ‘every woman’s memory of her husband’

complement, applies in a government configuration and a head does not govern its own specifier (because it does not c-command it).

When a single DP is merged with a concrete noun, it is merged in complement position and can be freely interpreted as theme, agent or possessor. In other words, the structural difference that holds between different theta roles within NP (the agent/possessor occupying a higher position than the complement, see, e.g. Grimshaw, 1990, for discussion) is obliterated in such noun phrases. The construct state is manifested in (89) and *Guggenheim* is ambiguous between the person depicted in the painting, the artist and the owner of the painting.

- (89) *tmunat Guggenheim*
 painting Guggenheim
 ‘Guggenheim’s painting’

At least with respect to the positioning of modifiers, CSNs are subject to exactly the same external positioning constraints as simple nouns. The syntactic derivation of both involves phrasal movement of an XP. The difference between simple nouns and CSNs is that, in addition to N⁰, they contain a complement DP.

The construct state is, in this sense, totally expected. It arises in a situation in which the head noun does not move out of NP. Being, in this sense, the derivationally unmarked configuration for nominals, it is not surprising that construct states are eminently resilient to diachronic change and remarkably uniform across Semitic.

Moreover, if head-movement is unavailable not only to nominal heads, but to adjectival and non-verbal heads in general, then the existence of construct state adjectives, participles, etc. is expected and Siloni’s argument to the effect that the construct state is not category-specific receives a natural interpretation.⁴¹

If complements (sisters to a head) are merged into the structure prior to subjects (or specifiers), then the thematic restriction on CS formation indicates that the construct state or the Freezing effect it manifests are established at a point in the derivation which follows or is simultaneous with the projection of (88) and derivationally precedes the introduction of a specifier in NP.

One might entertain the hypothesis that PP complements are not formed internally to NP, that is, that P is introduced in a higher position (perhaps in the functional domain of the clause in which the noun phrase appears as an argument, as argued by Kayne, 1999, 2001) and that the DP complement of P is attracted to it. Establishing a CS nominal with this DP complement would perforce prevent it from being attracted to P. It remains to be determined how N comes about to govern the agent argument in (i) and (ii).

⁴¹ Adjectival construct states, on which see, in particular, Hazout (2000) and Siloni (1996, 1997), are particularly interesting because they illustrate a situation in which an adjective is configured as a head governing NP, an option which cannot be ruled out if modifiers have a principled choice between (56a) and (56b). Arabic elative (i.e. superlative) modifiers are also heads. Hebrew morphology lacks a productive pattern (‘miškal’ or nonverbal *binyan*) for superlatives. The few frozen forms that are attested, however, are CS-heads, viz., e.g.

gdol ha mšorerim
greatest the poets
 ‘the greatest poet’

cf. English ‘the greatest of poets’

The construct state is associated with word-like phonology and prosody: Loss of stress on the governing head, preservation of the feminine suffix /t/, etc. This is true to varying degrees across Semitic but the cross-linguistic fact is that the phonological boundaries between the construct head and its annex are weak. Why should ‘freezing’ in our terms have such a phonological reflex?

A hypothesis that might be entertained is that construct state formation *is* a word-formation operation. A traditional and, I believe, correct idea is that the Semitic lexicon includes only or practically only category-neutral consonantal roots which are formed into phonological words by a set of procedures associating them with vowels and templates (perhaps by some version of autosegmental association, as per McCarthy, 1981). Following Arad (to appear), let us say that there is a syntactic movement operation which associates a root with a category label (see Borer, 1999b; Ouhalla, 1988, for related proposals) and that the object thus formed is then sent off to the phonological component for further processing.

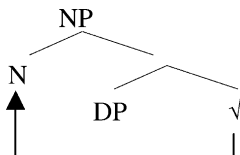
If we now assume that genitive Case assignment is an optional attribute or feature of nonverbal and [–Det] category heads and that, moreover, this Case must be assigned, we can shed some light on the word-like properties of CS-nominals: The [–V, –Det] category with which the root is associated has a genitive Case feature. The formation of a noun from a root associated with these features discharges the genitive Case and what is sent off to the phonology is then not the noun itself, but the entire CS nominal.⁴²

The fact that the CS constitutes a productive configuration for the formation of compounds—as attested by examples such as those in (90), from Borer (1989)—is surely a related consequence.

- | | | | |
|------|----------------------|-------------------|-------------------|
| (90) | beit xolim | beit sefer | 'orex din |
| | <i>house-sick-PL</i> | <i>house-book</i> | <i>editor law</i> |
| | ‘hospital’ | ‘school’ | ‘lawyer’ |

⁴² See Section 9 for a discussion of construct state nominals formed as a consequence of a syntactic category-changing operation, in which a verb becomes a noun and Arad (to appear) for a related discussion of V-derived as opposed to root-derived nominals.

Root-derived nominals may actually involve a more complex derivation than the one schematized in (88). In particular, if roots are first introduced into the structure and then *moved* to a categorial head, that is, if they undergo internal as opposed to external merge, then the derivation might look like one in which the root is raised to the N head and the genitive complement is merged in the spec of the root, as schematized below. It is not clear how to square such a derivation with the text proposal on genitive Case assignment.



8.1. Determiners and definiteness in construct state nominals

The CS-head of a CSN cannot be preceded by a definite determiner, as shown in (91).⁴³ Let us see if some light can be shed on this trait.

- (91) (*ha) kis xulca
 the pocket shirt
 ‘the shirt pocket’

In the syntactic literature from Ritter (1987) onwards, the problem has been to explain why N does not move to D in CSNs. However, since N never moves to D in Semitic, the grounds for the ungrammaticality of (91) must be reconsidered.

My own approach consists of claiming that

- (a) a CS nominal differs from a non CS nominal in that the latter need not but the former *must* raise to Spec/D, and
- (b) either Spec/D or D⁰ can be lexically filled at Spellout, but not both.

I have argued that XP movement in Semitic noun phrases targets a specifier position somewhere below D so that the order D⁰N in, e.g. (92), reflects the relative positions of the determiner and the noun in the nominal architecture. By the same reasoning, the ungrammaticality of (91) with *ha* should be interpreted to mean that a definite CS nominal *cannot* stop in a specifier position below D⁰, but is obliged to raise to Spec/D.⁴⁴

⁴³ Compounds such as those in (90) observe this constraint only optionally.

ha beit xolim ~ beit ha xolim
 the house-sick-PL. house the sick-PL.

ha beit sefer ~ beit ha sefer
 the house-book house the book

ha ‘orex din ~ ‘orex ha din
 the editor law editor the law

ha kartis bikur ~ kartis ha bikur
 the card visit card the visit

On a very colloquial register, the doubling of the determiner is also acceptable (to my ears, as evidenced by the following examples). Hazout (2000) finds similar examples unacceptable.

ha beit ha xolim
 the house the sick-PL

ha beit ha sefer
 the house the book

ha ‘orex ha din
 the editor the law

ha kartisha bikur
 the card the visit

⁴⁴ It is conceivable that indefinite nouns do not raise as high as definite ones: see Dobrovie-Sorin (1999) and footnote 5.

- (92) ha xulca
 the shirt

Independent support for this hypothesis can be culled from the co-occurrence restrictions on pre-nominal numerals and demonstratives and CS nominals.

Mohammad (1988) (see also Fassi-Fehri, 1999) show that demonstratives in Standard Arabic can occur either preceding or following a non-construct NP, but can only follow CS nominals. The contrast between Standard Arabic (93a) and (94a) is well-attested in the spoken varieties in which demonstratives alternate between a pre-nominal and a post-nominal position.⁴⁵

- (93) a. haaða l walad u
 this the boy NOM
 ‘this boy’
- b. l walad u haaða
 the boy NOM this
 ‘this boy’
- (94) a. *haaða ?ibn u r razul i
 this son NOM the man GEN
 ‘this man’s son’
- b. ?ibn u r razul i haaða
 son NOM the man GEN this
 ‘this man’s son’

The ungrammaticality of (94a)—as opposed to the full acceptability of (93a)—clearly shows that a CS NP is not in the same position as its non-CS counterpart but must be higher than the demonstrative. The difference can be made sense of by the hypothesis that the CS NP is driven up to Spec/D.

⁴⁵ Cowell (1964: 459) cites counterexamples (his *classificatory* constructs, essentially compounds), noting however, that only the *hal* demonstrative can precede these CSNs, not the long form.

- (i) a. hal ʔwlaad ʔl madrase
 this children the school
 ‘these school children’
- b. hal fenʒaan ʔl ?ahwe
 this cup the coffee
 ‘this cup of coffee’
- c. hal ʔmhattet ʔl ?izaaʿa
 this station the broadcasting
 ‘this broadcasting station’

Compare with the determiner doubling examples from Hebrew in note 43.

As we saw in Section 7, Hebrew lacks pre-nominal demonstratives so that the telling contrast in (94) cannot be reproduced. Recall, however, that cardinal numerals appear between the definite determiner and the noun in numerous Arabic dialects and marginally in Hebrew. The prediction that we can now test is that a definite CS noun phrase cannot appear in the position of the simple noun in examples such as (21), of which the Hebrew (e) is repeated below. This prediction is, indeed, met, as shown by the ungrammaticality of (95a) as compared with the acceptability (or, for some speakers, the marginality) of (95b).

(21) e. #ha xamišim šekel /škalim
the fifty Shekel/Shekels

(95) a. *ha xameš kisey xulca
the five pockets shirt
'the five shirt pockets'

b. (?)ha xameš kisim
the five pockets
'the five pockets'

The reason for this contrast is that a CS nominal, differently from a simple noun phrase, is obliged to raise to Spec/D and must, therefore, precede the numeral. We have seen (but did not explain) the fact that Hebrew cardinal numerals are uniquely configured as heads—contrary to Arabic—and as such, freeze their complement. An output such as (96) is thus underivable (but see note 12).

(96) *kisey xulca xamiša
pockets shirt five
'five shirt pockets'

With the nominal complement to a cardinal number frozen to its right, the requirement that the CS NP move to Spec/D can only be satisfied by raising to Spec/D the entire Card#P projection, which contains the CS nominal as a subconstituent.⁴⁶

(97) [_{DP} [xamešet kisey (ha) xulca] D⁰ [_{CARD#P} ...]]



⁴⁶ The option of satisfying the requirement that the CS NP move to Spec/D by displacing a category which contains it, varies among different Arabic dialects. Syrian allows it, as in (i), while Maltese does not, (ii).

(i) xams ʿiṣaabaat malaarya žədad
five cases malaria new
'five new cases of malaria' (Cowell (1964:504))

(ii) *žewj dyar missieri
two house father-my
'two houses of my father' (Payne (1996:181))

When the CS nominal is definite, i.e. when the annex is preceded by *ha*, a different derivation is available, one that employs the alternative strategy of numeral configuration, exemplified in (98). The position of the numeral here is higher than DP, in a high Card# position, above the CS nominal in Spec/DP. Similarly, quantifiers such as ‘all’ and ‘most’ can licitly precede a CS nominal, as shown in (99a, b), since QP is merged higher than DP.

(98) xameš dirot ha mora
 five apartments the teacher

(99) a. kol dirot ha mora
 all apartments the teacher

b. rov dirot ha mora
 most apartments the teacher

To summarize, CS nominals differ in one major respect from simple NPs. Simple noun phrases raise above the adjectival field in practically all Arabic varieties and in Hebrew. Movement of simple noun phrases over numeral phrases is subject to some variation, as we saw in Section 3.1, but none of the languages studied here provide evidence to the effect that NP raises to Spec/D. Construct state noun phrases, however, do provide exactly that sort of evidence. They invariably precede not only adjectives, but numerals and demonstratives as well.

The central issue addressed in this section concerns the representation of definiteness in CS nominals. If the CS nominal occupies Spec/D at Spellout, we have a trivial account for the ungrammaticality of (91): The definite determiner cannot precede the CS nominal because the latter is to its left.

The question now arises as to why (100) never arises.

(100) *kis xulca ha
 pocket shirt the
 ‘the shirt pocket’

This is where the adoption of a general constraint banning the lexical realization of both the head and the specifier of a projection becomes relevant. The head DP must be phonetically unrealized if its specifier is filled by the CS NP.⁴⁷

Numerals, adjectives and demonstratives are configured either as specifiers or as heads but the projection they appear in never contains both. The only exception that we have come across in this study is the case of a pre-nominal demonstrative co-occurring with a post-nominal one. Actually, this exception provides support for the generalization, since the pre-nominal demonstrative *hal* is *base-generated in D*, so that DemP never has lexical material in both its head and its specifier (see the discussion of example (82)).

⁴⁷ Relevant to this discussion is Giusti’s (1993) proposal to the effect that the doubly-filled filter constrains the DP projection as well as Koopman and Szabolcsi’s (2000) generalization of the *doubly filled Comp filter* to a structural constraint holding of all projections.

In all the cases in which lexically-filled specs are paired with null heads, an agreement relationship is established (recall the analysis of adjectival concord in Section 6). It seems reasonable to extend this to the null determiner which shows up in the company of CS nominals. Arguably, the definiteness of the CS NP has to match that of D.

One of the often-discussed peculiarities of the construct state is that the definiteness of the entire DP appears to be determined by that of the complement of the CS-head noun. In other words, (101a) is definite throughout—as shown by the English translation—while (101b) is indefinite.

- (101) a. *kis xulcat ha more*
 pocket shirt the teacher
 ‘the pocket of the shirt of the teacher’
- b. *kis xulcat more*
 pocket shirt teacher
 ‘a pocket of a shirt of a teacher’

While providing the formal procedure for the assignment of definiteness in CS nominals, the question still arises as to how the definiteness features of the complement of N come to be represented on the NP node in Spec/D and thus visible to D. I suggest that the formal mechanism here is that of percolation, familiar from pied piping cases such as (102).

(102) From the pocket of the shirt of which teacher did John steal a pen?

The question word *which* is embedded inside a PP but the *wh* features which characterize (102) as a question and which trigger Subject–Auxiliary inversion are able to percolate to the PP node. Similarly, we have seen that no matter how deeply embedded a noun appears inside a left branch, it will enter into an agreement relation with an AP. In the case of CS nominals, the definiteness features of the genitival complement of N percolate from the embedded D to the highest NP node and enter into an agreement relation with the matrix D.⁴⁸

When the genitival complement of N is itself a CS nominal, definiteness is determined internally to the complement by the very same percolation and agreement mechanism. Since this process is recursive and occurs at every level of embedding, the homogeneity of the value for definiteness in the CS nominal is assured.⁴⁹

⁴⁸ The literature contains a number of different suggestions as to the formal device responsible for or permitting the transfer of the definiteness feature of the CS annex: (secondary) percolation in the sense of Lieber (1983: 251–285), Borer (1989) or morphological merger, Benmamoun (1998). These authors argue that the formal device is contributed by the morphological component of the grammar. The present study argues, however, that there is no motivation for viewing construct state formation as occurring elsewhere than in the syntax, that its salient properties can be explained without appeal to post syntactic operations.

⁴⁹ CS-internal adjectives, even those that do not modify the non-final noun in a string of constructs, must also take the definiteness feature of the entire CS-nominal. I assume that this is insured by the percolation mechanism, so that conflicting values for definiteness are excluded. Thanks to a *Lingua* reviewer for pointing out this issue.

The final issue which needs to be addressed is why CS nominals must raise to Spec/D and, conversely, why non-CS noun phrases do not raise that high. To take up the latter point first, note that unlike other DP-internal heads, D does not license NP. Neither does D assign Case to N, nor does it agree with it in number and gender features. (The Semitic article is devoid of such features, contrary to articles in many Indo-European languages.)

D, let us assume, *attracts* a categorial feature of N. Since nominal heads do not move, as we have seen, either NP moves to Spec/D or its categorial feature can be attracted directly, without recourse to phrasal movement. Since the former option is more economical, it is the one the grammar opts for.

Non-CS nominals do move, though, internally to DP. I take this movement to be driven by an intrinsic need of the NP itself (or of the noun within it). DP-internal modifiers (with the exception of demonstrative heads and determiners) license NP or projections containing it. They do so either through the assignment of genitive Case (when configured as heads) or, via agreement when they occur as specifiers. Unlike D, other heads internal to DP do not, in and of themselves, attract any feature of N, but provide devices to license N or NP itself. Movement internally to DP serves to license NP while attraction to D satisfies a licensing condition of D.

Let us now assume that the assignment of genitive by a head is not an additional feature of that head, but is a property of the categorial feature of the head itself. That is, the feature [+N] is the source of genitive Case. Now, the realization of a definite article in a DP containing a CS nominal gives rise to a situation in which N is both attracted (to D) and assigns a genitive Case to its complement. It seems rather natural that a feature cannot be involved in two formally distinct and even opposed relations, i.e. it cannot both assign and be attracted. Thus, the categorial feature of the head of the construct state cannot be attracted to D, and since movement of N is not an available option, the grammar shifts to a more costly option, namely phrasal movement. Movement of NP to Spec/D establishes a coindexing or agreement relation in DP through which definiteness agreement is established. The same mechanism assures that the categorial feature of N, which is driven up to the NP node, becomes available to D.

9. The construct state in event nominalizations

V-derived, or as they are frequently called, action or event nominals in Semitic have been the subject of several in-depth studies in recent years. The following works are but a sample: Borer (1993, 1996, 1999a), Engelhardt (2000), Fassi-Fehri (1993), Hazout (1991, 1995), Ouhalla (1988, 1991) and Siloni (1991, 1996, 1997). The theoretical issues that lie at the center of the discussion revolve around the categorial derivation of these nominal expressions. Borer, Fassi-Fehri and Hazout have argued that action nominalizations are VPs which are nominalized syntactically: The verbal head moves out of VP and adjoins to a nominalizing head. Siloni, on the other hand, espouses a lexicalist standpoint and argues that action nominals are never verbs, at no level of representation, and that the alleged verbal properties of these nominals can be explained without positing either a VP or V-related functional projections. In line with recent work on the lexicon-syntax interface, Arad (to appear) and Borer (2003) (see also Ouhalla, 1988) propose that neither nouns nor

verbs enter into first merge, but rather roots, the categorial signature of which, along with other properties, is derived in the syntax.

From the standpoint of the present paper, the derivation of the construct state in action nominalizations hinges on the resolution of the categorial issue. Consider the variant of (10) in the construct form, namely (103).

- (103) havgazat xel ha-‘avir ‘et ha kfar
 bombardment the air force ACC the village
 ‘the bombardment of the village by the air force’
 lit. ‘the air force’s bombardment of the village’

The head noun in (103) is in construct with the agent of the nominalization and cannot be in construct with the patient. Under standard assumptions, the agent is mapped onto a specifier position while the patient is the sister of the noun. Everything else being equal, one would expect a form such as (104) to be at least possible: N and its DP sister would enter into the construct state and this constituent would move as a phrasal unit, just as non-event nominals have been shown to do.

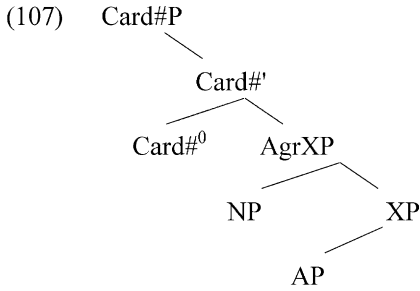
- (104) *havgazat ha kfar (šel) xel ha-‘avir
 bombardment the village (of) the air force

One should stress that it is not impossible for the head noun to appear in construct with its object, only that it may not do so in the presence of a projected subject. The noun can take its sister as a construct annex both when no subject is projected, as in (105a) as well as when the agent is projected in a ‘by’ phrase, as in (105b) and the object becomes the structural subject.

- (105) a. havgazat ha kfar
 bombardment the village
 ‘the bombardment of the village’
 b. havgazat ha kfar ‘al yədei xel ha-‘avir
 bombardment the village by the air force
 ‘the bombardment of the village by the air force’

The crucial difference between event nominals with a projected subject and the non-event nominals discussed earlier is that in the former, the construct state is formed, as it were, prior to any movement operations and under sisterhood. However, we have seen that construct state phenomenology is manifested not only when a head governs its sister, but also when it governs the specifier of its sister. This is the case in, e.g. (106), where the cardinal numeral governs and assigns case to the NP sitting in the specifier position of the agreement projection which is merged above the AP. The relevant part of the structure of (106) is given in (107).

- (106) šalos parot šveycariot
 three cows Swiss



The construct state in event nominalizations should be treated on par, in that the head noun enters into construct state with a DP in the specifier of its sister.

Adopting the essence of the Borer/Fassi-Fehri/Hazout/Mohammad/Ouhalla idea, itself a development of Ritter's original proposal for Semitic nominals, let us take the nominal heads of derived nominals to be verbs at the point at which an agent or subject is merged into the structure.

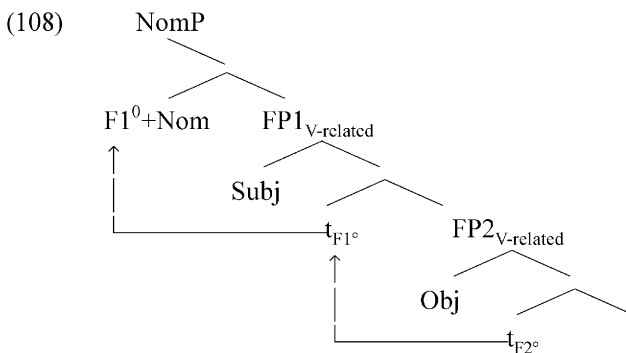
Up to a certain point, the derivation of event nominals proceeds like the derivation of a clause: A verb is raised and associated with functional heads in the conventional manner. Verbs in Semitic are capable of moving as heads. This is corroborated by the fact that the order of adverbs in a clause is not the mirror image of say, its English or Romance counterpart. Moreover, no freezing or construct state phenomena are attested with verbal categories.

At some juncture in the functional hierarchy, the raised verb encounters and incorporates to a nominalizing head, which we can identify with Hazout's NOM. (It remains to be determined whether NOM, which turns a verbal category into a noun, is the same head that creates nouns from roots.)

At that point in the derivation, NOM governs its complement. I assume that at that point the subject too has raised, up to the specifier of the head immediately below NOM. Given the genitive Case-assigning properties of NOM, a CSN can be formed.

The derived nominal, can and if need be must, continue to raise but, since it is a nominal and not a verbal head, it can only continue to do so via phrasal movement along the lines discussed earlier, pied piping along the entire structure below it.

There is thus a derivational phase which is shared by action nominalizations and clauses. Predictably, there is also a shared functional domain and we expect certain types of functional elements to appear in both nominals and clauses. More precisely, it is predicted that nominalizations manifest (clausal) functional information up to NOM, for example, FP1 and FP2 in (108).



One of the important facts nourishing the debate on the categorial nature of Semitic action nominalizations is that adverbial material can appear within them. In (109), the adverb *bə-brutaliyut* ‘brutally’ most naturally appears on the right margin of the nominalization, to the right of the patient. Its appearance between the agent and patient is marked but acceptable.

- (109) hafgazat xel ha-ʻavir ?(bə-brutaliyut) ʻet ha-kfar (bə-brutaliyut)
bombardment Air Force (with brutality) ACC the-village (with brutality)
 'The brutal bombardment of the village by the Air force'

The significance of (109) lies in the appearance of *verbal* modifiers or, more precisely, of *clausal* functional material internally to the nominalization. A structural interpretation of the facts readily suggests itself: the verbal *cum* nominal head *hafgazat* ‘bombardment’, the agent *xel ha-’avir* ‘the air force’ and optionally the patient, are raised above the functional projection housing the adverb. All of this takes place in the clausal domain, prior to the formation of the nominal.

In Shlonsky (1997), I showed that Hebrew verbs systematically raise out of VP and that the lowest surface subject position is not in VP but external to it. In particular, post verbal subjects in Hebrew must raise out of VP to some intermediate specifier position, since they obligatorily precede manner adverbials. (110) illustrates the two options of positioning manner adverbs with respect to post verbal subjects and objects. We can conclude that both the movement of the verbal head of the nominalization as well as that of the subject of the nominalization follow, up to a certain point, the trajectory of the verb and the subject in clauses and that the direct object can move above the adverb optionally.

- (110) ‘etmol hifgiz *(bə-brutaliyut) xel ha-’avir (bə-brutaliyut) ’et
yesterday bombard-PAST-3MS (with brutality) Air Force (with brutality) ACC
 ha-kfar (bə-brutaliyut)
the-village (with brutality)
 ‘Yesterday, the Air force bombarded the village brutally.’

Assuming that adverbs are arrayed in a strict hierarchy inside IP and since NOM splits the functional layer, it is predicted that only adverbs whose hierarchical position is lower than that of NOM will be admitted inside nominalizations. Put differently, an inequality is predicted to be manifested between clauses and nominalizations, with respect to the availability of adverbs beyond a certain point in the functional hierarchy.

Hazout (1991, 1995) shows that ‘manner’ or low adverbs may occur in such DPs while ‘sentential’ or higher adverbs may not. This is clear from (111).

- (111) a. *ktivat Dan 'et ha ma'amar /lelo safek /karov levadai /behexlet
writing Dan ACC the article without doubt /probably /with certainty
'Dan's writing of the article doubtlessly/probably/certainly'
- b. ktivat Dan 'et ha ma'amar bi-mhirut /be-nimus /'emeš
writing Dan ACC the article in-quickness /with politeness /last night
'Dan's writing of the article quickly / politely / last night'

A similar observation is made by Siloni (1997: 76) who argues, on the basis of contrasts such as those in (112), that it is the categorial status of the adverbial that matters: Only adverbial PPs, but not genuine AdvPs can occur in action nominalizations: *bi-mhirut* and *bə-'itiyut* are PPs while *maher* and *le'at* are true adverbs.

- (112) a. harisat ha cava 'et ha kfar bi-mhirut /bə-'itiyut
destruction the army ACC the village in-quickness /in-slowness
 'the rapid/slow destruction of the village by the army'
- b. *harisat ha cava 'et ha kfar maher /le'at
destruction the army ACC the village quickly /slowly
 'the rapid/slow destruction of the village by the army'

Engelhardt (1998) (see also Engelhardt, 2000) provides the example in (113) which contains the form *yadanit* 'manually' which is morphologically an adverb and not a PP. The occurrence of this adverb in the nominalization argues against a category-based explanation for the contrast in (112), as she concludes.

- (113) ibud ha-netunim yadanit
processing the-data manually
 'the manual processing of the data'

Let us scrutinize the examples in (112) in more detail. There is an interpretative difference between, e.g. *bi-mhirut* 'in quickness' and *maher* 'quickly', which is brought out clearly in the examples below (suggested by Maya Arad, p.c.).

- (114) a. After discovering the mole on my back,
 a. halaxti maher /bi-mhirut la rofe.
(I) went quickly /in-quickness to-the doctor

maher in (114a) does *not* refer to the speed of locomotion but to the speed of the event of 'walking to the doctor'. *bi-mhirut*, on the other hand, can also be used in this example, but it refers most saliently to the speed of walking. (From a pragmatic point of view, walking to the doctor *in quickness* entails 'walking-to-the-doctor' *quickly*, though the opposite does not hold.)

(114a) should be compared with (114b), in which a *speed of locomotion* reading is called for and hence only *bi-mhirut* is acceptable.

- b. Because I was terribly late,
 halaxti ??maher /bi-mhirut la rofe.
(I) went quickly /in-quickness to-the doctor

Travis (1988: 292) observes that English *quickly* is ambiguous between a reading in which it quantifies over events and one in which it quantifies over processes, viz. *John quickly lifted his arms* versus *John lifted his arms quickly*. Her observation is taken by

Cinque (1994) as evidence for the existence of two distinct adverbial positions, which he labels *Celerative I* and *Celerative II*. Cinque argues that the two positions host adverbs which have the same meaning but different scopes.

We can hence interpret the contrast between (112a) and (112b) in structural terms rather than in categorical terms: NOM is merged in a position which is higher than *Celerative II* but lower than *Celerative I*.

le'at and *bə-'ituyut* in (112a, b) should be handled in a similar vein. Interestingly, the adverb *le'at* has a reduplicated form: *le'at le'at* has, alongside its *Celerative* interpretation, a strict manner reading, translatable as 'slowly but surely' or 'carefully and systematically'. While simple *le'at* cannot occur in an event nominalization, reduplicated *le'at le'at* can, compare (112b) with (115) and note that this adverbial is *not* a PP but a true adverb, again a *prima facie* counterexample to Siloni's category-based distinction.

- (115) harisat ha cava 'et ha kfar le'at le'at (u bi-ysodiyut)
destruction the army ACC the village slowly slowly (and systematically)
 'the slow but sure (systematic) destruction of the village by the army'

Related to this is the fact that the *šuv* 'again' is unacceptable in nominalizations, (116a) while *šuv va-šuv* 'again and again' is fine, as in (116b), a fact that fits in well with Cinque's (1999: 91–93) proposed distinction between a higher Repetitive Aspect I phrase and a lower Repetitive Aspect II phrase.

- (116) a. hafgazat xel ha-'avir (??šuv) 'et drom levanon (*šuv)
bombardment Air Force (again) ACC South Lebanon (again)
 'the bombardment of South Lebanon by the Air force once again'
- b. hafgazat xel ha-'avir (šuv va šuv) 'et drom levanon
bombardment Air Force (again and again) ACC South Lebanon
(šuv va šuv)
(again and again)
 'the repeated bombardment of South Lebanon by the Air force'

Finally, note the contrast in (117), which supports Cinque's distinction between two completive aspect projections. The nominalizing head would appear between them.

- (117) a. *harisat ha cava 'et ha kfar legamrey
destruction the army ACC the village completely
 'the complete destruction of the village by the army'
- b. harisat ha cava 'et ha kfar laxalutin
destruction the army ACC the village completely

While a more careful study of the range of adverbial material inside nominalizations is undoubtedly needed, I take the preceding considerations to constitute sufficient evidence

for the hypothesis that NOM is generated in a position such that certain functional (primarily aspectual) categories can be included within derived nominals while others cannot.⁵⁰ Given Cinque's proposed hierarchy in (118), the distribution of adverbs discussed in this section falls in line with the hypothesis that the nominalizing head in Hebrew derived nominals lies below Asp_{Celerative(II)}.

- (118) Asp_{Repetitive(I)} > Asp_{Frequentative(I)} > Asp_{Celerative(I)} ... > Asp_{Completive(I)} > ...
 Asp_{Celerative(II)} > Asp_{Completive(II)} > Asp_{Repetitive(II)} > Asp_{Frequentative(II)}

It is interesting to compare, in this context, the rigid mirror-image order of adjectives in a non-event nominalization (specifically, one which lacks an agent argument), (119a, b), with the freer ordering found in action nominals such as (120a, b). The latter examples dovetail the orders allowed in clauses, shown in (121).

- (119) a. ha hafgazot ha masiviyot ha xozrot ve-nišnot
 the-bombardments the-massive the repetitive
 'the repetitive massive bombardments'
- b. *ha hafgazot ha xozrot ve-nišnot ha masiviyot
 the bombardements the repetitive themassive
 'the massive repetitive bombardments'
- (120) a. hafgazat cahal et ha kfar šuv va šuv be-'ofen masivi
 bombardment IDF ACC the village again and again in-manner massive
 'The IDF's repetitive massive bombardment of the village'
- b. hafgazat cahal et ha kfar be-'ofen masivi šuv va šuv
 bombardment IDF ACC the village in-manner massive again and again
 'The IDF's massive repetitive bombardment of the village'
- (121) a. cahal hifgiz et ha kfar šuv va šuv be-'ofen masivi.
 IDF bombarded ACC the village again and again in-manner massive
 'The IDF repetitively massively bombarded the village.'
- b. cahal hifgiz et ha kfar be-'ofen masivi šuv va šuv.
 IDF bombarded ACC the village in-manner massive again and again
 'The IDF massively repetitively bombarded the village.'

The construct-state in event nominalization is thus formed at a point in which the noun is formed and no earlier. The reason for which the annex to the CS-head is systematically the

⁵⁰ Belletti and Shlonsky's (1995) argument to the effect that the impossibility of complement reordering in nominalizations, as compared with clauses, is due to the absence of a focus position in the former is compatible with the text conclusion.

agent or subject of the nominalization and not its theme or object is that the subject is raised out of VP to a position which is higher than that of the object. In this respect, event nominalizations manifest the exact opposite of what is found in construct states of simple or concrete nouns: Compare (122a, b), on the one hand, with (123a, b) on the other.⁵¹

⁵¹ A *Lingua* reviewer wonders about the derivation of action nominals which contain both a direct object and an adjectival modifier. The ungrammaticality of (i) is surprising, since the object should be included in the clausal chunk which is nominalized and then raised as phrase above the adjective.

- (i) *hafgazot ha-cava 'et ha-kfar ha-masiviyot
bombardments the-army acc the-village the-massive
'The massive bombardments of the village by the army'

(ii), on the other hand, is basically acceptable, with the object to the right of the adjective.

- (ii) hafgazot ha-cava ha-masiviyot et ha-kfar
bombardments the-army the-massive acc the-village
'The massive bombardments of the village by the army'

There is some indication that the particle marking accusative Case, namely *'et* has a different status than in clauses. Hazout (1991) points out that *'et* must be followed by definite (or strongly determined) direct objects and is barred in front of indefinite ones, compare (iii) and (iv).

- (iii) ha-cava hifgiz 'et ha-kfar.
the-army bombarded acc the-village
'The army bombarded the village.'
- (iv) ha-cava hifgiz (*'et) kfarim rabim.
the-army bombarded acc villages many
'The army bombarded many villages.'

In nominalizations, however, *'et* is obligatory, barring the appearance of indefinite objects in action nominalizations.

- (v) hafgazot ha-cava et ha-kfar
bombardments the-army acc the-village
'The bombardments of the village by the army'
- (vi) *hafgazot ha-cava kfarim rabim
bombardments the-army villages many
'The bombardments of many villages by the army'

We can tentatively interpret these facts in the following way: *'et* in nominalizations marks or assigns an inherent case, similar in nature to the genitive preposition *šel* of free-state nominals. Like *šel*-phrases, *'et*-phrases occur to the right of all modifiers (compare (ii) with (vii)).

- (vii) ha-mxonit ha-aduma šel Dan
the-car the-red of Dan
'Dan's red car'

Both genitive and inherent-accusative cases are assigned in a functional domain which is above the DP projection, perhaps in the sort of configuration Kayne (1993) has proposed for the English possessive construction.

- (122) a. hafgazat xel ha-‘avir ‘et ha kfar
bombardment the air force ACC the village
 ‘the bombardment of the village by the air force’
 lit. ‘the air force’s bombardment of the village’
- b. *hafgazat ha kfar (šel) xel ha-‘avir
bombardment the village (of) the air force
- (123) 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

10. Conclusion

Let us sum up the main results of this paper. I first argued that the positioning of nominal modifiers with respect to the head of simple nouns cannot be adequately handled by an N-raising derivation. For reasons that remain unclear, nouns fail to move as heads in the grammars of Hebrew and Arabic. The only heads that seem to be able to move are those which do not assign genitive case. Within the nominal system, these are demonstratives heads and the gamut of phonetically-unrealized heads which have modifiers as their specifiers. This generalization also captures the fact that verbal heads may move as heads in Semitic since they lack a genitive feature.

When modifiers (adjectives, numerals, demonstratives, etc.) appear to the right of the noun, it is the noun phrase itself which has raised to the left of the modifier, moving from specifier to specifier and pied piping all the material on its right. In this manner, inverse or mirror-image ordering of post-nominal material is accounted for.

Some modifiers have the option of appearing pre-nominally as well as post-nominally. I argued that these elements can be merged either as heads governing their complement and assigning genitive case to their sister or to the specifier of their sister, or as specifiers of projections containing a phonetically null head. In the former case, the modifier’s sister is frozen in position, being licensed by genitive case. In the latter case, XP-movement of the sister of the null head is triggered, and agreement or concord is manifested on the modifier. I developed a configurational theory of agreement which accounted for these phenomena.

Many of the signature properties of the Semitic Construct-state fall out from the phrasal movement analysis. In particular, the post-complement positioning of modifiers follows from the claim that N never moves as a unit, only NP. NP can house a bare noun or a noun and a complement. In the presence of two adnominal complements, the theme shows up in construct with the head noun, since it is generated as sister to N, under the minimal NP node. The absence of a determiner on the head noun of a CS nominal is treated as a consequence of the obligatory movement of the CS NP to Spec/D, a claim to which

independent empirical evidence is adduced. Finally, the determination of definiteness of the CS nominal is brought about by pied piping the definiteness features to the highest node of the CS NP combined with specifier-head agreement with (null) D.

The final section of this paper dealt with derived or action nominals. I argued that these are not formed lexically but syntactically, via the incorporation of a verbal head to a nominalizing head (following Hazout, 1991, 1995). The nominalizing head is configured in the clausal hierarchy as a functional head, the position of which is above certain aspectual projections and lower than others. This explains why some adverbials, but not others, may occur inside a derived nominal.

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