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November 2006 To appear in *Proceedings of NACAL* 35

DETERMINATION PARAMETERS IN THE SEMITIC DIGLOSSIA

Although the history of Semitic linguistics has been dominated by a strong tradition of historical and geographical comparative approaches which succeeded (at least partially) in paving the way for establishing genealogical and areal branches in the Semitic family, little has been done in current formal descriptions of specific languages/dialects for exploring these results, or establishing firm typological syntactic criteria, which would be instrumental in characterizing both innovation and variation in syntactic changes.[1] If syntax/computation is the essential locus of parametric conservativity and changes affecting cognate languages (as defended in Guardiano & Longobardi 2003), rather than morphology or lexicon, as is generally assumed in (most) early and current historical Semitic linguistics, then accurate formal descriptions of current languages or dialects should be telling us more about history than normally expected. At the same time, bridging the gap between diachrony and synchrony in Semitic linguistics would be beneficial not only for diachronic linguistics, but also for synchronic descriptions as well, i.e. those concerned with syntactic computation and interpretation, and inter-Semitic variation.[2]

The aim of this contribution is to investigate one acknowledged syntactic domain in which Semitic typically exhibits salient properties, namely the nominal/determiner domain (= DP henceforth), and show that the 'peculiarities' of such a domain can be more perspicuously characterized, leading to principled diachronic and synchronic typologies. The term *diglossia* is used (unconventionally) here to refer to two kinds of languages: (a) those which reflect robust properties and changes of the *Semitic core*, and (b) those which reflect variation and changes of some *specific dialect*, fitting into innovation, interference/ borrowing, or periphery.[3] Some internal properties of DPs in the various Semitic languages should then make some DPs more Semitic than others, and in fact, various features attributed to Semitic in the literature will turn out to be properties of some specific dialect, rather than those of the common historical core.

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[1] The list includes Brockelman (1910), Meillet (1925), Meillet and Cohen (1924), Kurylowicz (1973), Moscati (1964), and Hetzron (1997), among others. See further references in fn 3.

[2] Moreover, such an integration is expected to help us solve Ullendorff's (1958) problem, i.e. that of examining "… the criteria which usually impel us to call a language 'Semitic'".

[3] Innovation is emerging from various external sources (substrata, adstrata, foreign contacts), or general change of the system, which may (or may not) be internal to the core (e.g. the general change to analyticity in urban dialects). Diachrony establishes various stages at which innovation, change, or grammaticalization are introduced. Changes might be related to various statuses of languages (natural, pidginized, creolized, or decreolized languages), with various learning processes (L1, L2 or 'mixed' acquisition). For example, the distinction between Old Arabic and Neo-Arabic has been equated with the distinction between Standard and Modern Arabic dialects, although properties of Old Standard (or koinè) and Modern Standard differ in various ways, and the same is true of Old and Modern dialects (see e.g. Vollers 1906, Fück 1950, Ferguson 1959, Versteegh 1997, among others, for discussion). Alternatively, differences (e.g. between standard and dialect) might be neutrally identified as just *variational*, in which case no necessary implications for history are drawn. For general discussion of internal and external changes, see e.g. Lightfoot (2003, 2006).

The methodology adopted is based on parametric comparative linguistics, building on available partial descriptions and data, especially from Central Semitic (including Classical and Modern Arabic, Arabic dialects, and Classical and Modern Hebrew), in the absence of exhaustive historical corpora, statistics, and exhaustive descriptions.[4] The best source to reconstruct history then is to rely on adequate identification of features of present-day languages, as well as available partial descriptions of remote languages. Material needed for such a reconstruction, however, suggests that current available descriptions should be seriously reconsidered to provide adequate clues for diachrony.

This contribution builds mainly on relevant comparative work on N-to-D movement by Longobardi (1994, 2005, 2006), Borer (1989, 2005), and Fassi Fehri (1999, 2002, 2006 a&b), among other references, associating D with its 'referential' content (its CI side), rather than its PF properties (as in e.g. Siloni 2000). We investigate the Semitic DP cartography (along the lines of Cinque 1999, 2003, 2006), and construe variation in terms of Merge, Agree, and Move, as in Chomsky (1995, 2005). We argue that properties of overt determination make use of two interpretable features on D: Individuation and Person. The former is notably realized by an 'indefinite' article, and the latter by a 'definite' article. Individuated vocatives are argued to be 'double bares', with two non-overtly realized D features. The variation examined provides firm grounds for developing a computationally based parametric historical linguistics, in the spirit of Guardiano & Longobardi (2003).

1. Indefinites

Indefinites are poorly described in Arabic and Semitic. One important issue to address is whether simple indefinites are true bare nouns, or just pseudo-bare.[5] If the former is true, then there is no mark of indefiniteness on N. If the latter is true, then the mark of indefiniteness can be *–n* or *–m* suffix on the noun, traditionally termed nunation or

[4] The traditional and 'popular' subgrouping of Semitic languages is based on geography and culture, and supported mainly by patterns of (morphonological) innovations (Brockelmann 1913, Bergsträsser 1923, Moscati 1964). It branches as follows:

(i) a. East Semtic: Akkadian
b. West Semitic
- Northwest : -- Canaanite: Hebrew, Phoenician, Moabite
-- Aramaic
- Southwest : -- Arabic
-- Southeast Semitic: Modern South Arabian, Ethio-Sabean (Old South Arabian)

Faber (1997), in Hetzron (1997), proposed a model based on Hetzron (1976) shared morphological innovations, which branches differently:

(ii) a. East Semitic: Akkadian
b. West Semitic
- Central Semitic
-- Arabic
-- Northwest
--- Ugaritic
--- Canaanite: Hebrew, Phoenician, Moabite
--- Aramaic
- South Semitic
-- Eastern: Soqotri, Mehri, …
-- Western: Old South Arabian, Ethiopian Semitic, etc.

In this model, Arabic and Hebrew are grouped closer, in Central Semitic. We adopt the grouping tentatively, but clearly the subgroupings are in need of reconstruction and refinements according to syntactic criteria.

[5] This issue was first explicitly brought up by Fassi Fehri (2002, 2006a &b) for SA and MA; see also Borer (2005) for Hebrew.

mimation.[6] Three views have been expressed in the literature with regard to the latter suffixation. The most traditional one is that it is devoid of syntax/semantics content, being just a *morphological* mark of nouns. Such a view has been originally proposed by Arabic grammarians, and echoed by Moscati (1964) and Greenberg (1968), among others. Moscati radically states (desperately) that it is "impossible to identify any Proto-Semitic means of expressing definiteness or indefiniteness", and that "there existed a mimation of nouns INDEPENDENT [our emphasis; FF] of any semantic function as regards definiteness or indefiniteness". This non-contentful usage is reflected, according to him, in the most Ancient Semitic material (p. 100). Brockelman (1910), on the other hand, defends an *indetermination* view. A third treatment is put forth by Kurylowicz (1950), according to whom mimation expresses general *determination*. In the spirit of Brockelman's treatment, we provide evidence in favour of a DP analysis of indefinites in which nunation contributes essentially a form of indetermination. Our analysis is framed in minimalist terms and a general theory of (in)determination that we elaborate throughout the article.[7]

1.1. N moves over indefinite quantifier

Consider first what corresponds to *some* indefinites in English. In CA and SA, *maa* "what", the counterpart of English 'some' must occur post-nominally:

(1) jaa'a rajul-u-n maa
came man-nom-n some
Some man came.

In this structure, the indefinite pronoun *maa* behaves syntactically like an adjective. Indeed, one of the most robust properties of Semitic first established by Fassi Fehri (1997-1999) for Arabic (standard and dialects) is that adjectives (in free states) must surface post-nominally, even when they are non-intersective:

(2) l-mudiir-u s-saabiq-u
the-director-nom the-former-nom
the former director

Properties of constructions such as (2) led us to establish the generalization in (3), which has been extended to Hebrew by Shlonsky (2004):[8]

(3) *NA generalization*
All adjectives must surface in post-N positions (in the relevant cases).

The generalization in (3) applies to the *maa* counterpart of 'some' in CA/SA, once it is treated as an adjective/specifier. It does not apply to the Arabic dialects counterpart (DA), as shown by the behaviour of MA *shi*, the reduced form of SA *shay'* "thing", which can only precede N:

(4) ja shi rajel (* rajel shi)
came some man

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[6] It is agreed that mimation developed into nunation in some languages such as Arabic and Aramaic, as m > n. The two terms refer to the same phenomenon, and would be used interchangeably here.

[7] Due to lack of space, we refer the reader to Fassi Fehri (2002, 2006b) for details and support of such an analysis. The following abbreviations are used throughout the text: CA for Classical Arabic, SA for Modern Standard Arabic, DA for Dialectal Arabic, MA for Moroccan Arabic, and EA for Egyptian Arabic.

[8] Another important generalization discovered there is the mirror image order (MIO) generalization, whereby Semitic APs occur in a MIO compared to their Germanic/Romance counterparts:
(i) *MIO generalization*
Post-N AP's are found in MIO with regard to their pre-N counterparts.
i.e. the order is N>A3>A2>A1
Shlonsky (2004) generalizes these generalizations to Hebrew, contra Gilnert (1989); see Fassi Fehri (1998) for discussion.

Some man came.

We interpret these distributions as follows. Assuming that *maa* is merged as Spec of np in CA/SA, more like adjectives, then n/np moves past this 'quantifier', presumably to D. In MA, by contrast, *shi* is generated as a head H, and np as its complement, and no movement occurs. As we will see, the Spec/H distinction, coupled with movement vs. its absence, instantiates a wide-spread micro-variation found in the Semitic family.[9] Note in passing that indefinite determination here is associated with either an indefinite wh-pronoun (*maa*), or an indefinite noun (*shi*). This provides a natural source for what corresponds to 'some' indefinites in English. The variation observed between SA and MA is represented in (5) and (6), respectively:

(5) [$_{DP}$ rajul-un [$_{D'}$ [$_{np}$ maa [$_{NP}$ e]]]]

(6) [$_{DP}$ [$_{D'}$ shi [$_{np}$ rajel]]]

1.2. N movement to indefinite D

Consider now the counterpart of English *a* indefinites, i.e. indefinites which originate through association with a cardinal numeral. Such indefinites have no real equivalents in remote Semitic as far as we can tell. In fact, simple indefinites (normally) marked with nunation/mimation express general indetermination. The 'referential'/'non-referential' duality of indefinites is established in CA and SA, as is their quantificational interpretation. This is illustrated by (7) and (8) from CA/SA:

(7) a. kalb-u-n y-anbah-u
dog-nom-n 3-bark-ind
A dog is barking.

b. kilaab-u-n t-anbah-u
dogs-nom-n f-bark-ind
Some dogs are barking.

(8) lam '-aqra' kitaab-an Neg > ∃ or ∃ > Neg
not I-read book-acc
I did not read a book.

Constructions (7) instantiate a referential (though 'non-kind') use of singular and plural indefinites, whereas (8) illustrates scope variability of existential indefinites, among other properties of Arabic (and in fact Semitic) indefinites.[10] In line with Brockelman (1910), it is reasonable to think that mimation/nunation is a mark of indefinite determination, and that *–n/-m* suffixes are reduced forms of *maa*. Assuming then that the affix *–n* realizes the head D (see Fassi Fehri 1993), then N incorporates into D via N-to-D movement. In minimalist terms, we can say that N has an uninterpretable D feature, the indeterminate

[9] A parallel variation has been established for Romance; see e.g. Crisma (1996) for discussion, as well as well as references given there.

[10] Further examples and contrasts involve wide and narrow scope ambiguity in (i), scope with opacity predicates in (ii), and telicity in (iii):

(i) kull-u rajul-in 'akala samak-at-an ∀ > ∃ or ∃ > ∀
every-nom man-gen ate fish-unit-acc
Every man ate a fish.

(ii) '-uriid-u 'an '-atazawwaj-a mra'at-an want> ∃ or ∃ > want
I-want-ind that I-marry-subj woman-acc
I want to marry a woman.

(iii) 'akala samak-at-an fii saa^{c}at-in
ate fish-unit-acc in hour-gen
He ate a fish in an hour.

Typical to SA/CA, however, is the absence of a mass/kind use of these forms. This situation lends support to the indetermination view first defended in Fassi Fehri (2002, 2004). It also questions Kurylowicz's (1950) general determination thesis of Semitic mimation , for which no clear evidence can be found.

feature, which is only interpretable on D. The unvalued feature then prompts N-to-D movement in CA/SA. If *–n/-m* realizes the indeterminate feature in the head D, and *maa* is realized in a Spec, then the change is a known one, i.e. a reanalysis from Spec to H (leading to a form of 'decay' in Keenan's (2006) sense):

(9) Spec → H

This process of reanalysis has taken place in CA and remote stages of (Central) Semitic. It is generally agreed that remote stages of marking (in)determination were characterized by mimation only, to the exclusion of definiteness, which was introduced only as a late innovation. If so, then Semitic indefinites are more remote than their definite correlates.[11] Indefinite determination is then realized as a head affix in CA/SA, but such a head is either empty in MA, or a full (quantifier) head in the *shi* 'some' case.[12] The 'some' quantifier is a specifier in CA/SA. The Spec/H alternation is then firmly established as a Semitic micro-variation.

1.3. Adjective movement and movement over adjectives

Common to Semitic is the property that adjectives surface (only) post-nominally, even with simple indefinites, in consonance with (3). This is instantiated by MA and Hebrew: (10) and (11), respectively:

(10) ktab kbir (* kbir ktab)
book big
a big book

(11) ha-dira ha-gdola (* ha-gdola ha-dira)
the-house the-big
the big house

In CA/SA, we observed in early work that two kinds of movement in DP are motivated: A(djective) movement and N movement, both to D (see Fassi Fehri 1999). Both N and A have an uninterpretable (formal) D feature, and must move to DP to check it. If A moves to D, then N moves to Spec D. Both N and A compete for movement to D or its Spec. There is reason to think that adjectives move in Semitic to check their D-features (but not in Romance or Germanic). If adjectives are treated as DPs in Semitic, then alternations in terms of Case, (poly)definiteness, and free and construct states can be explained.[13]

1.4. Semitic overt indetermination

There is an innovation in DA and Hebrew, not found in CA/SA, which confirms the view that Semitic has an indeterminate DP, and tends to express indetermination overtly. MA uses the numeral *wahed* to express indefiniteness, normally construed as 'specific':

(12) a. ja wahed l-weld
came one the-boy

[11] Moscati claims that "in the historical development of the Semitic languages, new and special means of indicating definiteness made their appearance in a number of different guises […] Where definiteness is expressed by a prefix, it may bring about a modification in the use of mimation or nunation, that is it may become a means of indicating indefiniteness… by contrast …". Note that this appears to run counter to what happened in e.g. Romance or Germanic, where definite articles were introduced first, followed by indefinites; see e.g. Vincent (1997) for Romance and Philippi for Germanic (1997), as well as Crisma (1999) and Lyons (1999). Interesting questions arise concerning the historical evolution of overt realization of articles in the classes of languages described by Dryer (2005), and how they come to develop first indefinite or definite articles, then the other member of the pair. We are aware of no work dealing with such distinctive developments.

[12] The same is likely to be true of Hebrew (Borer 2005).

[13] See Fassi Fehri (1999, 2006b) for a DP analysis of adjectives, and various movements involved in DP structure, including Adjective movement. For alternative views, see Cinque (2003, 2006), Borer (2005), Sichel (2002), Shlonsky (2004), among others.

One specific boy came.
b. ja-w wahed l-wlad
came-pl one the-boys
Some specific boys came.

Likewise, Hebrew and Aramaic exhibit various patterns of grammaticalization of 'one' as an indefinite article:[14]

(13) a. hoor 'ehaad (Biblical Hebrew)
stone one
a hole
b. 'eben hadaa (Biblical Aramaic)
stone one
a stone
c. ish-xad (street Hebrew)
man-one
a specific man

This form of grammaticalization of overt indefiniteness is not found in SA/CA. What is common to Semitic, however, is the tendency to develop an overt system of indetermination, in parallel to that of determination. We will return to this double system in section 3. Suffice it to note now that even though Semitic has introduced definite articles, it has kept its indefinite articles, or even developed new ones.

To sum up, a list of properties of Semitic indefinites emerge. The indefinite article is overtly realized as an affix on N. It originates as an indefinite pronoun. N moves to D, past A, and/or past the indefinite quantifier. The formation of a 'numeral' definite is more recent, and occurs in languages like Modern Hebrew or MA where nunation/mimation is only residual. The Spec/H variation, found in expressing indefiniteness, is also associated with movement vs. its absence.[15]

2. Definites

Historical studies of Semitic definites have often focused on forms of the article (within the word), rather than its syntax. Dialectal forms of the prefixed article vary between old Eastern *al-* and Western *am-* in the Arabic peninsula (Rabin 1951), or the *hal/han* allomorphy put forth by Beeston (1981), in addition to Hebraic *ha-*. With regard to its syntactic origin, the article's ancestor in Semitic is presumably a demonstrative, which underwent gradual grammaticalization as a D, much in line with the birth of the article in Romance or Germanic.[16] [17] Modern studies of Hebrew or Arabic definites often stress the purely 'formal' nature of definiteness. Borer (1989; see also Siloni 2000, and Danon 2001, among others) based such a view mainly on (a) the 'optionality' of the article with the demonstrative, and (b) the occurrence of the article on modifiers in Hebrew. Borer claimed

[14] Examples (13 a &b) are from Rubin (2005), and (13c) from Givon (1981).
[15] Common to Semitic is the affixal nature of the article (for a treatment, see Borer 2005). There is also variation as to whether the article is prefixal, as in Arabic or Hebrew, or suffixal, as in Aramaic or Old South Arabic. This variation recalls that found in Romance between pre-nominal French *le loup*, Spanish *el lobo* or Italian *il lupo*, and enclitic Rumanian *lup-ul* "the wolf" (see Rubin 2005). But mimation or indefinite affixation is uniquely suffixal, as far as we can tell. Such a placement dissymmetry mirrors that found with perfective/imperfective affix placement (see Fassi Fehri 1996/2000 for a treatment of the latter).
[16] Testen (1998) advances a different view, according to which the article has its origin in the emphatic *la-*, but this proposal is hardly tenable for Arabic, and more generally Semitic. For a recent demonstrative view, see e.g. Zaborski (2000).
[17] See Giusti (1995, 2001), among others, as well as references in fn 11.

that the definite article in Semitic is a feature on N, rather than a D feature. [18] The formal nature of both the definite and the indefinite articles is presumably not disputable.[19] But an appropriate characterization of the distribution of articles is still needed. For example, the 'optionality' of the article is not a shared property of most varieties of Semitic. Second, the fact that the article does contribute 'semantic' definiteness in simple definites remains to be accounted for. We propose to extend our treatment of indefinites to definites, taking N to be bearing a formal definite feature, which is valued in D.[20]

Consider first the situation in CA and SA. Demonstratives precede nouns which must be formally marked for definiteness. Moreover, Demonstrative and N agree necessarily in case and number, as exemplified by (14):

(14) haad-aani l-walad-aani
this-dual.nom the-boy-dual.nom
these two boys

These properties are best accounted for if Dem is in Spec of D, and N with the prefixed article is in D (i.e. has moved to D). The obligatory formal agreement excludes proper names (= PNs) from such a position:

(15) * haadaa zayd-un
this Zayd-nom

The Dem l-N requirement is avoided only if the proper name is moved higher to Spec D:

(16) zayd-un haadaa

The same limitations apply to definite construct states (= CSs), which cannot co-occur with a preceding demonstrative:

(17) * haadaa bayt-u r-rajul-i
This house-nom the-man-gen

(18) bayt-u r-rajul-i haadaa
house-nom the-man-gen this
This house of the man

If Dem is in Spec D, and D must exhibit overt definite agreement with Dem in such a position, then these contrasts can be accounted for.

The obligatory overtness of the definite article with the demonstrative is a property of CA/SA, but not of modern DA or Hebrew. For example, MA realizes the article with common nouns and Dem obligatorily, as in (19), but PNs and (definite) CSs are accepted when preceded by Dem, without overtly expressing definiteness:

(19) had l-weld
this the-boy
this boy

(20) had hmed
this Hmed

(21) had bent j-jiran
this daughter the-neighbours
this neighbours' daughter

Note, however, that these distributions appear to correlate with other properties of MA. First, the demonstrative has a different form in pre-nominal and post-nominal position:

(22) bent j-jiran hadi

[18] More recently, Borer (2005, 39) proposes that definiteness in Hebrew is a head feature assigning range to <e>d, and as such requires movement of the N-head to be realized.
[19] For a recent formal analysis of Arabic articles, see e.g. Roman (2001).
[20] For a detailed motivation, see Fassi Fehri (2006b).

daughter the-neighbours this
this neighbours' daughter

Second, MA exhibits a double demonstrative phenomenon, whereby the second demonstrative acts as a 'reinforcer' of the first demonstrative:

(23) had l-weld hada
this the-boy this
this boy here

To account for the variation observed between SA and MA, we assume that the first demonstrative is merged in a head position, and the second in a Spec position. The H Dem and its D complement behave like a CS. When they are merged as a H of a Dem configuration, movement is needed to the left of Dem. If so, then Dem can be either H or Spec in MA, and only Spec in SA. As a consequence, double demonstrative reinforcement is found in MA, but not SA.

(24) * haadaa l-walad-u haadaa
this the-boy this

Consider now Hebrew. The basic facts (from Borer 1996) are the following:

(25) ha-yalda ha-zot tikra 'et ha-shir
the-girl the-this will-read OM the-poem
This girl will read the poem.

(26) yalda zot tikra 'et ha-shir
girl this will-read OM the-poem

This girl will read the poem.

Given these facts, Hebrew demonstratives appear obligatorily as post-nominal (or even DP final), with no alternative orders. Furthermore, the article appears either on both Dem and N, or none. In other words, what appeared to be allowed in Hebrew is a fully inflected Dem following a (formally) definite N in (25), and a non-inflected N followed by a non-inflected Dem in (26). Such distributions are totally different from those found in CA/SA and DA. They are in need of an account, but they are certainly not common properties of Semitic.[21]

Partly shared, though, by Semitic is definite agreement between Dem and N. Variation centers around CS and FS alternations, as well as order. SA/CA shares with DA word order alternations, and with Hebrew the property that only FS variants of Dem Art-N are found. SA/CA and DA differ from Hebrew, however, in that no omission of the definite article on N is possible. Even Egyptian, which appears to have no pre-nominal Dem like Hebrew, differs from the latter in this respect:

(27) el-walad da (* walad da)
the-boy this
this boy

More research is needed to account for such a micro-variation. But as noted, Hebrew distributions are peculiar compared to those of other Semitic variants, notably CA/SA and DA. In the next section, we investigate further properties of Semitic definites, in contrast to indefinites.

3. Double (in)determination in Semitic

[21] See Shlonsky (2004) for some suggestions.

Semitic, like a class of other languages, tends to grammaticalize overtly two distinct ingredients of nominal discourse reference, found at the periphery of DPs, and normally associated with 'definite' (= DEF) and 'indefinite' (= INDEF) markings.[22] The semantic/pragmatic content of DEF includes, among other things, personal (or locational) deixis, uniqueness, familiarity, anaphora, genericity, etc.[23] INDEF is used as existential, non-specific or 'vague', specific or referential, novel, etc. All these contents are discourse oriented, or 'discourse features', in the sense of Chomsky (2005), but they have grammatical (formal) realizations which are uninterpretable features on D. Like C, D hosts various features of the periphery. Basically, it hosts: (a) 'personal' speech role relations that we represent by a *Person* feature, and (b) modes of individuation, represented by an *Individuation* feature. DP computation then involves [± Pers] and [± Indiv], which take part in Probe-Goal valuations of n and D features, via Agree and/or Move. The two features act as 'type shifters' for the sake of semantic typing. There is reason to think that N moves to D in Arabic, to value the Indiv feature (with indefinites, definites, and construct states), and it further moves to D (but less often) to value Pers (with vocatives, superlatives, and other cases).

As amply documented in the literature, languages make use of various modes of individuation in referring to individuals (or entities of type <e>), and determiners (merging in D) play a crucial role in shaping such individuating modes. Among the most discussed cases are: (a) definite DPs, (b) indefinite DPs, and (c) so-called bare nouns (BNs or null headed DPs), all of which are assumed to exhibit some form of determiner morphology. Longobardi (1994, 1996) treats proper names and the (c) case as strictly parallel. If D is an 'expletive', then it is null in e.g. Germanic (with covert movement), and it prompts overt PN movement to D in e.g. Italian. But if D has content (e.g. is a 'type shifter'), then PNs and BNs would not be fundamentally different from definites and indefinites (Longobardi 2005, 2006). We examine in this section two significant modes of individuation. One case concerns pure bare vocatives, which arguably have no expletive determiner morphology, trigger N-to-D movement, and designate a clearly identifiable addressee. The second case concerns definite DPs which have the peculiar property of bearing 'indefinite' morphology. We argue that such a double marking is neither contradictory nor complementary. In fact, one interpretable ingredient is the Pers feature, which is 1, 2, 3, or lacking. The second ingredient is the Indiv feature. An individuated nominal designates a clearly identifiable referent in discourse or context (ultimately making it 'unique'), in which case it will be positively marked as [+ Indiv], or it can fail to do so, leaving the referent vague or wide (in the speaker's mind), in which case it is marked as [- Indiv]. Individuation and Person markings are not complementary, as illustrated by the case of doubly marked DPs, or pure bare vocatives which are 'double bares', in the sense that they characteristically lack overt realization of both Person and Indiv.[24]

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[22] See Dryer (2005) for a statistical survey of 'double article' languages. The statement endorsed here is at least true at a late historical stage of Semitic. Conceivably, three stages can be postulated:

(i) no article
(ii) 'indefinite' article/mimation
(iii) 'definite' (and indefinite article)

We have no material establishing stage (i), despite Moscati's speculation that the mimation stage is in fact that stage. As extensively argued in Fassi Fehri (2002, 2004, 2006a&b), nouns bearing nunation never exhibit the behaviour of true (kind) bare nouns.

[23] Other ingredients discussed in the literature are inclusiveness, salience, maximality (see e.g. Lyons 1999).

[24] See Fassi Fehri (2006b) in particular for the details of such a system.

3.1. Definites and indefinites are not complementary

Consider first the determiner morphology of common nouns. In (28a), the prefix *l-* attaches to N, and the DP is interpreted as definite (unique or familiar). In (28b), the suffix *–n* attaches to N, and induces indefinite interpretation of the DP, either specific or non-specific (*l-* and *–n* are in bold faces, for convenience):

(28) a. jaa'a **l**-walad-u
came the-boy-nom
The boy came.
b. jaa'a walad-u-**n**
came boy-nom-n
A boy came.

This gives the impression that [±Def] valuation would account for such a contrast. But such a characterization is in need of justification. For example, it is not compatible with a theory of markedness in which only one member of the pair is marked, rather than both, such as Jakobson's (1957). But even if such a theory is not adopted (see e.g. Halle 1997), one has to establish that the two determiners are indeed complementary. There is in fact evidence that there are not, given e.g. that they can co-occur on the same noun:

(29) **l**-muslim-uu-**n** **(**SA)
the-muslim-pl.nom-n
the moslems

(30) **l**-wald-ii-**n** (MA)
the-parent-pl-n
the parents

In these examples, the 'sound' plural form of the noun appears with both marks. Therefore, the incompatibility in (31) cannot be attributed to an absolute complementary distribution:

(31) * **l**-muslim-u-**n** (SA)
the-muslim-nom-n
the moslem

(32) * **l**-waled-**n** (MA)
the-parent-n
the (parent) father

It is rather a limitation only on singulars. How can it be? As a first approximation, *l-* can be taken as inducing uniqueness/familiarity, whereas *–n* induces non-uniqueness/novelty, being compatible with the plural case, but not with the singular case. Then the ungrammaticality of (31)/(32) follows from contradictory values on the same N. But such a mismatch will also exclude (29) and (30) for the same reason, although they are not ungrammatical. If we use uniqueness (familiarity, maximality, salience), or whatever positive feature value associated with DEF to characterize *l-*, then such features cannot be used negatively for *–n*. Since the two morphologies are non-complementary, we are in need of a more perspicious characterization of their content.

As for *l-*, there is little doubt that its semantics is basically equivalent to that of English 'the', and we will see more arguments for that. As for *–n*, it has no strict equivalent in English, since 'a' is singular, and it has no plural version. The closest equivalent to *–n* in Indo-European in 'un-'in Spanish, which is compatible with different values of Number and Gender (cf. un-o, un-a, un-os, un-as; un = *-n*). Observe that *–n* is compatible with both specific and non-specific interpretations, as in (28b) above. But since the definite also allows such an ambiguity, specificity/non-specificity does not appear to be at first sight the relevant grammaticalized feature on *–n*:

(33) wajad-uu juttat-an fii n-nahr-i (specific)
found-they body-acc in the-river-gen
They found a body in the river.

(34) baqarat-un t-un^{c}ish-u qaryat-an (generic)
cow-nom f-live-indic village-acc
A cow (may) make a village alive.

(35) lam '-ara rajul-an ba^{c}d-u (non-specific)
not I-see man-acc after-nom
I did not see any man afterwords.

(33') wajad-uu l-juttat-a fii n-nahr-i (specific)
found-they the-body-acc in the-river-gen
They found the body in the river.

(34') l-baqarat-u t-un^{c}ish-u l-qaryat-an (generic)
the-cow-nom f-live-indic the-village-acc
The cow makes alive the village.

(35') lam n-ajid r-rajul-a l-munaasib-a (non-specific)
not we-find the-man-acc the-convenient-acc
We did not find the convenient man.

3.2. Searching for minimal (in)definite pairs

If *–n* and *l-* do not form a minimal pair, an alternative to explore is that N-*n* is in contrast with a pure bare N, and forms a minimal pair with it. The convenient candidate is the BN version of N-n, which occurs in individuated vocatives, as in (35):

(36) a. yaa rajul-u
Hey man-nom
Hey man!
b. muhammad-u
Muhammad-nom
Muhammad!

The BN is necessarily interpreted as pointing to an individuated addressee. By contrast, the N-*n* is not so individuated. It can denote a non-individual, or a predicate, but also refer to a vague individual. If we take the bare case to be the specific (and positive) member of individuation, then *-n* can be seen as the elsewhere member which includes mainly the negative member, but does not exclude the positive one. If so, then *–n* marks non-individuation, and the relevant basic contrasting pair is N/N-*n*, rather than *l*-N/N-*n*, keeping in mind that N-*n* is not in direct contrast with *l*-N, but rather with N.[25]

Consider now another minimal pair:

(37) a. **l**-muslim-uu-**n**
the-muslim-pl.nom-n
the moslems
b. muslim-uu-**n**
muslim-pl.nom-n
moslems

The first member has *l-*, whereas the second member lacks it, but both have *-n*. If determination is compositional, and the combination of the two determiners is not an oddity, then we expect the two members to share the non-individuation reading. The expectation appears to be borne out. To see this, consider again the non-referential

[25] Such a situation is comparable to the masculine member of Gender, as described by Jakobson (1957).

readings of examples (33)-(35) above, which are found with both indefinites and definites. As we have seen, *l-* and *–n* in fact share both referential/individuating and non-referential/non-individuating readings. Suppose individuation is the relevant notion, rather than reference. If *–n* marks the negative value of individuation in both cases, then [+ Indiv] can be seen as the unmarked case, realized as Ø. If so, we can account for *–n* on plurals and singular indefinites. As for singular definites, the disappearance of their *–n* may or may not be significant. Let us assume that it is not.

If *–n* contributes non-individuation in both definites and indefinites, what is then the contribution of *l-*? The latter cannot contribute [+ Indiv], or else we end up having two opposite values on the same np/dp. Suppose *l-* contributes Pers (either 3rd or some unmarked form), taking into account its anaphoric and pronominal properties, in analogy with pronouns. If so, then *l-* is expected to disappear with vocatives, since they are addressees and require 2nd Pers. We return to this case in section 4. If so, then a *l-/-n* split is established: *–n* marks (non-)individuation, whereas *l-* marks Pers. The unmarked counterparts in both cases are Ø, or absence of a realization.[26]

3.3. PNs are not indefinite

Consider now determiner morphology on PNs which occur in argument positions. While, it is natural to encounter bare PNs like (38), following Partee's (1986) 'natural' basic typology (see also Chierchia 1998, Longobardi 2006), and less natural although conceivable to get those like (39) with an 'expletive' definite article presumably (but not necessarily; see e.g. Burge (1973)), the cases in (40) and (41) are totally unexpected:

(38) jaa'a yaziid-u
came yazid-nom
Yazid came.

(39) jaa'a **l**-'azraq-u
came 'the-blue'-nom
Al-Azraq came.

(40) jaa'a muhammad-u-**n**
came Muhammad-nom-n
Muhammad came.

(41) jaa'a [c]abd-u llah-i
came slave-nom God-gen
Abdullah came.

Leaving (41) aside, (40) is totally unexpected in an analysis in which *–n* is treated as an 'indefinite' marker. Indeed, and contrary to such an expectation, (40) behaves like a definite DP in triggering definite agreement on modifying adjectives, rather than 'indefinite' agreement:

(42) muhammad-u-**n** **l**-kabiir-u (* kabiir-u-n)
Muhammad-nom the-big-nom
the big Muhammad

The definite/indefinite contrast of agreeing modifiers can be observed with CNs:

(43) a. shaay-u-**n** siiniiy-u-**n**
tea-nom-nn Chinese-nom-nn
a Chinese tea

[26] Crisma (1999), followed by Longobardi (2005), adopts the view that indefinite realization is encoding a [± Count] feature. We do not adopt such a view due to considerations discussed at length in Fassi Fehri (2004). Note that *–n* is blind to the count/mass distinction, since it applies to any class of nouns, like the indefinite article.

b. **l**-kitaab-u **l**-kabiir-u
the-book-nom the-big-nom
the big book

There are various ways to interpret (42). One possibility is to assume that agreement with PNs is uniformly definite, independently of their form. Hence the definite agreement may be a kind of 'semantic' agreement. But such an analysis, even if correct, does not tell much about the determiner morphology there. Why it is activated and appears on 'commonized' PNs in examples like (44) and (45), and it disappears in vocatives like (36b) above or (46) here:

(44) jaa'-a yaziid-u-**n** zur-tu-hu 'amsi
came yazid-nom-n visited-I-him yesterday
A Yazid I visited yesterday came.

(45) jaa'a **l**-muhummad-u lladii zur-tu
came the-Muhammad that visited-I
The Muhammad I visited came.

(46) yaa 'azraq-u
Hey Azraq
Hey Azraq!

Note that PNs in (44) and (45) are shifted to CNs by using determiner morphology, *-n* and *l-*, respectively. The relative clause then agrees in (in)definiteness with the head noun, either by using a definite relative marker or having none. We can see then that the morphology is 'inactive' on argumental PNs, but active in the other cases. These contrasts suggest that the expletive hypothesis should be extended to the PN argument cases, a solution hardly workable if *–n* is interpreted as semantically 'indefinite'. If so, then (40) can be taken as another case in which *-n* and definiteness are not incompatible. If D is active in PN, then *–n* in (40) contributes (formal) individuation, and *l-* in (39) definiteness (Pers). Both features are compatible with PN interpretation (*-n* being coerced to be positive in this case, as another instantiation of the elsewhere value).[27]

4. Bare determination

CA and SA, but also DA provide interesting instances of bare determination. In some of the cases examined here, two features (rather than one) are involved in the bare structure: [Pers] and [Indiv].

4.1. Individuating and non-individuating vocatives

Vocatives present another case of interest for the overt/covert issue of determination. CA/SA vocative phrases come in two flavours with regard to D structure. One form, call it Voc1, is exemplified in (47)-(48):

(47) a. yaa rajul-u
Hey man!
b. samak-u
fish-nom
Fish!
c. rijaal-u
men-nom
Men!

[27] Classical cases reported notably by Kurylowicz (1950) to undermine the indetermination view of *–n* find a natural solution here; for example, *gad-a-n* "tomorrow-acc-n", a name for a particular future time, can be treated like a PN.

(48) a. yaa muhammad-u
Muhammad-nom
Hey Muhammad!
b. ’azraq-u
Azraq-nom
Azraq!

Voc1 has the following properties:

(49) a. it is a ‘pure bare’ N (whether a common noun or a PN);
b. it bears nominative case;
c. it is interpreted as holding of a designated unique addressee;
d. it can have no restrictive modifier.

Property (a) can be accounted for by assuming N-to-D movement. If D hosts [2Pers] and [+ Indiv], then property (c) can be derived. Property (d) is compatible with the bare character of the np. As for property (b), it can be accounted for by taking into account case syncretisms.[28]

A second type of vocatives, found in CA/SA, call it Voc2, is illustrated by the following examples:

(50) yaa rajul-a-n ghayr-a mu’addab-in
man-acc-n not polite
Hey impolite man!
(51) yaa yaziid-a-n saghiir-a-n
yazid-acc-n little-acc-n
Hey little Yazid!

In contrast to Voc1, it has the following properties:

(52) a. the vocative is not a pure BN, is indefinite (and cannot be definite);
b. it bears accusative case;
c. the addressee is not designated/described as individuated/unique;
d. the noun can be modified by a restrictive phrase or a clause.

What is interesting in this case is that [2Pers] does not go hand in hand with [+ Indiv]. Rather, the description is conceived as non-individuated. This split of determinacy can be accounted for if the descriptive N (and its modifier) has not moved to D, unlike what happens in Voc1.

A further instantiation of vocatives, call it Voc3, is found in MA. Here the vocative phrase comes only as definite:

(53) ’a-l-weld (* weld)
Hey-the-child
(54) ’a-l-ezreq
Hey-l-Ezreq

Here too, there appears to be a split. [2Pers] is in D, whereas the definite np is presumably low (in dp), in analogy with what happens in SA Voc2.

These distributions prompt the generalization in (55), and the descriptive statement (56) for vocatives in CA/SA:

(55) Vocative phrases are DPs.
(56) a. np moves to D (individuated vocative), or
b. np stays low in dp (non-individuated vocative).

[28] This is beyond the scope of this article. For relevant descriptive statements, see e.g. Wright (1874/1977).

But what about vocatives in MA? Why is definiteness obligatory there? Is it a case of (a) or (b) in (56)? Upon examination, we will see that none is true.

Consider again determiner morphology in MA. There, *–n* is not used generally. It is not used on singulars, whether definite or indefinite. It is only used on sound plurals with more limitations than CA/SA, in fact a marginal use. In this language, *l-* and its absence in indefinites (which are bare) can be seen as the general minimal pair:

(57) a. **l**-weld "the boy"
b. weld "a boy"
c. **l**-welad "the boys"
d. welad "boys"

This language, therefore, has no 'indefinite' or non-individuating determiner in these cases. Instead, *l-* appears to play precisely that role in individuated and/or specific contrasts. Non-specificity is marked with *shi* "some", whereas specificity uses *wahed l-* "one-the", as indicated above:

(58) a. ja wahed l-weld (* weld)
came one the-boy
One (individuated) boy came.
b. ja-w wahed l-wlad
came-pl one the-boys
Some (individuated) boys came.

(59) ja shi weld (* l-weld)
came some boy
Some (non-identified) boy came.

As shown by the ungrammaticality of (60), the fully specific form cannot be used in vocatives (neither is the non-specific):

(60) ya (*shi) (*wahed) l-weld
Hey the boy
Hey boy!

These distributions can be accounted for if we take *l-* in MA to be marking [+ Indiv]. If individuation is positively marked through *l-* (and non-individuation is Ø), then its disappearance in individuated vocatives is not called for. Moreover, its compatibility with [2Pers] interpretation suggests that it has no Pers value, contary to *l-* in SA/CA.[29] If so, we have the following variation:

(61) Move to D in individuated vocatives is
a. overt (SA, English?), or
b. covert (MA).

(62) If D has Pers, then (a), otherwise (b).

4.2. 'Unique' superlatives

Superlatives exhibit a uniqueness (iota) property, normally associated with the superlative morpheme and the definite determiner. CA/SA exhibit interesting bareness in this case as we will see.

Definite superlatives in English have been analyzed as 'absolute' (strong definite), or 'comparative' (weak indefinite):[30]

(63) The highest mountain is covered with snow.

[29] This appears to be the situation for most innovating Semitic dialects such as DA or Hebrew. In the latter, mimation has been marginalized essentially like what happened to nunation in MA.

[30] See Szabolcsi (1986), Heim (1994), Kayne (2004), Cinque (2006), among others.

Superlatives in Arabic (at least when singular) are always syntactically indefinite (the plural definites are rather read as partitives). They can be interpreted, however, as unique/absolute:

(64) ’akbar-u jabal-i-n
biggest-nom mountain-gen-n
the biggest mountain

They also alternate with definite superlatives, and there they cannot be indefinite:

(65) l-jabal-u l-’akbar-u
the-mountain-nom the-biggest-nom
the biggest mountain

(66) * ’akbar-u l-jabal-i
biggest-nom the-mountain-gen

(67) * l-’akbar-u (* l-)* jabal-i
the-biggest-nom the-mountain-gen

Here, there is no indefinite interpretation corresponding to ‘some’, unlike English (see Herdan & Sharvit 2006):

(68) The dean praised the best student

(69) The dean praised a best student.

Their modifier, however, must be indefinite:

(70) ’akbar-u jabal-in ifriiqii (* l-ifriiqii)
biggest-nom mountain-gen African
the biggest African mountain

This mixed behaviour of superlatives with respect to (in)definiteness can be accounted for if we can think of traditional (semantic) definiteness as expressed through two distinct features: individuation and uniqueness. Superlatives can then be reasonably thought of as undergoing A to D movement, basically looking for (semantic) uniqueness and/or individuation, independently of formal definiteness:[31]

(71) Superlative moves to D, to get its ‘unique’/individuated interpretation.

In other terms, superlative A has uninterpretable Indiv and Pers features, which are valued in D, more like what happens with vocatives, formal (in)definiteness on modifiers aside.

5. Account and summary

In this article, we provided bases for a computational history of determination. We claimed that various stages of evolution of Semitic can be accounted for once two features are admitted as essential to the characterization of the D system: the Pers feature and the Indiv feature. In this section, we recapitulate some of the key points of such an analysis.

5.1. The computational history of determination

We have shown that Semitic has been characterized at some early stage by a mono-determination overt marking, namely mimation.[32] The latter presumably resulted from an enclisis of a reduced indeterminate pronoun (*-m/-n*), a reduced form of *maa*, as in Brockelman 1910), associated essentially with ‘indefinite’ meaning. It can be paraphrased

[31] Ordinals also induce uniqueness/individuation in the same way:

(i) taalit-u ’ughniyyat-in
third-nom song-gen
the third song

[32] In contrast, no stage of Semitic is documented which can be described as no-article stage, or a pure bare stage, contra e.g. Moscati (1964). In other words, there is no Latin or Chinese style Semitic which can be reasonably postulated.

by French 'quelconque' (Pellat 1951), or English 'whatever' if one is to stress its non-determinate (non-specific) reading (as did Brockelman). However, the same morpheme can be interpreted as 'a certain', 'a specific'.[33] But such distributions cannot be construed as limited to 'indefinite' interpretation (ambiguously specific or non-specific), because it leaves no room for interpreting *–n* on proper names, dates, etc. If e.g. *gada-n* "tomorrow" is treated like proper names (see *muhammad-u-n*) referring to a constant, then *–n* should be treated as an 'expletive' occurring in a 'determinate' constant chain. Such a determinacy cannot be taken as definiteness, as Kurylowicz (1950) has it.[34] It is then reasonable to think that *–n* is placed in D as [α Indiv], and that in early stages the determinacy feature (in fact Pers) was not specified. Such absence of specification provides it its capacity to function with proper names, dates, etc. We are then led to a novel approach of old mimation, according to which the latter is an overt expression of individuation, rather than indefiniteness/indetermination or definiteness/determination. This new approach solves the problems raised by the three traditional views of mimation summarized in section 1. The introduction of a 'definite' article *l-* is a valuation of an already present feature of D, namely (a determinate) Pers, which is presumably 'inactive' with indefinites. Pers is associated with uniqueness, when it came to be specified at a later stage of development in Semitic DPs.[35]

Most approaches of article grammaticalization differ from ours in being lexical rather than computational, in the sense that they trace evolution of articles to the evolution of a particular lexical (or vocabulary) item. For example, it is commonly proposed that the definite article arises from a weakening of a demonstrative specifier to a head D/Def (see Guisti 1995, 2001, Lyons 1999). Likewise, the indefinite article evolves from a weakening of a cardinal specifier to a general indefinite article, as in Heine's (1997) 'cycle'(72):
(72) I numeral > II presentative > III specific > IV non-specific > V generalized article
These approaches hardly take into account the interaction of the two markings, as well as the birth of a second marking, which 'reorganizes' and refines D marking. If the D

[33] Cantarino (1975) gives examples of indefinite *maa*, where it is interpreted as a 'free choice item' like 'any' or French 'quelconque', but also cases where it is translated as 'certain'/'specific' (see also Pellat 1951):
(i) li-'amr-in maa
for-reason-gen what
for some (unknown) reason
(ii) sha'n-un maa
concern-nom what
a specific concern

[34] In other words, we see no reason to think that *–n* was covering only the upper sphere of D, as he proposed in his schema (i) (in p. 326), and get a change to this schema to (iv) or (v), gradually, where *–n* moves from definite to an indefinite. Kurylowicz wants to place *–n* in the same positioning as *l-*, and then get it go down in the tree by weakening its expressive power. He postulates the following evolution schemata (where 1, 2, and 3 stages are construed as determinate, generic, and individualized functions; I have rearranged numbers and other material for convenience; see his p. 326):

(i)	1 nunation > 2 zero > 3 zero	(common Semitic)
(ii)	1 nunation > 2 nunation > zero	
(iii)	1 *l-* > 2 nunation > 3 zero	
(iv)	1 *l-* > 2 nunation > 3 nunation	
(v)	1 *l-* > 2 *l-* > 3 nunation	(CA)

But these evolution stages, while potentially possible, are not supported by available evidence.

[35] Looking at languages broadly, there are languages which have only a definite article, which is presumably specified for the 'upper' feature, or determinacy, and languages which are specified for the lower feature, individuation, and languages that get both features specified. It is difficult to conceive that both ends of 'definiteness' are marked, as in Kurylowicz IV. In fact, such a configuration is easy to interpret if two features are involved, and both of them are realized.

computation system is based on two features, as we have postulated, then the 'vocabulary' may include one or two articles, at different stages, in addition to other determiners.[36]

5.2. Two features in computation

Inspired by Crisma's (1997, 1999) analysis of vocatives as DPs, Longobardi (2006) postulates the following Denotation Hypothesis:[37]

(72) Individuals are denoted in D (N-to-D chain/CHAIN iff reference to individuals).

Observing that with respect to pronouns, English and Italian cease to contrast, pronouns being obligatory in D in both languages, Longobardi supposes that the head D (in addition to being available as "a checking position for interpretive properties like Definiteness and Count") is also "the only position where interpretable exponence of Person morphology is admitted cross-linguistically". D then consists minimally of the Person feature, hence the statement (73):[38]

(73) D is the Person head

Longobardi then restates (72) as (74):

(74) *Denotation hypothesis*

Individuals are denoted through the Person feature.

Thus, denotation of individuals basically consists of associating lexical material (i.e. individual-naming content of nouns) with Person specification (or grammatical Person), hence the head Person is required to search the ontology for an individual to be denoted. Properties are inherently personless, and Person acts as a 'type shifter', hence turning properties into individuals.[39]

Our system dissociates Person from Individuation. We claim that indefinites are typically associated with Indiv, and they (normally) lack Pers specification. Non-individuation can be informally described as in (75), in lines with Javez & Tovena (2005):[40]

(75) *Non-individuation*

> Information conveyed by a sentence containing an indefinite is rather 'non-referential' (or quantificational), or non-reducible to a situation where the DP refers to an individual.

Person specification is present with definites, which are not incompatible with individuation specification. The basic architecture of the (split) DP system then turns out to be as follows:[41]

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[36] These two positions can be thought of as parallel to T and C in the clausal domain. See Fassi Fehri (1996) for a treatment.

[37] This form of mapping is intended to replace that of Szabolcsi (1994)/Stowell (1991)/Longobardi (1994):
(i) A 'nominal expression' is an argument only if it is introduced by a category D.

[38] Pronouns must merge in that position or move to it. The exponence of person on pronouns is itself an overt phenomenon. See Vichyl (1957) for arguments that the definite article *–u* in Amharic is a specific use of the 3rd Pers. Thus *beet-u* can mean either 'his house' or 'the house'. Bernstein (2005) claims that *th-* in English is a third Pers marker, and that D is associated with Pers more generally. *Th-* never occurs with vocatives.

[39] The system looks then close to that of Chierchia's (1998), where D is basically a type shifter. Chierchia (2005) postulates two distint modes of type shifting for definites and indefinites:
(i) Definites are free variables (over individuals or choice functions). + DEF shifts freely.
(ii) Indefinites are ∃ closed variables (over individuals or choice functions). – DEF shifts via ∃ closure.

[40] Jayez & Tovena (2005, p. 26) provide the following definition of Individuation :
(i) "Given a restriction P and a scope Q, referential individuation consists in selecting an individual or a set of individuals through the kind of property used, in a unique world, to describe such an individual with respect to P and Q".

(76) DP (Pers/Def) > DP (Indiv/Indef)> NbP > ClP > np

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[41]Nb = Number; Cl = Classifier; np is the counterpart of vp. See Fassi Fehri (2006a & b) for further motivation.

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