FOFC in DP: Universal 20 and the Nature of Demonstratives

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1 Introduction

In this Chapter we turn our attention to nominals, the extended projection of N. For reasons that will become apparent, we concentrate on topics relating to the syntax and, in the final section, one aspect of the semantics, of demonstratives. The paper falls into three parts. The first, which makes up §2, focusses on the role that FOFC may play in accounting for Greenberg's Universal 20. This leads to a discussion in §3 of the typology of "low-demonstrative" languages, in connection with which I suggest a parameter specifying, in the unmarked case, a connection between overt low demonstratives and verb-initial clausal word order. Finally, in §4, I make a novel proposal regarding the general nature of demonstratives based on ideas in Williams (1980, 1981): the essential idea is that demonstrates are among a very small class of elements able to overtly realise the referential external argument of n.

Greenberg (1963:87) stated his Universal 20 as follows: "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". Thus Greenberg stated that these adnominal elements appear in the following orders in relation to each other and to N:

(1) a. Dem > Num > A > N
b. N > Dem > Num > A
c. N > A > Num > Dem

Cinque (2005:315) observes that, since Greenberg's original proposal was put forward, "[(1a)] remains virtually unchallenged, while [(1b,c)] has proven both too restrictive and too permissive". He discusses the various counterexamples in detail in his paper, and we will not linger over them here as, for the most part, they are not directly relevant to our concerns (except two classes, showing unexpectedly "low" demonstratives – see §2). Cinque then proposes an analysis based on the LCA and certain assumptions about constraints on movement; the most important of these for our purposes is that no DP-internal category can move which does not contain the

lexical projection NP. We will see that this is where FOFC has a role to play in the account of Universal 20.

2. Deriving Greenberg's Universal 20

Our discussion of the ordering of the adnominal elements falling under Universal 20 falls into two parts. First, I present a simplified version of Cinque's analysis, leaving aside certain technical complexities and, notably, leaving aside APs. This permits us to see clearly the role FOFC plays in the account of the possible and impossible orders. In §2.2, I reintroduce APs, and we look more closely at the four orders FOFC appears to exclude. What we see is that, of these four, only two are clearly attested, with one of these being much more common than the other. This, in turn, sets the scene for the proposals regarding the nature and position of demonstratives in §3.

2.1 Universal 20 without APs

In this section, we disregard adnominal APs, and hence the relative order of A and N. The main reason for this, in the context of FOFC, is that APs are modifiers and the core cases of FOFC seem to apply to head-complement relations (see BHR 2010 and Sheehan (this volume) on this). Furthermore, as Cinque (2005:315-6, n.2) points out, AP is probably not a unified category and, in particular, many putative APs in many languages may really be reduced relatives (see also Cinque (2010)).

Cinque (2005:321) assumes the following universal external-merge order (see also Shlonsky 2004:1482):

(2) [... [$_{WP}$ Dem ... [$_{XP}$ Num ... [$_{YP}$ A [$_{NP}$ N]]]]]

Cinque assumes that DemP, NumP and AP are specifiers of functional categories he labels WP, XP and YP. Interpersed among these, indicated by "..." in (2), are AgrPs into whose specifiers lower elements may move.

For now, we simplify this structure as follows, taking Dem and Num to be heads (although this does not imply that demonstratives and numerals are heads, they may well occupy the relevant specifier positions); giving the structure in (3):

(3) [$_{DemP}$ Dem [$_{NumP}$ Num [$_{NP}$ { N (A) }]]]

Very much in the spirit of Cinque (2005), the attested orders now follow from (3) combined with the possibility of NP movement, either to SpecNumP or to SpecDemP, and the further option of NumP movement, along with standard conditions on movement such as the A-over-A Condition and the Strict Cycle. As we shall see, FOFC accounts for a gap in the set of possible but unattested derivations.

Consider the various surface orders that can be derived from (3). The first possibility is the very simple one that nothing moves, giving a surface harmonic head-initial order (*these three boys*):

(4) Dem Num NP

This order is found in "very many languages" according to Cinque (among them English). There is nothing further to say about this order here.

The second possibility involves NP-movement, but only as far as SpecNumP. This gives rise to surface Dem>N>Num order (*these boys three*):

(5) $[_{\text{DemP}}$ **Dem** $[_{\text{NumP}}$ **NP** [**Num** (NP)]]]

According to Cinque (2005:320), this order, with the adjective preceding the Noun is found in "few/very few languages" (see Cinque's Note 13 for details). With the adjective following the Noun it is found in "many languages" (see Cinque's Note 14).

The third possible order involves a further step of NP-movement to SpecDemP, with stranding of NumP, giving surface N>Dem>Num (*boys these three*):

(6) $[_{\text{DemP}}$ **NP** [**Dem** $[_{\text{NumP}}$ ((NP)) [**Num** (NP)]]]]

Again, this order is attested in "few/very few languages" (see Cinque's Notes 11 and 12). As Cinque (2005:321) suggests, this may be due to the markedness of NP not pied-piping at all, but merely undergoing successive-cyclic movement through NumP to DemP.

The fourth possible derivation involves "roll-up," i.e. pied-piping at each step, giving NP-movement followed by NumP pied-piping. This derivation creates a surface order which is the mirror image of that produced by the first-merged order of elements, i.e. N>Num>Dem (*boys three these*):

(7) [$_{\text{DemP}}$ [$_{\text{NumP}}$ **NP** [**Num** (NP)]] [**Dem** ([$_{\text{NumP}}$ NP [Num (NP)]])]]

This order, with AP intervening between NP and Num, is very common, as Greenberg originally observed.

FOFC is relevant to the derivation where NP does not move within NumP, but NumP raises to SpecDemP. This gives surface Num>N>Dem (*three boys these*):

(8) [$_{\text{DemP}}$ [$_{\text{NumP}}$ **Num NP**] [**Dem** ([$_{\text{NumP}}$ Num (NP)])]]

Recall that the basic structural schema which violates FOFC is as in (9):

(9) *[$_{\beta P}$ [$_{\alpha P}$ α γP] β]

The structure in (8) instantiates the schema in (9) for α=Num, β=Dem, and so violates FOFC. So we see that FOFC underlies the observation that, if NumP moves in our simplified structure for DP, NP must first move to its Spec. Cinque (2005:325) discusses this very point, asking "Why is movement of phrases other than NP unavailable?" FOFC provides the answer: this movement leads to a FOFC violation.[1]

So we see that FOFC plays an important role in a movement-based account of Greenberg's Universal 20 of the kind proposed by Cinque (2005) (or, more precisely, an account of the possible orders of some adnominal modifiers, since Universal 20 is not fully empirically correct). However, we have been leaving the position of the adjective out of the picture. Let us now review the possible examples of the FOFC-violating order in (8), bringing the position of adnominal adjectives back into consideration.

[1] There is another case of illicit movement which gives the unattested surface order Num>Dem>N (*three these boys*), see in particular Cinque (2005:319). This is ruled out on the basis of the first-merged order of elements in (3). If NP moves first to SpecNumP, then Num' must move to give the surface order, and we follow standard assumptions in taking intermediate-level projections to be inert (see Chomsky 1995:249). If NP does not move, then either a non-constituent portion of Num (Specifier and head), or just the head Num, moves. The former is again ruled out on the standard assumption that movement can only affect constituents; the latter may be ruled out by a general ban on head-movement (Chomsky 2001), or by constraints on head-movement (e.g. that head-movement must target phase heads, see Roberts (2010); we will suggest below that the usual position of demonstratives is not a phase head). If NP moves to some position above and to the left of NumP and NumP then moves, the derivation is ruled out by the Strict Cycle.

2.2 Universal 20 with APs

If we bring adnominal adjectives back into the picture, the putative FOFC-violating order Num > N > Dem in (8) has four instantiations, as follows:

(10) a. A Num N Dem
b. Num N A Dem
c. Num A N Dem
d. Num N Dem A

Of these, (10a) appears to be clearly unattested; Cinque (2005:320), citing Greenberg (1963) and Hawkins (1983), mentions no examples and there are no clear cases in the *World Atlas of Language Structures* (henceforth *WALS*), although the evidence in *WALS* is somewhat equivocal, since information is provided on each pair NG ("Noun-Genitive"; see §3.2 for a brief discussion of this order), NA, NDem, NNum for very many languages, but not directly on the relative order of the adnominal elements themselves; moreover this information is not always provided in grammars.[2] On the other hand, as we will see directly (10b) and (10d) are attested, while the data concerning (10c) remain unclear. Let us now look at these cases in turn.

The order in (10b) is by far the most common of those in (10), being attested in a fair number of languages. Notably, it is found in all the Celtic languages:

(11) a. y pum llyfr newydd hyn [Welsh]
the five book new these
'these five new books' (Roberts 2005:92)

[2] Izi , Ogbronuagum (both Niger-Congo languages spoken in Nigeria) and Soonsorol-Tobi (an Oceanic Austronesian language) are possible cases of (10a), in allowing or requiring the orders NumN, AN and NDem. However, partly owing to lack of sources, I have been unable to veryify that the order in (10a) is actually possible in any of these languages. An interesting case in this connection is the Oceanic language Mussau, which allows the order A Num N, and normally has post-nominal demonstratives. However, when a demonstrative is added to the A Num N order, it precedes N and a special preposition *tana* is added:

(i) ouna ateba ale
new SG house
"one new house"

(ii) ouna ateba toko tana ale
new SG DEM P house
"this new house" (Ross (2002c:155))

Whatever is going on here, we see that the order in (10a) does not appear, although the pairs AN, NumN and NDem are all separately possible.

b. na trì leabhraichean mòra seo [Scottish Gaelic]
the-PL three books big-PL this
'these three big books' (D Adger (p.c.))

c. an dha fear mór seo [Irish]
the two man big this
'these two big men'

d. ar plac'h paour mañ[3] [Breton]
the girl poor this
'this poor girl'

According to *WALS* Maps 81, 88, 89 (Dryer 2008a,b,c), this order is also found in the Austronesian languages Raviona (Corston–Oliver 2002), Tinrin (Osumi 1995), Seediq (Holmer 1996), Karo Batak (Woollams 1996) and Acehnese (Durie 1985) and in the Oto-Manguean languages Isthmus Zapotec (Pickett 1960), Ocotepec Mixtec (Alexander 1988), Chalcatongo Mixtec (Macauley 1996), Lealao Chinantec (Rupp 1989) and Comaltepec Chinantec (Lynn 1989). All of these languages are verb-initial: VSO, VOS or both, in some cases (e.g. Acehnese, Karo Batak) also alternating with SVO. Given that the Celtic languages and Moroccan Arabic (see below) are also VSO, this is a striking fact, which we will return to in §3. The order in (10b) is also found in the Oceanic language Sisiqa, which according Ross (2002a) exhibits a form of V2 order. It is found in the following SVO languages: the Austronesian languages Arosi (Lynch & Horoi 2002), Bati-Vitu (Ross 2002b), Kwaio (Keesing 1985), Mussau (Ross 2002c) and Nakanai (Johnston 1980), as well as Nung (Tai-Kadai; Saul & Wilson 1980), Sre (Austro-Asiatic; Manley 1972) and the Hmong-Mien language

[3] In (http://makino.linguist.jussieu.fr/ARBRES/index.php/Demonstratif, accessed 1/10/10, 2/4/11), the Breton demonstrative is referred to as an analytic demonstrative, in which the lower element is a "deictic adverb" ("adverbe déictique spatial") . In many of the Austronesian languages given below where the same order shows up, it seems as though the lower element is also a deictic adverb of some kind. If we replace the term "adverb" with "modifier", since it seems anomalous to speak of DP-internal adverbs, then we are dealing with a deictic modifier. I will continue to refer to these elements as low demonstratives, since their central property is that of allowing deictic reference, although the idea that demonstratives are formed from the combination of definiteness and locative features is quite widespread (see for example Brugè and Giusti (1996)) and would justify referring to these cases as "analytic demonsrtarives". The full importance of the deictic nature of demonstratives will emerge in §4. Thanks to Mélanie Jouitteau for discussion of these points.

Hmong Njua (Harriehausen 1990).[4] Finally, Haddican (2002) lists the following creoles as having this order: Haitian, Papiamentu, Angolar, Le Tayo, St. Lucian, and Louisiana Creole. Cinque (2005:320, n. 16) also cites certain Mon-Khmer Languages (Dryer (2001)) and the Australian language Watjarri (Douglas 1981:241).

Looking again at the Celtic languages in (11), we can think that there is a morphosyntactic relation between the initial determiner and the low demonstrative. This is particularly clear in some Semitic languages, where the demonstrative appears preceding the (otherwise) initial determiner as well as in the low position, as in Moroccan Arabic shown in (12a), or where the definiteness marking "spreads" to N, A and the low demonstrative, as in the Hebrew example in (12b):[5]

(12) a. had ar rajeel haada [Morrocan Arabic]
this the man this
'this man' (Kaye & Rosenhouse 1997: 300)

b. ha-kufsa ha- gdola ha- zot [Hebrew]
the-box the-big the-this
'this big box'
(Berman 1997:327; see also Benmamoun 2000, Shlonsky 2004)

Moreover, a number of the other languages listed above show initial articles or determiners (Arosi, Nakanai, Longgu, Sisiqa and Tinrin). This evidence suggests that we should replace the label Dem with D, as follows:

[4] Other languages which might show either this order or that in (10c), but for which the crucial evidence is missing in the available sources include Palantia Chinantec (Oto-Manguean; Merrifield 1968) and Ghat Berber (Afro-Asiatic; Leroux 1909), Dong (Tai-Kadai; Yaohoung and Zheng 1998), Pwo-Karen (Sino-Tibetan; Kato (2003)), Obronuagum (Niger-Congo; Kari 2000), Sedang (Austro-Asiatic; Smith 1979), the Austronesian languages Arop-Lokup (D'Jernes 2002), Dehu (Tryon 1971a), Kaulong (Ross 2002d), Lampung (Walker 1976), Muna (van den Berg 1989), Puluwat (Elbert 1974), Sundanese (Hardjadibrata 1985), Taiof (Ross 2002e), Tigak (Beaumont 1979) and Timugon (Prentice 1971). Cinque (2005:320, n. 15) mentions Puluwat as having this order.

[5] This is not true for Basque, where the determiner appears to be low, like the Celtic demonstratives. Since Basque is in general a head-final language, it is quite possible that the determiner is in derived final position as a consequence of a roll-up derivation in DP of the type schematised in (7), but leaving D final. Basque has Num N order, presumably because numerals are merged in SpecNum after nP is rolled up into a lower Specifier of that category, thereby retaining surface DP-initial position when NumP raises to SpecDP. The same analysis would carry over to Chaha (a head-final Semitic language of Ethiopia with Num > N order).

(13) $[_{DP}$ D $[_{NumP}$ Num NP]]

This raises two questions:

(14) a. What is the first-merged position of Dem in DP?
b. What is the relation between Dem and D?

We will propose answers to these questions in the next section, which will allow a derivation of (10b) without a FOFC violation. Before going on to that, let us first briefly consider the other orders in (10).

I have found no clear cases of the order in (10c). The languages listed in Note 4 may have this order, but the crucial evidence, usually concerning the relative order of A and Dem, is either ambiguous or unavailable. Ndyuka, a Suriname creole, has the order Num/Quantifier – A - Article – N – Dem (Hutter & Hutter (1994:203-220)), so this may be an example. Cinque (2005:320, n. 15, citing Haddican (2002) and Rijkoff (2002)) mentions Berbice Dutch Creole, Sranan and Bislama, an Indian Ocean Creole; interestingly, the first two are also spoken in Suriname. Given these considerations, I will take this order to be either very rare or non-existent.

(10d) is rare, but is attested in Kilivila, an Austronesian Oceanic language spoken by the Trobriand Islanders (Senft 1986).[6] Cinque (2005:322, n. 26) points out that the order in (10d) "would only cease to be a problem if the adjective there derived from a relative clause, which is higher than Num, with Num N moved past the relative clause and Dem". It seems then that Cinque is proposing a derivation just like that in (8), with the single difference that *[Num NP]* moves over AP/RelCl:

(8') $[_{DemP}$ $[_{NumP}$ **Num NP**] [**Dem** AP/RelCl ($[_{NumP}$ Num NP])]]

Clearly this is derivation leads to a FOFC violation, just like (8). So Cinque's suggested account of this order is not available to us. We will suggest an alternative analysis of this case below, but before doing this we need to look more closely at the

[6] Other languages which may show the same order as Kilivila are Iai (Tryon 1971b), Nengone (Tryon 1967), Sundanese (Hardjadibrata 1985), and Urak-Lawoi' (Hogan & Pattemore 1988), all Austronesian.

general case of "low-demonstrative" languages, particularly the questions raised in (14).

3. The Nature of "Low" Demonstrative

3.1 The D-Dem Relation

Guardiano (2010) makes a number of interesting proposals concerning the cross-linguistic relation between determiners and demonstratives, and argues that demonstratives are universally first-merged in a "low" position. When we see them in a "high" position, they have undergone raising to SpecDP. This proposal was first made by by Giusti (1993) for Rumanian and by Brugè (1994) for Spanish; see also Brugè (1996, 2000, 2002:33-42), Brugè & Giusti (1996), Giusti (1997, 2002), Panagiotidis (2000), Grohmann & Panagiotidis (2005), Rosen (2003) and Shlonsky (2004).

Guardiano's initial observations are (i) that demonstratives are universal (this is also pointed out in Lyons (1999:107) and Alexiadou, Haegeman & Stavrou (2007:95)), (ii) that definite articles are not and (iii) that languages vary as to the possibilities of cooccurrence of these two elements. As far as I am aware, these are all empirically correct observations: (ii) is well-known (although, *pace* Bošković 2008, 2010, I am assuming that D is present even when not overtly realised; this is necessary in order to assimilate the languages with the order (10b) listed in the previous section which lack overt articles to the Celtic pattern), (iii) is precisely what we will discuss below, and (i) appears to be a substantive universal, with an obvious functional/communicative motivation (and, if the proposals in §4 are right, a semantic/conceptual motivation). On the basis of these observations, Guardiano goes on to distinguish six types of language, according to the position of the demonstrative in relation to other DP-internal elements, and according to the ability of demonstratives to co-occur with definite determiners.

Type 1 languages are represented by English and Italian, among many others. In these languages, Dem precedes nearly all other adnominal elements in DP (except quantifiers like *all/tutto*) and is in complementary distribution with D. In Type 2 languages Dem is likewise initial in DP, but it systematically co-occurs with overt definite articles, as in Hungarian:

(15) a. ez a nègy fèrfi
this the four men
'these four men'

b. az az ötödik szimfònia
that the fifth symphony
'that fifth symphony"

Guardiano's Type 3 languages include Welsh, where Dem co-occurs with D but follows it, with most other adnominal modifiers being post-nominal. Type 4 is represented by Hebrew, in being like Welsh as regards the position of Dem and definite D, but with "spreading" of definiteness marking in DP. Type 5 is exemplified by Modern Greek, where we find *aftos o anthropos* "this-Nom the-Nom man-Nom" ("this man (nominative)", but also *o anthropos aftos*), as well as, with adjectives, orders such as *o kalos aftos anthropos* (the-Nom good-Nom this-Nom man-Nom). Finally, Type 6 includes languages like Spanish and Romanian where both a Welsh-type and an English-type order seem to be options:

(16) a. este professor/el professor este [Spanish]
this professor/the professor this
'this professor'

b. el professor este alemano/alemano este
the professor this German/German this
'this German professor'

It is clear then that UG makes available at least two Dem-/D-positions, one initial in DP, and one in a low post-nominal position. Guardiano in fact proposes that there is a single universal first-merged position for demonstratives, in a relatively low position in the DP (Alexiadou, Haegeman & Stavrou (2007) make a very similar proposal). This is the position in which demonstratives always surface in the Celtic languages and in Hebrew. In languages like Spanish and Greek, demonstratives optionally raise to SpecDP and in languages like English, Italian and Hungarian, this raising is

obligatory (in fact, Greek appears to have a further "partial raising" option, which we will leave aside). We could add to this that French examples like *cette voiture-ci/là* ("this car here/there") may feature demonstrative elements in both positions (cf. Bernstein 2001).

The important conclusion from this brief summary of Guardiano's proposals is that, if the structure in (13) is the correct one, with Dem appearing either in SpecDP or lower in NP, then it is clear that the Num>N>(A>)Dem order of (10b) does not derive from NumP movement into SpecDP as the Determiner is clearly initial in these languages. Hence we do not have a FOFC violation here. However, if this approach to demonstratives is to be maintained, more must be said regarding both the first-merged position and (where appropriate) the nature of the trigger for movement of demonstratives.

3.2 Demonstratives as subject of nP

Let us now return to the two questions raised in (14), repeated here:

(14) a. what is the first-merged position of Dem?
b. what is the relation between D and Dem?

The best way to answer (14a) is in terms of the general structure of the DP. On analogy with the biphasal structure of the clause in (17a), as proposed in Chomsky (2000, 2001), I propose the structure for DP given in (17b) (see also Alexiadou, Haegeman & Stavrou (2007), Julien (2005:4)):

(17) a. Clause structure (Chomsky (2001), etc.):
$[_{CP}$ **C** $[_{TP}$ T $[_{vP}$ **v** $[_{VP}$ V $]]]]$

b. Nominal structure:
$[_{DP}$ **D** $[_{NumP}$ Num $[_{nP}$ **n** $[_{NP}$ N $]]]]$

In these terms, we can think of C and D as the *external* phase heads, interfacing with higher categories and with the discourse context. Those functional heads which are not phasal, T and Num, arguably have the basic property of quantifying over the lower phasal category (this is also true of more elaborate "cartographic" functional

structure for both CP and DP, where T and Num are split into sequences of heads of different quantificational types; see Cinque (1999:112, 2005:328)). The "little" *v* and *n* categories are the *internal* phase heads, determining non-lexical properties of the lexical root (case, agreement, perhaps category, etc.). V and N are lexical roots with intrinsic, perhaps idiosyncratic, argument structure.

Focusing on the Celtic DP, and illustrating just with Welsh, a further point to be made is that PP arguments of the Noun appear following the demonstrative:

(18)a. y llyfr hwn am forfilod
The book this on whales
"this book on whales"

b. y llun hwn o'r dyn gan Picasso
the picture this of-the man by P
"this picture of the man by P" (Rouveret (1994:221))

Similarly, sentential (CP) complement to Nouns are always the absolute last item in the nominal (thanks to David Willis for supplying this data):

(19)a. posibilrwydd cryf y bydd y Lib Dems yn colli eu seddi gwledig yng Nhymru
Possibility strong that will-be the Lib Dems Prt lose their seats rural in Wales
'a strong posibility that the Lib Dems will lose their rural seats in Wales'

b. gobeithion mawr gan bawb y bydd hyn yn datrys y broblem
hopes big by everyone that will-be this Prt solve the problem
'great hopes on the part of everyone that this will solve the problem'

c. y syniad newydd trawiadol hwn bod modd trosglwyddo ynni drwy'r awyr
the idea new striking this that can transfer energy through-the air
'this striking new idea that it's possible to transfer energy through the air'

(Brugè (2002:41) shows the same for Irish),

We can now posit the following structure for the Celtic DP:

(20) $[_{DP}$ **D** $[_{NumP}$ Num $[_{nP}$ (AP)* $[_{nP}$ DemP **n** $[_{NP}$ N (PP) (CP)]]]

In (20) we have a low position for adjectives and demonstratives, and N-to-Num raising (cf. Rouveret (1994), Cinque (1994), Duffield (1996)), or perhaps NP to SpecNumP. This allows us to account for the Celtic orders without violating FOFC, and also captures the fact that demonstratives and adjectives intervene between N and its complements (the AP* notation glosses over the tricky question of adjective hierarchies in Welsh and the general possibility of a cartographic analysis of these; see Willis (2006)).

Here are further examples of the order in (10b) from some of the languages mentioned in the previous section:

(21)a. duwa droe ureueng nyang-sakit nyoe
two CL person REL-sick this
"these two sick people" (Acehnese; Durie 1985:108)

b. a:^{M}i la:^{L} tiê^{L}i ki,á:^{H} ʔi^{M}-ni^{LM}i
three mule white of-1sg REL-that
"those three white mules of mine"(Lealao Chinantec; Rupp 1989:63)

c. uu ndá ndīkā náhnú ñúkwán
two PL banana big:PL that
"those two big bananas" (Ocotepec Mixtec; Alexander 1988:220)

In all of these cases, we can transpose the analysis of Welsh fairly straightforwardly, although the presence of a classifier in (21a) and the plural marker in (21c) create a complication. One approach would be to assume, as for Welsh, that the numerals occupy Spec,NumP with the classifier or plural marker in Num (it has been proposed several times in the recent literature that classifiers appear in languages without plural inflection on nouns, see Chierchia (1998), Huang (2007), Borer (2005, Chapter 4),[7] and so it seems natural to locate both properties in Num, in cross-linguistic complementary distribution; see in particular Borer (2005:92f) on this last point, and

[7] According to Borer (2005:86), this idea originated in Sanches and Slobin (1973:4).

see Huang and Ochi (2010) for a different view), with AP and DemP as in (20) in SpecnP. However, unless we allow for a rather unnatural movement of N(P) to the outer SpecnP or right-adjunction of N to Num, there is no position for the Noun here. There are two possibilities in this case: one is to assume that the numeral is in SpecDP, with the classifier/plural marker in D; in that case N can left-adjoin to Num just as proposed for Welsh above. The other possibility is that there is a further functional position between Num and N which N can move to; this may be a weak quantifier position of the kind identified by Zamparelli (2000). I will not decide between these possibilities, but simply note that the general approach sketched for order (10b) for Welsh can carry over in essence to the other languages showing this order.[8]

Interesting support for this approach comes from a typological observation regarding LD-languages. There seems to be a link between verb-initial clausal order and LD order. LD languages in many cases have VSO or VOS order: this is true of all the Celtic languages and of Moroccan Arabic, and was true of Biblical Hebrew (Modern Hebrew retains certain residual V-initial constructions). In fact, we have examples of VS order in the clause and LD in the nominal from all the major groups of VS languages: Austronesian (Raviona, Tinrin, Seediq, Karo Batak, Acehnese); Meso-American (Isthmus Zapotec, Ocotepec Mixtec, Chalcatongo Mixtec, Lealao Chinantec, Comaltepec Chinantec) and Salishan (Hisgha). Moreover, all 36 languages which show VSO order and LD also have NumN order (Dryer 2008a,b,c). Given the non-existence of (10a), and the apparent rarity (10c) and (10d), this suggests that the order in (10b) is connected to V-initial clausal order. Finally, of the other languages considered by Guardiano, Spanish, Greek and Rumanian are optionally LD and allow

[8] Not all the languages with the order (10b) have the Welsh order of Dem and complements/postmodifiers of N. In Nung, a Kam-Tai language spoken in Vietnam, for instance, Dem follows a post-nominal relative clause:

(i) dạ-mé mu'hu khà-còn thài té
Mother his before died that
"his mother who had died before"
(Saul & Wilson (1980:36))

Here we have to employ the Kaynian strategy of complement-movement out of NP followed by remnant NP-movement to a higher position. The structure in (20) does not provide sufficient "low" landing sites for these movements, however, suggesting that more needs to be said regarding the lower "*Mittelfeld*" of DP. This point will recur below. A perhaps related point is that several languages which have the order (10b) have "low" possessors (lower than in Celtic, where they are probably in D), occurring between A and Dem. This is true of Sre, Isthmus Zapotec, Karo Batak, Comaltepec Chinantec, Lealao Chinantec and Nung.

VSO order quite productively at the clausal level (unlike Italian, for example). This suggests a connection.

The most widely accepted analysis of VSO clausal order is that proposed by McCloskey (1996). He argues that this order is derived by a combination of V-raising to T and a lack of subject-raising to SpecTP (although it is fairly clear in many VSO languages that the subject does raise out of vP; see McCloskey (1996) on Irish, Roberts (2005) on Welsh and Schafer (1994) on Breton; on these assumptions, it must move to a position lower than SpecTP; this position may be analogous to the possible position of N in the functional structure of DP mentioned above for (21a,c)). Schematically, this analysis posits the derived clause structure in (22):

(22) $[_{TP}\ [_{T}\ V\ ]\ ..\ SU\ ..\ [_{VP}\ (V)\ O\ ]]$ -

The most important feature of this analysis for our purposes is that nothing is attracted to SpecTP. Perhaps somewhat simplistically, we can say that there is no EPP feature on T here; this is then a major parametric property which contributes to the derivation of VSO order (of course, V-raising is another, but this is clearly independent of VSO in principle, since many non-VSO languages feature V-to-T movement).

Now, we can generalise the LD structure of the DP in (19), and suppose that D bears some feature F that varies parametrically in its ability to attract Dem:

(23) $[_{DP}\ D_{[F]}\ ...\ [_{nP}\ Dem\ [\ n\ [_{NP}\ N\ ..\ ]]]]$

This idea has been independently put forward by Alexiadou, Haegeman & Stavrou (2007), Brugè (2000, 2002), Brugè & Giusti (1996) and Guardiano (2010); for Guardiano, F is a Person-feature, for Brugè and Brugè & Giusti "[+REF]", and for Alexiadou, Haegeman & Stavrou (2007:124), Panagiotidis (2000) mad Grohmann & Pangiotidis (2005) it is deixis. Also, Henry (2010) proposes a similar movement in varieties of English which allow both *this here book* and *this book here* (see also the discussions of non-standard English in Alexiadou, Haegeman & Stavrou (2007:117f.) and in Kayne (2008)). In order to pursue the parallel with clauses, I propose that the movement-triggering feature on D is the EPP feature. Hence we have (22):

(24) $[_{DP}\ D_{[u\varphi,\ (EPP)]}\ ...\ [_{nP}\ Dem_{[i\varphi]}\ [\ n\ [_{NP}\ N\ ..\ ]]]]$

Here the presence or absence of the EPP feature on D is a parameter controlling the cross-linguistic variation in attraction of Dem (and other elements, as we shall see in §4). Note that D has uninterpretable φ-features here, and Agrees with Dem's interpretable φ-features; we will return to this point below.[9]

We can generalise this account in an interesting way, and make the link to VS order explicit. Let us suppose that there is a general parameter that applies to both clauses and nominals, as follows:[10]

(25) Does a functional head F in a higher phase attract the external argument?

If we treat Del as the external argument of N (an idea I will discuss at length in §4), then (25) regulates subject-raising in TP/CP and Dem-raising in DP. English and Italian have this parameter set to the positive value, being SVO and "high demonstrative" languages. The Celtic languages and other VSO languages set it to the negative value, being VSO and LD. Greek, Spanish and Rumanian allow the EPP under specific discourse or other conditions, which we need not go into here. Kilivila, the language with the order schematised in (8') above, appears to have alternating VSO/VOS word order. On analogy with Massam & Smallwood's (1997) analysis of clausal VSO/VOS order in Niuean as a involving a combination of (possibly remnant) VP-fronting and object shift, we could posit NP-movement to the Specifier of the category between Num and n, with A in a lower position than that suggested by Cinque. This would give rise to the following structure (still thinking of the AP as being potentially a reduced relative):

(26) … Num [$_{FP}$ NP [$_{F'}$ F [$_{nP}$ Dem A/RelCl n (NP)]]]

Hence languages of the Welsh type differ in the nominal from languages of the Kilivila type in a way analogous to how VSO and VOS orders differ in the clause: the

[9] If we apply the Activity Condition of Chomsky (2001), and require the Goal of Agree to also bear an (active) uninterpretable feature, then we could posit an uninterpretable Case feature on Dem, which perhaps Agrees vacuously with a similar feature on D. I will leave this possibility aside here however. The Agree relation between D and Dem here has a parallel in the binding relation posited between (Spec)D and Dem in Lyons (1999:302).

[10] In terms of the proposals in Chomsky (2008), F would have to be the head of the higher phase. This certainly appears to be the case for D, as we can see; in the clause, to the extent that McCloskey's analysis of VSO as summarised above is correct, we would have to consider the feature to be inherited by T from C.

head, V or N, raises to T/Num in the VSO case and the NP raises to SpecFP/SpecTP in the latter case.

There is in fact still a possibility of a FOFC violation in (26), if NP contains a complement to N and is head-initial. However, the NP could be a neutralised category, as argued for the fronted VPs in these languages by Massam (2005); in that case, no FOFC violation results as FOFC only applies where both heads have the same categorial features. Clearly more needs to be said about languages of the Kilivila type, and more data is also needed.

The parameter in (25) predicts a rigid VS-LD correlation. At first sight, this does not seem correct. Following Cinque's (2005) discussion of exceptions to Greenberg's Universal 20, there certainly appear to be both SV-LD languages (e.g. Modern Hebrew, Wolof, Indonesian) and VS-HD languages. *WALS* lists 28 languages in the latter category[11] and 252 in the former (I return to these briefly below).

It appears then that the relation between VS and LD seems to have counterexamples in both directions. Therefore it may be better to regard this as a preference. What the VS and LD orders share is lack of movement of the external argument, as (25) states. Given that this is not a categorical requirement, as the counterexamples show, we formulate two more specific parameters as subcases of (25), as follows:

(27) a. Does F in the higher clausal phase attract the external argument?
b. Does F in the higher nominal phase attract the external argument? .

In a VS-HD language, then, (27a) is negative while (27b) is positive. Conversely, in an SV-LD language, (27a) is positive and (27b) is negative. Both of these settings represent relatively marked systems in relation to VS-LD or SV-HD since the latter two options represent settings of (25). The parameter in (25) is less specific than those in (27), and hence it determines less marked systems than those in (27). Note that, in (25), movement of the external argument in both nominals and clauses patterns together, while (27) allows them to pattern distinctly. Hence the parameters in (27) are

[11] Combining Maps 81 and 88 (Dryer 2008a,b). The languages are Arabic (Modern Standard), Berber (Figuig), Chamorro, Cora, Guajajara, Guató, Halkomelem, Hawaiian, Heiltsuk, Hiligaynon, Ilocano, Kalispel, Kokota, Kuot, Lillooet, Maasai, Makah, Mam, Mamanwa, Manobo (Western Bukidnon), Nahuatl (Huasteca), Podoko, Quileute, Sahaptin (Northern), Squamish, Tahitian, Tepehuan (Northern), Wolio.

less general than that in (25), and so potentially give rise to more marked systems.[12] Since they allow more specific, and therefore more marked, options, the options in (27) represent a lower portion of the relevant parameter hierarchy than (25) in terms of the proposals for parameter hierarchies put forward in Roberts (forthcoming).

The rather large set of SV languages showing NDem order is non-homogeneous. *WALS* provides information on each pair NG, NA, NDem, NNum for very many languages, but does not give information directly on the relative order of the adnominal elements themselves; moreover this information is not always provided in grammars. On the basis of what evidence is available, we can divide these languages into four principal classes: (i) N-initial languages, showing the pairwise orders: NG, NA, NDem, NNum (110 languages); (ii) GN-initial languages, showing GN, NA, NDem, NNum (43 languages); (iii) indeterminate between N- and GN-initial owing to lack of information (62 languages) and, (iv) NumN-ND languages, showing a potential FOFC violation (36 languages). This gives a total of 251 languages.[13] We can tentatively distinguish the first two classes if we assume that "Genitives", i.e. possessors, are first-merged in a "high" nP-external position. This is natural to the extent that (alienable) possessors are not part of the argument structure of the noun of which they denote the possessor (inalienable possessors are different, and may correspond to Experiencers merged NP-internally; note that here I am Ieaving aside the "subject of NP", i.e. that argument which corresponds to the external argument of the "corresponding" v). In that case, NG order indicates "high" N(P)-movement and GN order movement to a slightly lower position (where we also have NA, NDem,

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[12] In Roberts (2007, forthcoming), I suggested that relatively unmarked, more general, parameter settings are always preferred owing to the action of an acquisition strategy I referred to as Input Generalisation. This can be stated as follows (see Mobbs (in progress)):

(i) If acquirers assign a marked value to a given functional head H, they will assign the same value to all comparable heads.

Taking the movement-triggering feature to be the marked value of a head in relation to the same head without a movement triggrer (see Roberts & Roussou 2003), we can see that (25) specifies less marked systems than (27).

[13] The 252nd language is Cornish. This is a special case, in that it is unclear whether the earlier typically Brythonic clausal order XP Prt V S O, found in Middle Welsh and almost all modern dialects of Breton, was reanalysed as SVO in Late Conish (with XP being consistently analysed as the subject, the loss of the particles and the loss of the verb endings distinguishing a preverbal pronominal subject from a postverbal one). If it was, then Cornish falls into the fourth class of languages just individuated. If it was not, then Cornish is misclassified as SVO in *WALS*. George (1993:457-8) argues that a change of this kind did in fact take place. In that case, Late Cornish moved from a relatively unmarked to relatively marked parameter setting (with (27) taking over from (25)); since this change took place under the strong contact influence of English, we can understand how this was possible. Anna Gavarrò (p.c.) informs me that Catalan has low demonstratives, like Spanish, but, unlike Spanish, does not allow VSO order in the clause. See Brugè (2002:33-4) on Catalan.

NNum). If N(P)-movement is sufficiently high in these cases, neither order, when combined with NDem, can tells us whether the demonstrative is in a low or a high position.

The fourth type are the NumN, ND languages. These correspond to the orders in (10), i.e. most commonly to (10b), the "Celtic" order analysed above. As mentioned in §2, SV languages showing this order include Arosi, Bati-Vitu, Kwaio, Mussau, Nakanai, Nung and Sre. Since these are SV languages, we again have a marked parameter setting, involving the positive value of (27a) and the negative value of (27b).

Finally, we should reconsider how the orders in (4-7) are derived given the idea that Dem is always first-merged in a low position. The English order Dem > Num > N in (4) is clearly derived by Dem-raising to SpecDP. The DEM > N > Num order of (5) is derived by NP-movement to SpecNumP, exactly as before, combined with Dem-raising to SpecDP. The order in (6), N > Dem > Num is slightly more complex: it involves NP-movement to SpecnP, Dem movement to SpecNumP and then NP-movement to SpecDP. The order N > Num > Dem, seen in (7), involves NP-movement to SpecNumP. The unattested order discussed Note 1, Num > Dem > N, corresponds to the forst-merged order with no movement. The fact that this order is unattested implies that something must move from the lower phase: interestingly, exactly this has been observed many times in relation to the clause: the subject, the verb or some lower element must move into the higher phase (see Alexiadou & Anagnostopoulou (2001) for one statement of this generalisation).

In this section we have proposed that demonstratives may function as the external argument of N, and have looked at the typological support, as well as problems, for this idea. Accordingly, we have proposed the parameters (25) and (27), suggesting they may be related in terms of a markedness hierarchy.

We will now explore further the idea that demonstratives function as the external argument of N.

4. The demonstrative as the external argument of N

We have posited the structures for the DP and the CP in (28):[14]

[14] The "C/T" notation in (28b) is intended to indicate that, while according to Chomsky (2008) C is the true probe, T may inherit C's probing features.

(28) a. $[_{DP}\ D_{[u\varphi,\ (EPP)]} \ldots\ [_{nP}\ Dem_{[i\varphi,\ (uCase)]}\ [\ n\ [_{NP}\ N\ ..\ ]]]]$

b. $[_{CP}\ C/T_{[u\varphi,\ (EPP)]} \ldots\ [_{vP}\ DP_{[i\varphi,\ uCase]}\ [\ n\ [_{NP}\ V\ ..\ ]]]]$

Note that in these terms we could propose that the D-Dem Agree relation is what renders D's φ-features interpretable, and therefore able to Agree with clausal heads. The nature of Dem is then central to the functioning of DP in the Agree system. This idea could be extended to the uninterpretable Case feature of Dem, although any Case-agreement with D would have to be vacuous in the sense that D's Case feature would not be thereby valued (see Notes 9 and 19).

This proposal appears to face a serious problem, however: while we think that clauses always have an external argument (or at least they can always make a DP available in Spec,vP, perhaps through raising – passives, unaccusatives – or through expletive-insertion (Richards & Biberauer 2005)), it certainly does not appear to be case that DPs always contain demonstratives. Here I will argue that, once we take a particular view of the way in which argument structure (in a rather general sense) is realised in nP, this problem disappears and, in fact, a very interesting, essentially Russellian, picture of the syntax-semantics mapping in nominals emerges.

The leading idea was originally put forward by Williams (1981). There, in addition to developing the proposal, originally made in Williams (1980), that basic asymmetry in argument structure is between the external argument of a predicate and all other arguments, with the concomitant idea that the canonical external argument of a verbal predicate bears the Agent θ-role, Williams proposed that the external argument of the nominal was its reference. Thus, using Williams' notation for underlining the external argument of a predicate, we have something like the following (I leave aside the question of whether there are unaccusative Nouns):

(29) a. *hit* (x, y), *run* (x), *fall* (x)

b. *dog* (x), *father* (x, y)

The single argument of a non-relational Noun such as *dog* is its external argument, and this argument bears the Reference role of Noun. In other words, the values of *x* in (27b) are referents of the Noun *dog*. Thus, in a predicative clause such as *Fido is a*

dog, *Fido* can be seen as bearing this θ-role: the relevant part of the logical form is *dog(f)* (Williams (1994:34)).

In these terms, the proposal regarding Dem that is being developed here can be stated as follows:

(30) Dem can occupy the *x*-position in nP as Dem is able to form a "logically proper name".

In other words, Dem is able to directly establish the reference of NP without the intermediary of a propositional function, i.e. some form of quantification, what Russell (1905) called a "description". In this connection, it is worth quoting Russell:

"We may even go so far as to say that, in all such knowledge as can expressed in words – *with the exceptions of 'this' and 'that'* and a few other words of which the meaning varies on different occasions – no names, in the strict sense, occur, but what seem like names are really descriptions" (Russell 1919 [in Ludlow 1997:332]; emphasis mine).

In this connection, we can think that what can be the external argument of nP is inherently restricted by the nature of n (alternatively, we could think of this restriction as definitional of n, and perhaps of nominals more generally, but I will not speculate further in this here). Arguably the only other elements that can appear in Spec,nP are pronouns, or perhaps more precisely, bundles of interpretable φ-features, and variables (note that pronouns are precisely "words of which the meaning varies on different occasions" in Russell's terms). Fox (2002:67-8) proposes that variables arise at the semantic interface thanks to the operation of Trace Conversion, which applies to copies of A'-moved DPs, as follows:

(31) a. Variable Insertion: (Det) Pred → (Det) [Pred λy (y = x)]

b. Determiner Replacement: (Det) [Pred λy (y = x)] → the (Det) [Pred λy (y = x)]

For example, these conventions convert *Which boy Mary visited which boy* to *Which boy λx [Mary visited the boy x]*. Fox observes (see his Note 6) that these operations are designed to apply to copies of A'-bound DPs, leaving open the question of how it

may generalise to other categories. In fact, for quantifier-movement inside DPs, a simpler convention suffices, which we can state as follows:

(31') The chain (Q, Q), where Q is a strong quantifier, is interpreted as (Q, *x*), where *x* is a variable bound by Q.

The operation introduces a variable ranging over possible denotations of a predicate, which I take to be N, hence this defines the restriction of the quantifier: Qx_N.

Aside from demonstratives, arguably the only other elements that can appear in Spec,nP are variables. The latter include copies of quantified elements, as just described, and underspecified pronouns. Given that the interpretable features of Dem value those of D, which in turn value the clausal functional heads, we see that the referential property of demonstratives has the formal correlate of contributing a fully specified φ-set to the formal-feature system, and thus making the Probe-Goal Agree system work. Let us now investigate the consequences of this proposal regarding demonstratives for DPs which do not contain demonstratives and for the general DP-clause relation.

The ideas just sketched imply that we must rethink the nature of all (apparently) demonstrative-less DPs. Here we will sketch how we see the principal DP-types, leaving much for future research. Let us begin with **definite** DPs. Here the central idea is that the definite article is a clitic Dem. Thus, from a structure like (32a), Art (to use a neutral term) cliticises to D by incorporation, giving (32b) (see also Giusti (2001), Borer (2005:160f.) and Corver & van Koppen (2010)):

(32) a. $[_{DP}\ D_{[u\varphi,\ EPP]} \ldots\ [_{nP}\ Art_{[i\varphi]}\ [\ n\ [_{NP}\ N\ ..\ ]]]]$

b. $[_{DP}\ Art_{[i\varphi]}{+}D_{[u\varphi,\ EPP]} \ldots\ [_{nP}\ (Art_{[i\varphi]})\ [\ n\ [_{NP}\ N\ ..\ ]]]]$

The cliticisation operation here is in line with general approach to cliticisation/incorporation as syntactic head-movement in Roberts (2010). There the central notion is that of a defective goal, defined as follows:

(33) Goal G is defective in relation to Probe P iff G's formal features are properly included in those of P.

The condition on incorporation is (34):

(34) Defective goals must incorporate into their probes.

In (32), Art incorporates with D in virtue of having a subset of D's formal features. On the other hand, in (28), the demonstrative does not incorporate with D because it has a feature not shared with D, presumably related to deixis (see Alexiadou, Haegeman & Stavrou (2007:96f.)), hence Dem is not a defective goal in relation to D while Art in (32) is.

As shown in (32), I assume that D is first-merged with uninterpretable/unvalued φ-features. Definite articles, indicated in (32) as Art, on the other hand, have a full set of interpretable φ-features, which gives rise to the "uniqueness/exhaustivity" interpretation associated with definiteness. Raising these features from SpecnP to D endows D with interpretable features, making D in turn able to value the features of a clause-level category such as C/T or v. It also satisfies D's EPP-feature.[15] In this way, we see how the clausal Agree system depends on DP-internal relations which are intimately connected with the referential properties of DP. This idea is connected to the proposals in Lyons (1999) and Platzack (2004), who identifies definiteness or D respectively with Person, and also with the proposals developed extensively in Longobardi (1994, 1996, 2010) to the effect that certain features of N or NP must raise to D in order for DP to be licensed as an argument. There is a clear parallel here with T's φ-set in a fully null-subject language, which has the same property and licenses a definite pronominal interpretation of the subject (see the papers in Biberauer et al (2010)). Lyons (1999:282f.) argues that person and definiteness should be conflated; see also the proposals in Biberauer et al (2010) to the effect that a fully-specified φ-set is equivalent to a D-feature.

Enclitic definite articles most clearly illustrate the cliticisation of Art to D. In Rumanian, for example, we find the following paradigm (from Longobardi (2010)):

(35) a. lup-ul
wolf-the
"the wolf"

[15] In Roberts (2010) I assume that clitcisation to a head H cannot satisfy H's EPP feature. Here, I take the view that cliticisation can satisfy an EPP feature, but not EF. See Note 18.

b. batrân-ul lup
old-the wolf
"the old wolf"

c. *lup batrân-ul
wolf old-the

d. *batrân lup-ul
old wolf-the

Here we see that the Noun or adnominal Adjective must raise to a position preceding the enclitic definite article *–ul*. We can account for this in terms of the general approach to second-position clausal enclitics in Roberts (2011): there it is proposed that second-position effects arise where a clitic incorporates to a phase head bearing an Edge Feature (EF) of the kind discussed in Chomsky (2008). Incorporation, by its nature, cannot satisfy EF and so some further category must move to the phase edge. This category can be a head or an XP. As Longobardi (2010) points out, it is very difficult to tell whether N- and A-raising inside DP is head-movement or XP-movement. But we can account for the difference between the Rumanian article, which is obligatorily enclitic, and its English or Italian counterpart, in terms of the presence vs absence of EF associated with D. The order in (35c) is ruled out if we continue to assume that APs appear in the edge of the nP phase, since there is no way to derive a constituent containing N(P) and AP, which would move to satisfy D's EF here.[16] The order in (35d) could perhaps involve nP movement, but then (31') would create an unbound variable in the fronted nP (assuming the order of operations Art-incorporation > (31b') > nP-raising, the former two taking place in the n-phase, the latter in the D-phase). Alternatively, if *batrân lup* is a head-initial AP here, we have a FOFC violation.[17,18]

[16] Actually, a derivation comparable to that proposed for Kilivila in (26), with AP in SpecnP and NP raised to SpecFP, followed by FP-fronting to SpecDP, could give this order. This suggests that Rumanian has the more "VSO"-like option of fronting just N(P).

[17] The Scandinavian languages also have enclitic definite article, but Longobardi (2010) shows that the N-D/A-D elements occupy lower positions in the DP in these languages than in Rumanian. It appears, in fact, that the Art is a clitic in n in these languages, and binding is effected purely by the Agree relation with D.

Art-Incorporation leaves a copy in Spec,n which is interpreted as a variable at the semantic interface by (31'). If we identify the full set of interpretable φ-features, with the associated interpretation of uniqueness and exhaustivity, with the iota-operator, then we can see how *the NP* is interpreted as ιx [NP(x)].

A major advantage of this approach is that it naturally captures the common diachronic relation between demonstratives and definite Ds. In many languages, the definite article derives from an earlier demonstrative (e.g. all the Romance definite determiners derive from the Latin demonstratives *ille* and *ipse*; Modern English *the* derives from Old English *se, seo, þæt*, etc.; see Vincent (1997), Lyons (1999:331f.), Giusti (2001), Roberts & Roussou (2003:131-6)), Alexiadou, Haegeman & Stavrou (2007:96f.)). On the view just sketched, definite articles simply lack one formal feature borne by the former (the deictic feature). It is fairly commonly observed that feature-loss is a common diachronic process (see in particular Roberts & Roussou (2003)). The loss of the deictic feature on Art creates the conditions for incorporation of Art to D, since once this feature is lost, Art's formal features are a subset of those of D. Art thus becomes a D-clitic.

Turning now to **indefinites**, we take these to feature an underspecified null pronoun in SpecnP (cf. Holmberg's (2010) analysis of generic null subjects). As an underspecified element, it cannot refer alone, i.e. it is semantically a variable. There are two possibilities in principle for assigning reference to this element. One is to bind it from outside DP; this amounts to a version of the Kamp/Heim approach to indefinites (see Kamp 1981, Heim 1982). Biberauer & Roberts (forthcoming) develop a version of this idea in their analysis of negative clauses. The required binding is instantiated by the Agree relation between an operator in C, in declaratives this is the veridical operator Op_{Decl}, and D; this gives a particular value to D, e.g. in the case of Op_{Decl} the value of existential import, which allows this D to be interpreted as an existential quantifier. D is then able to bind *pro* in SpecnP. Binding can be seen a form of Agree. We can represent the relevant Agree relations as follows:

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[18] The question of the relation between the EPP and EF is tricky. The basic difference is that EPP moves a category which D Agrees with, while EF requires the Specifier, or more precisely the phase-edge, to be filled by some overt material, with no relation to Agree. As we have said, both English and Italian D bears an EPP feature (although we will see one possible class of exceptions in English below).

(36) $[_{C}\ Op_{Decl}] \ldots\ [_{DP}\ D[\exists](x)\ \ pro/x\ ]$
$\quad\ |_____|\ \ |_____|$
$\quad\ Agree_1\ \ \ Agree_2$

$Agree_1$ is the clausal A'-relation between Op_{Decl} and D, brought about by the inherently active nature of the Operator and an unvalued feature on D.[19] $Agree_2$ is the binding of *pro* in SpecnP, brought about by D's intrinsic property as an operator combined with the nature of the underspecified *pro*. The combined result of the two Agree relations is that the sentence is interpreted as veridical and the D is interpreted as existentially quantifying over a set of existing individuals. On this view, the indefinite article itself would be merely a morphological marker of indefiniteness with no quantificational force of its own (see Lyons (1999), Borer (2005), Crisma (2011)), occupying either Num or D. In fact, in English-type languages, we take it to be cliticised to D owing to its lack of feature content; this also satisfies D's EPP-feature). Alternatively, the indefinite article can be regarded as an existential quantifier first-merged in Num, which binds the *pro* variable (and, again, cliticises to D). The structure an indefinite DP would thus be as follows (see Lyons (1999:286, 301)):

(37) $[_{DP}\ \ D_{[u\varphi,\ EPP]}\ [_{NumP}\ [_{Num}\ a\ ]\ \ [_{nP}\ pro/x\ [\ n\ \ [_{NP}\ N\ ..\ ]]]]$

More generally, **weak quantifiers,** like the indefinite article, may be merged in Num and license *pro/x* by binding it (and, again, cliticise to D in English-style languages):

(38) $[_{DP}\ \ D_{[u\varphi,\ EPP]}\ [_{NumP}\ [_{Num}\ some\ ]\ \ [_{nP}\ pro/x\ [\ n\ \ [_{NP}\ N\ ..\ ]]]]$

Strong quantifiers, on the other hand, raise from Spec,nP to SpecDP leaving a copy interpreted as a variable (see Borer (2005:140f.) for a very similar proposal):

[19] The idea that Probes bearing Operator features are inherently active may seem stipulative, but there is a sound conceptual justification for it. If, as assumed here, Agree relations can create operator-variable relations, and if, as is often assumed, vacuous quantification is not allowed in natural language, then probes bearing an Operator feature must be inherently active since they are required to bind a variable, i.e. Agree with a Goal. This idea has an interesting implication for the operation of Agree in the A-system. It is standardly assumed that bearing (unvalued) structural Case makes a DP an active goal (cf. Chomsky 2001). Extending the operator-variable idea to the A-system, we can think of the Case feature as indicating that a DP has an open variable position, i.e. it is an argument. We can then relate the presence of the Case feature to a general Visibility Condition on arguments, ultimately to the θ-criterion. Of course, this line of reasoning appears to founder in the case of expletives, but this shows that the system is driven by formal, not semantic, considerations, in that we have to allow for variables which have no denotations here. Since this open position would be a property of both definite and indefinite DPs, it is distinct from the variable in SpecnP bearing DP's θ-role.

(39) $[_{DP}$ *every* $D_{[u\varphi,\ EPP]}\ [_{NumP}$ Num $[_{nP}$ ~~*every*~~ = *pro/x* [n $[_{NP}$ N ..]]]]

Clearly this satisfies D's EPP-feature.

This leads to an interesting account of the definiteness effect (the basic syntactic difference between weak and strong quantifiers – Milsark (1974)):

(40) There is a/*every fly in my soup.

We could think, along the lines of Kayne (2008:185f.), that *there* is merged inside DP, let us say in SpecnP:

(41) $[_{DP}$ $D_{EPP}\ [_{NumP}$ $[_{Num}$ *a*] $[_{nP}$ *there* [n $[_{NP}$ N ..]]]]]

From this position, *there* raises successively to SpecDP and on to SpecTP:

(42) $[_{TP}$ *there* ... $[_{DP}$ ~~*there*~~ $D_{EPP}\ [_{NumP}$ $[_{Num}$ *a*] $[_{nP}$ ~~there~~ = *pro/x* [n $[_{NP}$ N ..

(Kayne instead proposes that the constituent *a N* raises, followed by remnant DP-movement of [*there (a N)*] after merger of V). This is possible in the presence of a weak quantifier, as shown in (41) and (42), but *there* would compete with the first-merged position of strong quantifiers in SpecnP. Hence the definiteness effect emerges as an effect of the complementary distribution of *there* and strong quantifiers in SpecnP. Note that D has no φ-features here; if it had them, *there* would cliticise to it. Arguably, *there* has a Person feature but not Num (see Chomsky (2001)), so *a* appears as a default element in Num, if this head is Sg and no weak quantifier is present. Hence *there* can check with T. It cannot check with D as D has no features at all except EPP. Phonologically null D in English always has a default existential interpretation (see Longobardi (1994:641)); this is true unless D is bound by a generic or negative operator in C, as in certain bare plurals or negative contexts). Note that *there* cannot bear the R-role, as it has no denotation; instead this is assigned to the variable left by *there* boulnd by the existential D. This is possible in the absence of a level of D-Structure requiring θ-roles to be all and only assigned to first-merged elements.

Our approach also has interesting consequences in relation to generalised quantification. Consider the following simple example:

(43) *Every boy thinks*.

After DP-internal raising of *every*, variable insertion as in (31') and raising of the subject to SpecTP, we have the following representation for (43) at the C-I interface:

(44) $[_{TP}\ [_{DP}\ [_{D}\ \textit{every}\ ]\ [_{NumP}\ \text{Num}\ [_{nP}\ x_1\ [_{N}\ \textit{boy}\ ]]]]\ \text{T}\ [_{vP}\ [_{DP}\ [_{D}\ \textit{every}\ ]$

$[_{NumP}\ \text{Num}\ [_{nP}\ x_2\ [_{N}\ \textit{boy}\ ]]]]\ [\text{v}\ [_{VP}\ \textit{thinks}\ ]]]$

Assuming that copy deletion can apply freely in LF as long as a well-formed interpretation results (cf. standard accounts of reconstruction since Chomsky 1993), the D-phase of the DP-copy in SpecvP deletes at the C-I interface to avoid vacuous quantification, or there will be two quantifiers, two nuclear scopes, but just one restriction. So we get (44') from (44):

(44') $[_{TP}\ [_{DP}\ [_{D}\ \textit{every}\ ]\ [_{NumP}\ \text{Num}\ [_{nP}\ x_1\ [_{N}\ \textit{boy}\ ]]]]\ \text{T}\ [_{vP}\ \sout{[_{DP}\ [_{D}\ \textit{every}\ ]}$

$\sout{[_{NumP}\ \text{Num}}\ [_{nP}\ x_2\ [_{N}\ \textit{boy}\ ]]]]\ [\text{v}\ [_{VP}\ \textit{thinks}\ ]]]$

The interpretation of (44') is of course (45):

(45) $\forall x\ [\ \textit{boy}(x) \rightarrow \textit{think}(x)]$

(45) can be almost directly derived from (44'), aside from two apparent anomalies for compositionality. The first is the insertion of the implicational connective, which has no syntactic counterpart. Let us take this to be a convention in the interpretation of expressions involving universal quantification. The other anomaly is more interesting: the two occurrences of $[_{N}\ \textit{boy}\ ]$ in (44'). But this apparent anomaly actually gives us the conservative interpretation: if we interpret (44') with a direct one-for-one mapping from syntactic to logical expressions, we have:

(45') $\forall(x)\ boy(x)\ [\ boy(x) \rightarrow think(x)]$

This is "every boy is a boy that thinks," the conservative interpretation (Barwise & Cooper 1981). Conservativity is thought (see Keenan (1997:54-5) for more discussion) to be a universal property of determiner-quantification; note that it does not hold of adverbial quantification, as can be seen from the interpretation of *Only birds fly*. This interpretation follows from the structure we have proposed for DPs and the fact that just the D-phase is deleted in (44'), which derives from free minimal deletion up to crash at C-I, very much in the spirit of Fox (2000); what is deleted here is just enough to save the structure from crashing due to vacuous quantification (see also Fox (2002, Note 7) for discussion of a different possible way to link the copy theory to conservativity).

Still pursuing this general approach, we can treat **proper names** largely following Longobardi (1994). Longobardi observed the following paradigm for Italian and English:

(46) a. Gianni mio
b. il mio Gianni
c. John

Longobardi treats (46a) as involving N-to-D raising, while (46b) features an expletive D, an option unavailable in English. N-raising is best seen as NP-raising, through SpecnP (as required by the Phase Impenetrability Condition) to SpecDP, giving the following representation at C-I:

(47) $[_{DP}\ \textit{Gianni}\ D_{[u\varphi,\ EPP]}\ [_{NumP}\ Num\ [_{nP}\ [_{AP}\ (\textit{mio})\ ]\ [_{nP}\ \sout{\textit{Gianni}} = x\ [\ n\ [_{NP}\ \sout{\textit{Gianni}}\ ]$

If the copy of the proper name is interpreted as a variable, the DP emerges as a Russellian description ("the *x* such that *x* is Gianni"). The Italian expletive D, like the English expletive *there* discussed above, raises from SpecNP to SpecDP, leaving a variable, we get the same interpretation (note that *il* cliticises to D as its features are a subset of D's):

(48) $[_{DP}$ *il*-$D_{[u\varphi,\ EPP]}$ $[_{NumP}$ Num $[_{nP}$ $[_{AP}$ (*mio*)] $[_{nP}$ ~~*il*~~ = *pro/x* [n $[_{NP}$ ~~*Gianni*~~]

Longobardi originally treated English article-less, unraised proper names as undergoing LF movement to D. If such operations are not available in the current versions of syntactic theory, then we have a representation like the following at C-I:

(49) $[_{DP}$ $D_{[u\varphi,\ EPP]}$ $[_{NumP}$ Num $[_{nP}$ *pro/x* [n $[_{NP}$ *John*]]

Here the null D must have interpretable φ-features, in order to identify *pro/x* in Spec,nP through Agree with D. This again creates a bound-variable interpretation, again giving the Russellian interpretation. The same must be true of the null D of **bare plurals**, which have either an existential or a generic interpretation (the latter determined by an Agree relation with a sentential operator either in T or C; the former possibly a default as mentioned above for null D in English).

Concerning **pronouns**, I follow Cardinaletti & Starke's (1999) tripartition into weak, strong and clitic pronouns. In these terms, it is plausible that **weak pronouns** lack an n-phase and so are unable to refer alone (see Lyons (1999:304) for the suggestion that ptonouns are NP-less Ds). For this reason, they must be generated as the double of a "full" DP, and so we are led to follow a variant of Kayne's (2002) proposal that coreference relations involving pronouns involve movement: However, while Kayne assumed the structure *[[John] he]*, our assumptions imply that we should assume the "opposite" structure: *[he [John]]*. Here, *he* is in SpecDP, satisfying D's EPP-feature, $John_{NP}$ raises through SpecnP and creates a variable to bind in an example like *John thinks he is smart*,[20] giving the "coreferential" interpretation. Note that NP can move over DP by relativised minimality. On the other hand, raising *he* crashes as *he* alone can't bear a θ-role (since, as a weak pronoun, it has no R-position), hence the ungrammaticality of *He thinks John is smart* with the coreferential interpretation. The grammatical version of this sentence involves a "stand-alone" and therefore disjoint, pronoun *he*; in this case *pro* occupies SpecnP,

[20] It is actually not clear what feature of *John* prevents it from cliticising to D here. To put it another way, what formal feature does *John* have that D lacks? Both presumably have [N, masc, Sg, 3rd]. D may have a Case feature, which *John* does not, but this would not prevent cliticisation. Since, to my knowledge, proper nouns never cliticise in any language, we must assume they have the formal feature [proper].

licensed by the features of *he* and providing the reference of the whole DP as a "logically proper name". A further interesting result is that it follows from this and our sketch of expletives above that expletives are always weak, as Cardinaletti & Starke observed.

Clitics are bundles of φ-features unable to refer alone (see Roberts 2010). It therefore follows that a version of the "generalised doubling" analysis of Uriagereka (1988) is correct. A clitic must appear in a functional head with a referential *pro* in SpecnP; again, the φ-features of the clitic license *pro* in SpecnP, and *pro* provides the reference of the DP.

Finally, **strong pronouns** resemble proper names: they are Ns (which may raise to D).

4. Conclusions

In this paper we have seen three principal points. First, LD languages aren't a problem for FOFC, since they do not have to involve raising of a possibly head-initial low functional category along the lines proposed in Cinque (2005). Further, following Brugè and Giusti (1996), Alexiadou, Haegeman & Stavrou (2007) and Guardiano (2010), we proposed that demonstratives are always first-merged in a low position, SpecnP; Dem-raising to SpecDP is subject to the parameters in (25) and (27). The structural parallel between Dem and the external argument in SpecvP in the clause led to the proposal of a typological link between LD and VS(O) orders; this prediction is partially fulfilled. Finally, and more speculatively, we suggested that demonstratives are among very few elements able to bear the R-role of n (*pro* is the main other element). In turn, this has led to a generally "Russellian" analysis of DPs, which has a number of attractive features.

Finally, two conceptual points. First, the analysis of DPs involves a binding/Agree relation between D and SpecnP in all cases. The result of this is that D must always have interpretable φ-features, which is of course also central to the functioning of Agree relations at the clausal level. So we see that DPs' general ability to license functional elements thanks to their interpretable φ-features can be traced back to the ways in which DPs refer. This provides an important conceptual justification for Agree theory (and see Note 19 for a speculation about Case).

Second, we have posited that n licenses the R-role of N, while assuming, standardly, that v licenses the external argument of V (if there is one, and allows expletives to be merged there if there isn't). This raises an interesting question in relation to examples like the following:[21]

(50) a. T [$_{vP}$ those [dance]]

b. D [$_{nP}$ those [dance]]

Here the innermost bracket could be v/n, with the root having raised there, or VP/NP without such raising. These structures are quite different things: the clause *those (ones) dance* vs. the nominal *those dances*. In both, *dance* is interpreted as *dance(x)*, and in both *those* contributes interpretable (plural) φ-features. Yet in (50a) plurality relates to the external argument of *dance*, which with the contribution of T comes to something like "there is/are event(s) of dancing, of which the agent is plural" (see Roberts (this volume, for a brief introduction to the "separation" interpretation of argument structure of Parsons (1990), Schein (1992) and Herburger (2000)). In (50b), on the other hand, the contribution of plurality is different: "there are event(s) of dancing". In other words, in (50a), the syntactic external argument is interpreted as the Agent, but in (50b) it is interpreted as whatever the root denotes. As Milan Rezac (p.c.) pointed out to me, there are in fact two sources for this difference. One is that arguments of N in general do not have to be (overtly) realised, while corresponding verbal argument structure has to be projected into the syntax. Because of this, Spec,nP need not be interpreted as the Agent of *dance* in (50b). The other difference has to do with functional structure: in (50a), T is what establishes the "reference" of the "dance" eventuality, by embedding it in a tense/aspect matrix. On the other hand, in (50b) the reference of "dance" is established directly by the demonstrative in Spec,nP.

It seems clear that these differences between the intrinsic nature of v and n and the operations of their respective extended projections need to be reduced to a single property, but it remain unclear exactly how this is to be achieved.

[21] I am endebted to Milan Rezac for raising these examples and for helping me see their full significance.

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