An Even Simpler Account of *Dem Num A N* Orders

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1 Introduction

A prominent topic in the recent syntactic literature has been the order of the elements demonstrative (Dem), numeral (Num), adjective (A), and noun (N) within the nominal projection. Cinque (2005) shows that of the 24 possible orders of these four elements, only 14 are attested (actually 15; see below). Cinque proposes that the attested and unattested orders can be accounted for within the Antisymmetry approach of Kayne (1994), if the universal hierarchy of these elements is Dem $>$ Num $>$ A $>$ N. In the Antisymmetry approach, hierarchy maps directly to linear order, so the base linear order is also Dem $\succ$ Num $\succ$ A $\succ$ N. (I use "$>$" to indicate c-command, and "$\succ$" to indicate precedence.) Cinque proposes that all orders can be derived from this base structure/order by a type of movement known as "roll-up" movement. In roll-up movement, YP moves to Spec-XP, and then XP moves to Spec-ZP, followed by ZP moving, and so on. In Cinque's system for nominals, a constituent that includes N can undergo roll-up movement in various different ways (but only to the left), giving rise to the attested orders.

Abels & Neeleman (2012) criticize this proposal on various grounds, and propose an alternative that does without Antisymmetry. In their alternative, the attested and unattested orders can be accounted for by symmetrical base projection from the universal hierarchy Dem $>$ Num $>$ A $>$ N (see Table 2 below). That is, many different word orders can be base-generated, so long as this hierarchy is respected. Additional word orders can be derived by movement from one of the base structures. As in Cinque's proposal, phrasal movement is constrained to operate to the left and not to the right, and it also has to involve movement of a constituent containing N (see also Georgi & Müller 2010). Their proposal is thus very similar to Cinque's, although it rejects Antisymmetry and is thereby simpler.

I will suggest a different and even simpler approach to word order in the nominal domain. The basic fact to be accounted for is that free ordering is apparent after the head noun, while order is fixed before the head noun. An obvious alternative to phrasal movement to the left is postposing of the elements Dem, Num, A. If this postposing can take place in any order, the result is free ordering to the right of N. I go through several different ways of implementing such a postposing analysis, and show that they are all equivalent in their generative capacity. The simplest system is the least constrained one; all we need is a constraint to the effect that unmarked orders within the NP can only be created by rightward movement. Attempting to constrain the movement involved undergenerates, and so we want postposing to apply freely.

The analysis I propose is maximally simple and does without most of the devices used in other analyses. In particular, we can do without roll-up movement entirely. There is also no need to stipulate that N has to be part of any constituent that is moved. We can also get rid of all the functional projections typically proposed for nominals (and which are necessary for roll-up movement). Instead there is only the maximal projection of the N itself, NP. This account is therefore compatible with all of the evidence showing that the head of the nominal projection is the N itself, not any functional head (Bruening 2009, Bruening et al. 2018). Finally, we must do without any constraint against movement being "too short" (Bošković 1997, Grohmann 2003, Abels 2012), but this constraint can be dispensed with anyway (contra Abels & Neeleman 2012).

2 Dem Num A N Orders

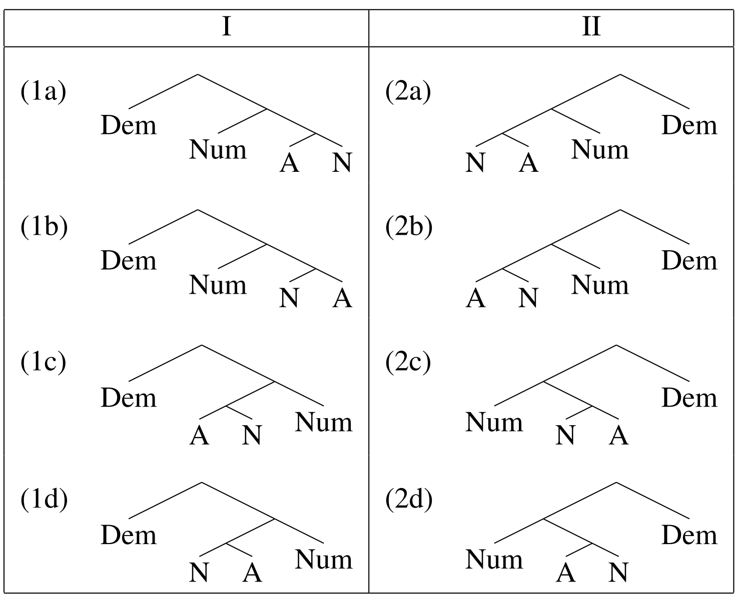
The attested and unattested orders of Dem Num A N are shown in Table 1 below, in the format of Abels & Neeleman (2012), their Table 2. Whether an order is attested or not follows Cinque (2005), with no attempt to evaluate the data (although I modify this slightly in Table 3 below on the basis of his data).

Table 1: Attested and Unattested Orders of Dem Num A N

I		II		III		IV	
(1a)	Dem Num A N	(2a)	N A Num Dem	(3a)	Dem N Num A	(4a)	*A Num N Dem
(1b)	Dem Num N A	(2b)	A N Num Dem	(3b)	N Dem Num A	(4b)	*A Num Dem N
(1c)	Dem A N Num	(2c)	Num N A Dem	(3c)	A N Dem Num	(4c)	*Num Dem N A
(1d)	Dem N A Num	(2d)	Num A N Dem	(3d)	N Num A Dem	(4d)	*Dem A Num N
(1e)	*A Dem Num N	(2e)	*N Num Dem A	(3e)	N Dem A Num	(4e)	*Num A Dem N
(1f)	*A Dem N Num	(2f)	*Num N Dem A	(3f)	N A Dem Num	(4f)	*Num Dem A N

Abels & Neeleman (2012) present the data in this form to illustrate symmetry in columns I and II and asymmetry in columns III and IV. As Abels & Neeleman (2012) note, the attested orders in columns I and II (orders 1a–d and 2a–d) are just those that would be expected if phrase structure is symmetrical and the universal hierarchy of projections is Dem $>$ Num $>$ A $>$ N (that is, N always combines with A first, then Num, then Dem). This is shown in Table 2:

Table 2: Symmetrical Projection



As can be seen in Table 2, base projection of the universal hierarchy Dem $>$ Num $>$ A $>$ N can generate eight of the attested orders.

Abels & Neeleman (2012) go on to propose an account of the asymmetry in columns III and IV of Table 1 in terms of phrasal movement within the NP. They posit two constraints on movement: (i) it must involve a phrase that includes the head N; and (ii) phrasal movement always has to be to the left. For example, order (3a), N Dem Num A, can be derived from the tree in (1a) in Table 2 simply by moving the N all the way to the left. Order (4a), *A Num Dem N, cannot be generated: if we start from the tree in (1a) in Table 2, we would have to move A and Num without moving N, but this is banned, as movement has to include N. If we start with tree (1b) in Table 2 instead, we would have to move N rightward, but again this is banned, as movement can only be leftward.

Note that this system also fails to generate orders (1e–f) and (2e–f). (1e) and (1f) are out because things must have reordered on the left, but in order to do that a constituent containing N must have moved. But no such constituent could have moved, since N is on the right in both orders. (2e) and (2f) are ruled out for a slightly different reason. (2e) and (2f) require N and Num to move together to the left, but there is no constituent in any of the trees in Table 2 that consists of just N and Num.

The system in Abels & Neeleman (2012) therefore appears to generate all and only the attested word orders. However, there is a snag. This is that order (2f) *is* attested. According to Cinque (2005: note 26), Num N Dem A (order 2f) is the unmarked order of the language Kilivila. It therefore is attested, it is just very rare.[1] The system in Abels & Neeleman (2012) therefore undergenerates: it rules out (2e), but it also incorrectly rules out (2f), which is actually attested.

Given that order (2f) is attested, I suggest that there is a different empirical generalization at work here that can be captured much more simply. I contend that what the patterns here are showing us is that reordering to the *left* of the head noun is not allowed, but reordering to the right of the head noun is, freely. All of the orders in column IV of Table 1 require a reordering from the base order to the left of the head noun, as do (1e) and (1f), but not (2e) and (2f). This is more apparent if we reorganize the data as in Table 3, correcting attestation of (2f).

Table 3: Base-Generation and Directionality of Reordering

I Base-Generated		II Reordering on Right		III Reordering on Left	
(1a)	Dem Num A N	(3a)	Dem N Num A	(4a)	*A Num N Dem
(1b)	Dem Num N A	(3b)	N Dem Num A	(4b)	*A Num Dem N
(1c)	Dem A N Num	(3c)	A N Dem Num	(4c)	*Num Dem N A
(1d)	Dem N A Num	(3d)	N Num A Dem	(4d)	*Dem A Num N
(2a)	N A Num Dem	(3e)	N Dem A Num	(4e)	*Num A Dem N
(2b)	A N Num Dem	(3f)	N A Dem Num	(4f)	*Num Dem A N
(2c)	Num N A Dem	(2e)	*N Num Dem A	(1e)	*A Dem Num N
(2d)	Num A N Dem	(2f)	Num N Dem A	(1f)	*A Dem N Num

Table 3 puts the orders that can be base-generated in the first column. Column II has orders that require reordering to the right of the head noun from the orders that can be base-generated in Table 2. Column III shows the orders that require reordering to the left of the head noun from the orders that can be base-generated in Table 2. As can be seen, all of the orders in column III, those that require reordering to the left of the head noun, are unattested. In contrast, in column II, reordering to the right of the head noun generally seems to be permitted, although order (2e) is not attested.

Note also that in column I, if we take the base order to be Dem $\succ$ Num $\succ$ A, then we see the same pattern even among the orders that can be base-generated: Elements to the left of the head noun have to respect that order, while elements to the right do not.

This way of looking at things makes order (2e) stand out. It should be expected to exist, if reordering to the right of N is permitted. Since (3d), (3e), and (3f), all of which involve the same thing, are attested (as is 2f), I suggest that we should view (2e) as an accidental gap. That is, our theory of the NP should permit

[1]It may seem questionable to rely on attestation in a single language, especially given that Cinque (2005: notes 2 and 25) also cites a single example of the order in (4c), Num Dem N A, the contact language Michif. However, this order for Michif seems to be based on a single example in Rosen 2003 (her example (3a), page 40). A different source for Michif, Bakker (1997: 88), says that the order is Dem Num N A (with a handful of As appearing before the N, as in French), although Bakker does not give any examples with both a Dem and a Num (both Dem and Num do occur before articles). I therefore do not take Michif to instantiate the order Num Dem N A, and in general, a single language is enough to indicate that an order is attested.

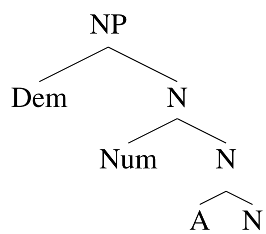
(2e) to be generated. It being unattested is a gap in our knowledge, or it is an accidental gap in the world, or this order is subject to some functional pressure that militates against it.

The approach pursued here is therefore that our theory of grammar should generate all 16 of the orders in columns I and II of Table 3 and rule out all of the orders in column III. I will propose a very simple way of doing this in section 3.

3 The Analysis

A very simple analysis of the pattern in Table 3 is available if we reject the hypothesis that the lexical NP is dominated by multiple functional projections. This sort of analysis has been strongly argued against on numerous grounds by Bruening (2009), Bruening et al. (2018). These works show that the maximal projection of a nominal must be a projection of the head noun itself. This means that the trees in Table 2 above must all be permutations of the following (I take no stand on the proper representation of intermediate projections here, all that is important is that they are projections of N):

(3)



That is, there are no functional projections dominating NP, the maximal projection of the nominal is the maximal projection of the N itself. This is already simpler than most other recent accounts of nominals, which have multiple functional projections (but note that both Abels & Neeleman 2012 and Georgi & Müller 2010 also do without functional projections in their accounts of Dem Num A N orders).

This also automatically rules out head movement of N as a possible account of the word orders in Table 3. Head movement can only move a head to the head that takes that head as its complement. In an analysis without functional projections dominating NP, nothing takes N as its complement within the nominal phrase. There is simply nowhere for N to move as a head within the NP. Head movement is also inadequate for deriving the attested orders, as Cinque (2005) shows, and as should be apparent from Table 2. There is no way for head movement to derive order (3f), N A Dem Num, from any of the trees in Table 2, for instance.

N cannot move as a head, then. Recall that Abels & Neeleman (2012) proposed that N moves as a phrase, and any phrase that moves has to include N. This was inadequate, because it incorrectly rules out order (2f). This is also a rather strange constraint (cf. Georgi & Müller 2010: 21). There is no general requirement that movement of elements within the NP include the N. Objects of postnominal P can front by themselves in English, for instance (*Who are they posting pictures of?*). Elements of VP, PP, and many other categories can also move without the head.[2]

Recall that what the data in Table 3 indicate is that reordering to the left of N is not allowed, but reordering to the right of N is. If N cannot move as a head, and moving a phrase containing N is inadequate, then the only option left is that Dem, Num, and A move. It appears from the data in Table 3 that Dem, Num, and A cannot move leftward within the NP to derive an unmarked word order, but they can move rightward. That is, we need the following constraint to govern the grammar of natural languages:

[2]This constraint is also very strange in light of the endorsement in Abels & Neeleman (2012) of an anti-locality constraint on movement; given that they also do not have functional projections within the nominal, movement of a constituent containing N within NP ought to violate any constraint against movement being too short. See more on this putative anti-locality constraint on movement in section 5.

(4) Only rightward movement of Dem, Num, and A within NP can produce an unmarked word order.

As I will show, this is the *only* constraint we will need. Positing additional constraints either undergenerates, or results in equivalent generative capacity. (Of course, we also need the hypothesis that the universal hierarchy of categories within the NP is Dem $>$ Num $>$ A $>$ N, but this assumption is common to all approaches since Cinque 2005.)

Note that I only posit (4) as a constraint on deriving *unmarked* word orders. There clearly are leftward movement operations that can affect elements within the NP. The hypothesis here is that these all serve to derive marked word orders (for information-structural effects, wh-questioning, etc.).[3]

Note also that constraining movement such that it can only be rightward is formally equivalent to constraining it to be leftward. Both Cinque (2005) and Abels & Neeleman (2012) (as well as the variation on their analysis proposed in Georgi & Müller 2010) stipulate that movement can only be to the left. There is no a priori reason why leftward movement should be preferred to rightward movement. The Antisymmetry approach of Kayne (1994) does hold that precedence is read off of c-command, and since movement is always upward in the tree, then movement will always be to the left. As Abels & Neeleman (2012) show, however, Antisymmetry fails to derive this and merely stipulates it, which is not a conceptual advantage at all. Being able to refer directly to directionality actually seems like a conceptual advantage in describing and accounting for differences between leftward and rightward movement, for instance in how far they can move constituents (Ross 1967). If all movement is leftward, it will be more difficult to account for these differences.

3.1 The Simplest Analysis: No Additional Constraints

The single constraint in (4) suffices to generate the orders in columns I and II of Table 3 and rule out the orders in column III. If there is no constraint on the base structure except that Dem $>$ Num $>$ A $>$ N, then we can start from any of the base structures in Table 2. If movement is always rightward and N never moves, there is simply no way to derive any of the orders in column III in Table 3 from the structures in Table 2. The only way to reorder to the left of a fixed N is to move elements to the left, but if this is banned, then the only order that can be generated to the left of N is the base order, Dem $\succ$ Num $\succ$ A, or subsets thereof (Dem $\succ$ Num, Dem $\succ$ A, Num $\succ$ A, Dem, Num, A). These subsets are exactly what is attested to the left of N in columns I and II in Table 3.

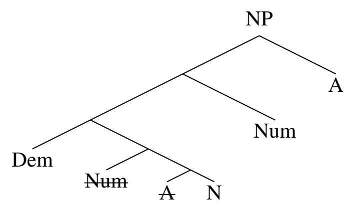
This means that the orders in column III of Table 3 simply cannot be derived from any of the starting structures in Table 2. As for the orders in columns I and II, all of them can be derived if there is no constraint on the order of rightward movement. If there is no constraint on the base structure other than the universal hierarchy, then the orders in column I of Table 3 have already been derived by base-generation (as in Table 2) and it suffices to show that the orders in column II can be generated. I show in Table 4 that they can be, all from the base structure in (3) (=1a in Table 2).

Many of the orders can also be derived from others of the base structures in Table 2. Note that allowing different base structures does not add additional possibilities; since only rightward movement is allowed, we cannot change the order on the left of N, and every order on the right of N is allowed. There is no possibility of overgeneration.

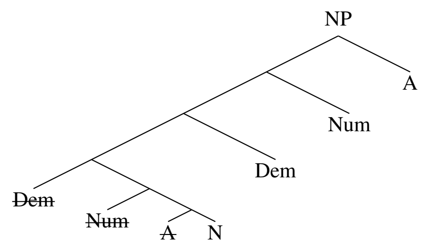
[3] An alternative that I will not explore here is that *all* movement within the nominal is rightward. This would necessitate analyses of phenomena that appear to involve leftward movement as either rightward movement, or base-generation (or a combination). This seems quite plausible for cases like degree inversion in English (*a poor man* vs. *so poor a man*), which have been argued not to involve movement from prenominal adjective position at all (e.g., Troseth 2009). All of the analyses of degree inversion that I am aware of (including Troseth 2009) do propose leftward movement (involving predicate inversion, in the case of Troseth 2009), but one could instead propose a base-generation analysis. Whether this approach could plausibly extend to all cases of apparent leftward movement within NP is something that I will have to leave to future research. (It seems unavoidable that elements that start within NP can move leftward *out* of NP.)

Table 4: Postposing from Dem Num A N to generate Column II of Table 3

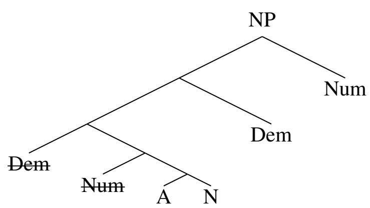
(3a)



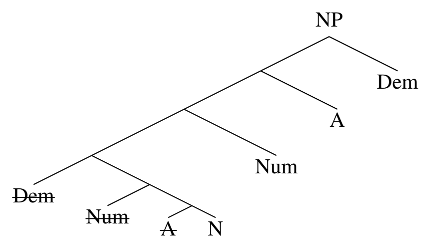
(3b)



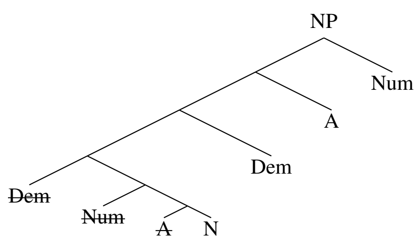
(3c)



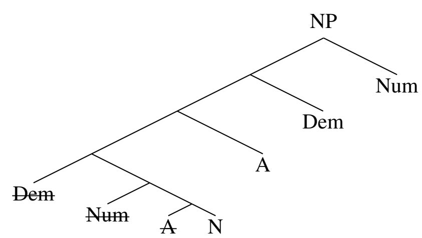
(3d)



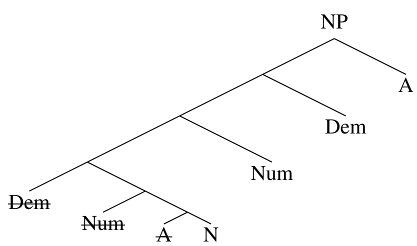
(3e)



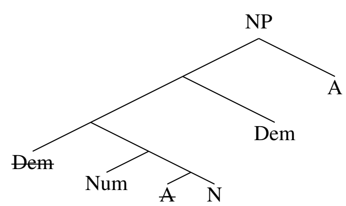
(3f)



(2e)



(2f)



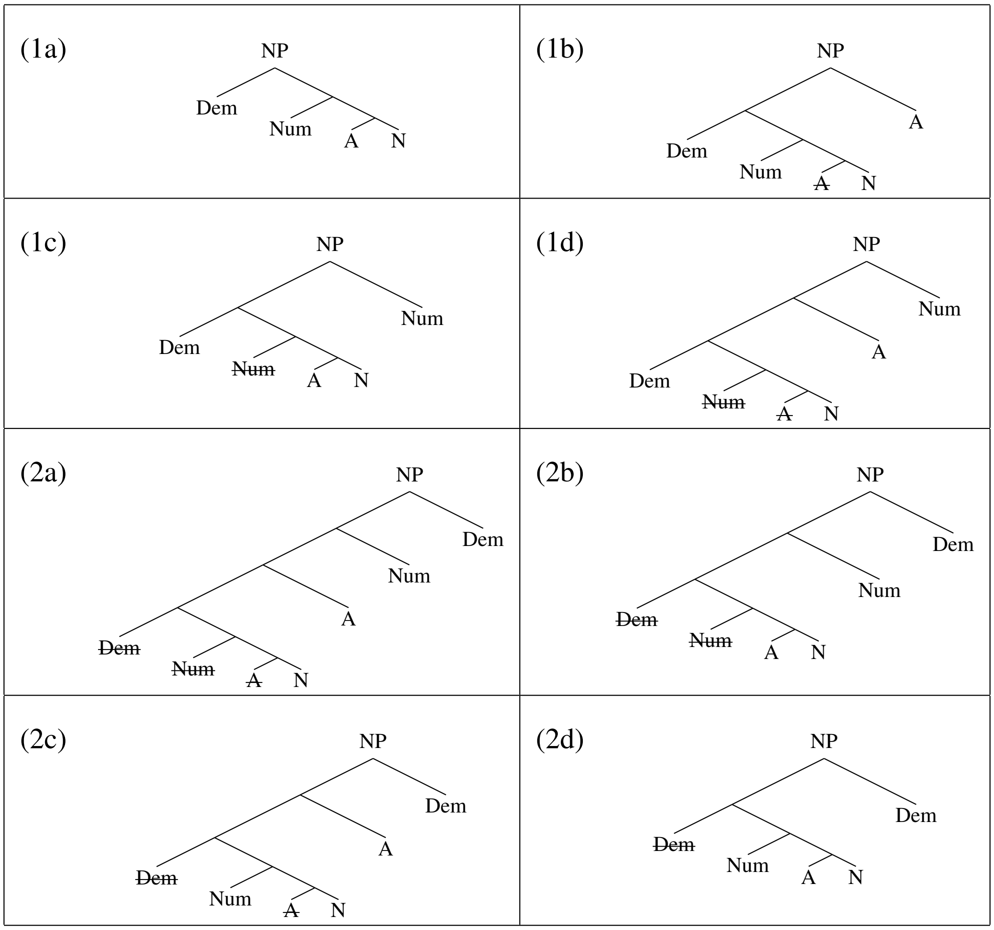
3.2 Constraining the Base Structure

Suppose we did want to constrain the system further. One way to do this would be to constrain possible base structures. Since the only way to get the order Dem Num A N is to base-generate it, we need to allow at least the base structure in (3) (=1a in Table 2). Suppose we *only* allowed this base structure. Would we still be able to generate all of the attested orders?

The answer is yes. Table 4 showed that from this structure can be derived all of the orders in Column II of Table 3. Table 5 shows that all of the orders in Column I can also be derived from this structure.

Adding this constraint therefore does not cause the system to undergenerate. It does not constrain the system any further, however. We can still generate only the 16 orders in columns I and II of Table 3, and none of the orders in column III of Table 3. That is, adding this constraint affects nothing, as permitting any of the base structures in Table 3 yields exactly the same result.

Table 5: Postposing from Dem Num A N to generate Column I of Table 3



3.3 Constraining Movement to Either Nesting or Crossing

Another possible way of constraining the system further is to impose additional constraints on rightward movement. For instance, we could propose that multiple movements must either cross, or nest, rather than take place in any order.

Such constraints would limit possible outputs, but not in a desirable way. First, suppose that multiple movements must nest. This will fail to produce orders (3d) and (3e) from any of the base structures in Table 2. This is because these orders have A in between Num and Dem, but this is impossible if movements must nest. Order (3d), N Num A Dem, seems to be robustly attested (see Cinque 2005: note 17), and there are several languages that display (3e) (Abels & Neeleman 2012: 61). Adding this constraint therefore undergenerates, indicating that there can be no such constraint.

Now, suppose that multiple movements must cross, recreating their hierarchical order. If only (3) is possible as a base structure, then we produce all of the structures in Table 5, but only (3d) of Table 4. That is, we fail to generate (3a–c) and (3e–f). Clearly, this is not a good move. If we instead allow any of the structures in Table 2 to serve as the starting point, then we fail to produce order (3b), where the linear order is the reverse of the hierarchical order. But again (3b) is well attested, and so this is again not a desirable move. We do not want to constrain movement to crossing.

Note in particular that (2e) can be generated from the base structure in (2b) of Table 2 (or 2a), simply by moving A across Num and Dem. Since this is only one instance of movement, it does not matter whether multiple movements must cross, or nest. That is, adding constraints on multiple movements does not rule out the one order that is unattested. Instead, it rules out orders that are well-attested. How many of these it rules out depends on what base structures are admitted.

I conclude that constraining rightward movement to either nesting or crossing undergenerates, and therefore it is not desirable to impose any such constraint on multiple movements. In order to generate all of the attested orders, we need to allow movement to apply freely.

3.4 Constraining the Output

One might try to rule out the unattested (2e) by imposing constraints on the output of the postposing operations. What (2e) involves is a structure that respects neither the base hierarchy nor the base linear order. One could propose that the output of all postposing operations has to respect at least one of Dem $>$ Num $>$ A or Dem $\succ$ Num $\succ$ A. This will not work, because the attested (2f) also respects neither. A constraint stating that at least one of the local orderings Dem $\succ$ Num and Num $\succ$ A must hold of the output also will not work, again because (2f) would also violate it (as would 3e).

Another possibility is a constraint stating that Dem has to either be peripheral, or it has to begin the sequence consisting of Dem, Num, A. This will rule out (2e), but it will also rule out (3f), N A Dem Num, which is well attested.

I can see no way to constrain the output of postposing so that it rules out only (2e) and not also one of the other attested orders. I conclude from this that (2e) must indeed be an accidental gap, and our theory should generate it.

3.5 Summary

The simplest analysis is the one with the fewest constraints. This is the analysis that allows any base structure in Table 2 and imposes no constraints on movement. The simplest analysis in this case yields all and only the word orders that we wish it to. Adding further constraints either changes nothing, or undergenerates. I conclude that all an adequate analysis needs is the universal hierarchy Dem $>$ Num $>$ A $>$ N and the constraint stating that unmarked word orders can only be derived by rightward movement of Dem, Num, and A. This yields all possible orders after N, but only one possible order before N. This is consistent with the facts, if the absence of order (2e) is an accidental gap.

4 Frequency

Table 6 repeats Table 3, but also marks orders as common (boldface) or rare (regular type), based on Cinque (2005). As can be seen, most of the attested orders are uncommon. All of the orders that require postposing in the analysis here are rare. We can therefore say that languages prefer their unmarked order to be a base-generated one, not one that requires movement.

In addition, the two base orders that are uniform in direction of branching, (1a) and (2a), are common. This should be expected, as uniformity in directionality of branching is generally thought to be desirable. In addition, (1b), with uniform right branching except for the order of N and A, is also common. I suggest that this is because, with only one adjective at least, switching N and A does not change uniformity of branching. I assume that there are functional reasons why a language may want to put adjectives after the noun, even in an otherwise uniformly right-branching language. In contrast, in a left-branching language, there is no functional reason to put the A before the N (hence the rarity of 2b, the mirror of 1b).

The other non-uniform order that is common is (1d), Dem N A Num. This order is uniformly left-branching, with the exception that Dem is on the left. I again assume that there are functional reasons that a

Table 6: Base-Generation vs. Reordering, with Common Orders Boldfaced

I Base-Generated		II Reordering on Right		III Reordering on Left	
(1a)	**Dem Num A N**	(3a)	Dem N Num A	(4a)	*A Num N Dem
(1b)	**Dem Num N A**	(3b)	N Dem Num A	(4b)	*A Num Dem N
(1c)	Dem A N Num	(3c)	A N Dem Num	(4c)	*Num Dem N A
(1d)	**Dem N A Num**	(3d)	N Num A Dem	(4d)	*Dem A Num N
(2a)	**N A Num Dem**	(3e)	N Dem A Num	(4e)	*Num A Dem N
(2b)	A N Num Dem	(3f)	N A Dem Num	(4f)	*Num Dem A N
(2c)	Num N A Dem	(2e)	*N Num Dem A	(1e)	*A Dem Num N
(2d)	Num A N Dem	(2f)	Num N Dem A	(1f)	*A Dem N Num

language would put Dem on the left, even when it is otherwise a left-branching language. Again, the mirror order, (2d), is rare.

The important point here is that all of the orders that require movement in the current analysis are rare. The only orders that are common are ones that can be base-generated. I take this to be an argument against the roll-up movement analysis of Cinque (2005), since in that analysis any deviation from Dem $\succ$ Num $\succ$ A $\succ$ N order (1a) involves movement. The rare orders are not differentiated from the common ones in such an analysis.

5 Anti-Locality

The analysis proposed here has elements that are dominated by NP (Dem, Num, A) moving to positions that are still dominated by NP. That is, the movement involved does not cross a maximal projection, but takes place entirely within the same maximal projection. This requires that there be no constraint against movement being "too short," as several researchers have suggested there is (Bošković 1997, Grohmann 2003, Abels 2012).

This is not a problem, because the cases that have been claimed to fall under an anti-locality constraint on movement can all be explained in better ways. First, PPs (Abels 2012) do not behave as they should if the anti-locality constraint is real; see Bruening (2014: 369–372). Second, the cases that best fall under this constraint are the immobility of IP (stranding C) and VP (stranding a head v or Voice). I can see two obvious alternative analyses of the inability of these categories to move. One is a constraint limiting movement to phases, as in Chomsky (2008). IP and VP are not phases, only CP and vP/VoiceP are. The second way is with the A-over-A condition (Bresnan 1976). If IP and CP are always non-distinct in the features relevant to movement, then any movement operation will always target CP and will never be able to target IP, since CP dominates IP. Ditto for VP within a dominating vP/VoiceP.

There is then no need for an anti-locality constraint on movement, leading to an even more streamlined model of grammar. It is also not a problem that the current analysis would violate such a constraint, because there is no such constraint.

6 Conclusion

The analysis proposed here has exactly two stipulated constraints:

(5) a. The universal hierarchy within the NP is Dem > Num > A > N.
b. Only rightward movement of Dem, Num, and A within NP can produce an unmarked word order.

In contrast, the analysis in Abels & Neeleman (2012) has three stipulated constraints:

(6) a. The universal hierarchy within the NP is Dem > Num > A.
b. Movement can only be leftward.
c. Movement in the nominal projection must involve a constituent containing N.

Their analysis also undergenerates, since it fails to produce the attested order (2f). So does the analysis in Cinque (2005), which is also even more complicated than the analysis of Abels & Neeleman (2012), since it includes the stipulations of Antisymmetry (Kayne 1994). The reworking of Abels and Neeleman's analysis as reprojection in Georgi & Müller (2010) also undergenerates, and it is even more complicated, requiring a host of assumptions to get reprojection movement to work. The analysis proposed here is much simpler.

The analysis proposed here does overgenerate, as it produces the unattested order (2e). However, overgenerating is not a problem at all, since it is easy for there to be accidental gaps (note that many of the attested orders are attested only in a very small number of languages). In contrast, undergeneration cannot be recovered from. The analysis proposed here is therefore superior to previous analyses both in its simplicity and in its empirical coverage.

The analysis proposed here also does without roll-up movement, reprojection movement, and pied-piping movement. Roll-up movement and reprojection movement can probably be expunged from the toolkit of a model of syntax entirely (pied-piping movement is probably necessary, though not for Dem Num A N order). The proposed analysis also does without functional projections dominating NP. In this last respect it is compatible with all of the evidence from Bruening (2009) and Bruening et al. (2018) showing that the noun is the head of the maximal projection of the nominal. Analyses that posit functional projections dominating the NP, such as that in Cinque (2005), are incompatible with all of this evidence. The restriction that N cannot undergo head movement within the nominal also follows naturally in a system where N is the head of the entire nominal. Head movement can only move a head to an immediately c-commanding head. If N is the head of the NP, it is not possible for there to be any c-commanding heads within the NP. We therefore do not need to stipulate in the analysis that N cannot move, it simply follows. Note also that much recent research has concluded that the head N never undergoes head movement within the nominal; see, for instance, Alexiadou (2001), Dimitrova-Vulchanova (2003), Shlonsky (2004), Hankamer & Mikkelsen (2005), Laenzlinger (2005), Willis (2006), Lipták & Saab (2014). All of this evidence supports a theory where NP is the maximal projection of the nominal, since this theory predicts the lack of head movement.

We also do not need or want an anti-locality constraint on movement. Movement does not need to cross a certain distance to be legitimate. The cases that have been ruled out by such a constraint can be ruled out in other ways, for instance with the A-over-A condition (which is independently necessary, in some form).

We also do not need to adopt Antisymmetry (Kayne 1994). As Abels & Neeleman (2012) show, this is an advantage. On the empirical side, elements in syntax can be high and on the right (Bruening 2014), in direct contradiction of Antisymmetry.

One interesting consequence of the current work is the conclusion that there is no constraint on multiple movements such that they must either cross, or nest. There have been proposals in the past that all multiple movements must nest (Pesetsky 1982) or they must cross (Richards 2001). We can see here that multiple movements must be able to do either, otherwise we undergenerate.

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