The Problem with Adjectives:
Why the Quick Red Fox Doesn't Jump Over the Brown Lazy Dog

by

Zoë Belk

260276739

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Advisor: Maire Noonan

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1. Introduction

Adjectives in many languages display unmarked orderings. For example, in English (1a) is preferred to (1b) in unmarked circumstances.

1. a) The big brown bag
   b) *The brown big bag

Furthermore, as demonstrated by Sproat and Shih (1991), the unmarked ordering seems to be the same in a variety of the world's languages, although the relative position of the noun may differ. (2) is an example from Mokilese demonstrating postnominal adjectives with the mirror-image linear ordering to that found in English, and (3) is an example from Irish showing postnominal adjectives with the same order as English (both examples from Sproat and Shih 1991).

2. pwo:'a wa:ssa siksikko
   ball red small-DET
   "that small red ball"

3. liathróid bheag bhuí
   ball small yellow
   "small yellow ball"

This finding begs the question: what mechanism is responsible for the basic ordering of attributive adjectives?

While much work has been done on adjective ordering restrictions, many questions remain to be answered. After a brief introduction to the literature, I discuss attempts at syntactic and semantic explanations to this phenomenon. In line with his work on adverbs, as well as on Greenberg's (1963) Universal 20, Cinque (1994, 2010) proposes a syntactic analysis that relies on dedicated functional heads hosting various classes of adjectives, as well as movement of noun-containing constituents. After comparing Cinque's (2005) account of Greenberg's Universal 20 with that of Abels and Neeleman (2009), I discuss the consequences of Cinque's (1994, 2010) account of adjective ordering restrictions, as well as problems with this account and potential solutions.

I then discuss more semantic approaches to adjective ordering restrictions, with a focus on what superlative adjectives may tell us about this phenomenon. In particular, I analyze Teodorescu's (2009) account of the ordering asymmetries between definite and indefinite superlative adjective strings, which makes use of truth-conditional identity and Strawson identity. I also consider Cinque's (2010) discussion of superlative adjectives before proposing a non-syntactic account of the data on superlative adjectives.

This paper provides a discussion of many of the major issues surrounding an analysis of adjective ordering restrictions (AOR). I point to possible solutions for many of these problems, but a definitive account of adjective ordering still remains to be proposed.

2. An introduction to adjective ordering restrictions

There have been several attempts at describing how and in what circumstances AOR apply. I discuss work done by Sproat and Shih (1991) to characterize how the type of adjectival modification affects the applicability of AOR. I then briefly introduce Cinque's (1994, 2010) syntactic account of adjectival modification, as well as Teodorescu's (2006, 2009) work on exceptions to AOR. Cinque's account is discussed further in sections 3.1 and 4, and Teodorescu's in section 5.

2.1 Cross-linguistic ordering patterns

Sproat and Shih (1991) discuss adjectival modification in Mandarin. They propose that Mandarin makes use of two different kinds of modification: direct and indirect. Indirect modification is characterized by the appearance of a particle, *de*, which attaches to adjectives as well as relative clauses and possessives. In direct modification, adjectives appear "bare" or without this particle. A maximum of two bare adjectives are allowed within a single DP in Mandarin. Sproat and Shih propose that θ-roles are assigned differently in the two different kinds of modification, with bare adjectives assigning θ-roles directly to their sisters and *de*-marked adjectives assigning θ-roles indirectly. Adjective ordering restrictions appear only to apply in

cases of direct, hierarchical (i.e. non-parallel) modification, and may be relaxed in certain contexts, such as focus.

Sproat and Shih discuss evidence from a wide variety of languages and conclude that the ordering in (4) seems to be universal, with > representing distance from the noun and not linear order.

4. QUALITY > SIZE > SHAPE > COLOUR > PROVENANCE

Some languages do not appear to exhibit AOR, and Sproat and Shih take these to be cases of indirect modification. Among those languages that exhibit AOR, some, like English, have adjectives that are prenominal and display the above ordering. Others, like Mokilese, have postnominal adjectives that appear in the mirror image order of (4). Finally, languages like Irish have postnominal adjectives in the same order as (4). Sproat and Shih analyze this ordering as [N A_1 … A_n t_N], a movement that is consistent with the many arguments for different kinds of fronting in Celtic VSO languages.

Sproat and Shih discuss a possible cognitive or semantic basis for AOR. It appears that adjectives that refer to absolute properties, like shape and colour, appear closer to the head than less absolute properties, like size or quality. For instance, *big* denotes relative size; an apple may be big and an elephant may be big, but those items do not have to be the same size for them both to be big. Rather, a "big apple" is in fact "big for an apple". Big-ness is not absolute, but compared to an appropriate context. By contrast, it does not make sense to say that something is "red for an apple" or "round for a plate", because these qualities are absolute and not subject to comparison with an appropriate context. In English, reordering adjectives which differ in absoluteness results in much worse sentences than reordering those with the same absoluteness:

5) a. beautiful big house
   b. big beautiful house

6) a. big red apple
   b. #red big apple

In Mandarin, combinations of two bare adjectives with the same absoluteness are not allowed. As stated in section 1, there can be a maximum of two *de*-less adjectives in Mandarin. This restriction is explained by the fact that with any more than two adjectives, at least two of them will be of the same absoluteness, which is prohibited in the language. These absoluteness constraints are important to consider, but it is still not clear why absoluteness should have an effect on the orderings of adjectives, or why the kind of modification involved should affect the applicability of AOR.

2.2 A cartographic approach

Cinque (1994, 2010) relies on an antisymmetric structure and dedicated functional heads to explain several adjective ordering patterns. Cinque (2010) focuses mainly on the relative position of what he calls reduced relative clause adjectives (indirect modification adjectives in Sproat and Shih's 1991 analysis) and direct modification adjectives, which display different syntactic and semantic properties. One set of functional heads is dedicated to hosting (specific types of) direct modification adjectives; these are structurally lower than another set of heads hosting reduced relative clauses. Because indirect modification adjectives, an example of which are *de*-marked adjectives in Mandarin, are freely ordered, as would be expected of relative clauses, the functional projections hosting reduced relative clauses are not dedicated to certain classes of adjectives.

In order to derive the pre- and postnominal orderings observed in Sproat and Shih (1991), Cinque (1993, 2010) requires movement of the NP through the higher projections. The ordering of adjectives in English and other similar languages represents the ordering of these elements in the Universal Grammar. The NP may be moved, in "roll-up" fashion, through the adjectival projections, and larger constituents may also be moved, provided they contain the noun. Cinque's (1994, 2010) analysis is discussed in more detail in section 3.2.1.

2.3 Exceptions to AOR

Teodorescu discusses some exceptions to adjective ordering restrictions, of which there are several classes. One such class is what Sproat and Shih (1991) term "indirect" modification adjectives. Cinque (2010) expands the notion of indirect modification adjectives to include all adjectives with (at least some of) a set of certain readings, those associated with reduced relative clauses. The different properties of the two types of modification are discussed in sections 3.1 and 4. Both Cinque (2010) and Sproat and Shih (1991) analyze this class of adjectives as reduced relative clauses. As relative clauses, they are predicted to be freely ordered, and this prediction is borne out.

Adjectives with special intonation or focus do not obey AOR. Adjectival modification with so-called "comma intonation", where a pause is inserted between each item and each item is treated as a separate intonational phrase, is not subject to AOR:

7. a) She loves all those Oriental, orange, wonderful ivories.
   b) She loves all those orange, Oriental, wonderful ivories.
   (Sproat and Shih 1991)

Sproat and Shih (1991) and Teodorescu (2009) analyze comma-intoned adjective strings as coordinate constructions. Generally, coordination is freely ordered[1], so the fact that comma-intoned adjective strings are exempt from ordering restrictions is to be expected under this analysis.

Adjectives bearing focus may also appear out of order:

8. a) I admire her long green scarf.
   b) I admire her GREEN long scarf (not her blue one).

The meaning of (8a) is "I admire her scarf which is long and which is green". (8b) most naturally means "Of her long scarves, I admire the green one". In this case "her long scarves" forms a contextually salient class of elements and the additional

[1] However, see Cooper and Ross (1975) for a discussion of so-called "freezes", or conjunctions with a fixed order.

modifier "green" picks out a subset of that set, indicating only those members of the set of "her long scarves" that are also "green". This phenomenon may be related to indefinite superlative adjective strings, as discussed in section 5.3.

Those adjectives known as "operator" adjectives form another class of exceptions to AOR. These are adjectives like *former* and *alleged* that cannot be used predicatively and are therefore not reduced relative clauses:

9. a) I met the former thief.
   b) *The thief was former. (Teodorescu 2006)

When operator adjectives appear in a string with one other plain, non-operator adjective, the ordering is free:

10. a) The former famous actor
    b) The famous former actor (Teodorescu 2006)

The two different orderings have different meanings. (10a) may refer to a person who is no longer famous, but (10b) may not. This is shown by the fact that (10a) but not (10b) can be followed by *…now forgotten* (Teodorescu 2009).

When two operator adjectives appear together, AOR again do not apply:

11. a) The former alleged thief
    b) The alleged former thief

Again, the two orderings have different meanings: (11a) refers to somebody who was formerly alleged to be a thief. (11b) refers to somebody who is alleged to have been a thief in the past.

Operator adjectives do not bear special stress or intonation and therefore constitute a separate class from those discussed above.

Superlative adjectives seem to be another class of exception to ordering restrictions. These will be discussed further in section 5.

In light of the works discussed above, an attempt can be made to define the characteristics of an exhaustive account of AOR. Such an account should be able to

clearly explain the circumstances under which AOR apply, as well as the cases that are exempt, such as operator adjectives and superlatives. It should propose a mechanism, such as dedicated functional heads, to explain why adjectives are ordered in the way that they are and determine why this mechanism does not apply to the exempt cases. It may need to make use of non-syntactic motivations, in the way that Sproat and Shih (1991) refer to a possible cognitive basis for certain ordering facts. The rest of this paper provides a discussion of current accounts of AOR with reference to these desiderata.

3. Syntactic accounts of ordering restrictions

Guglielmo Cinque has proposed cartographic accounts for adjective and adverb ordering patterns, as well as for Greenberg's Universal 20. This section discusses the possibility of a syntactic account of AOR by introducing Cinque's (1994, 2010) analysis of ordering restrictions, before comparing Cinque's LCA-based approach to Greenberg's Universal 20 with Abels and Neeleman's (2009) base-generation account.

3.1 Cinque (1994, 2010)

Cinque (2010) proposes a highly articulated structure to the DP. His analysis, which is consistent with the LCA, involves several categories of functional heads intervening between the determiner and the NP.

Based on evidence from English, representing Germanic languages, and Italian, representing Romance languages, Cinque proposes two classes of adnominal adjectival modification: reduced relative clauses (which correspond to Sproat and Shih's 1991 indirect modification adjectives discussed below) and direct modification adjectives. These two classes have several distinguishing features, some of which are described below. It should be noted that, while some adjectives may belong to both classes and be ambiguous in some circumstances, others may only involve either direct or indirect modification. This is discussed further in sections 4.1 and 4.2.

Reduced relative clauses (RRCs) may appear in a predicative position while direct modification adjectives (DMAs) may not:

12. a) His car was yellow.
    b) *His reason was main.

DMAs may have a non-intersective reading, but RRCs may not:

13. a) He is a heavy drinker.
        i) He drinks heavily.
        ii) He is heavy and he drinks.
    b) The drinker is heavy.
        i) *He drinks heavily.
        ii) He is heavy and he drinks.

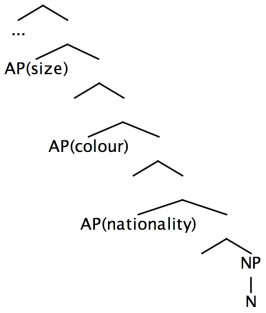
Heavy is of the class of English adjectives that may be merged either as a RRC or a DMA. This explains the ambiguity in (13a): if *heavy* is merged as a DMA, then the non-intersective reading arises; if it is merged as a RRC, the intersective reading arises. As both positions are between the determiner and the noun in English, both readings are available. However, when there is more than one adjective, as in (14) below, it becomes clear that the direct modification option is only available when nothing intervenes between the DMA and the noun.

14. a) He is a heavy former drinker.
        i) *He drinks heavily and he used to be a drinker.
        ii) He is heavy and he used to be a drinker.
    b) He is a former heavy drinker.
        i) He used to drink heavily.
        ii) ?He used to be a heavy person who drank.

Within the set of functional heads devoted to direct modification adjectives, individual heads are associated with different categories of adjectives, yielding the hierarchical orderings discussed above. A simplified version of this structure is presented in (15).[2]

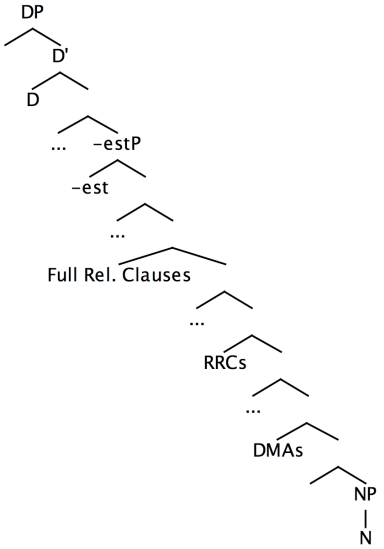
[2] All trees in this section are from Cinque (2010).

15.



Reduced relative clauses are merged higher than DMAs but lower than numerals. Full relative clauses are higher than RRCs and the superlative morpheme is higher still. A fuller (but not complete) picture of the DP is shown in (16).

16.

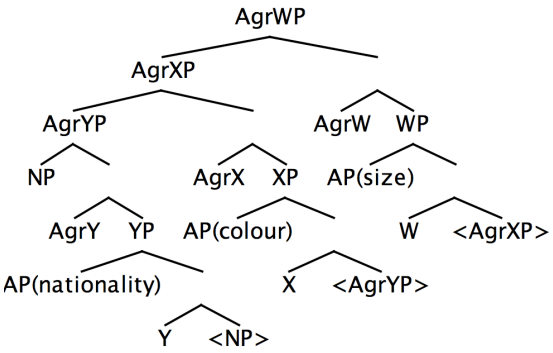


Cinque argues that the structure of the English DP (at least insofar as it pertains to RRCs and DMAs) reflects the structure found in Universal Grammar. This structure is represented in (15–16) above, and leads to the familiar English orderings in (17).

17. The most probable main cause of his death (is this) (from Cinque 2010)

The mirror-image ordering of postnominal adjectives found in Italian is derived via pied-piping the NP up through a certain number of functional projections, each of which hosts a different class of direct modification adjectives. This is demonstrated in (18) below.

18.

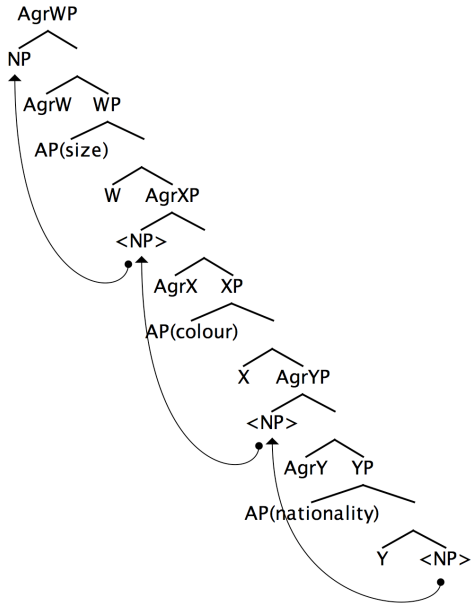


This structure leads to orderings like (19), from Italian.

19. a) La causa prima più probabile della sua morte (è questa)
the cause main most probable of his death (is this)
b) *La cause più probabile prima della sua morte (è questa)
the cause most probable main of his death (is this)
"The most probable main cause of his death (is this)"
(from Cinque 2010)

The English-like postnominal adjective ordering found in Irish (as described in Sproat and Shih 1991) is explained by direct (non-pied-piped) movement of the NP to a position higher than the highest RRC head. This is demonstrated in (20).

20.

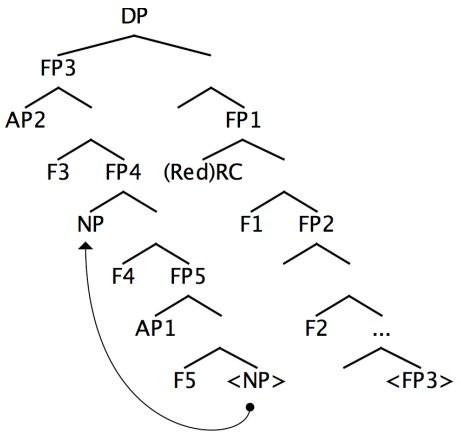


This structure gives rise to orderings like those in (21).

21. a) liathróid bheag bhuí
ball small yellow
"small yellow ball"
b) cupán mór Sasanach
cup big English
"big English cup"
c) pláta cruinn dearg
plate round red
"round red plate" (from Sproat and Shih 1991)

The entire DMA+NP constituent may then, in languages like Italian, raise above the RRCs within the DP, as represented in (22).

22.



This structure would result in the ordering [[DMA_2 [NP [DMA_1 t_{NP}]]] RRC [… t_{FP3}]], exemplified in (23).

23. a) Un attacante buono BUONO
a forward good good
"A good-hearted good (soccer) forward", "A good-hearted forward who is good at being a forward"
b) *Un attacante BUONO buono (Cinque 2010)

3.2 Accounts of Greenberg's Universal 20

Greenberg (1963) formulates a generalization about the ordering of the elements demonstrative (Dem), numeral (Num), adjective (A) and noun (N) in the world's languages. This generalization, known as the Universal 20, states that prenominally,

these elements only appear in the order Dem>Num>A>N across the world's languages, and the postnominally only the orders N>Dem>Num>A or N>A>Num>Dem are attested. The first part of this generalization remains largely unchallenged (Cinque 2005), but the second part has been found to be both too restrictive and too permissive. Cinque (2005) observes the following attested and unattested orderings of these elements cross-linguistically.

24. a)	i.	DEM NUM A N these five young lads	(attested)
	ii.	DEM NUM N A	(attested)
	iii.	DEM N NUM A	(attested)
	iv.	N DEM NUM A	(attested)
b)	i.	DEM A NUM N	(unattested)
	ii.	DEM A N NUM	(attested)
	iii.	DEM N A NUM	(attested)
	iv.	N DEM A NUM	(attested)
c)	i.	NUM DEM A N	(unattested)
	ii.	NUM DEM N A	(unattested)
	iii.	NUM N DEM A	(unattested)
	iv.	N NUM DEM A	(unattested)
d)	i.	NUM A DEM N	(unattested)
	ii.	NUM A N DEM	(attested)
	iii.	NUM N A DEM	(attested)
	iv.	N NUM A DEM	(attested)
e)	i.	A DEM NUM N	(unattested)
	ii.	A DEM N NUM	(unattested)
	iii.	A N DEM NUM	(attested)
	iv.	N A DEM NUM	(attested)
f)	i.	A NUM DEM N	(unattested)
	ii.	A NUM N DEM	(unattested)
	iii.	A N NUM DEM	(attested)
	iv.	N A NUM DEM	(attested)

(from Abels and Neeleman 2009)

Of the 24 logically possible orderings, only 14 are attested in the world's languages, leaving 10 unattested. Cinque (2005) and Abels and Neeleman (2009) attempt to explain these patterns using two different theories of base generation and movement.

3.2.1 An Antisymmetric Approach

Cinque (2005) relies on four assumptions, listed in (25).

25. a. The underlying hierarchical order in the extended projection of the noun is Agrw > W > AgrX > X > AgrY > Y > N where Y hosts AP in its specifier, X hosts NumP in its specifier, and W hosts DemP in its specifier;
    b. all (relevant) movements move a subtree containing N;
    c. all movements target a c-commanding position;
    d. all projections are modeled on the template (Kayne (1994)): [$_{XP}$ Spec [$_{XP}$ X0 Compl]] (Abels and Neeleman 2009 p. 3)

Given these assumptions, the attested orderings can be derived as follows. (24ai) is the ordering that arises when no movement takes place, and all elements remain in their base positions. (24aii), (24aiii) and (24aiv) are derived when the NP moves to SpecAgrYP, SpecAgrXP and SpecAgrWP, respectively. (24fiv), the mirror image of the base order (24ai) is derived through "roll-up" movement of the NP, i.e. movement of NP to SpecAgrYP followed by movement of AgrYP to SpecAgrXP, followed by movement of AgrXP to SpecAgrWP. Partial roll-up derives (24biii).

Four further orders are derived by moving agreement phrases but leaving the NP *in situ* within them: these are (24bii), (24eiii), (24dii) and (24fiii). Combining Agr-internal NP movement with movement of agreement phrases leads to the orders (24eiv), (24div) and (24diii). For instance, (24div) arises when NP moves to SpecAgrXP and AgrXP moves to SpecAgrWP. The final attested ordering, (24biv), is derived by movement of AgrYP to SpecAgrXP, followed by NP movement to SpecAgrWP, stranding AgrYP.

From the assumptions in (25), particularly (25b), it follows that all prenominal material must be in the base order. This rules out the orderings in (24b), as well as (24cii), (24eii) and (24fii). (24cii) and (24civ) require either movement of a non-constituent or a violation of (25b).

3.2.2 A Base-generation Approach

In order to account for the Universal 20 without requiring these problematic movements, Abels and Neeleman (2009) propose their own four assumptions:

26. a. The underlying hierarchical order of Dem, Num, A, and N in the extended nominal projection is Dem > Num > A > N, where > indicates c-command;
    b. all (relevant) movements move a subtree containing N;
    c. all movements target a c-commanding position;
    d. all (relevant) movements are to the left.

The first three of these assumptions are equivalent to Cinque's, but the fourth is weaker than his, simply requiring that movement be leftwards and not specifying the shape of base-generated structures. This allows Abels and Neeleman's analysis to be simpler than Cinque's in two ways: first, it allows more of the linear strings to be base generated (eight, compared to Cinque's one) and fewer movements are needed to derive the same orderings (Abels and Neeleman require a maximum of one movement per derivation, while Cinque requires up to three). Second, it requires fewer types of movement. Namely, it requires neither very local movement (of the "roll-up" type) or the stranding of pied-piped material, as Cinque requires.

The attested orderings are derived as follows. The following eight orders are base-generated:

27. a) [DEM [NUM [A N]]]
    b) [[NUM [A N]] DEM]
    c) [DEM [[A N] NUM]]
    d) [[[A N] NUM] DEM]
    e) [DEM [NUM [N A]]]
    f) [[NUM [N A]] DEM]
    g) [DEM [[N A] NUM]]
    h) [[[N A] NUM] DEM] (from Abels and Neeleman 2009)

The remaining six orderings are derived by leftward movement of a constituent containing the noun:

28. a) [DEM [N [NUM [A t_N]]]]
    b) [N [DEM [NUM [A t_N]]]]
    c) [[A N] [DEM [NUM $t_{[A\ N]}$]]]

d) [[N [NUM [A t_N]]] DEM]
e) [N [DEM [[t_N A] NUM]]]
f) [[N A] [DEM [NUM $t_{[N\ A]}$]]] (from Abels and Neeleman 2009)

Abels and Neeleman are able to derive and rule out the same orderings as Cinque, without assuming the Linear Correspondence Axiom (LCA). Abels and Neeleman's set of assumptions also negate the need for "roll-up" type movement and the stranding of pied-piped material. Abels (2003) has argued that roll-up movement, which requires very local movement from complement to specifier position within the same XP, is problematic because it is both unmotivated and uneconomical. Movement to specifier position is generally motivated by the need to check features, which can be accomplished in a head-specifier relation. However, if an element is in the complement of a head, it may have its features checked in that position, so a move to Spec is unnecessary. Additionally, allowing very local movement is inconsistent with evidence that complements may not "escape" through the Spec position of a head;[3] for instance, IP cannot be extracted from CP through SpecCP. Any framework that allows movement of a complement to a position where it may be extracted from its XP, as Cinque's does, will be unable to account for the restriction on extracting complements generally.

Abels and Neeleman argue that stranding of pied-piped material, which Cinque's analysis requires is systematically ruled out in domains other than the DP. They present evidence that this restriction is also present within the DP.

Abels and Neeleman show how, despite having a more restrictive base structure, the LCA does not restrict the types of movements allowed or required to explain various syntactic phenomena. They present mechanical procedures for "translating" LCA-compatible trees to those allowed by the Abels and Neeleman analysis, as well as the reverse procedure, which show that the two structures are largely equivalent in terms of gross constituency and c-command relations, and that the LCA "does not carry any of the empirical burden" (p. 66). They conclude that the claim that base-

[3] Note that extraction out of a complement is unproblematic.

generated structures must be antisymmetric is empirically vacuous, at least within the nominal domain. In order to capture the patterns of orderings uncovered by Cinque, (certain types of) movement must be universally leftward, and, despite appearances, rightward movement is effectively not disallowed by the LCA, so the LCA is an unnecessary assumption in the given case.

Cinque's analyses of adverbs (2005) and adjectives (2010) bear several similar features, including the assumption of an antisymmetic structure and similar movement types. Therefore, an Abels and Neeleman-style analysis of adjective ordering patterns may be useful in accounting for adjective ordering restrictions.

4. Issues in Cinquean Modification

Cinque's (1994, 2010) analysis of the two types of modification and how they affect AOR poses some general theoretical problems. This section analyzes three of the most important of these problems, and proposes potential solutions for these problems.

Cinque's (2010) definition of the properties of direct modification adjectives, the ambiguity of the distinction between direct and indirect modification, and the presence of at least four levels of adjectival modification where he only allows two are each discussed in detail. However, it is important to note that these problems are not peculiar to an LCA-based analysis of AOR; rather, these issues are largely due to the way Cinque distinguishes between the two types of modification. Any attempt at explaining AOR which involves distinguishing between different types of adjectival modification should be able to account for the issues presented in this section.

4.1 DMAs must be non-intersective?

Cinque explores the different interpretive qualities of direct and indirect modification. Most important to this paper is the difference between intersective and non-intersective readings of adjectives.

The intersective reading of an adjective is the most straightforward. It can be paraphrased as follows:

29.

This is a red ball.	This is a ball AND this is red.
This is a big apple.	This is an apple AND this is big (for an apple).
This is a Adj N	This is a N AND this is Adj.

Examples of this reading are given below.

30. a) A red ball = A ball that is red
    b) A Canadian wine = A wine that is Canadian
    c) The round plate = The plate that is round
    d) The big apple = The apple that is big (for an apple)

In many cases, the intersective reading is not "relativized"; that is, the quality described by the adjective does not depend on the nature of the noun being modified. This non-relativization is exemplified in (30a-c). In these cases, it is nonsensical to compare the redness of a ball to the redness of an apple, because redness is not relative. On the other hand, (30d) provides an example of a relative intersective reading. The big-ness of an apple is very different from the big-ness of an ant or the big-ness of an elephant. In cases of the relative intersective reading, it makes sense to add "for an X", because this phrase makes explicit the context of comparison: something that is big "for an apple" will almost certainly not be big "for an elephant". This context is unnecessary for the non-relative intersective reading, and it sounds odd to say, for example, "This ball is red for a ball". However, it is important to note that both the relative and non-relative intersective readings are indeed intersective, and can be paraphrased in the same way.

The non-intersective reading of adjectives is less concrete and less straightforward to paraphrase. The adjective may modify the noun in unexpected ways, resulting in a more idiomatic interpretation. Examples of non-intersective modification are given in (31) (some of these examples are ambiguous between the two readings).

31.

	Intersective reading	Non-intersective reading
A hard worker	*A worker who is hard	A person who works hard
A beautiful dancer	(A dancer who is beautiful)	Someone who dances beautifully
The Canadian flag	(The flag that is Canadian, from Canada)	The flag of Canada
A heavy drinker	(A drinker who is heavy)	Someone who drinks heavily
A poor speaker	(A speaker who is poor)	A speaker who is pitiable
		An ineffective speaker (speech-giver)
		Someone who does not speak well (bad grammar, speech impediment)

Cinque uses the term "adverbial" reading interchangeably with "non-intersective" to capture the "someone who X's Y-ly" paraphrase. However, this paraphrase is not always appropriate, as in the "pitiable" meaning of *poor*. This is discussed in Section 4.3.

Cinque claims that the non-intersective reading is uniquely associated with direct modification, and the intersective with indirect modification. He states:

> "Direct modification has only the "adverbial" individual-level, non-restrictive, modal, nonintersective, absolute (with both nonsuperlative and superlative scalar adjectives)… interpretations, and can give rise to idiomatic readings. Indirect modification (the relative clause source) instead has the opposite values." Cinque 2010 p.27.

He later states that:

> "A second syntactic difference between the two sources involves their word-order properties. … Direct modification adjectives, like *de*-less adjectives in Chinese… are rigidly ordered, while adjectives deriving from relative clauses are not." Cinque 2010 pp. 28–29.

Taken together, it is clear that Cinque's analysis does not reflect the patterns observed in, for example, Sproat and Shih (1991). Consider (32) and (33), below.

32. a) The big red ball (= The ball that is big and that is red)
    b) *?The red big ball

33. a) The nice round plate (The plate that is nice and that is round)
    b) *?The round nice plate

These are clearly examples of the intersective reading of the adjectives concerned, and Cinque would analyze them as reduced relative clauses; however, the ordering is not free, as would be expected given such an analysis. Cinque must therefore revise either his statement that only reduced relative clauses receive intersective readings, or his statement that only adjectives involved in direct modification are rigidly ordered.

It seems preferable to allow direct modification to receive the intersective reading, as this would still capture the free ordering of reduced relative clauses described not only in Cinque (2010) but also in Sproat and Shih (1991). However, allowing all direct modification adjectives to receive an intersective reading seriously weakens Cinque's theory, as it becomes nearly impossible to determine what kind of modification a given adjective is involved in.

Under this approach, certain adjectives that receive intersective readings may ambiguously modify the noun directly or indirectly. In the phrase *my new yellow car*, *new* and *yellow* may both modify the noun directly or indirectly, or *new* may modify it indirectly while *yellow* modifies directly. Given this ambiguity, and the fact that AOR only apply to cases of direct modification, it becomes nearly impossible to test predictions about adjective orderings. The only adjectives that are unambiguously involved in direct modification are not suitable for combination with one another (e.g. **a hard poor typist, *the heavy Canadian flag*). Take for instance Sproat and Shih's (1991) proposal that direct modification adjectives are split into two classes of absoluteness, with quality, size and shape adjectives forming one class and colour and provenance adjectives forming another class. They observe that the results of reversing the order of two adjectives of the same level of absoluteness is much less degraded than reversing the order of two adjectives of differing absoluteness. In order to test this observation under Cinque's analysis, it is necessary to find pairs of

adjectives (one pair from the first absoluteness class, one from the second, and one pair with one member from each class) that unambiguously modify the noun directly and that are felicitous in combination. I have been unable to come up with such a set of sentences, due to the fact that a great number of adjectives are subject to the reduced relative clause ambiguity.

4.1.1 A revision of Cinque's modification

This problem might be solved by stipulating that where an adjective may not receive a non-intersective reading, it may be involved in direct modification. As demonstrated in (29–30), in non-idiomatic DPs, *red* may only receive an intersective reading. However, as seen above, this adjective is generally subject to ordering restrictions. Therefore, we may say that, despite its intersective reading, it is a case of direct modification, which explains the applicability of ordering restrictions to adjectives like *red*, *round* and *big*. Furthermore, if an adjective may receive either an intersective or a non-intersective reading (like *heavy, poor* and *beautiful* in (31) above), the intersective reading indicates indirect modification and the non-intersective reading indicates direct modification. Finally, in cases like *a hard worker*, where an intersective reading is not available, the modification is unambiguously direct. These generalizations are presented in (34).

34.

<table>
<tr><td>Unambiguously intersective reading
(e.g. red)</td><td colspan="2">Reading ambiguous
(e.g. heavy)</td><td>Unambiguously non-intersective reading
(e.g. hard worker)</td></tr>
<tr><td rowspan="2">↓</td><td>Non-intersective
(e.g. heavy drinker)</td><td>Intersective
(e.g. heavy book)</td><td rowspan="2">↓</td></tr>
<tr><td>↓</td><td>↓</td></tr>
<tr><td>Direct modification</td><td>Direct modification</td><td>Indirect modification</td><td>Direct modification</td></tr>
</table>

This revision does not account for provenance adjectives, however. (31) above demonstrates the difference between the intersective and non-intersective readings of provenance adjectives like *Canadian*. The intersective reading of *a Canadian wine*

may be paraphrased as "A wine that is from/was made in Canada". Similarly, *the Chinese vase*, *a Russian man* and *some Belgian chocolate* are all cases of the intersective reading. However, *the Canadian flag* does not (necessarily) mean "The flag that is from/was made in Canada" but rather "The flag that represents Canada". The two readings may co-occur, as demonstrated in (35), but both readings are subject to ordering restrictions, as in (36) and (37).

35. A Chinese Canadian flag (= A Canadian flag that was made in China)

36. a) A tattered Canadian flag
    b) *?A Canadian tattered flag

37. a) The green Chinese vase
    b) *?The Chinese green vase

I will treat provenance adjectives as an exception to the revision stated above, and assume that both readings are available under direct modification. Provenance adjectives are therefore subject to ordering restrictions.

4.2 An Ambiguous Distinction

Given my revision of Cinque's analysis, determining the type of modification involved in a given situation would appear to be unproblematic. My analysis predicts that if the ordering of an adjective with respect to another adjective is free (as in (38) below), it must be involved in indirect modification. If the ordering is fixed (as in (36)), it must be involved in direct modification.

38. a) The poor heavy typist (= The typist who is poor and who is heavy)
    b) The heavy poor typist (=The typist who is poor and who is heavy)

In both (38a) and (38b), it is possible to get a reading where both adjectives receive intersective readings and the ordering of the adjectives is free. This indicates that both adjectives are involved in indirect modification, which explains the lack of rigid ordering between the two. Now consider (39).

39. a) The heavy Canadian drinker
    b) The Canadian heavy drinker (= The heavy drinker who is Canadian)
    c) *?The Canadian heavy drinker (= The drinker who is Canadian and who is heavy)

(39a) is unambiguous: it can only refer to a drinker who is heavy and who is Canadian. Given my revision to Cinque's (2010) division between direct and indirect modification, I analyze "heavy" in this case as a reduced relative clause, because it receives an intersective reading. "Canadian", as discussed in section 4.1, is a direct modification adjective, despite its intersective reading. (39b–c) is unambiguous, and may only receive a non-intersective reading of *heavy*. Sproat and Shih (1991) demonstrate that provenance adjectives, like *Canadian*, are the class of adjective that is closest to the noun. Given that in (39b–c), *heavy*, which is of a class that is structurally further from the noun than provenance adjectives, intervenes between *Canadian* and the noun, Cinque would claim that *Canadian* is involved in indirect modification. (39b) therefore demonstrates that low adjectives like *Canadian* may modify the noun directly or indirectly according to Cinque.[4]

Compare (39) to (40).

40. a) Golden Canadian maple syrup (colour > provenance)
    b) *?Canadian golden maple syrup (*provenance > colour)

(40) shows that the observed ordering reflects Sproat and Shih's (1991) hierarchy: here, the provenance adjective may not precede the colour adjective. In (39), "Canadian" has the option of modifying "drinker" either directly or indirectly, but this option is not available in (40). Why should this be so?

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[4] Despite the discussion in section 4.1, I use a provenance adjective here because it is of the lowest class of adjectives. I found *heavy* difficult to assign to one of Sproat and Shih's (1991) five classes, as it may describe a quality, size or shape, so I am reluctant to use an adjective of a higher class. Using a colour adjective rather than a provenance adjective might be possible, but given that nouns involved in non-intersective readings tend to refer to people (*beautiful dancer, hard worker, heavy drinker*), a colour adjective would refer to skin colour. I am not sure that skin colour adjectives are of the same class as plain colour adjectives.

One obvious difference between (39) and (40) is that the changes of adjective ordering in (39) entail a change of meaning. *Heavy* in (39a) must receive an intersective reading, while in (39b) it may not. In (40) a change in adjective ordering does not affect the meaning of the phrase. I propose that this is because neither of the adjectives in (40) is ambiguous in the same way that adjectives like *heavy* and *poor* are.[5] As discussed above, I revise Cinque's analysis of adjectival modification to state that unambiguously intersective adjectives are in fact involved in direct modification and are therefore subject to AOR. However, this only explains the free ordering in (39) and the rigid ordering in (40), not the reason for the unavailability of indirect modification in (39a).

One possible solution to this problem is to analyze the non-intersective readings of adjectives as a type of compounding. This would not be compounding in the traditional sense, as there is no compound intonation, and the link between the adjectival and nominal elements is more concrete than in traditional compounding. (Compare *heavy drinker*, "someone who drinks heavily", to *gréenhouse*, "*a house that is green".) Additionally, traditional compounding does not permit modification of the adjectival element, while this direct modification "compounding" does: **A very greenhouse* vs. *A very heavy drinker*. However, a "compounding" analysis is supported by the fact that non-intersective readings appear only to be available when the adjective in question and the noun are adjacent. (For further discussion of this see section 5 on superlatives.) Under a strictly syntactic approach to compounding, it may be possible to capture this compound-like behaviour. If traditional compounding requires a structure with no functional structure, explaining compound stress and lack of modification, these non-intersective, idiomatic "compounds" may permit a limited amount of functional structure, while remaining

[5] Provenance adjectives are non-intersective only when modifying certain nouns, like *flag* and currencies (*dollar, shilling, franc,* etc.) among others. *Maple syrup* is not one of these nouns: *Canadian maple syrup* may only mean "Maple syrup that comes from/was made in Canada".

structurally very close. This would explain the modifiability and lack of compound stress.

This phenomenon may also be related to phrasal idioms, where the various parts do not themselves bear any idiomatic reading and are therefore unmovable and unmodifiable (Maire Noonan, p.c.). Compare (41) and (42).

41. a) He kicked the bucket.
    b) ??The bucket has been kicked by John.

42. a) He let the cat out of the bag.
    b) The cat has been let out of the bag by John.

In (41b), the passivized structure is very degraded compared to (42b), because of the nature of the two different idioms. *The bucket* does not bear any idiomatic reading itself and so may not be moved, but *the cat*, which can be equated to *the secret,* is movable. In the case of *heavy drinker*, *heavy* may not be moved (under the relevant reading), for instance when it appears in superlative form. It may be that *heavy drinker* is closer in structure to *kick the bucket*-type idioms, rather than the *let the cat out of the bag*-type.

The exact nature of this "compounding" is a subject for further research, but see below for a discussion of the various sites of adjectival modification.

4.3 How many levels of modification?

Recall from (31) the various readings of *a poor speaker*, repeated as (43) below.

43. a) A speaker with very little money
    b) A speaker that is to be pitied ("The poor speaker came down with a cold at the last minute)
    c) An ineffective communicator ("I found John's presentation skills lacking - he is a very poor speaker.")
    d) Someone whose language skills are lacking ("French is Marie's first language and she is a poor speaker of English.")

Poor is peculiar in allowing so many readings: other adjectives (like *heavy* and *hard*) allow two. However, the fact that at least four readings are possible seems to point to there being at least four sites for nominal modification.

Cinque (2010) recognizes two of these readings, those exemplified in (43a) and (43c/d).[6] He refers to (43a)-type readings as intersective and (43c/d)-type as non-intersective, or adverbial. This captures the fact that the (43d) reading can be paraphrased as "Someone who speaks poorly". It seems that the adjective in (43d) is not modifying the noun, but rather the verbal element of the noun. This reading would correspond to the lowest possible modification site. The intersective reading, "speaker who is poor", corresponds to the highest modification site, which may be a reduced relative clause as proposed by Cinque (2010). The two remaining readings would correspond to sites between these two extremes, with (43c) in a lower site than (43b).

Cinque (2010) states that only reduced relative clauses are felicitous in a predicative position. This explains the ungrammaticality of the examples in (44).

44. a) *The problem was main. (c.f. The main problem)
    b) *The physicist is nuclear. (c.f. The nuclear physicist)
    c) *The drinker is hard (under non-intersective reading. Ok under intersective reading.) (examples based on Cinque 2010)

However, in certain cases a non-intersective reading appears in a predicative position, as in (46b).

45. a) He is a strong performer. (= He is strong and he is a performer/He performs strongly, well)
    b) This performer is strong. (= He is strong and he is a performer/*He performs strongly)

46. a) It was a strong performance. (= *It was strong and it was a performance/The performance was good, the performers performed strongly)
    b) The performance was strong. (*It was strong and it was a performance/The performance was good, the performers performed strongly)

---

[6] The difference between (Xc) and (Xd) can be very subtle, as it is the difference between someone who speaks poorly (Xd) and someone who ranks low among speakers (Xc). In other instances, like *poor typist*, the difference between someone who types poorly and someone who ranks low among typists (presumably because of poor typing skills) is difficult to tease apart.

In (45b), the adjective loses its non-intersective reading when it is in a predicative position. In (46a), the adjective receives only a non-intersective reading. , However, this reading is not lost in (46b), despite the fact that the adjective is now a predicate. This is entirely unexpected given Cinque's (2010) analysis, because predicative adjectives should never allow a non-intersective reading. Let us therefore examine these examples a little more closely.

The non-intersective readings in (45–46) seem to involve modification of the verbal element of *performer/performance*; that is, they refer to the strength of the act of performing. This is analogous to the situation discussed above for (43d). The intersective reading requires the modification of the whole noun - *performer* in (45) and *performance* in (46), analogous to (43a) above. A performance cannot be physically strong (as is required by the intersective reading), so this reading is not available in (46a). However, *strong* is still able to modify *perform* in (46b) despite its being in a predicative position. This is unexpected, but may be explained if some nominalizers are more transparent to modification than others.

From these examples, it appears that *-ance* is more transparent than *-er*. This means that the presence of *-er* blocks modification of the verbal element (*perform*) by *strong* in predicative position. This is demonstrated by the fact that the "strong performance" reading is unavailable in (45b). However, even in predicative position, the presence of *-ance* does not block the "strong performance" reading in (46b). *-ance* must therefore be transparent to this kind of modification. We can conceptualize the difference between these sentences along the lines of (47–48), parallel to (45–46).

47. a) [strong [perform -er]] / [[strong perform] -er]
    b) [[perform -er] (is) strong] / *[[perform (is) strong] -er]

48. a) *[strong [perform -ance]] / [[strong perform] -ance]
    b) *[[perform -ance] (is) strong] / [[perform (is) strong] -ance]

If the difference between (47a) and (47b) were due to the predicative position of the adjective, we would not expect to find the "strong performance" reading in (48b), even through a repair strategy. Rather, we would expect the sentence to be simply

ungrammatical. The facts in (45–46), however, suggest a different solution, namely one involving the opacity or transparency of different nominalizing elements to modification.

Distinguishing between different types of adnominal modification is not as clear-cut as it may seem. The preceding discussion of the importance of correctly defining and distinguishing the different types of modification, as well as of determining how many types of modification there are illustrates several issues that need to be addressed in Cinque's (2010) analysis. I have proposed possible solutions to these problems, but these solutions are an area for further research.

5. AOR and Superlatives

This section discusses the problems posed by superlative adjectives to a complete account of adjective ordering restrictions. I examine how Teodorescu (2006, 2010) and Cinque account for the apparent reversal of orderings found in definite superlative adjective strings and why indefinite, but not definite, superlative adjective strings appear to be freely ordered. I summarize the problems posed by both of these analyses, and present an alternative, non-syntactic solution to both problems.

5.1 A Pragmatic Account

As mentioned in section 2.3, superlative adjectives seem to form a special class of exceptions to AOR. (49a-b) show the ordering found in positive (non-superlative) adjectives strings, and (49c-d) demonstrates the observed reversal in ordering found when the hierarchically lower adjective is a superlative.

49. a) The long white plane
    b) #The white long plane
    c) *?The long whitest plane (that I saw)
    d) The whitest long plane (that I saw) (Cinque 2010)

When the hierarchically lower adjective appears in superlative form, the order of the adjectives is (possibly obligatorily) reversed. Cinque (2010) attributes this reversal to the superlative morpheme attracting *white* to its position high in the DP, as seen in

the tree in (16). The implication is that there is no position to which *long* can move that would allow it to be pronounced before *whitest*.

Now consider (50) below:

50. a) Marco is a short Italian student.
    b) #Marco is an Italian short student.
    c) Our class has a shortest Italian student.
    d) Our class has an Italian shortest student.
    e) The dean spoke to the shortest Italian student.
    f) *?The dean spoke to the Italian shortest student. (Teodorescu 2009)

(50a–b) reflect the unmarked ordering of the elements when neither is superlative. However, (50c–f) show that adjective ordering restrictions obtain in definite, but not indefinite superlative DPs. Furthermore, the different orderings in (50c) and (50d) give rise to two different meanings, along the lines of the operator adjectives discussed above. (50c) is felicitous in the situation where our class has several Italian students, one of whom is shorter than all the others (this student need not be the shortest of all students in the class). (50d) is felicitous in the situation where our class has a student who is shorter than all other students in the class and who happens to be Italian.

From these data, it seems that adjective ordering restrictions obtain in definite but not indefinite superlative DPs. Why should this be so? Teodorescu (2009) argues that AOR only apply when two potential orderings are Strawson identical. Modelled after von Fintel (1999), Strawson identity requires the presuppositions of the determiner phrase containing the superlative to be satisfied. It would not account for all the data to say that truth-conditional identity triggers AOR, as can be seen in the following scenario (from Teodorescu 2009):

> 51. A hypothetical international school's students include Mihai, who is Romanian, and Carlo, who is Italian. Of all the Italian students, Carlo is the shortest. However, of all the students in the school, Mihai is the shortest.

In this case, *shortest Italian student* refers to Carlo, but *Italian shortest student* does not refer to anyone. Without the definite article, these two adjective orderings are truth-conditionally distinct. If truth-conditional identity were the trigger for AOR, we

would not expect them to apply in this scenario. However, when these phrases combine with the definite article, they become Strawson identical and the adjective ordering restrictions do apply, as observed. In order for the phrases to be Strawson valid, their presuppositions must be satisfied. The definite article presupposes existence, while the indefinite article asserts existence. Therefore, in order for the presuppositions to be satisfied (that is, in order to be Strawson valid), the definite superlative phrases must refer to somebody in the real world. If they were both to refer to someone in the real world, they would refer to the same individual, because *the Italian shortest student* is also necessarily *the shortest Italian student*. These phrases are therefore Strawson identical: if they were Strawson valid, they would refer to the same individual. Despite the fact that *the Italian shortest student* doesn't actually refer to a real person, the phrases are Strawson identical and AOR apply in this case.

5.2 Problems Posed by Superlative Adjectives

Teodorescu's (2009) analysis explains much of the data on adjective ordering in superlative phrases. However, her approach fails to account for all of the data.

52. a) John spoke to the bald heavy drinker at the bar.
    b) John spoke to the heavy bald drinker at the bar.
    c) This bowling team has a heaviest bald drinker.
    d) This bowling team has a bald heaviest drinker.
    e) John spoke to the heaviest bald drinker at the bar.
    f) *?John spoke to the bald heaviest drinker at the bar.

(52a) is ambiguous. *The bald heavy drinker* could either denote an individual who is bald and who is heavy and who is a drinker, or an individual who is bald and who drinks heavily. (52b) refers unambiguously to someone who is heavy and bald and who drinks. This much is predicted by Cinque's (2010) analysis of adjectival modification. (52c,d) are predicted to be grammatical by Teodorescu's (2009) condition on the applicability of AOR: the two sentences are not Strawson identical in the same way that (52c,d) are not, so AOR should not apply. Now consider the following scenario:

> 53. Bill and Ben are at the bar one night, along with several other men. Both Bill and Ben, along with a few of their friends, are bald. Bill is known as the person who drinks most heavily at the bar. Ben, on the other hand, is known for his weight: of all the bald men at the bar, Ben is the heaviest.

In this case, *?*the bald heaviest drinker* refers to Bill, who drinks most heavily and happens to be bald. *The heaviest bald drinker*, however, refers unambiguously to Ben, who, out of all the bald drinkers at the bar, weighs the most. If John spoke to Bill then (52f) would be true and if he spoke to Ben then (52e) would be true.

This scenario demonstrates that (52e,f) are not Strawson identical: because of the ambiguity of *heavy* the presuppositions of both phrases may be satisfied by different individuals. Teodorescu (2009) would therefore predict that AOR should not apply, meaning that ordering should be free. This is not what we observe: only (52e) is acceptable, reflecting the ordering that Cinque (2010) predicts. This is a serious problem for the Strawson-identity approach to adjective ordering restrictions.

The sentences in (52) are also problematic for Cinque's (2010) picture of the DP. Cinque assumes that the superlative morpheme merges high in the DP, and it subsequently attracts its target adjective. In (52) the target adjective is *heavy*, which may be merged as a DMA or a RRC. If the adjective is a RRC, we expect the intersective "who is heavy" reading, and if it is merged as a DMA, we expect the "drinks heavily" reading. This movement would presumably leave behind a trace, which should be able to be reconstructed at LF. We would therefore expect the same ambiguity in (52e) that we find in (52a), because the trace of *heavy* in (52e) should be located either in the RRC realm or in the DMA realm. However, (52e) is unambiguous: it may only refer to the drinker who is the heaviest and who is bald. Cinque (2010) does not account for this unambiguity. This fact is related to the discussion on the possible compounding analysis of non-intersective adjectives in section 4.2.

A further problem remains: Cinque's (2010) analysis correctly predicts the ungrammaticality of (52f) by claiming that there is no position higher than the superlative morpheme that may host an adjective. However, this same structure

cannot then account for the grammaticality of (52d), because if there is no position for *bald* to move to in (52f), there must be no position for it in (52d). On the other hand, if *–est* can lower to the position of *heavy* in (52d), or if there is a higher adjective-hosting position, then Cinque must explain why this is not the case in (52e).

5.3 A Restriction on Restriction?

How can we account for this ordering asymmetry between definite and non-definite superlative adjective strings? One piece of evidence may come from the seemingly special status of non-definite superlatives (see Herdan and Sharvit 2006). Non-definite superlatives seem to appear mainly in *have*-constructions. Consider the following sentences in the context of a jam-making competition:

54. a) This class has the sweetest jam (in the competition).
    b) This class has a sweetest jam. (i.e. one of the jams is sweeter than the rest.)

Indeed, indefinite *have*-constructions seem themselves to have a special status. Compare (55a–b).

55. a) My dog has a white head.
    b) My dog has the white head. (Bernhard Schwartz, p.c.)

(55a) means that the head of my dog is white, while (55b) means that my dog is in possession of a white head (belonging to someone or something else). It seems that we are dealing with two different *have*s, one that combines with the indefinite article and another that combines with the definite article, and which have distinct meanings. However, while this observation may be part of the reason for the difference in ordering restrictions in definite and indefinite superlatives, it cannot be the whole story, because indefinite superlatives can in fact appear in non-*have*-constructions:

56. a) John climbed the highest European mountain.
    b) *?John climbed the European highest mountain.
    c) John climbed a highest European mountain.
    d) John climbed a European highest mountain.

The examples in (56) show the same ordering patterns as in (50c–f) and (52c–f), despite the fact that (56) does not feature a *have*-construction. If the idea of two different *have*s can help to explain the orderings found in (50) and (52), it cannot help explain (56), and a further solution is required.

Bernhard Schwartz (p.c.) suggests that the difference in ordering restrictions between definite and indefinite superlative strings may be due to the restriction inherent in the definite superlative. Herdan and Sharvit (2006) argue that the role of the superlative morpheme is to pick out a set of individuals; if the superlative is preceded by the definite article, that set is a singleton set, but if it is preceded by the indefinite article, the set may have more than one member. This is illustrated in (57).

57. a) The dean praised the best student.
    b) The dean praised some/a best student.
    (based on Herdan and Sharvit 2006.)

In (57a), the definite superlative picks out the single best student of all the students. However, (57b) refers to one member of a set of "best students"; perhaps the best student of 2009 or the best student of linguistics. By its nature, (57a) is restricted to one individual. (57b), on the other hand, is not: it picks out a set of individuals that may be further restricted by the addition of more modifiers. We therefore predict that a string like [a shortest student] is acceptable with further modification of the set denoted by [shortest student]. However, because [the shortest student] is already restricted to one individual, further modification should be unacceptable.

Consider (58) below.

58. a) *Of Peter, John and Michael, I want to talk to the Canadian Peter.
    b) Of the Peter from Canada, the Peter from Wales and the Peter from the US, I want to talk to the Canadian Peter. (based on Schwartz, p.c.)

When there is only one relevant Peter, *the Canadian Peter* is ungrammatical. In this situation, *Peter* may only refer to one person, so adding further restriction is unacceptable. However, when *Peter* may refer to more than one individual, adding further restriction is completely acceptable, and reduces the number of individuals to which *Peter* may refer.

Recall (56) above. Under the restriction analysis, (56a) is self-evidently acceptable. [the highest European mountain] picks out one individual, the highest of the European mountains, and the definite superlative is not further modified. Similarly, (56c) picks out a set of highest mountains in Europe; this set would include the highest mountain in France, the highest mountain in Italy and the highest mountain in Germany, among others. The superlative phrase in (56d) picks out the set of highest mountains, which includes the highest mountain in the Urals, the highest mountain in the Rockies, the highest mountain in the Alps and the highest mountain in the Pennines. *European* further restricts this set to only the highest mountains in Europe; this restricted set includes the highest mountain in the Alps and the highest mountain in the Pennines, but not the highest mountain in the Laurentians or the Andes. [a highest mountain] may be further restricted by *European* because it is not already restricted to a single mountain. Finally, in (56b), [the highest mountain] is already restricted to a single individual, much as *Peter* in (58a) is. Therefore, further restriction, for instance by *European*, is ungrammatical.

The same analysis can be applied to (50c–f) and (52c–f). The definite superlative phrases in the (e) examples are not further modified (*the shortest Italian student*/*the heaviest bald drinker*), but they are in the (f) examples (**the Italian shortest student*/**the bald heaviest drinker*). The (c) and (d) examples are somewhat complicated by the presence of a *have*-construction, as discussed above, but for both (50c–d) and (52c–d), the indefinite superlative phrases allow further modification when present (as in the (d) examples) but do not require it (as in the (c) examples).

If further restriction of the definite superlative phrase is responsible for the ungrammaticality observed in (50f), (52f) and (56b), then we would expect modification of the same phrases with non-restrictive adjectives to be grammatical. This is indeed what we find.

59. a) The dean spoke to the damned tallest student.
    b) Given the choice between K2 and Mount Everest, John climbed the good old highest mountain. (based on Schwartz, p.c.)

Because the adjectives *damned* and *good old* do not further restrict the set of individuals referred to by the definite superlative phrases, modification of such phrases by these adjectives is grammatical. It therefore appears that the ungrammaticality of sentences like (50f), (52f) and (56b) is not due to a violation of ordering restrictions per se, but to unnecessary restriction of a singleton set.

The proposed analysis of superlative adjective orderings, limiting further modification to phrases that do not refer to single individuals, explains Teodorescu's (2009) observations as well as problems with that work. It accounts for the fact that definite superlative adjective strings are rigidly ordered, while indefinite superlative strings are freely ordered. This restriction is not syntactically motivated, but explains the observed syntactic phenomena.

6. Conclusion

An exhaustive account of adjective ordering restrictions is still elusive. I have discussed several attempts at categorizing and accounting for these restrictions and their exceptions, including that of Sproat and Shih (1991), Cinque (1994, 2010) and Teodorescu (2006, 2009). Two styles of a syntactic account of ordering restrictions, that of Cinque (2005) and Abels and Neeleman (2009) were compared in order to examine the possibilities of such a syntactic solution. However, the works discussed, most importantly Cinque (2010), raise several issues that need to be addressed, including the need for a clear definition of the properties of the different types of modification, the ambiguous distinction between types of modification, the number of modification types and the problems posed by superlative adjective strings. After examining these issues closely, I propose possible solutions to the problems raised.

In order to account for observed ordering restrictions in intersective adjectives, like colour and size adjectives, I propose that, with the exception of provenance adjectives, indirect modification only occurs in the intersective reading of ambiguous adjectives, like *heavy*. In other cases, direct modification occurs, and these adjectives should be subject to ordering restrictions.

I discuss the possibility of analyzing adjectives with non-intersective, idiomatic readings as a type of non-traditional compounding. If traditional compounding, as exemplified by *greenhouse* and *blackboard*, involves very limited or no functional syntactic structure, non-intersective adjectives may make use of a less limited, but not complete, functional structure, in line with the observed differences between phrasal and other idioms. This analysis explains why non-intersective adjectives may be modified and do not receive compound intonation, but must still appear adjacent to the noun they modify.

While Cinque (2010) identifies two different types of modification, and therefore two different locations for such modification to take place, I demonstrate the existence of at least four modification sites, each of which results in a unique reading. These additional modification sites also bear on the existence of non-intersective readings of predicative adjectives.

Superlative adjectives also pose a problem for both syntactic and pragmatic accounts of AOR. Definite superlative adjective strings display a reversal of the ordering restrictions that apply to positive adjectives, and indefinite superlative strings display free ordering. I suggest that the ordering restrictions present in definite superlative strings are due to the fact that definite superlatives denote a single individual and that further modification or restriction is ungrammatical. Indefinite superlatives are not inherently restricted to single individuals and further modification is therefore not ungrammatical.

A complete account of adjective ordering restrictions should be able to clearly explain why and how adjectives are ordered. The preceding discussion of some issues in current analyses of AOR, as well as the proposed solutions, provide a step towards a better understanding of ordering restrictions in adjectives.

References

Abels, Klaus. "Successive Cyclicity, Anti-Locality, and Adposition Stranding." University of Connecticut, 2003.

Abels, Klaus, and Ad Neeleman. "Universal 20 without the LCA." In *Merging Features: Computation, Interpretation, and Acquisition*, edited by José M. Brucart Anna Gavarro and Jaume Sola. 60–79. Oxford: Oxford University Press, 2009.

Bernstein, Judy. "DP's in French and Walloon: Evidence for Parametric Variation in Nominal Head Movement." *Probus* 3, no. 2 (1991): 101–26.

Cinque, Guglielmo. "On the Evidence for Partial N-Movement in the Romance DP." In *Paths Towards Universal Grammar: Studies in Honour of Richard S. Kayne*, edited by Guglielmo Cinque, Jan Koster, Jean-Yves Pollock, Luigi Rizzi and Raffaella Zanuttini. 85–110. Washington D.C.: Georgetown University Press, 1994.

Cinque, Guglielmo. "Deriving Greenberg's Universal 20 and Its Exceptions." *Linguistic Inquiry* 36, no. 3 (2005): 315–32.

Cinque, Guglielmo. *The Syntax of Adjectives: A Comparative Study*. Cambridge, MA: MIT Press, 2010.

Cooper, William E., and John Robert Ross. "World Order." In *Papers from the Parasession on Functionalism*, edited by Robin E. Grossman, L. James San and Timothy J. Vance, 63–111. Chicago, IL: Chicago Linguistic Society, 1975.

Greenberg, Joseph H. "Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements." In *Universals of Human Language*, edited by Joseph H. Greenberg. 73–113. Cambridge, MA: MIT Press, 1963.

Heim, Irene. "Notes on Superlatives." MIT, 1999.

Herdan, Simona, and Yael Sharvit. "Definite and Nondefinite Superlatives and NPI Licensing." *Syntax* 9, no. 1 (2006): 1–31.

Sproat, Richard, and Chilin Shih. "The Cross-Linguistic Distribution of Adjective Ordering Restrictions." In *Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda*, edited by Carol Georgopoulos and Roberta Ishihara. 565–93. Dordrecht: Kluwer, 1991.

Szabolcsi, Anna. "Comparative Superlatives." In *Papers in Theoretical Linguistics, MIT Working Papers in Linguistics*, edited by Naoki Futui, Tova R. Rapoport and Elizabeth Sagey, 245–65. Cambridge, MA: MITWPL, 1986.

Teodorescu, Alexandra. "Adjective Orderings Revisited." In *Proceedings of the 25th West Coast Conference on Formal Linguistics*, edited by Donald Baumer, David Montero and Michael Scanlon, 399–407. Somerville, MA: Cascadilla Proceedings Projects, 2006.

Teodorescu, Alexandra. "Modification in the Noun Phrase: The Syntax, Semantics and Pragmatics of Adjectives and Superlatives." University of Texas at Austin, 2009.

von Fintel, Kai. "NPI Licensing, Strawson Entailment and Context-Dependency." *Journal of Semantics* 16 (1999): 97–148.