ON CONCORD AND PROJECTION

Giuliana Giusti

Abstract: In the spirit of the copy theory of movement, I propose that Merge applies only to satisfy Selection or Modification. This proposal differentiates between Agreement (instantiated by an EPP-feature targeting the upper argument selected by the lexical head, in the usual way) and Concord, occurring between any head and its Specifier with no additional trigger. It also derives head-movement by proposing that the functional skeleton of a lexical head is one and the same bundle of features, projected according to a paradigm associated with the head. As a consequence, parametric variation can be reduced to properties of inflectional paradigms.

Keywords: agreement, concord, merge, nominal expression, head-movement

1. Introduction

This paper[†] sketches the general lines of an ambitious project (outlined in Giusti 2007, 2008, 2009) with the aim to reconcile general issues on syntactic structures, such as the motivation for the EPP-feature, the question whether feature-sharing is the result of a single operation, the (dis)advantages of assuming or eliminating head-movement, the status of the hierarchies investigated by the cartographic approaches. All these issues have been on the agenda in recent years and have until now received independent treatments.[1] The ambition here is to give a unified answer to (some of) them, grounded on a principled theory of Merge. The general proposal is that Merge takes place to instantiate two basic relations: Selection and Modification. The former is triggered by selectional requirements that arise between a (lexical or functional) feature (which is realized in a head) and a maximal projection; the latter is the optional relation between a maximal constituent and a head.

A crucial part of this proposal is to conceive the notion of head as a bundle of features (cf. Matushansky 2006) whose hierarchy is given by UG and whose

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[†] A first presentation of this research project was delivered at the the Bucharest Conference in 2007, and appeared in the University of Bucharest Working Papers in Linguistics. A second draft has been circulated as University of Venice Working Papers in Linguistics 2009. I presented parts of this project at the University of Leiden, October 2009, University of Amsterdam, the syntax circle April 2010, and at the Bucharest conference 2010. I thank all the many who commented on this, especially Lisa Cheng and Enoch Aboh, but my very special thanks go to Hans den Besten with whom I had a long discussion at dinner around a year ago and is no more here with us.

[1] The work-in-progress status of this paper does not allow me to do justice to the literature, which obviously deserves the discussion that is missing here.

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realization must be acquired through exposition in the frame of a paradigm. In this view the notion of paradigm becomes crucial. In one and the same language, the form of paradigms certainly shares many properties, but at the same time can leave the door open for idiosyncratic properties of individual (class of) items. This new notion of paradigm is taken to include not only the traditional forms of single words but also and crucially the free morphemes that realize their extended projection (in the sense of Grimshaw 1991), which in this proposal are taken to be part of the bundle and the (partial) realization of a scattered head (in the sense of Giorgi and Pianesi 1997).

Agreement arises when an EPP feature is part of the bundle and is required when the proper interpretation of the extended constituent (clause or nominal expression) requires an intersection between two different reference values. In clauses this happens between the temporal reference of the situation and the individual reference of the subject, while in the nominal expression this happens when the individual reference of the head noun is restricted by the individual reference of an embedded nominal expression. Only the former is obligatory because it intersects reference values of different types (time and person) to produce a third type, namely propositional value. Concord arises every time an element is (re)-merged (for whatever reasons) as the modifier of a head. So abstract Concord always occurs between a modifier and its head, a remerged element can obviously concord with different heads, while a complex head which is remerged at different points of the extended projection concords with all its modifiers. The result is that Agreement is a unique relation while Concord is recursive. Furthermore, the same pair of elements may Agree and Concord at the same time.

This paper is structured as follows: In section 2, I sketch the background proposals which have already been put forth in previous papers and talks and state the specific topic of this paper which regards the notions of projection and concord in the nominal expression. In section 3, I support my idea that Concord is not Agree concentrating on adjectival concord in nominal expressions in Italian and German, showing that some apparent adjectival concord is in fact the result of the overt realization of the scattered nominal head. In section 4, I draw some general conclusions highlighting strong points and hinting at open questions.

2. Background proposals

The basic hypothesis from which all other properties follow is the quite reasonable one formulated in (1):

(1) Merge operates to instantiate two relations: Selection and Modification.

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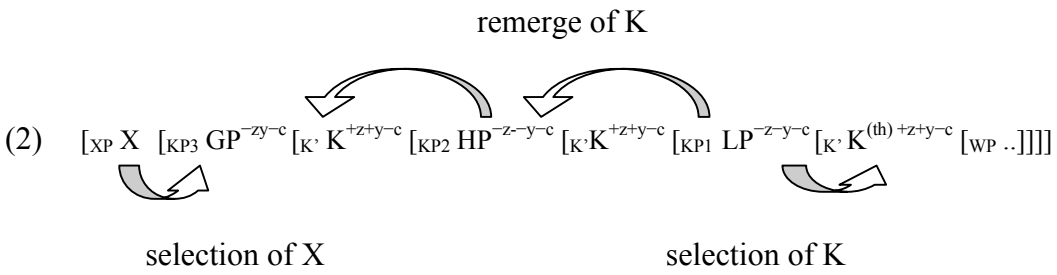
Selection merges a lexical head (X or K) specified in the lexicon for selectional features with a fully fledged constituent, or "perfect projection", that can satisfy such selectional features (KP and WP respectively). Modification merges a fully fledged constituent (GP, HP, LP) as a modifier of a lexical head K with a projection of K. The relations are instantiated one at a time obeying the relevant hierarchies. This has the consequence that the head needs to remerge each time a new argument or specifier is picked from the numeration.

Let us take the structure in (2) as an abstract example. In (2) the head K is associated to two interpretable features [+z], [+y], and one uninterpretable features [−c].[2] This means that the paradigm of K (take it to be a verb or a noun) is associated with interpretable features (e.g. Tense and Aspect if a V, gender and Number if a N) and an uninterpretable feature. If it is a V, in order to project to form a clause with propositional value, it must intersect with a person feature, so the well known EPP feature is merged as part of the paradigm. If it is a noun, in order to receive a theta-role it must be marked for Case). K has a theta-role (th) to assign and selects a maximal projection WP whose features are not given for ease of presentation. K remerges as many times (KP1, KP2, …) as necessary. Remerge may be necessary to realize all more than one segment, as required by the paradigm; and/or to satisfy selectional requirements of the head (discharging all its th-roles, and the deleting the associated EPP-feature); and/or to realize the modification relation with each of its modifiers. In the specific case represented in (2) below, K merges three times and the last projection KP3 can be embedded as the complement of another head X; but it could also be a modifier of a head X, or could stand alone, e.g. if K is the verb of a main clause. LP, HP, GP are modifiers of K, (if K is a verb they are adverbials, or circumstantial PPs; if K is a noun they can be adjectives, or other nominal expressions). The modifiers have an internal structure that cannot be given here for ease of presentation. But they can crucially contain (depending on the properties of their paradigm) an uninterpretable feature that needs to be checked against one or more (interpretable or uninterpretable) features of K. This will be achieved by the Concord relation:



[2] Notice that I am indicating the interpretable value of a feature with [+] and the uninterpretable value with [−], instead of low case [*i*] and [*u*] respectively. This is just to avoid misinterpretation with low case letters [z], [y], [c], indicating the very features.

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In (2) feature sharing arises every time an operation of Merge or Remerge takes place, this means that many uninterpretable features are checked and deleted. But I argue, they feature sharing is not all result of the same kind of relation. The hypothesis that Merge only applies to instantiate Selection or Modification, produces the three structural relations: Agreement, Concord, and Projection, that will be briefly considered in the following.

In Giusti (2007, 2008, 2009) I argue that Agreement is a consequence of selection. It targets the Person features of an argument, (e.g. the subject and the object in the clause, the possessor in the NE) onto the projection of the predicate selecting it. This is done at a high rank in the hierarchy of the feature bundle and has the effect of remerging the Person feature of the argument into a high specifier of the selecting head. This relation also results in case assignment to the argument: (abstract) nominative for the subject of clauses, (abstract) genitive for the subject of nominal expressions. Case assignment in many languages is non-overt, or at least, this is what is traditionally assumed. But in old work of mine (Giusti 1995, 1997), I have argued that articles are in fact markers of Case. If this is true, many more languages should enter the number of those having overt case. This approach reconciles many views in the structuralist and generative tradition. First of all, the observation often made by historical linguistics that the Indo-European languages that have developed an article have done so at the same time when case morphology is weakening. It also captures Hjelmslev's (1935) observation that in no language of the world the category of Case can be safely assumed to be missing. It is also in line with Longobardi's (1994) proposal that the DP is a necessary marker of argumenthood, at least in some languages (*pace* Chierchia 1998, Bošković 2008), if Case is taken as the marker of Agreement on the argument.

I add nothing here to the theory of Agreement which is currently proposed in the minimalist framework as split in two parts: the actual agreement (a probe with an EPP feature searches for the first goal in its c-command domain that can check such a feature) and the possible but not obligatory remerge of the goal as the specifier of the probe. If this latter operation takes place, concord will also take place between the probe and the goal, but in this case it will be the goal to copy the features of the probe (cf. e.g. Pesetzky and Torrego 2001).

In Giusti (2007, 2008, 2009), I propose that Concord is a consequence of a Spec-Head agreement configuration. This can take place for various reasons. One of the possible reasons is the modification relation arising between a noun and an adjective which has a direct modification relation to it (in the sense of Cinque 2010). In this case Concord transfers a bundle of features (e.g. Number, Gender, and Case specifications) from a remerge of the head N onto each specifier. This is overt if the modifier has such uninterpretable features in its paradigm. Differently from Agreement, Concord occurs as soon as the Specifier head configuration is formed, namely as soon as the element in Spec is merged and before proceeding to a new merger (of the same head, or of a new head).

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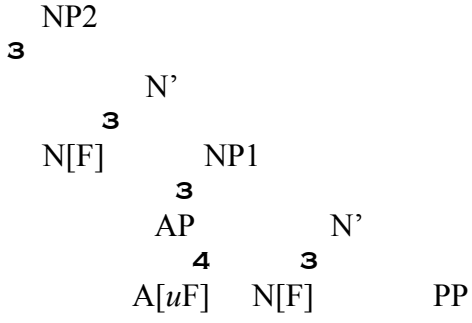
Projection also results from Merge for selection or modification. If we adopt the anti-symmetric view (Kayne 1994) that merge can only create binary structures, the two elements merged cannot be of the same bar-level (head and head, XP and XP, or X' and X'), but they must have different status, to the effect that selection can only merge a head with a maximal projection and a modification can only merge a maximal projection with an X'. If this holds true, the merging of a modifier must be preceded by the (re)merge of a head to create the appropriate X'-node.

This iterated merge of the same head builds up the spine of an extended projection, in the sense of Grimshaw (1991). But differently from what is generally assumed, the spine of the extended projection is formed by copies of the same bundle of features. The realization of individual copies obeys economy principles, so that we never (or rarely) see the same form repeated in the structure but we may find one feature appearing in more than one segment, giving an apparent redundancy effect which is crucially neither concord nor agreement.

In the rest of this section, I give concreteness to the reasoning above, concentrating on the interaction of Concord and Projection in Nominal Expressions. The two claims to be supported in the whole paper are given in (3):

(3) a. Concord (e.g. Feature sharing between N(P) and A(P)) is not Agree
b. N-movement is nothing else but Projection, namely the realization of (parts) of remerged copies of the head.

Let us apply merge in the fashion proposed in (2) to a nominal expression. The lexical head N is bundled at the first instance of merge with all the (un)interpretable features required in the given language; here this is represented with N[F]. When an adjective is merged, a structure like NP1 is obtained, and then the merging process proceeds to allow for a second modifier (e.g. a determiner of some kind, as will be argued for later on) to merge. The minimal structure we obtain from the merger of an adjective and a noun is given in (4), where the head A[*u*F] is also bundled with uninterpretable features that need to be checked immediately after merge:

(4)


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Let us now concentrate on the properties of merger of the head N. The lexical head and its features are merged all in a bundle. This claim can be instantiated in two ways: either assuming that all features are bundled at the same level, as e.g. Murakami (2011), or that the bundle is internally structured in a hierarchy. My preference for the latter choice is not just suggested by anti-symmetric requirements at the X° level, but is in line with the general idea (also presented in Giusti 2002) that the hierarchies of functional features proposed in the cartographic approach can be captured in a more minimalistic fashion as a result of a general principle of UG that rules merge.

This proposal differs minimally from the cartographic approach, but the difference crucially gives welcome results. Instead of assuming that the hierarchy represents the actual structure to be merged in all cases and in all languages, with the unwelcome assumption of enormous void structures, I propose that Merge obeys the hierarchy every time it combines two elements in anti-symmetric fashion. The bundle of features that constitutes the head of an extended projection is created by Merge, obeying universal hierarchies. Something similar has been proposed in the UOC (Universal Ordering Constraint) of Giorgi and Pianesi's (1997). If this holds true, we expect that the parametrized spell-out of the copies, as well as checking and valuation of the features in the bundle also obey a Universal Ordering as is in fact the case, as will be argued for in a moment.

Re-merged elements create a chain of identical copies which are spelled out according to economy principles. In general, it is not economical to realize the same identical bundle more than once. This is the reason why we never find examples such as (5):

(5) a. *child nice child
b. *ragazzo simpatico ragazzo
c. *băiatul frumos băiatul

Whatever features the paradigm of a noun in English, Italian and Romanian realizes, it would be against economy to spell-out the two copies with identical forms (unless required independently, as we will see below). The paradigm of noun is scattered in English and Italian (6a-b/b'), but it is not in Romanian, as in (6c). Notice also that Italian gives two possibilities, one similar to English (6b) and the other more similar to Romanian (6b'):

(6) a. the nice child
b. il simpatico ragazzo
b'. il ragazzo simpatico
c. băiatul frumos

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I propose, following an old suggestion of mine (Giusti 1995, 1997), that the article is a Case morpheme, in particular English and Italian nominal paradigms would only have a partitive vs. non-partitive case and the definite article is the realization of non-partitive case. Case is the highest feature (it is irrelevant here to observe that it is non-interpretable). For this reason it is realized as the leftmost element if the head is scattered in the structure, as in English and Italian, and as the rightmost element if it appears inside the bundle, as is the case of Romanian:

(7) a. $[_{NP2}\ [_{N}$ the$]\ [_{NP1}$ nice $[_{N}$ child$]]]$
b. $[_{NP2}\ [_{N}$ il$]\ [_{NP1}$ simpatico $[_{N}$ ragazzo$]]]$
b'. $[_{NP3}\ [_{N}$ il$]\ [_{NP2}\ [_{N}$ ragazzo $[_{NP1}$ simpatico $[_{N}$ ~~ragazzo~~$]]]]$
c. $[_{NP2}$ băiatul $[_{NP1}$ frumos $[_{N}$ ~~băiatul~~$]]]$

Notice that in English, the form of non-partitive Case disregards gender and number (*the*), while the form of partitive case is sensitive to number (*a* for singular, zero for plural). In Italian, Case is redundantly bundled with gender and number, cf. non-partitive *il/lo*.M.SG, *i/gli*.M.PL, *la*.F.SG, *le*.F.PL and partitive *un(o)*M.SG, *una*.F.SG. But it is zero for plural in (8):

(8)	a.	Ho visto il ragazzo / lo scolaro	I have seen the boy/ the pupil.M
		un ragazzo / uno scolaro	I have seen a boy/ a pupil.M
	b.	Ho visto la ragazza / la scolara	I have seen the girl/ the pupil.F
		una ragazza / una scolara	I have seen a girl/ a pupil F
	c.	Ho visto i ragazzi / gli scolari	I have seen the boys/ the pupils.M
		ragazzi / scolari	I have seen boys/ pupils. M
	d.	Ho visto le ragazze / le scolare	I have seen the girls/ the pupils. F
		ragazze / scolare	I have seen girls/ pupils. F

In Romanian non-partitive, direct case (here nominative) forms a unique bundle with N, gender and number (9a-b), partitive singular is realized as free morpheme bundled with gender and number, while partitive plural does not display gender morphology (9c-d):

(9)	a.	Băiatul / Fratele a venit	The boy / The brother arrived
		Băieţii / Fraţii au venit	The boys / The brothers arrived
	b.	Fata / sora a venit	The girl / The sister arrived
		Fetele / surorile au venit	The girls / The sisters arrived
	c.	Un băiat / un frate a venit	A boy / A brother arrived
		Nişte băieţi / fraţi au venit	boys / brothers arrived
	d.	O fată / O soră a venit	A girl / A sister arrived
		Nişte fete / surori au venit	girls / sisters arrived

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Oblique case can be found on the noun (10a-b), or on the quantifier *un-* (10c-d), but not on the partitive segment *o* or *nişte*. This falls naturally if (in)definiteness is related to Case morphology in a non-arbitrary way. (Cf. Cardinaletti and Giusti (2005) for partitive case assignment):

(10)	a.	L-am dat băiatului / fratelui	I have given it to the boy / to the brother
		L-am dat băieţilor / fraţilor	I have given it to the boys / to the brothers
	b.	L-am dat fetei / surorii	I have given it to the girl / to the sister
		L-am dat fetelor / surorilor	I have given it to the girls / to the sisters
	c.	L-am dat unui băiat / unui frate	I have given it to a boy / to a brother
		L-am dat unor băieţi / fraţi	I have given it to some boys / brothers
	d.	L-am dat unei fete / unei surori	I have given it to the girl / to a sister
		L-am dat unor fete / surori	I have given it to some girls / sisters

Up to this point, I have assumed gender, number and Case to be the functional features bundled with N. Are they interpretable or uninterpretable? And is their interpretability related to their morphlogical shape?

In Italian, gender is certainly interpretable on nouns such as *ragazzo* 'boy' and *ragazza* 'girl'. The different gender specification brings with it a different denotation which requires an indexicalization to individuals of different sexes. But it is less obvious that gender is relevant to the different denotation of *casa* 'house/home' and *caso* 'chance/case'; or to the same denotation of *tavola* and *tavolo*, both 'table', or to the different denotation of *sedia* 'chair' and *sgabello* 'stool'. As a matter of fact, English would have neuter gender in these cases. So we could conclude that at least for inanimate individuals, Italian gender marks Word Class and is not interpretable. A similar reasoning can be made for Number, which is usually part of the Referential value of the nominal expression and in this case, it must be taken as interpretable, giving the difference between *ragazza* 'girl' and *ragazze* 'girls', or *tavolo* 'table' and *tavoli* 'tables'. But this cannot be the case of so-called *pluralia tantum* such as *forbici* / *scissors*, *pantaloni / pants*, or collectives such as *gente* (grammatically singular) or *people* (semantically and grammatically, but not morphologically plural).

Case is uninterpretable by definition. It is as uninterpretable as to be a real problem for the Full Interpretation Principle, which can only be accommodated assuming that Case makes theta-roles visible (cf. Haegeman and Guéron 1999, Ch 5). Pesetsky and Torrego (2001: 361) suggest that Nominative Case is *u*T on D. In the framework sketched here, which takes D to actually be a copy of N, this is to say case is *u*T in the paradigm of N. The same *u*X must be specified for the other cases (Accusative, Dative, Partitive, etc) but this goes beyond the goals of this preliminary presentation and I leave it for future research.

Notice that I have not included in the bundle of N other crucial features such as Person, Definitess, or Indexicality. In my view, we must split apart the

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syntactic realization of the denotation and of the referential index. The form that realizes the denotation includes (interpretable or uninterpretable) gender and number, while the element(s) to be interpreted as a referential index must be combined with the denotation to obtain individual reference. This syntactic elements (which is also a bundle of features around the representation of the referential index) is merged with the denotation to obtain a referring nominal expression. The denotation (represented by N, bundled with its interpretable and uninterpretable features) combines with the referential operator indP (indexical Phrase) with the last application of Merge driven by modification (of the denotation). The referential index is what used to be called SpecDP, and is here labeled as the highest SpecNP. Before observing how this takes place in some more detail, let us pin down how the modification relation triggers features sharing between the head and the specifier in the case of adjectival modification.

3. Feature sharing in the modification relation

Feature sharing and feature spreading is the most intriguing trait of natural language and a real problem for the minimalist framework which aims to represent language as a system ruled by principles of economy and full interpretation. A mistaken strive to economy is in my opinion what led Bosque and Picallo (1996), and after them Carstens (2000), to extend a costly operation such as Agreement to adjectival concord. Let me briefly summarize in (11) the properties generally attributed to Agreement in the minimalist framework, in order to contrast them with the properties of adjectival concord. In the framework proposed here all the properties listed in (11) derive from the fact that Agreement is directly related to selection, theta-assignment and the consequent necessity for a role to be associated with a referential index:

(11) a. For a theta-role to be interpreted it needs to be associated with a ind_R (reference to individual).
b. The theta assigning head is associated to an *u*[in_{dR}] (EPP).
c. The EPP feature is merged quite high in the internal hierarchy of the bundle, enough to be checked and deleted at or immediately adjacent to the left edge of the selector.
d. For *u*[ind_R] to be deleted, the probe targets an ind_R in its c-command domain
e. [ind_R] merges with the probe.
f. Pied-piping of the entire Goal with the Probe is subject to language variation.
g. Agree assigns Case.

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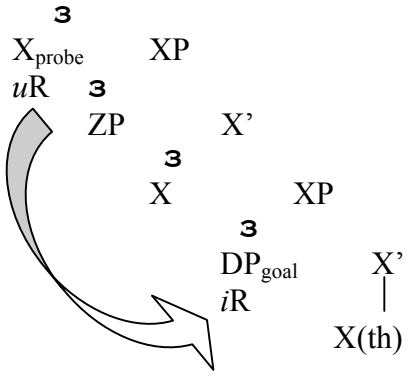
(11a) is the trigger for the whole procedure. The operations in (11b-g) are all instances of (re)merge triggered by it.

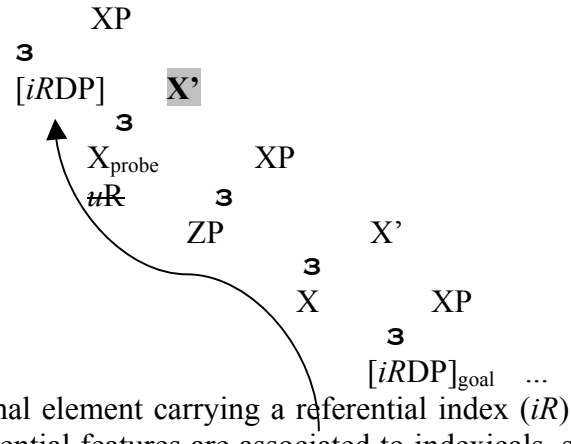
Let us observe in (12a-b) how these applications of merge result in the syntactic tree. In (12a), X is bundled with a theta role to assign. The theta role, hierarchically low in the bundle, requires that a *u*R-feature (the EPP feature) be part of the bundle at a high level. The other intermediate features of the bundle are not indicate here for ease of explosition. When X merges at the given high level, *u*R probes the first Specifier in its c-command domain with an *i*R feature and finds DP (let us suppose that ZP is an adverbial, or an adjective and has no *i*R):

(12) a.



X probes DP and checks the *u*R feature, triggering remerge of *i*R in SpecXP, as in (12b). The remerge of *i*R involves the remerge of the whole DP, but the realization of the lower or of the upper copy of this DP is subject to parametric variation:

(12) b.



The minimal element carrying a referential index (*iR*) is a personal pronoun, but other referential features are associated to indexicals, such as anaphoric or deictic

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Reference, provided by demonstratives, direct reference associated with proper names, etc.

Nothing of this kind is involved in adjectival concord. I propose that Concord is the consequence of an uninterpretable feature of the expression merged in the specifier. This feature is checked and deleted on the spot, by virtue of the Spec-Head configuration. There is no need to move anything anywhere.

(13) a. Concord is checking and deleting an uninterpretable bundle of features of a modifier.
b. It serves to interpret the denotation of the modifier as restricting the denotation of the modified item.
c. Modifiers are not merged to discharge a theta role of the head.
d. They do not have a uniqueness relation to the head.
e. Modifiers do not (need to) move (in the unmarked order).
f. They are never assigned Case, they may concord for Case.
g. Crucially the *u*F does not c-command the *i*F.

The properties in (13) are crucially different from those in (11). In particular, only (13a) is an application of Merge, all other statements in (13) are (negative) properties that derive from it. In particular, the obligatoriness and the uniqueness properties are related to selection, while the optionality and the recursive character are related to modification. In genuine Agreement, movement of the probed feature (with or without pied piping of the whole constituent) creates a Spec-Head configuration which is already present in the case of concord and needs not be re-created at a higher level (contrary to Bosque and Picallo 1996, and Carstens 2000). In fact the movement triggered by agreement has a probe which c-commands the goal, while the uninterpretable feature involved in Concord is in the modifier (since it is the adjective that has uninterpretable nominal features) and at no point in the configuration could ever c-command the entire nominal expression which spreads its features, including Case (in those languages in which this is overt), above that same specifier – Case is certainly a feature checked in the highest position, much higher than the position in which adjectives are merged.

In (14) we observe a nominal structure, where concord occurs twice. In NP1 it takes place between the adjective and the nominal head. In NP2 an indexical is merged, which concords with N in exactly the same way. If the indexical is a personal pronoun, in Italian it only checks number – gender is not present in first and second person pronouns (*noi ragazze/ragazzi* 'we girls/boys', *voi ragazze/ragazzi* 'you girls/boys') in Italian or in English, third person pronouns are not merged in nominal expressions, because third person is also present in the null indexical of definite descriptions. But gender and number are checked in some Italian dialects where strong pronouns are inflected (*noialtri, noialtre*, etc.,

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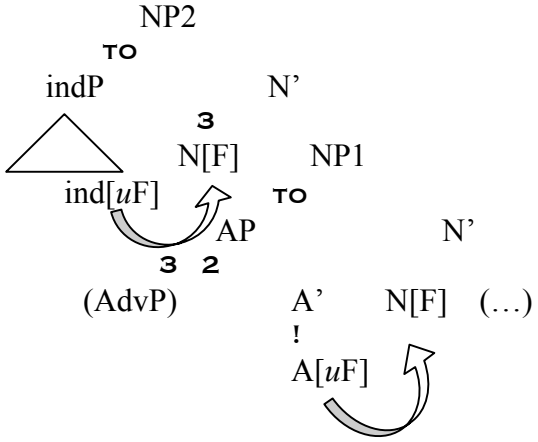
parallel to Spanish *nosotros, nosotras*, etc.). On demonstratives, gender and number are checked (*questo/a* 'this'*, questi/e* 'these'*, quello/a* 'that', *quelli/e* 'those') in Italian, but only number is checked in English. All in all, it depends on the inflectional properties of the element which checks the uninterpretable features. To put it in the terms used in section 1, it all depends on the properties of the paradigm of a given item, and we of course know that in English adjectives, do not inflect at all:

(14)



In the rest of this section, I give some examples of how this proposal derives different kinds of concord in Italian and German. In particular, I want to suggest that the realization of the scattered head N can depend not only on the requirements of the paradigm (in certain case a scattering is required, in other cases it is not), but it may also depend on the properties of the paradigm of the element in Spec, as will be claimed is the general case of German adnominal adjectives (section 3.2), but is also the case of three special items in Italian (section 3.3).

3.1 Italian

The order in which adjectives are merged follows a hierarchy of adjectival modification, as argued by Cinque (1994), and much work after his seminal idea. This hierarchy of modification tells us nothing about the paradigm of individual adjectives, which can be divided into three major classes according to whether they concord for gender and number, only number, or whether they are uninflected. Notice that in Italian adjectives never concord for Case:

(15) a. Class1 overt gender and number (e.g. *italiano/a/i/e*);
b. Class2 overt number, no gender (*olandese/i*);
c. Class3 uninflected (e.g. *rosa*, *blu*, *demodè* (out of fashion), *punk*,).

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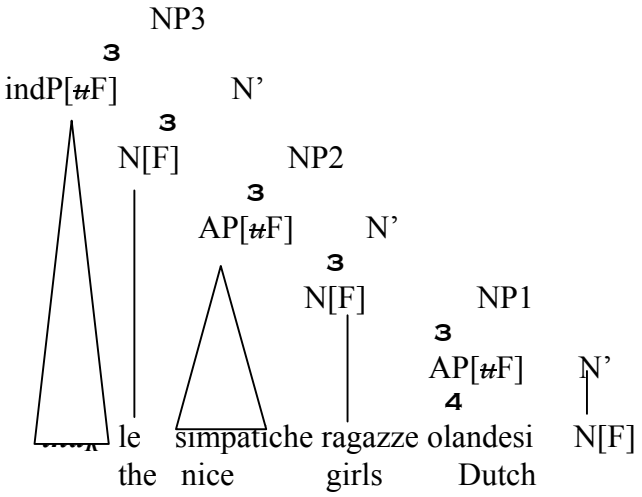
Starting from the lexical array in (16), let us derive the nominal expression *le simpatiche ragazze olandesi*, to which for the purpose of the discussion, we attribute nominative case, indicated as [–T]. Notice that the head N is bundled with gender, number and Case, but the paradigm gives it scattered in two forms{*ragazze, le*}, where gender and number appear on both segments:

(16) a. {*ragazz*,+fem,+pl,–T}→{{[[[*ragazz*]+fem]+pl]},{[[[–T]+fem]+pl]}},
b. {*olandes*(-gend)-num},
c. {*simpatic*-gend-num},
d. {ind$_R$-gend-num}

The structure is given in (17), where *ind$_R$* stands of an empty operator (cf. Campbell 1996) which is responsible for the definiteness interpretation of the nominal expression and is licensed by concord with the scattered head *le*, and where the lower head N is not spelled out at all:

(17)



As anticipated above, the head of NP3 must be overt to license the null *ind$_R$*. But if an overt *ind$_R$* is merged, as in the case of the demonstrative in (18), which concords with N for the relevant features (apparently gender and number), the upper copy of the bundle of N can (and therefore must) be economized, reminding us of a a "doubly filled Spec-Head Filter" effect. This can be reduced to a general principle of Economy, tentatively given in (19), which regulates the realization of copies of the extended head also according to the properties of the element

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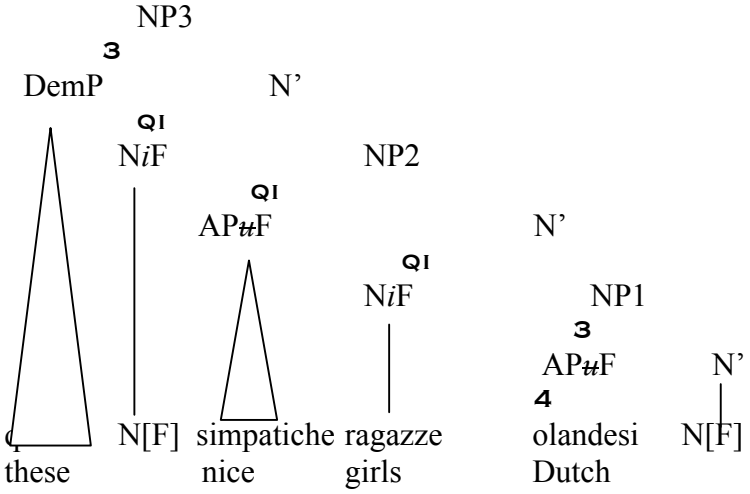
merged in its Specifier.[3] The economy principle in (19) is subject to variation according to the possibility in a given language for a given element in Spec to omit the over head (and in this case the head must be omitted) or not:

(18)



(19) Economize spell-out
If a feature is overt on the specifier (by virtue of concord), it may not need to be realized on the head.

Features are not necessarily overt on all segments of the paradigm. Gender may be non-overt on nouns as well as on adjectives. In (20) *patente* 'license", *cantante* 'singer'*, diserbante* 'weed-killer' are three out of many nouns derived from present participles, adjectival forms in -*e* (of Class 2 adjectives), that are typically underspecified for gender:

(20) a. la patente nautica
the.F.SG licence.SG nautical.F.SG
b. questa / questo cantante pop
this.F.SG / this.M.SG singer.SG pop
c. un forte diserbante chimico
a.M.SG strong.SG weed-killer.SG chemical.M.SG

In (20) we observe that in all cases, whether gender is interpretable as is the case for *cantante* (which can refer to either a man or a woman singer), or uninterpretable as in the case of the object referring *patente* and *diserbante*,

[3] For a previous formulation cf. Dimitrova-Vulchanova and Giusti (1998) "Economize functional heads", and Giusti (2002, 2009, 2010) for the treatment of doubly filled DPs in different languages.

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grammatical gender is provided to the modifiers which need it, namely the Class1 adjectives *nautica* and *chimico*, and the demonstrative *questa/questo*. There is no overt gender on *forte*, which is a Class 2 adjective, and no gender or number on *pop* a borrowing from English, which is uninflected like many borrowings, but this is a property of the paradigm of the adjective and is totally independent of the paradigm of the noun. And I also find no reason to say that on the adjective the non-overt features are not represented at all.

Trivial evidence to assume that gender and number inflection for a given adjective is part of its paradigm is the predicate position, where the three classes of adjectives discussed in (15) display the same property displayed in adnominal position:

(21) a. La giacca è rossa/ verde/ blu
the jacket.F.SG is red.F.SG/green.SG/blue
b. Le giacche sono rosse/ verdi/ blu
the jacket.F.PL are red.F.PL/green.PL/blue
c. Il cappotto è rosso/ verde/ blu
the coat.M.SG is red.M.SG/green.SG/blue
d. i cappotti sono rossi/ verdi/ blu
the coat.M.PL are red.M.PL/green. PL/blue

With the exclusion of uninflected adjectives, which can only occur in postnominal possitions, prenominal adjectives can be of Class1 and Class2:

(22) a. La grande/ piccola giacca rossa/ verde/ blue
the large.SG/ small.F.SG jacket.F.SG red.F.SG/green.SG/blue
b. Le grandi / piccole. giacche rosse/ verdi/ blu
the large. PL/small. F.PL jacket.F.PL red.F.PL/ green.PL/blue
c. Il grande/ piccolo cappotto rosso/ verde/ blu
the large.SG/small.M.SG coat.M.SG red.M.SG/green.SG/blue
d. i grandi/ piccoli cappotti rossi/ verdi/ blu
the large.PL/ small.M.PL coat.M.PL red.M.PL/green. PL/blue

We conclude this section observing that, as far as Italian is concerned, the paradigm of adjectives does not have any specification for the different positions where adjectives can are found. The adjectival hierarchy discussed in Cinque (1994, 2010), is independent of both the internal hierarchy of nominal features and of their realization either in the nominal or in the adjectival paradigm.

3.2 German

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Differently from Italian, adjectives in German have different inflections according to predicate (23) or adnominal function (24), and in this case they further differ according to the so-called weak and strong inflection (24):

(23) a. die Frau / der Mann, / das Kind ist sympatisch
theF.SG woman/ the.M.SG man / the.N.SG child is nice
b. die Frauen / die Männer, / die Kinder sind sympatisch
the.PL woman.PL / the. PL man. PL / the. PL child. PL are nice

(24) a. die sympatische Frau / eine sympatische Frau 'the/a nice woman'
b. der sympatische Mann / ein sympatischer Mann 'the/a nice man'
c. das sympatische Kind /ein sympatisches Kind 'the/a nice child'

Notice that weak or strong inflection is not related to definiteness, since in (25a) we observe strong morphology on the adjective following two indefinite determiners (*ein* and *kein*) and two possessives (*mein* and *ihr*), while the definite article and the demonstratives in (25b) trigger weak morphology. The irrelevance of definiteness is further reinforced by the observation that the masculine singular genitive realized as *-es* on all the determiners in (26) triggers weak inflection in all cases. The empirical generalization to be made here is that if the determiner, whatever its value may be, has strong inflection, the following adjectives have weak inflection, on the contrary if the determiner has defective inflection the following adjectives have strong inflection:

(25) a. ein/kein/mein/ihr gut**er** alt**er** Roman
a/ no/ my/ her good old novel
b. d**er**/jen**er**/dies**er** gut*e* alt*e* Roman
the/ that/ this good old novel

(26) a. ein**es**/kein**es**/mein**es**/ihr**es** gut*en* alt*en* Romans
of a/ no/ my/ her good old novel
b. d**es**/ jen**es**/dies**es** gut*en* alt*en* Romans
of the/that/ this good old novel

It is generally assumed that German adjectives have three different paradigms. One, totally lacking concord for predicate position, and two different paradigms sensitive to whatever features in the structure, to be used in adnominal position. But there is a more economical alternative to this. I propose to analyze the different morphology on German adjectives is to assume that adjectives are never inflected in German, as we observe in predicative and in the citation form. What we find attached to adjective is neither concord nor agreement morphology but a segment of the scattered nominal head. The head *Mann* in (27) is scattered in three segments. The lower segment makes just the lexical head visible, the intermediate segment (*-e*) which can be iterated as many times as there are adjectives, is underspecified for gender, and the highest segment (*-er*) is specified for gender, number and case. This can either be realized on the root *d-* of the

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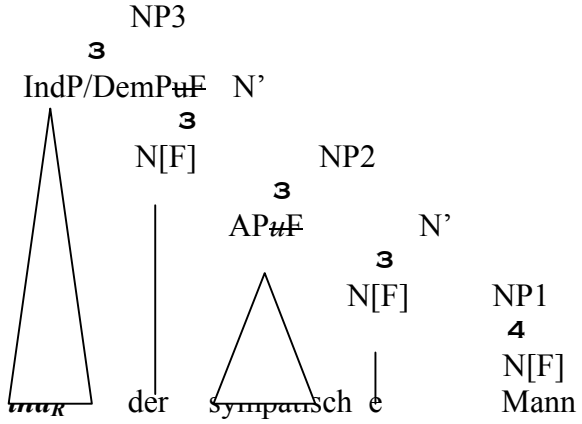
definite article (which I take to be a dummy and is therefore merged with it in N) or attached on the overt demonstrative *dies-* merged in SpecNP3 (namely SpecDP):

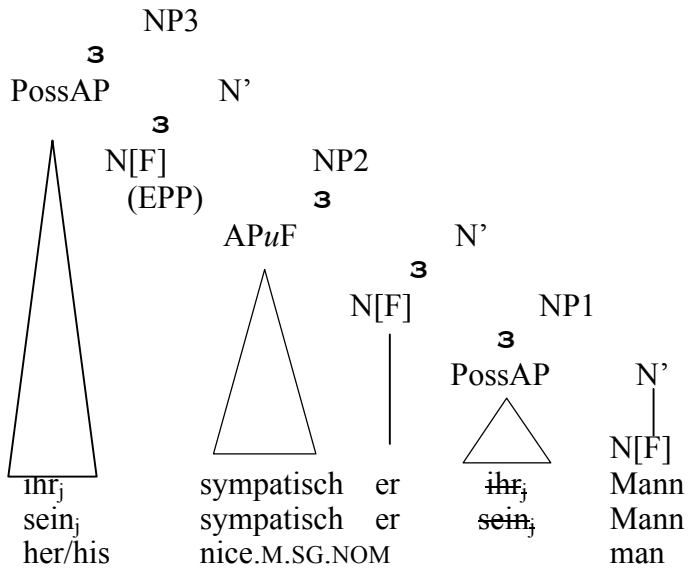
(27)



a. ~~*ihr*~~ der ~~sympati~~sch e Mann
b. dies- er sympatisch e Mann
this-M.SG.NOM nice-SG.NOM man

In noun phrases where, for some reason to be motivated in future work, the Specifier of the highest projection does not need to be in Spec-Head configuration with an over head, the highest segment of the scattered head appears attached on the adjective, as in (28), and can be iterated on as many adjectives as are merged (cf. (25-26) above):

(28)



ihr$_j$ sympatisch er ~~ihr$_j$~~ Mann
sein$_j$ sympatisch er ~~sein$_j$~~ Mann
her/his nice.M.SG.NOM man

Notice that the possessive in (28) is the "subject" of the nominal expression and as such it is targeted by the EPP feature in N[F] and moved from the low position SpecNP1 to the high position SpecNP3. It is however not the EPP feature that

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makes the N[F] of NP3 non-overt, since possessive adjectives in the same position occur with strong morphology and consequengly produce weak morphology in the following adjectives:

(29) seines/ seinem sympatischen Mann
his.M.SG.GEN/DAT nice.OBL man

3.3 A special case in Italian

Looking at German inflectional adjectival morphology in this novel is reminiscent of a recent proposal by Cardinaletti and Giusti (forthcoming) which accomodates three lexical items that appear in prenominal position in Italian. One is the prenominal form *bel*, and the other two are the distal demonstrative *quel* and the partitive article or articulated preposition *del*. The special morphology that justifies a unified treatment of these elements is the fact, immediately observable in tables (30)-(31) below, that they have the same very special morphology of the masculine plural definite article, which I give here only in the masculine because this is the gender where the special inflection is more evident. This is not shared by the proximate demonstrative *questo* and by other prenominal adjectives:

(30)

		boy.M.PL	friend. M.PL	Studenti.M.SG
a.	the	i**l** ragazzo	**l'**amico	**lo** studente
b.	those	que**l** ragazzo	que**ll'**amico	que**llo** studente
c.	handsome	be**i** ragazzi	be**ll'**amico	be**llo** studente
d.	some	de**i** ragazzi	de**ll'**amico	de**llo** studente
e.	these	questo ragazzo	questo amico	questo studente
f.	nice	simpatico ragazzo	simpatico amico	simpatico studente

(31)

		boy. M.PL	friend. M.PL	student. M.PL
a.	the	**i** ragazzi	**gli** amici	**gli** studenti
b.	those	que**i** ragazzi	que**gli** amici	que**gli** studenti
c.	handsome	be**i** ragazzi	be**gli** amici	be**gli** studenti
d.	some	de**i** ragazzi	de**gli** amici	de**gli** studenti
e.	these	questi ragazzi	questi amici	questi studenti
f.	nice	simpatici ragazzi	simpatici amici	simpatici studenti

Cardinaletti and Giusti (forthcoming) propose that while the morphology appearing on *questo* and on adjectives such as *simpatico* is part of the functional projection of the DemP or of the AP, the particular article-like morphology on *bel*,

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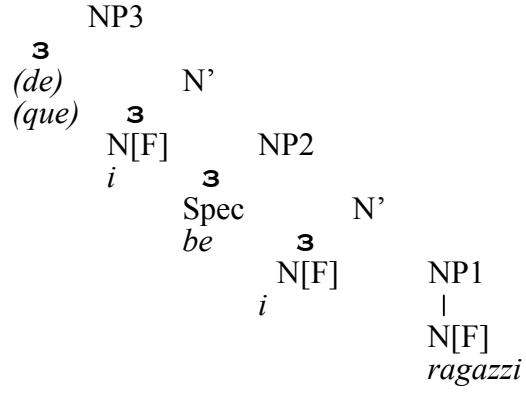
quel, *del* is a functional head of the extended projection of the head noun. In this framework of scattered heads, I reformulate that proposal by saying that the scattered head of masculine plural must be overt if such items as the prenominal adjective *be-* or the demonstrative *que-* or the partitive determiner *de* are inserted in Spec. The form of this scattered head which makes gender and number overt and is sensitive to the fonological properties of the following word, is identical with the article. In fact it is the article, which is nothing else than a segment of the inflectional paradigm of the noun:

(32)



We can conclude that the principle of economy in (19) which tells us whether to realize a copy of a bundle of features is sensitive both to the requirements of the paradigm of the scattered head as well as to the requirements of the paradigm of the XP that is merged in the Specifier. More than one identical copy of a scattered head may be overt, as we have observed in German (25-26) and in Italian (30-31a-d); and this also depends on the inflectional requirements, namely on the paradigm of the element merged in the specifier.

4. Conclusions

From the discussion above I think we have achieved a number of welcome results. The first is the one discussed in Giusti (2008) according to which Agreement and Concord are two different relations that can co-occur in the same Spec-Head configuration. This is true not only of possessive adjectives in Italian, as claimed there, but also in German as claimed in section 3.2 above. Due to the EPP feature triggering agreement between the head N and the possessive, the latter is moved to the upper portion of the nominal structure. But according to its paradigm, the possessive adjective concords with N. In German this may result in

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the overt realization of the scattered head in the highest or in the intermediate projections, as seen in (27-28) above.

A second result is that head-movement is cast in a general framework which restricts its instances in a principled way. It can explain a number of differences btween head-movement and other kinds of XP movement in a natural way and opens up new perspectives in the reconciliation of theories that want to do away with head-movement and others that claim that head movement is necessary.

As a consequence, this general framework allows a.o. for the reformulation of a number of questions in language acquisition and language change. Change in the paradigm, weakening in inflectional morphology are often the trigger for syntactic change. This falls naturally in the proposal that not only what is traditionally called inflectional morphology but also free functional morphemes such as complementizers and articles, and other sorts of "particles" such as prepositions and mood/tense/aspect markers can be considered as part of the paradigm of the lexical head (N, V, A) and are involved in the realization of the bundle of features associated with that head in syntax.

A third welcome result is the possibility to reconcile the cartographic notion of hierarchy with a more minimalistic perspective of economy. Hierarchies do not need to be "frozen" in labels merged in syntactic structure and are probably grouped according to different points of merger. The bundle of features of a head are hierarchically merged at the head level. They indirectly interact with syntactic structure in so far as the bundle hierarchy must be obeyed in the realization of the scattered head. But some hierarchies may not interfere with each other.

There are many issues open. First of all, this approach needs a formalization of the notion of paradigm, which has been left in a totally fuzzy state. I think it may be promising to look at the teories of inflectional morphology developed by Aronoff (1994), Maiden (2004) and a recent proposal by Thornton (2007). Since this approch is not formulated in the minimalist framework, it must be integrated with the idea that the paradigm represents the internal hierarchy of the bundle.

Empirical questions left open involve if and how concord takes place in the verbal domain as well. Adverbials are the natural parallels of Adjectives and they certainly entertain a similar structural relations to verbs. In this respect, I would expect to find languages where adverbials concord for verbal features. Unfortunately I have no hint whether this prediction is born out. As regards the uniqueness of agreement vs the recursiveness of concord, the difference between a unique person agreement on the highest auxiliary, vs a multiple gender and number concord on past participles in some cases in Italian, may suggest that the two different structural relations also take place in the clause, with interesting results.

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