

Hybrid Categories and the CIT



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Abstract One of the principles believed to be a basic cornerstone of the theory of the structure of phrases is the Categorical Identity Thesis (CIT), see in particular Grimshaw (1991, 2005) and Van Riemsdijk (1990, 1998). The CIT states that the categorial status of functional heads in extended projections must be identical. In other words, functional heads in nominal projections all the way up to the highest DP shell must be nominal in nature. And correspondingly functional heads in verbal projection all the way up to the clausal shells must be verbal in nature. There is a class of constructions, well-known, that seems to counterexemplify the CIT. The most obvious example of this kind, perhaps, is the existence, in English, of nominal and verbal gerunds. The present article suggests that a natural solution to this problem can be found if the theory of syntactic representations is rethought radically. The central idea is that syntactic representations should be thought of in terms of monovalued syntactic features and a multi-tiered arrangement of these features in ways that are close in spirit to Element Theory as developed for phonology in the 1980 s.

Keywords Categorical identity thesis (CIT) • Element theory • Extended projection • Gerunds • Obligatory contour principle (OCP) • Tiers

1 Preliminaries¹

The Categorical Identity Thesis (CIT), developed in Grimshaw (1991, 2005) and Van Riemsdijk (1990, 1998), states that the categorial status of functional heads in extended projections must be identical. In other words, functional heads in nominal

¹This short note is dedicated to my friend István Kenesei, enlightened linguist and invaluable fighter for the success of generative grammar in Hungary and well beyond. Thanks are due to an anonymous reviewer for a number of constructive comments. Errors of any kind remain, as usual, my own.

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projections all the way up to the highest DP shell must be nominal in nature. And correspondingly functional heads in verbal projection all the way up to the clausal shells must be verbal in nature.

There is a class of constructions, well-known, that seems to counterexemplify the CIT. The most obvious example of this kind, perhaps, is the existence, in English, of nominal and verbal gerunds. Gerunds are all built on a verbal stem with the suffix *-ing*. But not all *-ing* forms are gerunds. Take the following examples:²

- | | | |
|--------|--|------------------|
| (1) a. | John is walking. | progressive form |
| b. | the train now standing at platform 5 | reduced relative |
| c. | John destroying the book annoyed everybody. | verbal gerund |
| d. | John's destroying of the book annoyed everybody. | nominal gerund |

In the present discussion we will leave the progressive and the reduced relative aside.

Verbal gerunds take accusative objects, allow for adverbial modification, do not take articles nor adjectival modification:

- | | |
|--------|--|
| (2) a. | John quickly/*quick destroying the book..... |
| b. | *The quickly destroying the book.... |
| c. | *John quickly destroying of the book.... |

Nominal gerunds, on the other hand, cannot take an accusative object, they disallow adverbial modification, but they do take articles and allow adjectival modification.

- | | |
|--------|--|
| (3) a. | John's quick/*quickly destroying of the book |
| b. | The quick destroying of the book |

In other words, verbal gerunds are V-projection-like in the lower reaches of the projection and exhibit typical nominal properties in the higher functional shells. But nominal gerunds are nominal in the lower reaches and also show nominal properties in the higher shells.

There is, however, a third type of gerund, call it a hybrid gerund, which is like a verbal gerund in the lower domains of the projection but like a nominal gerund in the higher zones:

- | | |
|-----|------------------------------------|
| (4) | John's quickly destroying the book |
|-----|------------------------------------|

On the assumption that the hybrid gerund form as such is verbal, this means that the higher functional shells switch from verbal to nominal. This implies that hybrid

²The examples are borrowed from Alexiadou (2013: p2 exx (1-4)).

gerunds constitute a problem for the CIT. For discussion see i.a. Grimshaw (2005), Alexiadou (2013) and Pires and Milsark (2017).

In my contribution I will discuss this puzzle and suggest a way of approaching this puzzle that, while not explaining the problem of hybrid categories entirely, may point the way to a possible and plausible solution. This approach is based on a rather fundamental rethinking of the nature of syntactic representations. The standard view, originally proposed in Chomsky (1970), was based on two binary categorial features: $[\pm N]$ and $[\pm V]$. Together, these features define the four major categories N, V, A, and P in the following way:

(5)

	+N	-N
+V	A	V
-V	N	P

As I have argued in Van Riemsdijk (1988) the categorial features should be replaced by a set of mono-valued, privative features. Working out more details of a representational system along these lines turns out to permit a rather straightforward account of hybrid gerunds.

This note starts with a discussion of what I call syntactic Element Theory. What I mean by that is an alternative approach to the representation of syntactic categories that is based on monovalued categorial features. This will be the topic of Sect. 2. Section 3 will describe how syntactic Element Theory can be used to deal with hybrid categories, in particular with the problem of hybrid gerunds. In Sect. 4, a brief conclusion will be presented.

2 Syntactic Element Theory and the CIT

Categorial identity is the observation that the spine of extended projections consists of nodes that carry the same categorial features: functional heads (and their projections) of nouns are nominal, functional heads of verbs are verbal etc., see Grimshaw (1991, 2005), Van Riemsdijk (1990, 1998). Extended projections are what counts for endocentricity and maximality, intermediate maximal projections (to preserve the one-to-one relation of (functional) heads and their phrases) are unimportant (Grimshaw) or abolished (Van Riemsdijk). Categorial identity can be seen as the major principle that guarantees the internal cohesion of phrases.

Assuming NEG to be a functional head in the verbal projection, the CIT implies that NEG must carry the verbal categorial feature(s). But unlike, say, auxiliaries, which are clearly verbal, there is no straightforward way to identify NEG as either verbal or nominal or, indeed, to assign it any categorial status at all other than NEG. But assigning it the category ‘NEG’ is obviously a lazyman’s solution, at best. The CIT, however, forces the issue. And indeed, just to stick to this example, there are languages in which identification of the categorial status of NEG is transparently

possible. As a matter of fact, it shows up as a verbal element. Take Finnish (and several other Finno-Ugric languages).³ The negative verb is conjugated in moods and personal forms in Finnish. In the present tense, the form of the main verb is just the stem of the present form without a personal ending, e.g. *lähden—en lähde* (“I leave”—“I do not leave”), *menisit—et menisi* (“you would go”—“you would not go”), *syönee—ei syöne* (“he/she may eat”—“he/she may not eat”), *ottakaamme—älkäämme ottako* (“let’s take”—“let’s not take”). In the imperfect tense, the form of the main verb is the past participle, e.g. *otin—en ottanut* (“I took”—“I did not take”), *otimme—emme ottaneet* (“we took”—“we did not take”). Obviously, the NEG-element inflects for person and number like auxiliaries do.

As in physics, the force that ensures the cohesion of extended phrases has a counterpart, the force of repulsion. Repulsion is active at the places where an extended phrase is embedded in a broader syntactic context. An extended nominal projection, call it DP, will be the object of a verb in a verbal projection, for example. Put differently, N does not take N-projections as complements, V does not take (bare) V-projection complements (modulo restructuring (fusion) or movement (separation)).⁴ This type of effect is statable as *XX, and it is natural to see this as a manifestation of a large family of phenomena often referred to as haplology.⁵ There are many problems in this domain, in particular sorting out when haplological effects are active and when they are not. Historically, haplology is mostly detected in morphological or morpho-syntactic phenomena. But it is plausible to consider other sets of phenomena in these terms as well, though if means interpreting haplology in a more abstract way. I think it is plausible, for example, to consider the Doubly Filled Comp effect as an instance of haplology, for example. The reason is that in languages that have the DFC effect, wh-phrases in Spec, CP will yield the effect when C is instantiated by a complementizer, generally a morpheme of nominal origin. But when Verb Second style processes put a verbal element into C the DFC effect disappears. See Van Riemsdijk (2008) for more discussion.

The categories suggesting this interplay of cohesion and repulsion are N and V. When we turn to the two other major categories, AP and PP, a somewhat different picture seems to emerge. Ps and PPs act like jokers: they cooccur with every other category, in other words, P/PP is the most versatile category. P can take DP, PP and VP/CP as its complement and PP can be a complement to V, N, A and P. Inversely,

³The examples given here are from: https://en.wikipedia.org/wiki/Negative_verb. The paradigm of the negative auxiliary is as follows:

Indicative:	1SG: en	2SG: et	3SG: ei
	1PL: emme	2PL: ette	3PL: eivät
Imperative :	1SG: ä	2SG: älä	3SG: älköön
	1PL: älkäämme	2PL: älkää	3PL: älkööt

⁴A metaphor that comes to mind when we think about the interplay of cohesion and repulsion is magnetism, cf. Van Riemsdijk (1998).

⁵See also Neeleman and Van de Koot (2017).

A/AP are “outside” the head-complement system in that they essentially only occur in predicative relations. They cannot be complements to any kind of head, and if they take a complement, then that complement has to be a PP (or an obliquely case-marked DP, which I take to be essentially like a PP) or CP, where CP = PP, cf. Emonds (1985).

This means that there is a clear asymmetry among the major categories: P/PP is the most versatile category, suffering least from *XX-effects, A/AP is the least versatile category, suffering most from *XX effects. This was the reason I argued for replacing Hoekstra’s Unlike Category Constraint (UCC)⁶ by the Unlike Feature Constraint (UFC), see Van Riemsdijk (1988). The idea was quite simple: instead of taking the four major categories as atomic units, we should look at the categorial features [\pm N, \pm V]. The observed asymmetry can then be accounted for by limiting the *XX effect to the positive values of the categorial features. This idea in turn points unequivocally in the direction of monovalued, privative features. While I had realized this in my (1988) article, I inexplicably set the idea aside in my (1998) article. I am currently trying to make up for that mistake.

The primitive system developed in Van Riemsdijk (1988) was based on the assumption that the monovalued features [N] and [V] could be represented like autosegments in phonology and that the *XX effects were due to the *Obligatory Contour Principle* (OCP). This way of handling things was directly inspired by Vergnaud’s work on vowel harmony (1976, 1980). For a first translation of a Vergnaud-style system, see Figs. 1 and 2.

One aspect implicitly present in the overall picture is not directly reflected in representations of the type shown in Fig. 1, namely the idea that the OCP forces a kind of template on syntactic structures. Indeed, one might say that the core of phonological representations, sequences of syllables, are, essentially, of the type CVCVCVCV. In very much the same way, we could say that, again simplifying to the extreme, the core of syntactic representations is a template of the type NVNVNVNV.⁷

⁶Hoekstra’s idea was to generalize from N and V to all four major categories, assuming that P/PP and A/AP have essentially the same properties as N/DP and V/IP, see Hoekstra (1984).

⁷In a GLOW/talk Kayne (1982) presented a similar idea, though more from the perspective of semantics and the lexicon than with phonology in mind. The reviewer points out, correctly, that the templates which I am suggesting here constitute the basic skeleton for both syntactic and phonological structures, are misleading in the sense that CVCVCVCVCV is generally taken to be purely linear. NVNVNVNVNV on the other hand might be taken to be non-linear in the strict sense in that the V is generally assumed to govern the N (or its phrase NP/DP) but not vice versa. And in the case of the template HMMHMMHM we have a purely hierarchical situation in which each lexical head H is contained in a (maximal) phrase M, which in turn is governed by another lexical head H. But the linearity of the CVCVCV tier is far from uncontested. Indeed, assuming syllables, as they often are, to be built up by a nucleus which together with a coda constitutes a rhyme, and furthermore assuming the rhyme to be ‘merged’ with an onset to form the complete syllable, makes the structure of the syllable hierarchical. And in turn that suggests that syllables are not linearly aligned, as mostly thought, but indeed constitute a hierarchical structure, see in particular Vergnaud (2003) for illuminating discussion. Vergnaud even goes so far as to suggest that a sequence of syllables is just as recursive as syntactic structures are generally thought to be.

Fig. 1 Translating the binary features into privative features

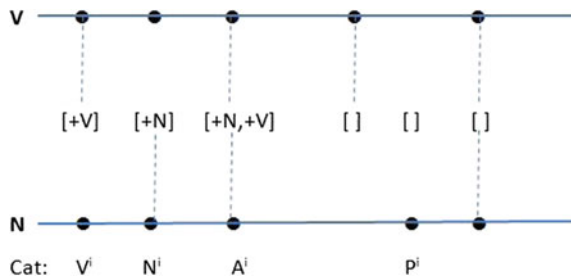
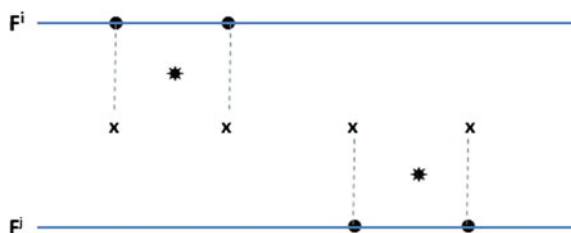


Fig. 2 An ‘autosegmental’ account of OCP effects



This way of thinking about syntactic structure is also attractive in another sense. In Muysken (1983) the idea was presented that the two ‘poles’ of a complex (extended) phrase are best characterized in terms of two features which he called $[\pm\text{Projection}]$ and $[\pm\text{Maximal}]$.⁸ Thinking about these two features in terms of a monovalued system, we could replace them by [H] for ‘head’ and [M] for ‘maximal projection’. And that would then yield a second basic template for syntactic structures: HMMHMMH.

With this idea as the broad background, we may think of syntactic representations in terms of an array of tiers, where each tier is a template. In particular, I will assume that terminals derive their syntactic status by being (or not) linked to some element on those tiers, I will call the one the categorial tier (CT: NVNVNV), and the other the level tier (LT: HMMHMM). The core syntactic units that are thereby characterized I will refer to as complete syntactic units (CSUs). In the example below I will illustrate this for the structure of the maximal projections of N and V.⁹ I have added a ‘tier’ for heads, lexical, semi-lexical and functional, as well as a tier as a tier called the merge tier. This is principally for convenience to show how the tier representation relates to canonical syntactic trees, but maintaining a Merge Tier (MT) and a Head Tier (HT) is probably redundant and can ultimately be dispensed with entirely. This is illustrated in Fig. 3.

⁸In some form or other this idea was incorporated both in Grimshaw’s and my work on extended projections (Grimshaw 1991; Van Riemsdijk 1990). For more discussion of Muysken’s proposal, see also Muysken and Van Riemsdijk (1986).

⁹Purely for convenience these are shown in the same figure.

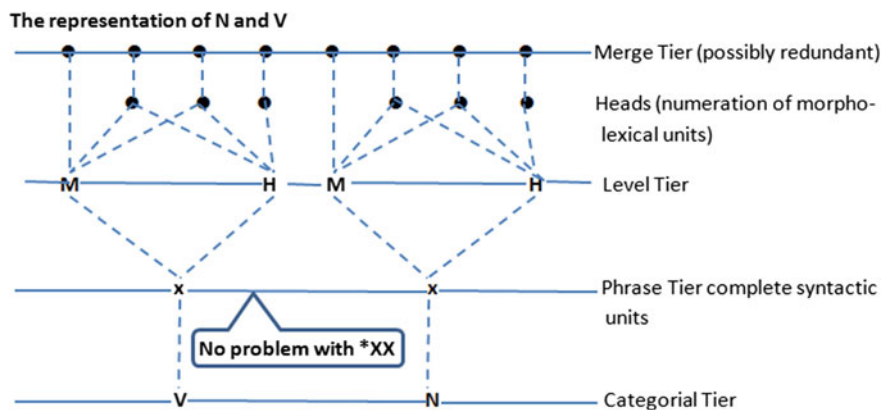


Fig. 3 The tiers of syntactic structure

If, in Fig. 3 we look at the two ‘segment slots’, we see that no OCP violations arise as on the Categorial Tier the N and the V are adjacent, that is, neither *NN nor *VV applies.¹⁰ The points on the head tier can be multiple. There is one that is uniquely linked to the lexical head, and there is one uniquely linked to the maximal projection position on the merge tier. Any intermediate heads are either functional or semi/lexical, where the degree of functionality or semi/lexicality is determined by their relative proximity to either the lexical head or the maximal projection node.¹¹

Figure 4 shows the general structure of AP. This is so because its CSU-slot is both N and V, hence OCP will rule the structure out regardless of whether the next slot is and N or a V. This accounts for the minimal syntactic versatility of AP. See Fig. 4.

Due to limitations of space, I will omit a discussion of the representation of PP.¹²

¹⁰It is not clear that the OCP does any useful work on the Level Tier. I leave that open here.

¹¹For the notion of semi/lexical head, see Van Riemsdijk (1998) as well as the various articles in Corver and Van Riemsdijk eds. (2001) and many references cited there. What remains unresolved here is the question as to how the difference in degree between the lexical heads, the functional heads and all the head-types in between escape the OCP-effect. For the time being I will simply assume that the difference in degree is sufficiently large to defeat the OCP-effect. What is intended, however, is the idea that the relative proximity of an intermediate head node to either M(ax) or (lexical) H determines the relative degree of functionality/lexicality. Clearly, a more precisely formalized representational system should be devised for these notions.

¹²The issue is complicated by the fact that P is sometimes a pure lexical head, as in temporal adverbials, for example, but sometimes it is a high functional head as in prepositional objects. See Van Riemsdijk (2015) for discussion. More generally, the primitive system alluded to in the text is essentially about heads and complements. Not only are Ps an interesting ‘hybrid’ category that does not fit straightforwardly into the system, as discussed in my article mentioned above, but much more generally, the complete system of modification is outside this system. My own intuition is that this is precisely the right way of looking at it. The idea is old. See Jacobson (1964) and Keyser (1968).

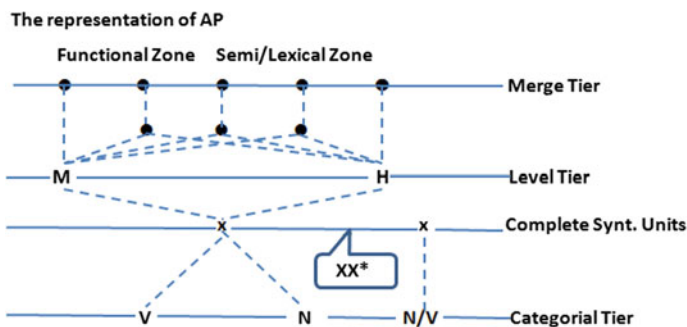


Fig. 4 How A-projections cannot escape the OCP

3 The Element Theory Approach to Hybrid Categories

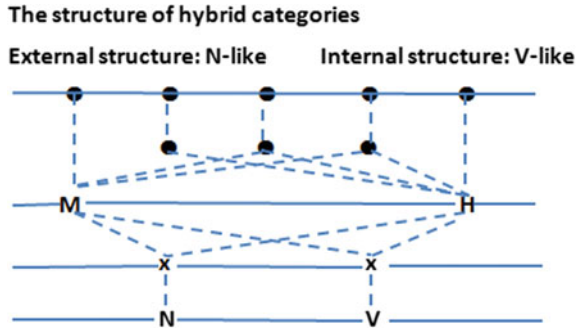
Let us now turn to the issue of hybrid (or mixed) categories. Take the case of hybrid gerunds. I will assume without further discussion that hybrid gerunds constitute one single extended projection.¹³ The problem, of course is, that the inside of the extended projection looks very much like a verbal projection in many ways, but externally it behaves like a DP. For extensive discussion, see Grimshaw (2005), Alexiadou (2013) and Pires and Milsark (2017). At first sight this sounds like a serious infraction against the CIT as the spine of this single extended projection seems to start off as a verb and somewhere halfway up changes to a noun. However, if we use the autosegmental, tier-based way of representing syntactic phrases, we see that there is no problem, as shown in Fig. 5.¹⁴

Reading Fig. 5, what the notion of hybrid category boils down to, if we compare it with the way a non-hybrid N-projection or V-projection is represented (cf. Fig. 3), a hybrid phrase has two slots on the Complete Syntactic Unit (CSU) but

¹³This assumption is, of course, not a trivial one. For general considerations on this type of questions, see Van Riemsdijk (1998). But surprisingly little has been said about possible criteria to decide the matter in the case of gerunds. One possible source of information, one might think, is extractability of the object of the gerundive verb/noun. My impression is that extraction is possible in either case: (i) Which book did you witness John's destroying (of) ___? As far as I am aware, both variants are possible. In case the verbal gerund were monoprojectional but the hybrid gerund biprojectional, one might have expected a differential grammaticality judgment. But a recent overview publication, Pires and Milsark (2017), discusses only the extractability of the subject of the gerund and notes that genitive subjects of gerunds are not extractable, which is not a surprise in view of the Left Branch Condition.

¹⁴The tiers are exactly the same as those in Fig. 4 above. From top to bottom: Merge Tier, Level Tier, Phrasal Tier (or Complete Syntactic Units Tier), and Categorial Tier. Note incidentally that the implied ordering of the tiers is largely an artefact caused by the two-dimensional way of graphically expressing structures that consist of multiple autosegmental tiers.

Fig. 5 Representing hybrid categories in syntactic element theory



packed into a single H-M pair. A non-hybrid phrase, for example a maximal extended N-projection, has a single CSU which is connected to a single N on the Categorical Tier. We may say that hybrid gerunds retain their status of counterexample to the CIT, but it is a counterexample that is perfectly predicted to exist due to the choice of syntactic Element Theory as the best way of representing categorial structure in syntax.

4 Conclusion

I conclude that the Element Theory approach to the representation of syntactic phrases, which is restricted in important ways by the OCP, offers a quite straightforward and insightful way of representing certain hybrid phrases including nominal gerunds.

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