Condition B in NPN*

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SUMMARY

This article deals with Condition B in NPN constructions like *face to face*, which is a case of reduplication in Travis (2003) or Jackendoff (2008) but a structure obtained by simultaneous symmetric Merge of P with N in Haïk (2013). After reminding the reader of my previous analysis, which claims that NPN constructions are ternary flat structures which only seem to contradict Kayne's antisymmetry of syntax, I follow this with binding conditions in the *face to face* construction and propose that NPN constructs must obey Condition B. This condition will be advocated here as the linguistic manifestation of our cognitive system, which is unable to produce a mental representation of the same thing in two different places at the same time.

RESUME

Cet article considère comment la Condition B s'applique aux constructions NPN comme *face to face*, qui est, selon Travis (2003) ou Jackendoff (2008), une structure à réduplication, mais selon Haïk (2013) une structure obtenue par la Fusion simultanée en mode symétrique de P avec N. Après avoir rappelé mon analyse de la construction, où NPN est une structure ternaire qui, apparemment, semble contredire l'hypothèse de Kayne sur l'antisymétrie de la syntaxe, je poursuivrai sur les conditions de liage qui apparaissent dans la construction *face to face*, car ces structures doivent respecter la Condition B, analysée ici comme la manifestation linguistique de notre système cognitif, qui ne peut pas produire une représentation mentale d'un même objet à deux endroits différents au même moment.

1 NPNs

It is important to acknowledge that NPN constructions are of two kinds, depending on whether N or P is the head. In Haïk (2013), they are either N-headed coordinate nouns—a rare construction, like *student after student* which occur in nominal positions; or P-headed small clauses, acting as DP- or V-modifiers like *nose to nose* or *day by day*—a common construction among languages:[1]

* To Lisa Travis, for good moments in our youth in Building 20; for all her personal qualities of kindness and intelligence, Lisa was among the people who made the MIT Linguistics Department such a great place to be in; and for friendly encounters in Montreal and virtual space, while life was going on. With the joy of entering a debate Lisa has largely contributed to.

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(1) N-headed NPNs (*student-after-student* construction):
Student after student flunked. (Jackendoff 2008)

(2) P-headed small clause NPNs (a: *face-to-face* and b: *day-by-day*):
a. They challenged each other face to face/nose to nose/forehead against forehead/etc.
b. The international economic landscape is changing day by day.

All these NPN constructions show the same Condition-B effect, but for this article I have decided to concentrate solely on the *face-to-face* construction.

One striking property of NPNs is that, except for a few exceptions like *nose to cheek* which receive an ordinary nonsymmetric small-clause analysis, the nouns must be the same:

(3) face to face/*face to nose (Jackendoff (2008)

This has led Travis (2003), Jackendoff (2008), Pi (1995), Pskit (2015) and others to analyze NPN as the result of reduplication. Travis provides an elegant account of reduplication as syntactic head movement of N to the specifier of P, leaving an overt N, where P functions as a plural quantifier, accounting for the special properties of this construction, which names a plural and not a pair in *day by day*, and where the final N can carry modifiers (*hand in sticky hand*).

Despite the explanatory power of that account, let me suggest a competing idea. Let us link the identity condition on the Ns to the question of what a *face-to-face* NPN names:

(4) Jules and Jim stood there hand in hand/nose against nose/shoulder to shoulder, etc.

Those NPNs name the posture of two individuals whose body-parts stand in mirror symmetry with each other. Their form and their meaning recall nonsymmetric depictive expressions like *his hand to his face*, which are ordinary prepositional small clauses which name the posture of one or more individuals with respect to oneself or to one another:

(5) They/he stood there, [her lips on his cheek]$_{SC}$/[his hand to his face]$_{SC}$, etc.

Such small clauses respect the syntax of Ps, which have a subject interpreted as a figure, and which form a predicate interpreted as the ground against which the figure stands out, as in Talmy (2000), adopted and worked out for example in Svenonius (2007).

Now, returning to NPNs, if they are small clauses too, this raises the question whether a small clause can express symmetry. Consider the task of naming a mirror symmetric situation, such as two noses against one another, as in (4) above. Conceptually, it is hard to determine which form is the figure and which is the ground, because one is as salient as the other, so both forms should be figures having the other figure as a ground. In the psychological studies of the perception of spatial objects, the Gestalt experiment with Rubin's vase, which originally illustrated the notions of figure and ground, shows that we either see a black vase in a white background or two symmetric faces

[1] The distribution and meaning of this type of modifying small clauses in French have been studied at length in Hanon (1989), and the various NPN constructions in Beck and von Stechow (2006), Jackendoff (2008), Matsuyama (2004), Oehrle (1998), Pi (1995), and Travis (2003) among others.

against a black background, and takes for granted that the mirror symmetric shapes are seen as a whole:

Figure 1. Rubin's vase (from https://upload.wikimedia.org/wikipedia/commons/b/b5/Rubin2.jpg)

In fact, Gestalt theory found that symmetric components tend to group together (Todorovic 2008). We may thus wonder whether symmetry can be expressed with the use of a small clause, because a small clause describes a salient figure against a less salient ground. The answer is that it is possible. There are two ways to do that, and one of them is the one I will argue for.

2 TWO WAYS TO EXPRESS SYMMETRY

One way for the symmetric reading to be obtained in (4) is for the small clause to be predicated of each member of the plurality, here, *Jules and Jim*, distributively. If each one of them is assigned the property of having his nose against the other's nose, then that produces the symmetric reading. This analysis respects binary branching. So, let us discuss binary branching before we turn to the second way the symmetric reading can be obtained.

Since Kayne (1994), syntactic work has been using the idea that structures are binary branching. If syntax is the reflex of a series of computational operations, then binary branching shows that certain mental operations are done and can only be done with two elements at a time, like saturation, scope taking and agreement. Some other tasks can be done at the same time as the derivation, like associating intonation, gestures and mimics with a meaning during the derivation (Ebert and Ebert 2014; Schlenker 2017).[2] So, if syntax reflects mental computation, we may claim that grammar can use a device available for mental actions in general, action in symmetry. So, the operation that actually gets the symmetric reading is symmetric Merge:

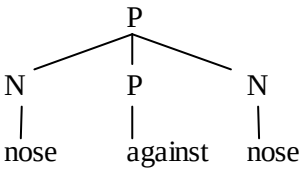
(6) NPN small clauses result from Merge of P with N done at once in a symmetric fashion around P, forming two symmetric PN predicates applying to two symmetric N subjects. The resulting flat structure thus necessarily reads as the union of two phrase markers.

Symmetric Merge is more economical than the binary derivation because it produces and interprets the three elements N, P and N all at once as two subject-predicate relations, one read from left to right, the other from right to left; whereas binary calculus of N[PN] has to perform two binary relations – it must first form a predicate then a subject-predicate relation – and one computational step is more economical than two. Moreover, in general, symmetric actions or perception of symmetry are easier, hence presumably more economical, than nonsymmetric or nonsimultaneous similar actions or perception (van der Helm and Leeuwenberg 1996; Ivry et al. 2004). So this derivation must be preferred by the language faculty.

[2] This does not necessarily lead to Philips and Lewis's (2013) claim that grammar is a real-time procedural system, building in a top-to-bottom left-to-right fashion, but if all its properties are cognitively based, then each grammatical operation corresponds to some mental calculus. What can, must, and cannot be done consists in grammatical knowledge and that knowledge is put to use in top-to-bottom left-to-right order.

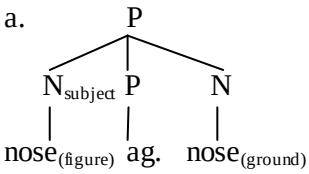
So, a small clause NPN is a ternary structure where P stands on a plane of symmetry:

(7)

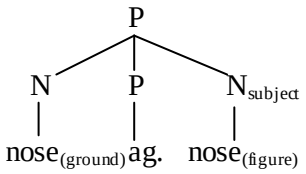


In such a flat ternary structure, I assume that each N can be defined as a subject of the group formed by the other two elements P and N, because it does not belong to that group, whereas the other N can be defined as the complement of P because it is contained in the projection of P. Moreover, given that the subject-predicate relation *nose + against nose* simultaneously merges leftward and rightward in a mirror symmetric fashion, it reads from left to right and right to left (*nose A against nose B and nose B against nose A*). This means that structure (7) must necessarily be analyzed as the union of two phrase markers (Goodall 1984), where P and N form the predicate applying to the $N_{subject}$ (*figure* and *ground* indicate the interpretations):

(8) a.



and b.



The whole construct is a projection of P, because small clauses are projections of their predicates (Stowell 1983). As for the symmetric meaning, it is a necessary result of symmetric Merge, because the Ns that occur on both sides of the preposition are the projections of one and the same element retrieved from the numeration, N (say, *nose*, *hand*, etc.), and given that N summons the mental representation of one particular object (a nose, a hand, etc.), N calls to mind two mirror mental representations of that object, one associated with the N before the P and the other with the N after the P. The meaning of the P will say whether the mental representations of the two Ns are set in mirror symmetry or in sequential symmetry, which is another possible mental representation of symmetric objects, as in the *student after student* and *day by day* constructions.[3]

As for small clauses with different nouns, like *nose to cheek*, the fact that they have different nouns necessarily precludes the symmetry analysis. They are produced by the general rules of hierarchical binary computation of ordinary small clauses. Let us now turn to the binding facts.

[3] Structure b seems to violate word order, because a complement to the left of its head does not fit Kayne's (2011) universal rightward expansion of Probe to Goal or Chomsky et al.'s (2017) theory of linearization. And the specifier should be to the left of its predicate. So, if the left-to-right expansion of Merge stems from the way operations are performed in the brain, then the order in structure b should be impossible. However, the leftward-expanded derivation is not deviant because it is obtained by a mental operation performed in symmetry with one that respects those linearization conditions.

3 NO REFLEXIVE READING

3.1 THE FACTS - A PRELIMINARY IDEA: CONDITION C

The relevant contrast emerges depending on whether the Ns are the same or not. We see that NPN small clauses with same Ns cannot be interpreted reflexively:

(9) a. Jules and Jim are standing, hand to/on shoulder. ✓ refl | ✓ recip
b. Jules and Jim are standing, hand in hand/foot to foot. *refl | ✓ recip

In Haïk (2013) I banned the reflexive interpretation of (9b) as a Condition-C violation by the two Ns. Because, if we assume that an N like *hand* names a type rather than a token (Vergnaud and Zubizarreta 1992), then two occurrences of *hand* have the same reference if the hands belong to the same individual, and given that they c-command each other, they violate Condition-C.

However, if we were to rely on Condition C, the view that syntax is a reflex of semantic and morphological computation would not fit with a number of interesting theories of Condition C, where the ban on R-expressions has been expressed in cognitive or pragmatic terms (Bouchard 2010, Zribi-Hertz 1989, Ruwet 1991, Wasow 1979, and Schlenker 2005). For example, in Schlenker's (2005) pragmatic account, a relevance principle requires avoiding naming, in its domain of salience, a super-salient entity with an R-expression. Super-salient entities are individuals mentioned by an R-expression. Syntactic and semantic correspondences conspire to the result that the syntactic domain of salience of a DP is its structural sister. So, an R-expression may not occur inside the sister of the same R-expression, which is Condition C. Alternatively, Bouchard's (2010) account of Condition C explains the ban on subject pronouns c-commanding their antecedents because pronouns depend on their antecedents for their interpretation, and a VP depends on its subject for its interpretation, leading to circularity that does not make sense cognitively.

In such analyses, Condition C uses semantic dependency. But considering NPNs, they name symmetric objects, which are grammatically computed with symmetry. If we follow Schlenker's logic, given that symmetry produces two referents with the same salience (the two faces of Rubin's vase), then we would expect that naming the two with a full N each should be possible, no N sister to the other compelled to prevail. So, Condition C does not target what is at stake here.

Let us put the responsibility of the impossibility of the reflexive interpretation on the internal reading of NPN small clauses, namely on the interpretive values assigned to the Ns.

3.2 ANALYSIS WITH CONDITION B. CONDITION B IS A COGNITIVE CONSTRAINT

First, we assume that NPN constructs are binding domains, because they have subjects. In NPNs, if the Ns are the same, as in *hand in hand*, then, if the body-part belongs to the same body, they refer to the same thing and they produce Condition-B violations. And when the Ns are different, as in *hand to cheek*, or when they name body-parts of different individuals, as in *hand in hand* in the reciprocal interpretation, they do not violate condition B.

Let us first define Condition B and then see how it applies in NPN constructions. Condition B excludes co-arguments that have the same referential value:

(10) a. *John$_i$ likes him$_i$/a picture of him$_i$
b. John$_i$'s sister likes him$_i$

The main difference between (10a) and (10b) is that in (10a), the scene described involves the participant John twice, one of which is John and the other also John (or John in the picture), whereas in (10b), it involves John's sister and John. What is wrong with (10a) is that a scene cannot involve one same individual playing two participant roles, each participant occupying its own inherent spatiality in that particular scene. This is, ultimately, due to the general cognitive constraint that prohibits conceiving one and the same object in two different places at the same time. In NPN small-clauses, the reflexive interpretation is impossible because it requires mentally placing one body-part in a certain place and the same body-part in another place in the same mental image. The cognitive constraint prohibits that. We assume the following:

(11) a. In NPN, each N names some mental referent.
b. A syntactic binding domain names a mental picture.

The present account does not put into question the definition of binding domains. They are usual minimal functional domains. What this article claims is that syntactic binding domains are isomorphic with units of mental representations, which contain mental referents. And the binding theory constrains the occurrences of such mental referents:

(12) Cognitive constraint (manifested as Condition B in grammar):
One cannot conceptualize a thing in two different places at the same time.

Thus Binding condition B is not a grammatical constraint but the effect in language of that cognitive constraint. Compare with Reuland (2011), who also aims to explain binding theory as a reflection of cognitive capacities. In the present account, the cognitive condition I am appealing to has been verified independently of language; a relevant question in the debate is whether the linguistic capacity is autonomous or derives from general mental properties.

Now, why is it that anaphors escape condition-B violations?

3.3 CONDITION B DOES NOT EXCLUDE ANAPHORS

The reason why this cognitive property does not extend to anaphors is because anaphors do not give rise to mental referents, causing the cognitive principle to apply vacuously. Note that my claim does not apply to long-distance- or focus- or other exempt reflexives, which deserve a separate account, as in Zribi-Hertz (1989), or Cole *et al.* (2008). Consider the simplest case:

(13) Jules saw himself.

If anaphors were not special items, the individual Jules would be mentioned twice, both the DP and the anaphor would summon a mental representation of him, violating cognitive constraint (12) and the sentence should be rejected. The reason (13) sounds perfect, and thus can be computed by the linguistic capacity, is that, as claimed here, reflexives and reciprocals are special lexical items that do not name mental referents and hence do not fall under (12). Still, they allow the clause to describe a situation with the same predicates as when the situation is not reflexive or reciprocal.

Anaphors, through some functional means, allow an event to implicate an individual without having to mentally put that individual in some inherent place distinct from that of its antecedent. Evidence for their special argument status has appeared in Kayne (1975), who observed that, in French causative constructions, an embedded reflexive or reciprocal verb (*se + verb*) behaves like intransitive verbs in not triggering the dative preposition *à* on its subject, as opposed to transitive ones, which are marginally acceptable with a non-reflexive clitic:

(14) Il a fait **se** voir ***à** ces deux-là. vs. fait la voir (?)✓ **à** ces deux-là.
He has made **SE**-see ***à**-those two made her-see **à**-those two
'He has made those two see themselves/each other vs. see her.'

This behavior has led a large number of linguists to suggest that reflexive and reciprocal morphemes are not arguments of verbs. Some authors, like Reinhart and Reuland (1993) or Reinhart and Siloni (2005) create a reflexive/reciprocal predicate by linking two of its argument places. Williams (1994) encodes binding relations in theta-grids. Such types of analyses are compatible with the claim that a reflexive or a reciprocal element does not call to mind a mental referent with its own inherent spatiality.

3.4 CONDITION B IN NPNS

Consider NPNs again, where the reflexive reading is barred, unlike the reciprocal reading:

(15) a. Jules and Jill danced hand in hand/arm in arm/palm against palm.
b. Jules is face-to-face *(with himself).

We must give two separate accounts, depending on whether the NPN is idiomatic or not. A number of NPNs are idiomatic, as in (15b) and others not, as in (15a). So, let us start with non-idiomatic NPNs, and then we will study the idiomatic ones.

Consider first the impossible reflexive reading of a non-idiomatic NPN like *palm against palm* in (15a). This NPN is produced by merging N with P in a symmetric manner, yielding a ternary structure interpreted as the union of two symmetric small clauses: $N_{subject}$+$[PN]_{predicate}$ and $[NP]_{predicate}$+$N_{subject}$, calling to mind two simultaneous mental pictures. In each structure, two Ns occur, which both call to mind the same mental referent, but that is impossible by principle (12). Hence, the NPN is excluded by Condition B, for having one same referent impossibly required to appear in two places in each mental picture corresponding to each phrase marker.

Now consider the reciprocal interpretation. That interpretation is one in which the Ns do not name body-parts of the same person. As a union of two phrase markers, the two NPN small clauses are interpreted as naming two pictures, one interpreted as 'N_1 [is P N_2]' ('x's hand is in y's hand') and the other as '[N_1 P] is N_2' ('in x's hand is y's hand'). In none of these mental pictures does one same referent appear twice, hence the absence of a violation of Condition B.

One comment is necessary. A crucial point in this analysis is that the Ns of NPN constructs do not name the whole plurality of the body-parts. For example, if the Ns were plural and named the two symmetric objects, as in the ill-formed **faces to faces* small clause, mentioning the sum of John's face and Jim's face, that would produce a Condition-B violation. That is because plurals in their reciprocal interpretation must obey Condition B, even if each interpretation of the reciprocal reading respects Condition B. That is to say, even if a sentence like **John and Mary saw them*

should be acceptable in the reciprocal reading ('John saw Mary and Mary saw John'), it violates condition B because the two DPs *John and Mary* and *them* call to mind the same set of individuals. The NPN construct escapes that violation by having N heads, which do not name the set in question. In conclusion, the NPN construct is formed of two Ns, each one of them naming a thing. Given that it is the union of two symmetric phrase markers, it gives rise to the two needed reciprocal interpretations, each phrase marker yielding one of the two interpretations.

Now, let us consider what happens when an NPN like *face-to-face (with)* is an idiom, as in (15b). Then its internal content is independent of the clause it occurs in because its meaning has been computed once and for all independently of that clause. An idiom is partially not computed compositionally in the syntactic derivation, its internal content being inert as concerns the saturation operation, and the reference of nominals.[4]

Let us consider how the meaning of idiomatic *hand-in-hand* is formed. Like all NPNs, it is formed by symmetry and thus necessarily names a mirror symmetric picture. Because it is a binding domain, owing to condition B, it cannot have a reflexive meaning. So, the idiom *hand-in-hand* must be understood as involving a relation between two different hand-types, and consequently two individuals, like reciprocal predicates such as *meet*. Then, once the reciprocal meaning has been fixed, such small clauses are apprehended holistically, with a meaning of mirror symmetry, paraphrasable as 'intertwined with' for *hand-in-hand*, 'facing' for *face-to-face*, 'facing closely' for *nose-to-nose*, etc. Because the idiom is not computed compositionally when it enters the syntax, the two nouns *face* do not have to name faces, *a fortiori* the faces of the individuals named in the clause.[5] It is only when it is created as a word that Condition B applies, and makes it a reciprocal predicate, namely a predicate with two participants that relate reciprocally with each other, like *meet*. Let us consider that last point.

A reciprocal predicate can either take a complement (*Jules met Jim*), or apply to a plural subject (*Jules and Jim met*). The NPN too can find its two participants in those ways, by taking a complement in *with* naming the second individual, as in (16a), or by taking a plural subject, as in (16b). Then, this bi-argumental *face-to-face* predicate can turn into a reflexive one, by the use of the reflexive pronoun as a complement of *with*, like any reciprocal predicate, as in (16c):

[4] Ernst (1981) has shown that idioms are not fully inert and can accept adjectival or adverbial modification, as in *grist for the linguistic mill*, when they can be decomposed into metaphorical parts. Idioms can also treat an idiomatic DP as referential in a superimposed reading, as in Ernst's *pull [his cross-gartered leg]*, commented on by McClure (2011), which is why idioms must be represented as normal, discrete and hierarchical, syntactic structures. See Nunberg et al. (1994) for compositionality in idioms.

Another question is that, if structure is the reflex of semantic and morphological operations that take place when Merge puts two elements together, then we may ask how idioms, which do not compute saturation or assignment of reference to nominals, can be said to Merge in syntax. Simply, idioms are retrieved from memory with their particular form and meaning, but they are not computed with grammatical rules. Much like when we merely repeat a sentence, we put words next to each other but we do not activate our internal grammar to do so.

[5] Actually, the complement of *with* is often metaphorical, and its referent does not have to have a face, but the subject of *face-to-face* cannot be metaphorical, so the referents of the subjects below must have faces:

(i) Jules and Jim are face-to-face vs. *Jules and his mistake are face-to-face.
(ii) Jules is face-to-face with his mistake. vs. *This mistake is face-to-face with Jules.

(16) a. Jules will play face-to-face with Jim.
b. Jules and Jim will play face-to-face.
c. Jules is face-to-face with himself.

That means that, if an idiomatic NPN does not find the second argument in the structure, then the sentence is ruled out as lacking an argument, as in the idiomatic example in (16b) above (**Jules is face-to-face*), the same ill-formedness as that of **Jules met*.

4. CONCLUSION

NPN constructions are the result of a mental operation of structure production involving two linguistic objects, P and N, effected as symmetric Merge. This is necessarily accompanied with the meaning of symmetry of the things named, whose spatial relation is described by P. The resulting ternary structure is interpreted as the union of two phrase markers, one read from left to right and the other from right to left. These constructions cannot have a reflexive reading because of Condition B, and Condition B is the grammatical instantiation of a general cognitive property.

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