A representational analysis of Wh-Questions in French

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In this paper, we present empirical evidence and conceptual motivation for a representational analysis of Wh-questions in French, based on a comparative study of a signed language, LSQ (Langue des signes québécoise).

As is well known, in French, a Wh-phrase in a direct question may appear sentence-initially as in ($1$), or in situ as in ($2$).

($N1$)  

a  
Qui dis-tu qu'elle a vu?
"Who do you say that she saw?"

b  
À quoi penses-tu que Paul rêve?
"About what do you think that Paul is dreaming?"

($N2$)  

a  
Tu dis qu'elle a vu qui?
You say that she saw who?

b  
Tu penses que Paul rêve à quoi?
You think that Paul dreams about what

Currently, the standard assumption in generative grammar is that the sentences in ($1$) are derived by movement of the Wh-phrase to Spec of COMP. The Wh-phrase is assumed to be displaced in order to account for the fact that it combines semantically with the embedded verbs vu and rêve; the trigger for the movement is the need to indicate the scope of the Wh-phrase, assuming it to be quasi-quantificational in nature: the Wh-phrase moves into the Spec of a [+wh] COMP. In ($2$), the combinatory properties are directly recoverable; in order to obtain the scopal properties, it is assumed that the Wh-phrase is moved at a covert level of LF (cf. Aoun et al. 1981).

However, this type of analysis raises problems in an approach which tries to restrict grammatical constructs to those which are part of virtual conceptual necessity, such as Chomsky (1994) or similar versions of Occam's
principle. As Chomsky (1994: 16) notes, movement transformations are not part of virtual conceptual necessity. Therefore, if the high cost tool of movement transformations is adopted, then the minimalist approach becomes incoherent. So although Chomsky adds that "[t]he most casual inspection of output conditions reveals that items commonly appear overtly "displaced" from the position in which they are interpreted at the LF interface," we will argue that, if we go beyond a casual inspection, it appears on the contrary that items are NEVER "displaced", that they are always interpreted in the position in which they appear on the surface. It is therefore possible to restore coherence into the approach by eliminating this costly tool, the movement transformation.

A Wh-phrase in Spec of Comp is assigned a certain question interpretation in that position: in various analyses, this is expressed by an agreement relation with a [+Wh] or Q morpheme in Comp (Baker 1970). This is what is assumed to trigger the movement of the Wh-phrase (otherwise, movement would not take place due to considerations of economy of the derivation). But if a feature can trigger movement, it can presumably license generation of the Wh-phrase directly in that position. See Freidin (1978) for a similar criticism of the structure-preserving rule of passive. The Wh-phrase also gets a second interpretation, as an argument or an adjunct, but there is no a priori reason to privilege this interpretation over the first one in determining where the Wh-phrase should be inserted in the structure.

To better understand the role of order (and the structure that underlies it) for the two properties of scope and semantic combination in French Wh-constructions, we will look at order in a much broader perspective. On the topic of linear order and others as well, we tend to identify as deep properties of grammar, properties that may actually turn out to be artefacts
of our own mode of expression, that is, an oral language, with fairly rigid order. But in a large number of languages, the role of order is very different. A look at sign languages and at nonconcatenative languages puts order in a different perspective. These languages use means other than word order to indicate which lexemes combine together, so that these languages do not necessarily have a basic word order.

For instance, morphological markings provide information on the computation. It is a long standing observation that the richer that morphological information is, the freer the word order is (for example, see Osgood (1963)).

Consider how Wh-scope and semantic combination are expressed in LSQ. With regards to what a Wh-sign combines with, this is not expressed by order, since there does not appear to be fixed positions for arguments or adjuncts in general. Thus, in LSQ, all word orders are possible for sentences with manually signed subject and object. The examples in ($3$) are reproduced from spontaneous discourse or narration corpora.

($N3$)  

a. HEARING-PEOPLE INFLUENCE DEAF-PEOPLE  
"Hearing people influence deaf people"

b. WOMAN BIG PIZZA SLICE EAT  
"The big woman eats a slice of pizza"

c. BROTHER BITE INDEX3  
"It (a dog) bit my brother"

d. INTERPRETER THEMSELVES BRING  
"They brought their own interpreter"

e. WANT INDEX1 DOG  
"I want a dog"
The freedom of order is also apparent in Wh-constructions. Consider examples ($4$)-($6$), taken from Dubuisson, Miller and Pinsonneault. In ($4$), the Wh-sign is internal.

($N4$) 

\[-\underline{\text{whq}}\]

DISTRIBUTE HOW INDEX1

“How am I going to distribute that?”

In ($5$) and ($6$), the Wh-sign is initial and final. The different grammatical functions played by the signs PIERRE and WHO are not translated by a difference in sign order, but by a change in the movement of the directional verb which is signed from the object to the subject locus.

($N5$) 

\[-\underline{\text{whq}}\]

WHO PETER(i) 3HIREj

“Who is Peter hiring?”

($N6$) 

\[-\underline{\text{whq}}\]

WHO PETER(i) 4HIRE3

“Who is hiring Peter?”

In ($5$), the verb is signed towards the locus where Pierre is situated, whereas in ($6$) it is away from where Pierre is situated. So apparently, order is not what determines what a Wh-phrase combines with in LSQ. If we turn to the scope of the Wh-phrase, it is also independent of order and structure. Scope is expressed by a non-manual sign: the head is tilted backward and the eyebrows are frowned or raised, and this is maintained throughout the domain over which the wh-phrase has scope. This is indicated in our examples by a line above the domain over which the non-manual sign has scope and is maintained.

Note immediately that examples like ($4$)-($6$) raise serious problems for analyses based on a basic order with movement of the Wh-phrase to an
initial Spec of C. In ($4$), HOW would be in situ, and therefore a basic order with an initial V would have to be postulated, as in ($4'$).

\[($4') \quad V \text{ ADJUNCT SUBJECT}\]

In ($5$), the Wh-word, an object, could have moved to the initial Spec of C; however, the V is not initial anymore, so the basic order has to be one of the three in ($5'$).

\[($5') \quad OSV, \text{ or SVO, or SOV}\]

If the subject Wh-word has moved to the initial Spec of C in ($6$), then the basic order could be one of those in ($6'$).

\[($6') \quad SOV, \text{ or OSV, or OVS}\]

There isn’t one basic order that works for all three sentences. Similar problems arise in an analysis with the Wh-phrase moving to a final Spec of C. These different positions are not necessarily constrained by topicalization or emphasis. The only constraint on order seems to be one of articulatory economy: there is an articulatory tendency to produce signs in an economical order, an order which minimizes the movements and eases the flow of signs; thus, criss-crossing of signs is avoided. For example, consider ($7$), which may also be signed with the Wh-sign following the verb as in ($8$) if the sentence is in isolation.

\[($N7) \quad \underline{\text{whq}}\]

\[\ldots \text{CL-1/ WHO HIRE}\]

“Who has hired him?”
($N8)  ______whq

HIRE WHO
“Who has hired him?”

The informants of Dubuisson, Miller and Pinsonneault felt that taken in the context of the preceding signs in the video excerpts, ($7) was more natural. In ($7), when the signer begins to articulate WHO, he has just produced the classifier ONE (CL-1) (‘individual’) with the dominant hand. Both signs have a similar handshape. The transition from one sign to the other involves a minimum of changes at the phonological level. The choice of the order HIRE WHO would have been less economical since the formational parameters of HIRE are less similar to those of the person classifier.

If order does not determine the semantic combination of the Wh-phrase, then how can signers parse the sentences? Because of its four dimensional nature, a sign language such as LSQ uses an interesting device to express semantic combination—pointers. In order to understand pointers, one must have a certain understanding of the use of space in a sign language. Consider the example in ($9) (which could be either in ASL or LSQ).

($N9)  BOY INDEX3a  GIRL INDEX3b  bKICKa

"The girl kicked the boy"

The subscripts in ($9) represent a very common feature of sign languages in general. A signer can establish the location of a referent by pointing to a locus in the signing space, or making a sign in that location, or some other device such as looking at a locus while making the sign. For the rest of the discourse, that locus is used to refer to that referent. Signers can keep quite a number of referents apart. Once the location of the referents has been
established, verbs, which tend to be signed out in space in front of the body, can be signed between these loci, the hands moving or being oriented in relation to the loci, thus indicating clearly and unambiguously the grammatical relations involved. For example, in ($9), the verb KICK is a directional verb: it is signed starting from the locus where the referent of GIRL has been established, and is directed towards the locus of BOY, so that the sentence unambiguously means the girl kicked the boy. The order here is OSV. It could also be SOV, as in ($10).

($N10) GIRL(b) BOY(a) bKICKa
   "The girl kicked the boy"

However, though the order in ($10) is possible, the one ($9) is preferred by native signers. This is again for economy of articulation. As Fischer (1975) points out, there is a simple reason for this preference. "A sign like KICK moves from the location of the agent to the location of the patient. If the agent is mentioned after the patient (i.e., if we have OSV order), then the least amount of transition time between signs is used. If, on the other hand, the order is SOV, an additional step of moving hands from the location of the patient back to the location of the agent, in order to start the verb sign, is required" (p. 19). This factor of articulatory economy often determines the preference for the order of signs, over and above other factors.

Let us now return to pointers in Wh-constructions. Pointers take several forms. For instance, two signs can be produced in the same locus. Thus, in ($11), GO and WHERE may be related, despite the fact that they are separated by several signs.
(§N11) WHERE(a) BOY INDEX3b SAYc GIRL INDEX3d GOa

The signer, who looks to the right during the WHERE looks to the left during BOY SAY GIRL, and then looks again to the right for GO, which is signed as ending on the same locus as the Où was signed. Because WHERE and GO are signed in the same locus, they are unambiguously related.

Because of the four-dimensional properties of sign languages, there are other means to derive the same effect. At the moment the signers produce the Wh-phrase, they can point with their index to a specific locus, and then sign the verb in that locus. The signers can also sign the Wh-phrase in a given locus, and then point to that locus while signing the verb. Alternatively, the signers can sign the Wh-phrase while they look at a specific locus, and then sign the verb in that locus.

??[These various possibilities for pointers are affected by the type of Wh sign and of verb that is involved. A Wh-sign anchored on the body must be signed in a specific locus, on the signer's body. This restricts its possibilities: for example, it cannot be signed in the locus in the signing space where a verb is signed. Similarly, a verb anchored on the body has less possibilities.]

The choice between the various pointers is determined by factors of economy of articulation: a signer chooses what can be signed in the most fluid way. For example, the WHO sign is signed anchored on the chin with the dominant hand: one can then point with the index of the non dominant hand to establish the relation with a given locus, as in ($12).

(§N12) Anchored WH with Directional V

?(dh) WHO PETER(b) SAYc MARY(d) LOOK-ATa
"What did Peter say (to someone) that Mary looked at?"

These various means of indicating what the Wh-phrase combines with, which we call Wh-pointers, can be seen as an enlarged compensation system, beyond order and morphological markings, to express how elements combine together. However, we believe that the implicit assumption that order is the 'deeper' notion that must be compensated is unwarranted. Order is one means among others, such as morphological markings and four dimensional markings, that provides information about how items combine together.

Returning to French, just as we did for LSQ and looked beyond manual signs, we can look at more than the position of arguments and the segmental phonological information, and take into consideration the information provided by prosody. First, consider the case of Wh-phrases that are in situ, as in (§2) above, repeated here as (§100).

($N100)$

a  Tu dis qu'elle a vu qui?
    You say that she saw who?

b  Tu penses que Paul rêve à quoi
    You think that Paul dreams about what

We must account for the scopal properties of the in situ Wh-phrases, and for their properties of semantic combination. The latter is straightforward here: the semantic combination of the Wh-phrases is directly accounted for by their position. As for their scopal properties, they are determined by the particular prosodic properties of in situ Wh-phrases, without the need of LF movement. The particular intonation that comes with these examples assigns a question interpretation to the whole sentence. This intonation is not found
only in in situ Wh-questions; it also appears in noninverted yes/no questions as in ($101a$) (compare with the standard case where the subject and tensed verb are inverted, as in ($101b$)).

($N101$) a Tu as vu Marie?  
   b As-tu vu Marie  
   Have you seen Marie?

This question intonation necessarily assigns a question interpretation to the whole sentence, and not just to a subpart of it, as we can see in the interpretation of the yes/no question in ($102$), where the scope of the question cannot be only on the embedded clause as in (a).

($N102$) Jean te demande si je viens?  
   a #Jean asks you if I am coming  
   b =Is Jean asking you if I am coming?

Similarly, in the interpretation of an in situ Wh-construction as in ($103$), the Wh-phrase must necessarily have scope over the whole clause.

($N103$) Jean se demande si/*que Marie a fait quoi?  
   a #Jean is wondering if Marie did what  
   b =What is Jean wondering if Marie did?

The sentence in ($103$) cannot be interpreted as an indirect question as in (a), but only as a direct question as in (b), even though ($103b$) is ungrammatical with syntactic movement in French ($104$) as well as in English:
($N104) *Qu'est-ce que Jean se demande si Marie a fait?

The contrast between ($103) and ($104) is problematic for an analysis of in situ constructions with movement at LF. If LF movement of the Wh-phrase is possible here, why isn't SS movement also possible? A stipulation must be added to the grammar to account for the contrast. For example, in the standard analysis of Aoun et al. (1981), the filter ($34) is assumed to apply at PF.


But this filter does not seem to account for cases like ($103) since the [+wh] COMP is filled by the [+wh] element si, which satisfies the filter in sentence like ($190).

($N190) Je me demande si Jean est heureux.

"I wonder if Jean is happy"

More damaging is the fact that the filter seems to incorrectly rule out sentences with an empty [+wh] COMP in the matrix clause, such as ($101), since the [+wh] COMP in ($101) is not filled at PF.

In an analysis that takes intonation into account, there is no need to add a stipulation to the grammar. The fact that question intonation necessarily assigns a question interpretation to the whole sentence in yes/no questions is naturally extended to Wh-constructions.
A final comment on a movement analysis of in situ Wh-phrases. As noted by Aoun et al. (1981), this type of analysis also requires a device to rule out the possibility of moving the quoi to the matrix COMP with qui in ($191$).

($N191$)  Qui sait [CP quoi [IP faire]]

As they noted, ($191$) can only get the interpretation with quoi "downstairs" as in ($192a$), and not the one in ($192b$).

($N192$)  a  Wx , x sait faire [Wy , faire y]
       b  W(x, y) , x sait faire y

In a movement analysis, a filter like ($36$) is needed to stop quoi from raising at LF:

($N36$)  wh-R only affects wh-phrases in argument position (Aoun et al. 1981)

We make the natural assumption that the scope of a Wh-phrase is determined either by question intonation or by the Wh-phrase being in Spec of COMP; then there is no need for a device like ($36$).

Consider now the cases where Wh-phrases appear to be displaced, as in ($105$).

($N105$)  a  Qui dis-tu qu'elle a vu?
        "Who do you say that she saw?"
       b  À quoi penses-tu que Paul rêve?
        "About what do you think that Paul is dreaming?"
The scope of the Wh-phrase is determined by its position, in Spec of CP. To account for its semantic combination, the Wh-phrase does not have to be "moved" from a position where it can establish a local relation with a verb. On the contrary, such an assumption creates severe problems of restrictiveness for the grammar, if we consider the grammatical system in its entirety.

In fact, all analyses indicate in some way that, from its position in Spec of Comp, the Wh-phrase establishes a local relation with the element that assigns it a semantic role, without having to be "displaced". For example, in (§13),

\[(\text{§N13}) \quad \text{Je sais [(CP à quoi [C' C [IP1 tu [VP1 penses [CP2 que [IP2 Paul [VP2 rêve]]]]])]}
\]

à quoi is the sister of the null Comp (We assume with Chomsky (1994:11) that when a head projects, it becomes the label of the complex formed, so C' is just an informal notation and it actually stands for the null complementizer itself.). This null complementizer is the sister of IP1, hence of its head I, which is the sister of VP1, which is the sister of CP2, which is the sister of IP2, which is the sister of VP2. This iteration of relations is a means of extending the sisterhood (and government) relation by transitivity, so that a Wh-phrase can "reach down" to get its semantic role from the element which "normally" assigns this role (see Kayne's 1983 Connectedness and the V-chain analysis of Bouchard 1984).1

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1 Iteration of transitivity does not wildly overgenerate phrases in positions higher up in the structure, because as we stated above, a phrase is licensed in a position only if it is interpreted in that position (like the question
This iteration of local sisterhood relations is present even in movement analyses. Thus, the domains of application of Subjacency and the ECP are defined in terms of dominance and sisterhood relations, as is explicitly expressed in the notion of L-marking, for example.

\[(\$N14) \quad \text{L-marking (Chomsky 1986):}
\]
\[\alpha \text{ L-marks } \beta \text{ iff } \alpha \text{ is a lexical category that } \theta \text{-governs } \beta.
\]
\[(\alpha \theta \text{-governs } \beta \text{ iff } \alpha \text{ is a zero-level category that } \theta \text{-marks } \beta, \text{ and } \alpha, \beta \text{ are sisters.})\]

Movement analyses redundantly postulate an iteration of local movement relations which are parallel to the sisterhood relations, as we can see by comparing (\$13) and (\$15).

\[(\$N15) \quad [\text{CP Who [C do] [IP you [I think] [VP V [CP that [IP Mary [I saw] [VP ]]]]}]\]

These additional relations are not only superfluous, they are also less natural notions to associate with locality conditions. Thus, if Wh-constructions involve an iteration of head-complement relations, it is natural for dominance relations and the domains created by these to play a role in Wh-constructions. But in a transformational approach, a series of tree structures are related to one another, and it is unexpected that dominance properties internal to any of these structures should play a role in the transformational mapping. (This is a case where the movement metaphor plays tricks on us.)

interpretation induced by the relation with the Q-morpheme in the example discussed here).
The constraints are of a very different nature from that of the transformational operations. Stating the restrictions in terms of constraints on variables, as Ross (1967) did, was directly compatible with a transformational approach; but when Chomsky (1973) showed that the restrictions generalized as a subjacency condition, a constraint on domains rather than on variables, he opened up a gap between the transformational operations and the constraints. In short, with constraints based on dominance relations, the actual transformational aspect of the analysis of long distance dependencies is redundant and has no independent effect in the grammar. Therefore, one cannot simply dismiss an analysis based on transitivity of sisterhood as being a notational variant of a transformational analysis. These are not notational variants, since the transformational analysis requires quite a few additional features which turn out to be redundant, hence should be dispensed with.

The notation of transformational analyses just conceals the iteration of sisterhood relations. In order to argue convincingly for movement transformations, it is not enough to show that one can analyse constructions with these tools. It must be shown that what is in excess of the iteration of sisterhood relations in these analyses is necessary. The brief discussion above at least raises doubts about this necessity.

If we take the methodological stance that we must search for alternative analyses for the data that movement transformations try to account for, because these transformations are neither empirically nor conceptually necessary, then many current assumptions have to be reassessed. For example, the conclusion in Kayne (1993) that functional heads exist because phrases must move becomes untenable. In fact, the need for so many covert functional categories, categories that are not accountable to either of the
interface levels, should count against the proposed theory. Otherwise, we are left with a tautology: orders that differ from the basic order arise because there are functional categories; functional categories are postulated because there are different orders.

**Constraining the Grammar**

Restrictiveness of the system as a whole is the only kind of restrictiveness of Grammar that actually reduces the choices available to the learner. It is of little use to have a highly restricted component of Grammar if those effects are canceled out by other aspects of the system. For example, the ECP and Subjacency, given appropriate structures, restrict the application of Move a. But with a proliferation of escape hatches for Subjacency and of trace-licensers for the ECP by way of functional categories that are freely introduced in the structure, it is always possible to void the effects of the ECP and Subjacency. Thus, any structure arrived at by an analysis can always be modified to add a functional category escape hatch if ever it turns out that movement is possible where it was predicted not to be; conversely, if movement is impossible where the theory predicts it should be possible, a blocking functional category can be added to the structure to account for the absence of movement. If no constraints are given on the formulation of what counts as a functional category and when it can be introduced in a structure, the class of possible grammars has not been reduced overall by constraints like the ECP and Subjacency.

Similar considerations hold for surface ordering based on functional categories. For example, Kayne (1993) argues that a phrase XP cannot be right-adjointed to a phrase WP as in ($16a$); but leftward adjunction of WP to
a functional category above XP is allowed, as in ($16b), deriving very similar effects, at least on the surface.

\[
\text{(SN16)} \quad \text{a} \quad \ast \text{WP} \quad \text{b} \quad \text{FP}
\]
\[
\quad \text{sl} \quad \text{sl}
\]
\[
\text{WP} \quad \text{XP} \quad \text{WP} \quad \text{FP}
\]
\[
\quad \text{sl}
\]
\[
\quad \text{XP}
\]

Similarly, multiple left adjunctions to the same node as in ($17a) are disallowed, but with the possibility of freely inserting multiple functional heads, basically the same effect can be produced on the surface, as in ($17b), with the additional problem that the learner has to figure out if there are as many functional heads as left-joined phrases, or many more which mediate the movements of these phrases.

\[
\text{(SN17)} \quad \text{a} \quad \ast \text{WP} \quad \text{b} \quad \text{FP}
\]
\[
\quad \text{sl} \quad \text{sl}
\]
\[
\text{YP} \quad \text{WP} \quad \text{YP} \quad \text{WP}
\]
\[
\quad \text{sl} \quad \text{sl}
\]
\[
\text{XP} \quad \text{WP} \quad \text{XP} \quad \text{WP}
\]

The learner is therefore left with potentially many more choices than in a simple head parameter analysis that dispenses with freely inserted functional categories.

On the whole, systemic restrictiveness is extremely low if free insertion of functional categories is admitted. The theory faces a serious problem of
restrictiveness: the construction specific rules of the early days of transformational grammar have been replaced by construction specific functional categories that trigger movement. An unconstrained use of covert, contentless functional categories is very low in explanatory power: it essentially amounts to a listing of properties, with no accountability to the articulatory-perceptual component or the conceptual-intentional component. It is therefore of very little informative value and has the major disadvantage of destroying all attempts at restricting the theory elsewhere by allowing these restrictions to be overridden. Overall systemic restrictiveness is therefore weakened. The theory seems to be heading the wrong way.

There are two avenues that one can pursue. First, one may look for some independent motivation for functional categories and provide an explanation why these categories trigger the movements that they do. This means that one does not just give to the functional categories names that correspond to apparently needed properties of grammar, such as Agreement, Aspect, Number, Gender, Case, and so on; this can be very deceptive, since the familiar name gives the impression that something real has been accomplished. One must show how these specific categories actually contribute to our understanding of those properties. A second avenue to explore is to dismiss the notions of movement transformation and of contentless functional category, and to look for some other, more restrictive, form of analysis.

To curb the proliferation of categories, we can posit that every syntactic element must correspond to something in the semantic representation. In Bouchard (to appear), it is argued that overall restrictiveness can only be obtained if this also extends to the semantic component, so that every
semantic element must be identified by something in the syntactic representation. This is embodied in the Principle of Full Identification, given in ($18$).

($\text{N}18$) **Principle of Full Identification:**
Every (morpho-)syntactic formative of a sentence must have a corresponding element in the semantic representation. Every formative of a semantic representation must be identified by a (morpho-)syntactic element in the sentence which is associated with that representation.

This principle follows from economy—no element can be introduced in either the syntax or the semantic representation unless it is traceable to linguistic evidence. Viewing economy in this way has important repercussions for syntactic structures because it severely limits the categories that can be postulated. It also limits the operations.

For example, a transformation relates one structure to another. There are various types of operations that do this. (1) A transformation can add material to a structure. (2) It can delete material. (3) A transformation can collapse material by chunking, as in ($19$).

($\text{N}19$) **Chunking into frighten**

\[
\begin{align*}
\text{A} & \quad \text{A} \\
\text{sl} & \quad \text{sl} \\
x & \quad x \\
\quad \text{B} & \quad \Rightarrow & \quad \text{BCD} \\
\text{sl} & \quad \text{sl} \\
\text{CAUSE} & \quad \text{C} & \quad \text{FRIGHTEN} & \quad y
\end{align*}
\]
Movement transformations are a combination of adding and deleting. Movement transformations, as well as adding and deleting, are not minimal, they do not come for free, in the sense that they are not a virtual necessity. As Noam Chomsky observed in his class lectures (Fall 1993), we can imagine a Grammar which would not have movement transformations. On the other hand, chunking is within the domain of virtual necessity. Given the processing advantages of chunking, which codes complex representations into simpler units, we take chunking to be a defining property of natural languages. Without chunking, natural languages would be practically unusable because of the complexity of the representations that would have to be processed. So chunking is the only type of transformation allowed by the Principle of Full Identification ($18$), and this is a desirable result since chunking is the only transformation within virtual necessity.

Similarly, the notions of dominance and sisterhood, which are at the heart of the analysis of long distance dependencies presented in ($13$), are also in the domain of virtual conceptual necessity. As discussed in Bouchard (to appear), it is a defining property of natural languages that their primitives combine into larger units, presumably because the languages would be unusable otherwise. So we need a means of expressing a combination function. Dominance and sisterhood are one way of doing this in a system of representation based on tree structures: two elements combine together if
they are sisters, dominated by a node that expresses that a relation holds between them.

If we impose constraints as the ones in (18) on the elaboration of analyses, transformations being restricted to chunking (because chunking is necessary to obtain a usable language), and contentless functional categories being ruled out (because they void the effects of constraining principles of the grammar), we certainly do not make the task of the linguist easy. However, this is the cost for systemic restrictiveness.

Our hope in writing this paper is that the deep problems presented will promote the opening to new research strategies that will go beyond the automatic use of the same tools, which can create an illusion of restrictiveness.

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