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## When Syntax Overrides Semantics\*

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### 0. Introduction

Current formal theories of grammar differ sharply as to their assumptions concerning the relationship between syntax and semantics. Neo-Fregean logical grammars, such as Montague grammar, rest on the assumption that computing meaning is a compositional operation which not only presupposes a theory of syntax but also may constrain this theory in non-trivial ways. Such Neo-Fregean theories require, for instance, that the semantic effect of every syntactic operation be statable explicitly. As pointed out in Gamut (1991), this has the consequence of potentially allowing semantic constraints to influence the syntax:

- (1) Gamut (1991:141)  
“...logical grammar, with its principle of compositionality of meaning, goes straight against the autonomy of syntax so cherished in the generative tradition. For compositionality not only requires a well-defined syntax to base semantic interpretation on; it also puts some constraints on it. As we remarked above, ... it follows from compositionality that every non-lexical aspect of meaning must be syntax based. ...And that means, at least in principle, that semantic considerations may influence the syntax, thus breaching the supposed autonomy of the latter.”

Generative grammarians, on the other hand, reject the idea that semantic constraints can ever influence the form of syntactic derivations. The quote in (2), taken from Hornstein (1984), makes this quite clear:

- (2) Hornstein (1984:109)  
“... the central laws of linguistics must be seen as applying to syntactic items rather than to the semantic values of such syntactic items. In short, the relevant explanatory level of generalization is syntactic, not semantic. In this

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strong sense, therefore, syntactic actions and principles have primacy over semantic ones.”

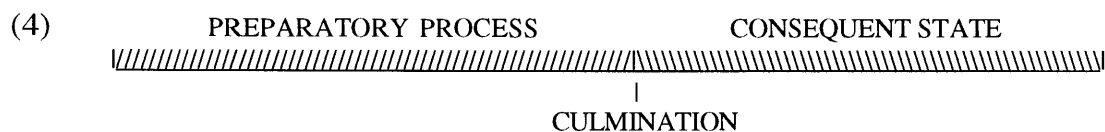
The two major goals of the present paper are to present evidence which I believe supports the generative view and to discuss what implications this may have for grammatical theory. Specifically, I will first establish the existence, in the grammar of French, of a pronoun which is subject to both a semantic aspectual constraint and a syntactic noncoreference constraint. Next, I will show that when these two constraints operate in an environment which causes them to put conflicting requirements on the pronoun, the syntactic constraint has primacy over the semantic one. Finally, I will discuss how economy principles regulate syntactic primacy and I will argue, based on the evidence uncovered, that economy appears to extend beyond LF to the cognitive system of language as a whole.

### 1. A Semantic Constraint in the French Pronominal System

There exists a French pronoun known in the literature as “demonstrative *ce*” which competes with personal pronouns inflected for number and gender such as *il/elle* (he/she) in the subject position of predicate nominal sentences. Thus, in French one finds contrasts of the type in (3) noted and discussed by Burston (1983), Coppieters (1974, 1975), Kupferman (1979), Reed (1996, 1997), and Wagner (1966), among others:

- (3) a. Si Max était bel et bien un meurtier, \*il/ce serait un homme traqué  
if Max was pretty and good a murderer he/CE would-be a man hunted  
par la justice  
by the justice  
'If Max were really a murderer, \*he/CE would be a man hunted by law  
enforcement agencies'
- b. Si Max commettait un meurtre, il/\*ce serait alors un homme traqué  
if Max committed a murder he/CE would-be then a man hunted  
par la justice  
by the justice  
'If Max were to commit a murder, he/\*CE would then be a man hunted by law  
enforcement agencies'

Reed (1996, 1997) argues that what determines the choice of *ce* versus a pronoun inflected for number and gender in sentences like (3) is a semantic rule making reference to aspectual considerations. Following Reed (1997), I will give a brief characterization of this approach by making use of the notion of “consequent state,” a notion discussed by Moens and Steedman (1988) within their larger theory of Event Structure. In this theory, all events make reference to a basic structure made up of maximally three stages: a preparatory stage, a culmination point, and a consequent state, as can be seen in (4):



To illustrate these notions, let us take the predicate in (5a): *become the fastest swimmer in the world*.

- (5) a. PREDICATE = BECOME THE FASTEST SWIMMER IN THE WORLD  
 b. She *is becoming* the fastest swimmer in the world.  
 c. She *has just* become the fastest swimmer in the world.  
 d. She *has already* become the fastest swimmer in the world.

The preparatory process of this event may consist of a number of discrete steps including learning to swim, training, etc. The progressive aspect in a sentence like (5b) focuses explicitly on this stage. In contrast, the culmination point is reached when the swimmer clearly has no rivals, such as the moment immediately following the one at which she sets a new world record. To focus on this stage explicitly, one can use the present perfect with the adverbial *just*, as in the sentence in (5c). The consequent state follows this achievement. It corresponds to the state of having become the fastest swimmer in the world. Focusing on the consequent state explicitly can be achieved by using a combination of the present perfect and the adverbial *already*, as in the sentence in (5d).

Going back to the distribution of French demonstrative *ce*, what Reed (1997) argues is that French *ce* lexically encodes aspect because this item is licit with respect to all and only aspectual contexts which focus on a consequent state. She proposes that in the conceptual semantic framework of Moens & Steedman, the distribution of demonstrative *ce* be captured by adding to this item's lexical entry the feature [+ consequent state]. She also shows how similar results can be obtained in model-theoretic terms. Assuming a logic-based account of aspect along the lines of Dowty (1979), Reed proposes to capture the distribution of demonstrative *ce* by adding to Dowty's model the truth-conditions in (6):

- (6) Where  $p$  is a sentence,  $[CE\ p]$  is true at the index  $\langle i, w \rangle$  iff  $p$  is true at  $\langle i, w \rangle$ ,  $p$  is true at the initial and final bounds of  $i$  in  $w$ , and  $p \neq \text{HABITUAL}(q)$ .  
 (Reed, 1997:149)

For the purposes of the present paper, however, I will simply assume that French *ce* is subject to a semantic aspectual constraint which can be stated informally as follows:

- (7) In predicate nominal sentences, *ce* must be used if the aspectual value of the sentence focuses on a consequent state, while personal pronouns like *il* must be used in all other cases.

Let me briefly illustrate how the rule in (7) works. Consider first the example in (8):

- (8) Quant à Ivan, il/\*c'est en passe d'être le coureur le plus rapide du monde  
 As to Ivan he/CE is in pass of-be the runner the most fast of-the world  
 'As for Ivan, he/\*CE is about to be the fastest runner in the world'

In the sentence in (8), the expression être en passe de 'to be about to' has the effect of selecting that portion of the event structure in (4) referred to as the preparatory process.

Therefore, by (7), the personal pronoun il must be used since this is a case which does not focus on a consequent state. Consider next the sentence in (3b). This sentence also disallows ce though for different reasons. According to the hypothetical situation described by (3b), a conditional sentence, the state denoted by the consequent clause could only non-vacuously be true if the state of affairs denoted by the antecedent clause were true. That is, the state of being a hunted man would hold of Max at the moment immediately following the one at which he commits a murder. The adverb alors ‘then’ has the effect of focusing on the culmination point of the event of Max becoming a hunted man. That is, it selects that moment at which Max first achieves this status. Thus, we have a type of aspectual situation which focuses on the culmination point in the event structure and by (7), the personal pronoun il must be selected. Finally, in (3a), a sentence which is superficially similar to (3b), we find that ce, not il, is the pronoun selected. Again, this follows from aspectual considerations. That is, in (3a), it is understood that for the resulting state of being a hunted man to be ongoing, we would require that Max have committed a murder at some indeterminate previous time. In other words, the consequent clause of this conditional sentence focuses on the consequent state portion of the schema in (4). As a result, the rule in (7) forces the choice of ce. In sum, the distribution of ce versus il in predicate nominal sentences is determined by a semantic aspectual rule. However, as we will see in the next section, the distribution of ce is also regulated by a syntax-based constraint, namely, Condition C of the Binding Theory.

## 2. A Conflict at the Syntax-Semantics Interface

As discussed at length in Authier and Reed (1997), demonstrative *ce* can be classified as an anaphoric epithet with respect to A-binding, that is, as an element which functions semantically as a (specialized) pronoun yet obeys Condition C of the Binding Theory. That French *ce* is semantically a pronoun can be seen in (9). That is, French *ce* shares with pronouns (and anaphoric epithets) the following properties: It can make reference to an object previously introduced in the discourse, as seen in (9a); it can function as a bound variable, as (9b) shows; it induces weak crossover violations, as illustrated in (9c); and it licenses donkey-anaphora, as demonstrated by (9d).

- (9) a. Un homme<sub>i</sub> est entré. Le salaud<sub>i</sub>/c<sub>i</sub>’ était un agent du fisc  
 a man is entered the bastard/CE was an agent of-the IRS  
 ‘A man came in. The bastard/CE was a tax collector’
- b. Jean a réprimandé [chaque voyou]<sub>i</sub> en public, tout en laissant entendre que  
 Jean has reprimanded each hooligan in public all in letting hear that  
 le pauvre bougre<sub>i</sub>/c<sub>i</sub>’ était un mécompris en privé  
 the poor bugger/CE was a misunderstood-one in private  
 ‘John reprimanded every juvenile delinquent in public while implying that the  
 poor bugger/CE was just a misunderstood kid in private’

- c. \*La personne qui sait que le salaud<sub>i</sub>/c<sub>i</sub>'est un cas perdu déteste  
 the person who knows that the bastard/CE is a case lost hates  
 [chaque voyou]<sub>i</sub>  
 each hooligan  
 'The person who knows that the bastard/CE is a lost cause hates every juvenile delinquent'
- d. Tout flic qui arrête un voyou<sub>i</sub> est porté à croire que le pauvre bougre<sub>i</sub>/  
 all cop who arrests a hooligan is carried to believe that the poor bugger  
 c<sub>i</sub>' est un mécompris.  
 CE is a misunderstood-one  
 'Every cop who arrests a juvenile delinquent tends to believe that the poor bugger/CE is a misunderstood kid.'

On the other hand, the coreference properties of *ce*, like those of anaphoric epithets are constrained by Condition C of the Binding Theory as can be seen in (10):

- (10) a. \*Sylvie<sub>i</sub> est convaincue que c<sub>i</sub>' est une matheuse  
 Sylvie is convinced that CE is a math-expert  
 'Sylvie is convinced that she is a math expert'
- (10) b. Tous les professeurs de Sylvie<sub>i</sub> sont convaincus que c<sub>i</sub>' est une matheuse  
 all the teachers of Sylvie are convinced that CE is a math-expert  
 'All of Sylvie's teachers are convinced that she is a math expert'
- c. Robert est jaloux de Sylvie<sub>i</sub> parce que c<sub>i</sub>' est une matheuse  
 Robert is jealous of Sylvie because CE is a math-expert  
 'Robert is jealous of Sylvie because she is a math expert'

As (10b) and (10c) show, coreference between ce and a non-c-commanding referential antecedent is possible. However, such a coreference relation is prohibited in (10a) where ce appears in the c-command domain of its intended antecedent. Clearly then, the intrasentential coreference properties of ce fall under Condition C of the Binding Theory.

But what exactly is the status of Condition C on minimalist assumptions? Or, to put it differently, should minimalist Binding Theory be viewed as syntactic, semantic, or both? Until recently, core binding phenomena were assumed to be purely syntactic in nature (cf., e.g., Pollard & Sag 1992; Chomsky 1995 (chapters 1-2)), earlier attempts at capturing intrasentential anaphoric relations in pragmatic terms (cf. Reinhart 1986) having been shown to make incorrect predictions cross-linguistically (cf. Lasnik 1991). Recently, however, the status of Binding Theory has been reevaluated, due to novel assumptions motivated on conceptual as well as empirical grounds. Both Chomsky (1995, chapter 4) and Epstein (1994) have proposed that the computational system (i.e., syntax) is strictly derivational. This automatically places Binding Theory at the syntax-semantics interface due to the representational character of the binding conditions (cf. Freidin 1997, among

others). The very term ‘binding’ would seem, in fact, inappropriate under its traditional definition of ‘coindexing and c-command’ if the use of syntactic indices is excluded under minimalist assumptions (see Freidin, to appear, for discussion). Chomsky’s (1995: 211) formulation of Condition C does, in fact, reflect this move away from coindexation; while still making reference to features of tree geometry (i.e., c-command), Condition C is stated as a constraint on interpretation: “If  $\alpha$  is an r-expression, interpret it as disjoint from every c-commanding phrase.” Thus, conditions of the Binding Theory are seen in the minimalist model as bare output conditions that use information from the computational system (for example, c-command) but are determined from the “outside” at the syntax-semantics interface. Interestingly, more empirically oriented works produced in the last three years also support this view. Reinhart and Reuland (1995), for example, argue that Condition B is uniquely semantic, and Safir (to appear) proposes what he calls a “symmetric theory of anaphora” which makes reference to both syntax and semantics. Further, in a recent paper (Authier, 1996), I argue that Binding Theory must be seen as operating at the syntax-semantics interface based on the fact that semantic presuppositions tied to focus particles can rescue sentences which violate Condition B or Condition C by creating implicature expressions which exclude the prohibited coreferential readings found in the assertion of such sentences. In view of these recent developments then, it seems reasonable to assume that Condition C is not likely to be an output condition that belongs entirely to the computational system, and that it is equally unlikely to be purely semantic since it makes reference to tree geometry and in so doing uses information from the computational system.<sup>1</sup> Thus, I will assume Condition C to be (partially) syntactic in nature in that sense.

Given these assumptions, the fact that Condition C constrains the distribution of ce provides us with the means to test what happens when a constraint which makes use of syntactic information and one which does not put conflicting requirements on a lexical item. To see how, consider first the sentence in (11):

- (11) Léon<sub>i</sub> veut que tous sachent que c<sub>j</sub>' est le chef  
 Leon wants that all know that CE is the head  
 ‘Leon wants everyone to know that he ( $\neq$  Leon) is the boss’

In this example, the aspectual value of the most embedded clause focuses on a consequent state and, as a result, the semantic rule in (7) forces the choice of ce as the subject. However, ce is also subject to Condition C, which in turn forces the contra-indexing found in (11), given that *ce* is in the c-command domain of the expression *Leon*. Thus (11) is a sentence which obeys both the semantic and the syntactic constraints relevant to ce.

French must nevertheless find a way to express the idea conveyed by the predicate calculus representation in (12):

- (12) WANT (I,  $\forall x$  [PERSON (x)  $\rightarrow$  KNOW (x, BOSS (I))])  
 (i.e., Leon wants everyone to know that he (= Leon) is the boss)

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<sup>1</sup>Note that the constraints regulating the distribution of anaphors, in particular long distance anaphors, may involve an even tighter link to the computational system on the assumption, first defended by Pica (1987), that long distance anaphora involves LF movement. This may also be true of pronominal binding, which has been argued to sometimes involve LF movement by Hestvik (1992), Avrutin (1994), and Authier & Reed (1997).

The problem is, of course, that expressing this idea creates a tension between the two principles which constrain the distribution of *ce*. That is, if the personal pronoun *il* is substituted for *ce* in (11), coreference between this pronoun and the matrix subject will be allowed by Binding Theory since *il*, unlike *ce*, is a pronoun subject to Condition B. However, the semantic rule in (7) will disallow the choice of *il* since the clause in which it appears focuses on a consequent state. If, on the other hand, *ce* is selected in compliance with the semantic aspectual rule in (7) then the indexing forced by Condition C will prohibit the interpretation in (12). In a nutshell, French cannot express the interpretation in (12) without resolving this tension by allowing one of the two conflicting constraints to supersede the other and, as can be seen in (13), it is Condition C which prevails in this case.

- (13) Léon<sub>i</sub> veut que tous sachent qu' il<sub>i</sub> est le chef  
 Leon wants that all know that he is the head  
 'Leon wants everyone to know that he (= Leon) is the boss'

That (13) illustrates a case of a (partially) syntactic principle having primacy over a semantic one and not a mere suspension of (7) in embedded contexts is evidenced by the fact that the personal pronoun *il* in (13) does not behave like a free pronoun. That is, the indexing in (14) is impossible:

- (14) \*Léon<sub>i</sub> veut que tous sachent qu' il<sub>j</sub> est le chef.  
 Leon wants that all know that he is the head  
 'Leon wants everyone to know that he (≠ Leon) is the boss'

This follows from the fact that the interpretation conveyed by (14) can also be conveyed by (11), a sentence which, unlike (14), does not violate the semantic constraint in (7). Thus, if both the syntactic and the semantic constraints can be obeyed, the grammar requires that they be so. It is only when necessary that syntactic primacy is established; that is, when no alternative derivation exists which would resolve the conflict. In some sense then, it appears that syntactic primacy is subject to principles of economy.

Let us now make these intuitions a bit more precise. In the Minimalist framework, grammatical operations that are part of the computational system are regulated by invariant UG principles of economy. Let us call this "derivational economy," a notion which can be defined as follows:

- (15) DERIVATIONAL ECONOMY:

Economy conditions regulate grammatical operations in the following manner: a grammatical operation GO is permitted when it is necessary to guarantee convergence and is prohibited from applying otherwise.

Derivational economy is assumed to belong to the computational system, a system which is strictly derivational. The conditions of the Binding Theory, on the other hand, are bare output conditions that are determined from the outside at the syntax-semantics interface but use information from the computational system (e.g., c-command). Thus, Binding Theory can be seen as being partially syntactic. The aspectual constraint on demonstrative *ce*, on



the other hand is purely semantic. That is, given the Minimalist model of grammar, we would assume that such an aspectual constraint is imposed by the external cognitive system and that it is the external cognitive system which marks a representation as deviant if this constraint is violated. All of these assumptions are summarized in (16).

(16) ASSUMPTIONS:

- A. The computational system  $C_{HL}$  is strictly derivational (Chomsky, 1995; Epstein, 1994).
- B. The conditions of the Binding Theory (e.g., Condition C) are bare output conditions (BOCs) that use information from  $C_{HL}$  (e.g., *c*-command) but are determined from “the outside” at the syntax-semantics interface (see e.g., Freidin, 1997).
- C. The aspectual constraint on French demonstrative *ce* is imposed by the external cognitive system which marks a representation as deviant if the constraint is violated.

Now, given these assumptions, let us define “syntactic primacy” as follows:

(17) SYNTACTIC PRIMACY:

Given two representational constraints  $C_1$  and  $C_2$  such that  $C_1$  uses information from the computational system and  $C_2$  does not,  $C_1$  may override  $C_2$  but not vice-versa.

Although syntactic primacy is a representational operation, it appears to be subject to economy considerations, just like derivational operations. As we have seen, syntactic primacy cannot apply in (14) because it would involve an operation, namely, the suspension of the semantic principle in (7), which is not necessary since the desired interpretation can be obtained through (11) without having to resort to the suspension of (7). In other words, syntactic primacy is subject to a principle of representational economy along the lines of (18):

(18) REPRESENTATIONAL ECONOMY (applied to syntactic primacy):

Syntactic primacy is subject to representational economy: it applies when it is necessary to ensure the availability of a particular interpretation and is prohibited from applying otherwise.

### 3. Concluding Remarks

In conclusion, we have examined empirical evidence based on the distribution and coreference properties of a French pronoun, demonstrative *ce*, and this examination has led us to two basic conclusions. First, constraints which use information from the computational system take precedence over those which do not. And, second, the

principles of economy which regulate grammatical operations in the computational component appear to extend beyond LF. The first conclusion would seem to indicate that the idea that syntax is autonomous is on the right track. That is, at least in this case, it would seem that the output of the computational system is not influenced by the cognitive systems which access its interface representations; in fact, quite the opposite. The second conclusion, on the other hand, would seem to argue for an integrated model of grammar in which each module, computational or representational, is subject to similar economy conditions and is therefore as much part of grammatical theory as the other.

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