

REMARKS ON SELECTIONAL RESTRICTIONS AND PRESUPPOSITIONS

1. Introduction

McCawley disputes the syntactic treatment of selectional restrictions Chomsky expounded in Aspects of the Theory of Syntax (cf. McCawley (1967) (1968)). He claims instead that phenomena involving selectional restrictions are nothing but aspects of the more general semantic phenomena of presupposition, an idea previously introduced by Fillmore. In particular, it is claimed that inherent and selectional features that are introduced in the base component in the Chomskian scheme do not exist as syntactic features.

The problem of selectional restriction is unquestionably a moot point in semantico-syntactic theory, and a sweeping solution to the problem should naturally not be expected to come easily. The primary concern of this paper is rather restricted. I shall take up McCawley's particular method of refutation of Chomskian selectional features and try to show that his argument is not quite acceptable. In his argumentation against Chomsky's selectional features McCawley ingeniously makes use of the fact that some nouns, e.g. neighbor, are neutral with respect to gender. However, the full implication of this fact is not sufficiently appreciated within a language like English, where grammatical gender plays only a marginal role. I shall try to show below that in languages like French, where natural and grammatical genders interact in an intricate way, this problem of 'neutral' nouns remains syntactic. In the course of the discussion I shall reinterpret and reformalize some transformations partially as well-formedness conditions rather than solely as structure-changing operations. I would claim that the Chomskian type of selectional features, and consequently inherent features, too, cannot entirely be abolished from syntax, although I would give a somewhat different interpretation to features that appear formally similar to Chomskian selectional features. This amounts, as will be claimed, to formalizing some aspects of semantic presupposition within syntax and reinterpreting Chomskian selectional features as a special type of such rules of presupposition. More generally, however, it must be recognized that syntax and semantics cannot be separated in the ways the Chomskian

and the McCawleian frameworks, though differently, would assume.

2. Chomskian framework and McCawley's criticism

First I shall summarize to the extent necessary for our present purposes Chomsky's framework of selectional restriction and McCawley's criticism of it.

McCawley points out quite rightly that in the Chomskian framework the feature Male would have to be introduced in the base component as one of the inherent features of a noun, since choice of pronouns him and her must depend on this feature. For example, the sentence

- (1) A waitress hurt herself.

would be derived, irrelevant details omitted, from the base form:

- (2) A waitress hurt a waitress.

The pronoun herself in (1) inherits, so to speak, the feature specification -Male of the noun waitress in (2) through a pronominalization process. In the Chomskian framework an inherent feature such as Male that participates in operations of the syntactic component must be introduced in the preterminal string underlying the base form (2) by means of a rewriting rule, say, of the form:

- (3) [+ Human] → [+ Male]

The lexical entry waitress is also assigned the specification -Male; the lexical insertion rule, operating under the nondistinctness convention, inserts the lexical entry waitress in a slot where the specification -Male has been provided by rule (3).

Once introduced as a syntactic inherent feature, the feature Male would not be restricted to serving in gender agreement between anaphoric pronouns and their antecedents, but also to characterizing selectional restrictions; selectional features referring to the feature Male would serve to distinguish the well-formedness of, for example,

- (4) The waitress is buxom.

and the anomaly of, say,

- (5) The actor is buxom.

More specifically, buxom would be assigned the feature specification $+[-\text{Male be } ____]$, and in the Chomskian framework it may only be inserted in the environment -Male ... _____, which is satisfied in (4), but not in (5).

But this machinery with inherent features and selectional features referring to them leads one to peculiar situations, as McCawley rightly observes. Consider the sentence

- (6) The neighbor is tall.

The slot that is filled by the noun neighbor must be specified either as +Male or -Male by the rewriting rule (3). The lexical entry neighbor, on the other hand, would be unspecified with respect to feature Male. The nondistinctness convention allows neighbor to be inserted in a slot of a preterminal string that is specified either +Male or -Male. Thus, the slot underlying neighbor in the speech form (6) may be either +Male or -Male, which implies that the speech form (6) is ambiguous in the sense of the syntactic theory.

This conclusion is obviously bizarre; the theory conflicts with the intuition it is supposed to formalize. It is true that when the speech form is applied to an actual situation the real referent of the word neighbor in the world must be either male or female; but it is perfectly possible for us to hear about a speaker's neighbor without knowing his or her sex, or even for a speaker to talk about his neighbor without knowing the neighbor's sex.

But this theory has also apparent advantages. For when self-inflicted hurt takes place the sex of the subject must be revealed if it is known, so that one has to say either

- (7) The neighbor hurt himself.

or

- (8) The neighbor hurt herself.

The base form of these speech forms may appear to be identical:

- (9) The neighbor hurt the neighbor.

but the Chomskian theory would be able to differentiate two different base forms underlying (7) and (8), respectively, by assuming that in one both occurrences of neighbor are +Male while in the other they are

-Male.

Furthermore, the Chomskian framework of selectional restriction would predict the natural reading of sentences like:

(10) The neighbor is buxom.

Upon hearing this sentence the hearer would naturally assume that the person referred to by the word neighbor is female. In fact, only neighbor with the specification -Male may occupy the subject position of (10) since buxom would be assumed to have the specification +[-Male ____]. Any criticism against the bizarre ambiguity of (6) implied by the Chomskian framework must give some solutions to these two points where the Chomskian framework works well.

McCawley's criticism of Chomsky in the matter of selectional restrictions does not, of course, end with the difficulty connected with sentences like (6). McCawley points out that a selectional restriction imposed by a verb or adjective is a restriction on the entire noun phrase as its subject, object, etc., rather than on just the head of that noun phrase. For example, he says, the sentence

(11) My buxom neighbor is the father of two.

violates the same selectional restriction as does

(12) My sister is the father of two.

Thus, in general, what brings about violation of a selectional restriction is entire syntactic constituents rather than some distinguished lexical items contained in them. Furthermore, as McCawley claims, any piece of semantic information that may figure in semantic representation, and only such information, may figure in selectional restrictions. Finally McCawley concludes that 'the matter of selectional restrictions should be totally separate from the base component and that the base component thus be a device which generates a class of deep structure without regard to whether the items in them violate selectional restrictions' (McCawley 1967, p. 7).

3. McCawley's treatment of selectional restrictions and presupposition

I shall return later to comment on McCawley's general claim just cited. My immediate concern in this section is to review McCawley's treatment of sentences like those discussed in the preceding section in the Chomskian framework.

McCawley does not introduce rules like (3) in the base component, or for that matter any inherent features like Male; neither maleness nor femaleness is introduced in the preterminal string that underlies (3). Nor is the lexical item neighbor specified +Male or -Male in the lexicon. (3) is structurally unambiguous and does not carry any information on the sex of the person referred to by neighbor, a natural conclusion.

Then how would one account for the fact that in the natural reading of (10) neighbor is understood to be female? McCawley says that the meaning of buxom 'presupposes' femaleness of its subject; this is a semantic phenomenon. The selectional restriction illustrated by the pair consisting of the normal form and the anomalous form (4) and (5) is also explained as a matter of presupposition. Both forms are syntactically well-formed in the McCawleian framework, i. e. well-formed outputs of the base component. In (4) the semantic presupposition of the meaning of buxom is satisfied by the meaning of waitress, resulting in a normal sentence. On the other hand, in (5) the same semantic presupposition of the meaning of buxom is contradicted by the meaning of actor, resulting in a semantically anomalous form.

McCawley's argument for accounting for selectional restrictions as exemplified by (4) and (5) in terms of presupposition is reinforced by the claim that the notion of presupposition is needed anyway in the general framework of semantics. For one thing, McCawley points out, the Chomskian framework of selectional features can cover in any case only a fraction of the phenomena of selectional restrictions. To quote his favorite example, there isn't any syntactic or semantic feature to characterize matrixhood of lexical items so that they may be the object of the verb diagonalize; rather, the verb diagonalize presupposes that the intended referent of the object be a matrix. A selectional violation would arise if the assertions and presuppositions made by various parts of a sentence contradicted each other. For another thing, presupposition may also account for selectional restrictions of a lexical item 'on itself', quoting McCawley's phrasing, i. e. 'presupposition' on the referent of a lexical item by its meaning itself. Thus, for example, as McCawley rightly comments following Fillmore, the meaning of bachelor is 'unmarried' or 'not having a wife' and humanness, maleness, etc. are presupposed by this meaning. (For details of justification of this claim the reader is referred to McCawley (1968)). Thus it would appear, and in fact I would agree, with certain qualifications which will be made clear later, that the idea of presupposition is the correct generalization of the notion of selectional restriction and the latter is now to be subsumed under the former in the theory of grammar.

According to McCawley, maleness and femaleness to be assumed

in neighbor in (7) and (8), respectively, are also semantic phenomena of presupposition; they are presupposed, presumably, by the meanings of himself and herself. An anomalous form like

(13) A waitress hurt himself.

is now considered, according to McCawley, to be syntactically well-formed but only semantically anomalous just as (5); the assertion of femaleness of the lexical item waitress contradicts the presupposition by the word himself that its antecedent is male. In fact, McCawley says, as generally is the case with semantic anomaly, either of these two contradictory elements may be taken to be metaphorical, indicating either effeminacy of a waiter or masculinity of a waitress.

4. Criticism of McCawley's claim, 1; gender agreement in the general case of pronominalization

So far McCawley's contention appears convincing, and in fact I do not deny that it contains interesting insights, particularly in bringing together the phenomena of selectional restriction and presupposition. Nonetheless, his argumentation does not seem to be perfect and, in particular, I do not believe that he has established a proof that selectional and inherent features are totally abolished from syntax. Some subtleties remain in the relationship of selectional restrictions with the syntactic mechanism of language.

To begin with, McCawley's contention that gender agreement of a pronoun with its antecedent is a matter of semantic presupposition is not as clear and plausible as it may appear at first glance with such examples as (13). First of all, one encounters some difficulty when one tries to go beyond an informal understanding of the claim to see what such a contention may mean in more exact formal terms. This is because McCawley neither proposes any formal mechanism for presupposition, nor does he specify, in the papers under discussion, the formal mechanism of pronominalization he would adopt; more specifically, it is not clear whether his claim on the semantic nature of gender agreement of a pronoun is meant to be crucially dependent on one or the other formulation of pronominalization prevalent at present, in particular, on the one he proposed in another paper of his, McCawley (1967a). The claim may have different implications for the relationship between syntax and semantics, depending on the particular formulation of pronominalization.

This point is not my main concern at present, however. The reason I am going to dwell on it for a while is mainly to make the second point--

to which I shall come shortly--clearer. It suffices for us, then, to assume for the time being the mechanism of pronominalization proposed in McCawley (1967a). According to this proposal, here drastically simplified only to serve our present purpose, nouns as lexical items are not inserted into slots under node N in the preterminal string in the sense that such slots are generally understood; rather, such slots are filled only by variables with referential indices like \underline{x}_1 , \underline{x}_{27} , etc. To the sentence are attached as many extra occurrences of node N as there are different referential index variables in it where each variable is 'defined' in terms of a noun. Thus sentences (1) and

(14) A waitress hurt an actor.

would have base forms like

(15) (\underline{x}_1 hurt \underline{x}_1), \underline{x}_1 = a waitress.

(16) (\underline{x}_1 hurt \underline{x}_2), \underline{x}_1 = a waitress, \underline{x}_2 = an actor.

respectively. It is assumed that there is an operation that inserts the defining noun phrase into the corresponding variable, or if there are many occurrences of the variable, one of its occurrences; the rest of the same variable are filled in by pronouns. To return to examples (15) and (16), the first occurrence of \underline{x}_1 in (15) is filled by a waitress, the second occurrence by herself, to yield sentence (1); in (16) \underline{x}_1 and \underline{x}_2 are filled by a waitress and an actor, respectively, to yield sentence (14).

Then, presumably, the presupposition relation among the elements of a sentence is established after this operation of replacement of variables by words which, in a sense, exerts the effect of both the lexical insertion rule and the pronominalization rule at the same time. And, presumably, choice of himself or herself, which is to fill the second slot of \underline{x}_1 in (15) is made independently of any inherent features that the lexical item waitress may have; only the semantical presupposition of one or the other of these pronouns may contradict some assertions that the lexical item may make, yielding 'semantically' anomalous forms like (13).

Thus, the claim to the effect that forms like (13) are semantically anomalous, which seems quite compatible with intuitive judgment on such forms, appears to fit well in the mechanism of pronominalization proposed by McCawley himself. This I do not dispute. But now to the second point. This is essentially nothing to do with what particular formalization of pronominalization one would adopt, but rather with intuitive judgment that forms like (13) are semantically anomalous with, characteristically, two possible metaphorical readings. On this is based

the claim that gender agreement of pronouns is in nature identical to semantical presupposition related to selectional restrictions. However, my point is that forms like (1) and (13) are too special for a general conclusion to be drawn on the semantic implication of pronominalization in general. Take, thus, sentences like

- (17) A waitress hurt herself when someone hit her and she dropped some glasses.

The base form, according to McCawley, would be something like

- (18) (x_1 hurt x_1 when x_2 hit x_1 and x_1 dropped x_3), x_1 = a waitress, x_2 = someone, x_3 = glasses.

Now if one fills the second occurrence of x_1 and those after that by pronouns independently with respect to gender, i. e. without making gender agreement, one might get forms like

- (19) A waitress hurt himself when someone hit her and he dropped some glasses.
(20) A waitress hurt herself when someone hit him and she dropped some glasses.

But in such cases, I would dare assume, though I am not a native speaker of English, that the forms thus obtained are mere word salad under the condition that referential identity is presupposed by the base form (18); (19) or (20) may not cause a metaphorical or humorous reading, indicating that the waitress changes successfully her (or his?) femininity or masculinity so frequently.

To avoid generating forms like (19) and (20) syntactically, one would have to have recourse to the feature of gender by some means, whatever formulation pronominalization might be assumed to take. Of course, one could still claim that forms like (19) and (20) are by mere definition syntactically well-formed and only semantically anomalous or semantically filtered out. But then the attempt at justifying intuitively the claim for semantic anomaly for (13), pointing to two possible resolutions in anomalous readings of the contradiction of meaning, becomes irrelevant. Besides, to call forms semantically anomalous to which presumably no semantically anomalous reading may even be assigned is hardly acceptable.

To summarize, Chomsky would, as McCawley points out, need the feature Male as an inherent syntactic feature and would introduce it by a rule like (3), because it is required in the formulation of gender agreement

of a pronoun; on the contrary, McCawley would claim that such a feature as a syntactic feature is not required in the formulation of gender agreement of a pronoun, since gender agreement and violation of it are to be accounted for semantically in terms of presupposition. But I believe his argument based on forms like (13) is insufficient to establish this general claim; the fact remains that a feature like Male must be referred to in the operation of pronominalization. It is another question how pronominalization is to be formalized, how features like Male are to be introduced in the syntactic component, or whether or not such features play any role in selectional restrictions within or outside the syntactic component.

5. Criticism against McCawley's claim, 2; gender agreement in French

Would the above observation on pronominalization imply that human nouns must be specified as to their gender so that their gender may be referred to by pronominalization, and hence would it lead us to go back to the Chomskian framework in which (6) emerges as an ambiguous form? I shall put aside this question for the time being. In this section I shall discuss another example in which the gender feature is called for by a syntactic process. In fact, I shall take this to be more crucial than the above observation on pronominalization in connection with the problem of whether or not inherent features such as Male may be considered to be asyntactic in the general theory of grammar (in the sense that they are not involved in the working of the syntactic component). It is also more crucial in determining how selectional restrictions are related to the syntactic mechanism of language.

After all, English is not a very good testing ground for possible involvement of the gender feature in the syntactic mechanism of language since gender plays rather a marginal role in grammar. A language such as French would testify to a more intricate involvement of gender in syntax. In French some nouns are grammatically masculine but semantically neutralized as to their referentiality to a male or female person. One may say

(21) Un professeur sera surpris.

without excluding the possibility that the referent of the subject will be female. The sentence

(22) Le professeur a épousé Pierre.

is not semantically anomalous, le professeur in the natural reading of

the sentence being taken to refer to a female professor. If a sentence like (22) is embedded by relativization into a matrix sentence as a modifier of le professeur, some, if not all, speakers of French make gender agreement of a participle, if necessary, according to the natural, rather than grammatical, gender of le professeur. Thus we have

(23) Le professeur qui a épousé Pierre sera surprise₂.

or

(24) C'est le professeur qui a épousé Pierre que Charles a surprise₂.

It would be quite all right to say that femaleness of le professeur in (23) and (24) is presupposed by the meaning of the modifying clause qui a épousé Pierre; to this extent, the femaleness of le professeur could be just a matter of semantic interpretation, just as the femaleness of neighbor would be presupposed by the meaning of buxom in the sentence

(25) The buxom neighbor was surprised.

In this English case with neighbor the story ends here; in the French case with le professeur it doesn't. Apparently the femaleness presupposed by the modifying clause is responsible for the feminine ending of the participle surprise in (23) and (24). Gender agreement transformation would be quite naturally understood if it can refer to the feature Female of le professeur in (23) and (24); but this would mean that the femaleness of le professeur in these sentences is not simply a matter of semantic presupposition.

Although it may seem hardly necessary, let me elaborate this point a little further. Let us compare the case of English pronominalization exemplified by (1), (7), (8), etc. with the case of French gender agreement exemplified by (23) and (24). Let us for the time being disregard the criticism directed towards the 'semantical' treatment of pronominalization in section 4. Thus, in examples like (1), (7), or (8), where only one anaphoric pronoun is concerned, or more specifically, where only an occurrence of a reflexive pronoun is concerned, the account of gender agreement (or disagreement) in terms of presupposition appears to have some reasonable basis. Let us accept for the time being the reasonableness, to this extent, of presuppositional treatment of gender agreement in English pronominalization and compare it with possible presuppositional treatment of gender agreement in French participles. (In fact, later I shall accept a somewhat modified version of a 'presuppositional' account of gender agreement of English pronouns in the general case.) Let us then go back to McCawley's framework and consider the McCawleian base form

(26) (x_1 hurt x_1), x_1 = neighbor.

which would supposedly underlie both (7) and (8); the first x_1 is replaced by neighbor; (7) and (8) are obtained if the second x_1 is replaced by himself and herself, respectively. After this replacement maleness and femaleness are presupposed in neighbor by himself and herself. Variables like x_1 are, so to speak, vessels, and insertion of lexical items like neighbor or pronouns like himself fills those vessels with semantic information. Even before such bestowment of semantic information, those vessels are related semantically to each other to some extent in the schemata like

(27) x_1 hurt x_1 , or, x_1 hurt x_2 .

These schemata themselves represent primitive forms of units of meaning. Lexical insertion and pronoun insertion represent further refinement of such primitive forms of meaning. In the structure of English it happens that the third person singular pronoun must carry a piece of information, i.e. gender, that may not be carried by a human noun like neighbor, and in cases like (26), even though the two vessels represented by the two occurrences of x_1 are supposed to be coreferential, they may be filled with different pieces of information. Then pieces of information that are lacking in one of the two vessels are presupposed in it by the information filled into the other.

But in a case like gender agreement in French, particles with such a 'natural' interpretation for presupposition may not be available. Informally speaking, it would be quite obvious that to assume that the position filled by the feminine ending of surprise in (23) and (24) represents some kind of 'slot for meaning' is unnatural. Formally such an assumption would result in two kinds of redundancy. First of all, the information that le professeur is feminine is given in the relative clause; since this is the case, there is no need to reserve room after a participle to store that information. Secondly, the French past participle agrees in gender with the deep object only in case some transformation happens to bring the object before the participle; the 'nonclefted' sentence corresponding to (24) is

(28) Charles a surpris le professeur qui a épousé Pierre.

Accordingly, if one assumes that there is a slot for a meaning after surpris in the base structure to indicate the gender of its direct object, it must be later deleted from structures like (28) where the direct object does not precede the participle in the surface structure; thus this semantically redundant assumption does not buy anything on the formal side,

either.

The gender agreement of French participles is to be recognized as a syntactic process that belongs to a layer much closer to the surface structure--a kind of process the standard transformational technique is supposed to be particularly fitting to describe.

It appears clear, then, that the feature specification +Male must be referred to in a syntactic process of gender agreement of French participles and is not simply semantic in the sense that its role is restricted to semantic interpretation and presupposition. Would this observation lead us to the original Chomskian framework?

6. An alternative proposal indicated

I have claimed that both the Chomskian and the McCawleian framework are not appropriate to deal with the phenomenon of gender agreement in general, or more specifically, with the particular gender agreement found in French between a participle and its deep object. Some alternative proposal is now in order. In the following I shall submit a solution that would be a plausible one developed from the original Chomskian framework. However, as it will be pointed out later, the insight of Fillmore and McCawley that relates the notion of selectional restriction to the idea of presupposition is also in a sense incorporated in the framework to be proposed now.

The informal guideline underlying the formal framework to be proposed is to formalize the assumption (which I believe to be intuitively plausible) that the gender of the participle surprise in (23) and (24) is determined by the natural gender of le professeur, which in turn is determined by the natural gender of the subject of the embedded sentence, which, finally, is determined, semantically speaking, by the meaning of the phrase a épousé Pierre and, syntactically speaking, by the context _____ a épousé Pierre.

Let us then start from the beginning. How would the statement 'the context _____ a épousé Pierre determines the natural gender of the subject' be reflected in the formal machinery of the Chomskian framework? It would be reflected in a statement like 'the verb épouser is assigned, among others, a specification of a selectional feature +[-Male] _____ [+Male].'

For completeness' sake, let me here recall how selectional features like this are to be interpreted in the Chomskian framework. In fact, Chomsky proposed two alternative interpretations of the use of such

features. Let me explain them for the sake of simplicity, with examples from English. Presumably the adjective buxom is assigned the selectional feature specification 'take a female subject', or formally $+[-\text{Male}]$ _____ or something like it. Now, according to one alternative, selectional features like this are introduced by rewriting rules in the base component of a form something like

(29) Adj \rightarrow $+[-\text{Male}]$ _____ in env. $[-\text{Male}] \dots$ _____

Adjectives are subcategorized by this rule into those that take female subjects and the others. Each adjective in the lexicon is assigned a specification with respect to this selectional feature, $[-\text{Male}]$ _____ after all redundancy rules and conventions are applied to it inside the lexicon. Thus, buxom, for example, is assigned the specification $+[-\text{Male}]$ _____. Now an adjective with this specification may be inserted into a slot in the preterminal string where the same feature specification has been introduced by rule (29). Since rule (29) is context sensitive, referring to the inherent feature $+\text{Male}$ of the subject slot, which is assumed to have been introduced by a rule like (3), the mechanism sketched above insures getting (4) to the exclusion of (5).

According to the other alternative, rewriting rules like (29) are not introduced in the base component; in a preterminal string an adjective slot is not assigned any specification with respect to the selectional feature $[-\text{Male}]$ _____. Only in the lexicon is the specification of the feature assigned to adjectives. Then, each lexical entry is assumed to represent a transformation that replaces a dummy symbol Delta by itself and the selectional feature specifications assigned to it are assumed to describe structural indices of this particular transformation. For example, the adjective buxom is assigned the specification $+[-\text{Male}]$ _____ in the lexicon. This specification means that the lexical entry buxom may replace a Delta that is found in a string that has a proper analysis $[-\text{Male}], \dots, [+Adj]$ or something like it.

Note that in either of the alternatives it is assumed that slots for nouns are assumed to have been assigned inherent feature specifications like $+\text{Male}$ in the base component by the time rewriting rules like (29) or transformations that insert lexical entries are applied.

It is argued in McCawley (1968) that there is little empirical evidence to support the first alternative over the second; then, the first alternative is simply overloaded with extra machinery. I do not substantiate this point and refer the reader to McCawley (1968). I simply state here that my proposal, to be submitted now, may be considered an improvement on the second alternative, not the first.

Thus, each lexical entry is assumed to represent a transformation which inserts 'itself' into a preterminal string. But I shall provide a selectional feature specification like +[-Male] _____ with a different interpretation so that we may get rid of spurious specifications of inherent features like +Male in preterminal strings. Let us continue to observe buxom waitress, neighbor, and actor. As McCawley rightly observes, the meaning of buxom presupposes femaleness of its subject. He does not provide us with any formulation of such a 'rule of presupposition' in a formalized semantic theory, to which, according to McCawley, it belongs. But once one starts speculating on a possible formalism of such a presupposition rule one would come to reinterpret a selectional feature specification like [-Male] _____ as a presupposition rule saying, to put it informally, that femaleness is presupposed in the subject of buxom. Such a selectional feature specification might now be considered to be a kind of semantic redundancy rule to predict femaleness of the subject noun from the meaning of the adjective buxom. Note that, according to this reinterpretation of selectional feature specifications, which is intended to give a formal basis, at least partially, to McCawley's presupposition theory, selectional features are not syntactic features. Take sentence (10). The syntactic component would generate it without any specification as to male/female distinction of neighbor; the semantic component operating on this syntactically well-formed string would assign a semantic feature specification -Male to neighbor which is predicted by a presupposition rule, or a kind of semantic redundancy rule, that is assigned to the lexical entry buxom. No particular syntactic process would be involved that assigns the specification -Male to the waitress, or the slot it fills, in sentence (4), either; but in this case the lexical entry waitress would be assigned a semantic feature specification -Male in the lexicon unlike neighbor, which is neutral, and accordingly the semantic redundancy rule represented by the selectional feature specification +[-Male] _____ would apply to (4) only vacuously. Sentence (5) would also be generated by the syntactic component as a syntactically well-formed sentence. The semantic redundancy rule would contradict the semantic inherent feature specification of the lexical entry actor and mark the sentence semantically anomalous.

This would be one plausible way in which one might formalize (a portion of) McCawley's presuppositional theory. Note that as a kind of redundancy rule a presupposition rule is not allowed to 'rewrite' a specification already given. In fact, it is a perfectly reasonable assumption that 'inherent' feature specifications may never be rewritten; they may only be supplied or predicted by their contexts.

Essentially the only thing I need now to go from the McCawleian framework to the one I am proposing, though its implication for the general

theory is all-crucial, is simply to add that presuppositional redundancy rules such as discussed above may not be entirely located in the semantic component. This would be a direct consequence from our observation on gender agreement of French participles made earlier. In the next section I shall recapitulate this conclusion and discuss some other consequences of our observation.

7. Selectional feature as structural change of a transformation

It was claimed that the feature specification -Male of le professeur in (23) and (24) must be available when gender agreement transformation operates on the participle surpris. It follows that prediction of femaleness of the subject of the phrase a épousé Pierre may not be realized strictly within the semantic component totally independently of the transformational component of French grammar. It must be assumed that the redundancy rule that is assumed to be represented, some way or other, by a selectional feature specification like $+[-\text{Male}] \text{ } ____ [+Male]$ is a syntactic rule. The Chomskian framework may now be modified to accommodate this requirement simply by dropping rewriting rules like (3) that introduce inherent features into preterminal strings and interpreting a selectional feature specification like $+[-\text{Male}] \text{ } ____ [+Male]$, not as a structural index of the transformation represented by a lexical entry that is so specified, but rather as a structural change of the transformation, with slight modification in understanding this term, as will be proposed shortly.

Let me go back, for simplicity's sake, to the English examples, to explain the point. Consider how forms like (4), (5), and (10) would be generated or blocked. The preterminal string underlying these forms would have the form

(30) N is Adj.

where the slot N is not specified as to its male/female distinction. The transformations, presumably unordered, that correspond to the lexical entries waitress, actor, or neighbor, on the one hand, and buxom, on the other, replace N and Adj, or more exactly, the occurrences of Delta dominated by them, by the lexical entry waitress, actor, or neighbor, on the one hand, and buxom, on the other, respectively. The selectional feature specification $+[-\text{Male}] \text{ } ____$ assigned to the lexical entry buxom is now assumed partially to read 'specify the subject as -Male', or in other words, the lexical entry might be interpreted to represent a transformation something like

$$\begin{array}{ccccccc}
 (31) & N, & \dots, & [\text{Delta}]_{\text{Adj}} & & 1 & \\
 & 1 & & 2 & & 3 & \\
 & & & & \rightarrow & \underline{-\text{Male}} & , 2, \underline{\text{buxom}}
 \end{array}$$

I said 'partially' because it appears that, strictly speaking, the specification of $+\underline{[-\text{Male}]}$ _____ is assumed to represent at the same time the structural condition of the transformation, $\underline{N}, \dots, \underline{\text{Adj}}, \underline{N}$ being predictable from $\underline{-\text{Male}}$, and a part of its structural change. I shall propose shortly to interpret the specification $+\underline{[-\text{Male}]}$ _____ to stand solely for the structural change of the transformation, with appropriate modification of its meaning to be specified later, so that a pleasing uniformity may be regained. But for the time being let us return to the formulation given in (31) and finish our rough examination of how forms like (4), (5), and (10) would be generated or blocked.

Assume that replacement of \underline{N} by waitress, actor, or neighbor takes place before replacement of $\underline{\text{Adj}}$ by buxom. Then, when rule (31) is about to be applied in the process of derivation of (4), (5), and (10), the slot \underline{N} in (30) will have been specified as $\underline{-\text{Male}}$, $\underline{+\text{Male}}$ or unspecified with respect to $\underline{\text{Male}}$, respectively. In the first case, rule (31) applies vacuously, and (4) is obtained. In the second case, the inherent feature specification $\underline{+\text{Male}}$ assigned to actor in the lexicon contradicts the specification $\underline{-\text{Male}}$ prescribed in the structural change of rule (31); by convention an inherent feature specification may not be changed; hence the blocking of the derivation of (5). In the third case rule (31) applies nonvacuously and specifies neighbor as $\underline{-\text{Male}}$ and generates (10) as a syntactically well-formed form with the specification that neighbor is female.

Assume, next, that replacement of \underline{N} takes place after replacement of $\underline{\text{Adj}}$. Then when the nouns waitress, actor, and neighbor are to be inserted into the slot \underline{N} , this slot has been assigned the feature specification $\underline{-\text{Male}}$; this specification is vacuously supplied to waitress, contradicts the specification $\underline{+\text{Male}}$ of actor, and is nonvacuously supplied to neighbor to generate, to block, and to generate (4), (5), and (10), respectively.

Thus, the modification proposed above to interpret lexical entries as transformations would yield the desired result concerning forms like (4), (5), and (10) under the same assumption that such transformations are mutually unordered as in the Chomskian framework. The above exposition still leaves some lack of clarity as to which feature specifications of a lexical entry are to be interpreted as representing structural change and which others as structural index of the transformation the lexical entry represents. As mentioned above, such distinction of the role of the feature specifications in a lexical entry will be removed later.

Note that in the proposed framework sentences like (6) do not emerge

from the syntactic component as structurally ambiguous sentences, as in the original Chomskian framework. The lexical entry neighbor is not specified at the feature Male in the lexicon, no 'selectional feature' is assigned to tall that would introduce a gender specification in its subject, nor is any specification of the inherent feature Male introduced by a rewriting rule like (3).

8. Relativization and pronominalization as feature agreement transformation

Leaving for later consideration the problem of exactly how feature specifications in a lexical entry should be interpreted, let us now proceed to see how French examples like (23) and (24) would be generated, since this is more crucial to the main theme of the paper. The way a sentence like

(32) Le professeur a épousé Pierre.

is generated parallels the way (10) is generated and needs no more clarification; presumably, the verb épouser is assigned the disjunctive specifications $+[-\text{Male}] \text{ } ____ [+ \text{Male}]$ and $+ [+ \text{Male}] \text{ } ____ [-\text{Male}]$, and in the derivation of (32) the first of these supplies the specification -Male and +Male to le professeur and Pierre nonvacuously and vacuously, respectively. Le professeur in (32) is syntactically specified as -Male. On the other hand, in the base form of the matrix sentence of (23) and (24):

(33) Le professeur sera surpris.

or more exactly

(34) Delta surprendra le professeur.

le professeur is unspecified at feature Male because surprendre does not demand selectional restriction on its subject or object based on male/female distinction.

The mechanism we still need to complete the derivation of sentences (23) and (24) is to 'shift' the specification -Male that has been assigned to le professeur in the constituent sentence by a 'selectional restriction' to le professeur in the matrix sentence which no 'selectional restriction' assigns such specification.

This problem is dependent on how the entire process of relativization

is to be formalized. For our present purposes, however, it suffices to recognize that some sort of cross-reference of identity is involved in relativization as well as in pronominalization. Consider the base form that underlies sentence (23):

(35) Le professeur # le professeur a épousé Pierre # sera surpris.

Here, as indicated above, the second le professeur gets specified as -Male while the first is unspecified at feature Male. In order to 'shift' the specification -Male from the constituent to the matrix sentence, one might formulate (a portion of) the relativization transformation as follows:

(36) N # X N Y #
 α Male
 1 2 3 4 → 1 2 \emptyset 4
 α Male

where 1 = 3 except for some feature specifications including +Male.

This would suffice to derive (23) from (35) with additional application of a gender agreement rule that would refer to the specification -Male introduced into the matrix occurrence of le professeur in (35) by (36). The rule is a kind of regressive agreement rule.

I shall return shortly to formalization of the mechanism of regressive agreement connected with relativization. At this point let us return to the problem of gender agreement of pronouns in English. How would forms like (1), (7), (8), or (13) be generated or blocked? Let us base our examination of the problem on the 'classical' formulation of pronominalization, according to which pronominalization would be formulated as follows:

(37) N X N
 1 2 3 → 1 2 $\begin{bmatrix} 3 \\ +\text{Pro} \end{bmatrix}$

where 1 = 3 (identity appropriately understood)

In the Chomskian framework the gender specifications of the pronoun and its antecedent are given in the base component; in the base form (2) of (1) both occurrences of waitress are assigned -Male, and this specification is inherited by herself in (1) through pronominalization. 'Identity appropriately understood' in the formulation of pronominalization in (37) is understood to include identity of gender. Two different base forms are responsible for derivation of (7) and (8), one with the specification +Male, the other with

-Male, assigned to neighbor. In our framework, as in the McCawleian, neighbor is not assigned gender specification which may be inherited by a pronoun. Pronominalization itself must introduce gender specification of the anaphora of neighbor, which means a rule like

$$(38) \quad \begin{array}{ccccccc} N & X & N & & & & \\ 1 & 2 & 3 & \rightarrow & 1 & 2 & 3 \\ & & & & \alpha\text{Male} & & \alpha\text{Male} \\ & & & & & & +\text{Pro} \end{array}$$

where $1 = 3$ (identity appropriately understood)

is necessary. The common base form of (7) and (8) has not yet polarized its meaning into its two possible realizations, (7) and (8). Rule (38) has this effect of polarization, and one could say it is a rule of 'simultaneous' or 'non-directed' assimilation or agreement.

Note that this formulation is compatible with the derivation of (1); with alpha taken to be minus, rule (38) only vacuously supplies the specification -Male to the two occurrences of waitress in the base form (2) of (1). On the other hand, form (13) may be generated only at the expense of violation of the structural change specified by (38).

9. Transformations as partial well-formedness conditions

We have now all the machinery needed to generate desired gender specifications in the grammatical examples discussed above, and also to block derivation of the ungrammatical ones. Some simplification of the formalism involved in the proposed framework is now in order. Let me note the following two points on the shape of rules (36) and (38). First of all, information is somewhat redundantly given in rule (38); the information contained in the structural index of the rule is repeated in the structural change, since feature Male is lexically determined by the category noun. Thus, we might just as well state only the structural change of the rule in the form

$$(39) \quad \begin{array}{ccc} \alpha\text{Male} & X & +\text{Pro} \\ & & \alpha\text{Male} \\ 1 & 2 & 3 \end{array}$$

where $1 = 3$ (identity appropriately understood).

This rule may be regarded as partially a blank-filling rule and partially a well-formedness condition. This is made possible on the assumption

that inherent features may not change their specifications. Secondly, one may note essentially the same kind of redundancy in the formulation of (36) as in that of (38). It may not be immediately seen from the way relativization is formulated in (36), but this is due to the fact that the formulation is insufficient; the third term may not be deleted entirely but certain features of it must be inherited by a relative pronoun. In fact, in French gender must also be kept in a relative pronoun in such cases as

(40) La femme avec laquelle Pierre s'est marié a été surprise.

Instead of (36) one may have a rule

(41) N # X N Y #
 α Male
 1 2 3 4 → 1 2 3 4
 α Male PRO

This rule must be supplemented by the rules that prepose the relativized term and form an appropriate relative pronoun from it. But note now that it does not matter whether the specification alpha Male of the third term appears in the structural index or the structural change of the transformation, again on the assumption that inherent features may not be respecified. And if this specification is shifted from the structural index part to the structural change part of the rule, the same kind of redundancy becomes apparent as with rule (38). Thus one might as well reformulate it as

(42) N # X N Y #
 α Male α Male
 +Pro
 1 2 3 4

where 1 = 3 (identity appropriately understood).

This may again be considered to be partially a blank-filling rule and partially a well-formedness condition.

To return to example (23), the blank at feature Male in le professeur in the matrix is filled by rule (42); on the other hand, the specification -Male which is inherent in the lexical entry femme is 'tested' by rule (42) in derivation of (40).

We are now in a position to return to the meaning of lexical entries as transformations. Some nonuniformity was noticed concerning interpretation of feature specifications given in lexical entries; some seem to have

been interpreted as describing structural indices and some others structural changes of lexical transformations that insert 'themselves'. But now these transformations are also regarded as 'uni-sided'; i.e. they are transformations describable only by their structural change and they act partially as blank-filling rules and partially as well-formedness conditions like transformations (39) and (42).

Let us recall how sentence (23) would be derived in the framework proposed above. The rewriting rules of the base component would generate, irrelevant detail omitted, the preterminal string of the form

$$(43) \quad \#N_1 V_1 N_2 \# N_3 V_2 N_4 \# \quad \text{where } N_2 = N_3.$$

The lexicon contains the following entries:

$$(44) \quad \text{surprendre,}$$

$$(45) \quad \text{épouser, } +[-\text{Male}] \text{ ______ } [+ \text{Male}], \text{}$$

$$(46) \quad \text{Pierre, } +\text{Male,}$$

$$(47) \quad \text{professeur, blank Male,}$$

Application of transformations (46) and (47) to (43), and some other irrelevant adjustment, would yield

$$(48) \quad \begin{array}{ccccccc} N & V_1 & \text{le professeur} & \# & \text{le professeur} & V_2 & \text{Pierre.} \\ & & \text{blank Male} & & \text{blank Male} & & +\text{Male} \end{array}$$

Application of transformation (45) would assign -Male to le professeur in the constituent and 'test' the specification +Male of Pierre:

$$(49) \quad \begin{array}{ccccccc} N & V_1 & \text{le professeur} & \# & \text{le professeur} & \text{a épousé Pierre} & \# \\ & & \text{blank Male} & & -\text{Male} & & +\text{Male} \end{array}$$

Transformation (44) simply inserts itself into V_1 ; passive transformation will then yield

$$(50) \quad \begin{array}{ccccccc} \text{Le professeur} & \# & \text{le professeur} & \text{a épousé} & \text{Pierre} & \# & \text{sera su} \\ \text{blank Male} & & -\text{Male} & & +\text{Male} & & \end{array}$$

Transformation (42) would assign -Male to le professeur in the matrix and 'test' -Male in le professeur in the constituent:

- (51) Le professeur # le professeur a épousé Pierre # sera surpris.
 -Male -Male +Male
 +Pro

Then, finally, gender agreement transformation, the nature of which is to be examined below, changes surpris into surprise, making reference to specification -Male of le professeur in the matrix.

I have finished presenting the framework of the base component of a transformational grammar which is claimed to overcome shortcomings of both the Chomskian and the McCawleian frameworks. It may be regarded as a sublation of these two earlier proposals. Like the Chomskian and unlike the McCawleian framework, some selectional features are introduced in the lexicon, though they are given a somewhat different interpretation than in the Chomskian framework. Like the McCawleian and unlike the Chomskian framework, inherent features like Male are not introduced into preterminal strings by rewriting rules; they are introduced into base forms by lexical insertion transformations, some originating from inherent specifications of lexical entries and some others from 'prediction' or 'presupposition' of 'selectional restrictions'.

10. Gender agreement; grammatical and natural gender

The reader will have noticed that gender agreement in French of participles or, more generally, participles and adjectives needs more careful treatment than the foregoing discussion may directly show. Let us consider sentences like

- (52) La théorie que le professeur a proposée a été mise en doute par Pierre.

The participle mise agrees in gender with la théorie. Nothing particularly remarkable is involved here except that la théorie is feminine only in the grammatical sense. The specification -Male that appears, for example, in selectional restrictions of épouser is not supposed to refer to this feminine feature of la théorie, so that one may not get

- (53) *La théorie a épousé Pierre.

Naturally, then, the inherent feature of 'natural' gender that we have been discussing must be distinguished from another syntactic feature of grammatical gender. Let us continue to denote the natural gender feature by Male and denote the grammatical gender by Masculine. The lexical entry professeur is specified as +Masculine and unspecified at feature Male.

The lexical entry théorie is specified as -Masculine, but is it also unspecified at Male? If it is unspecified at Male, how would it be possible that (53) is blocked? Perhaps a plausible answer to these questions is to introduce the convention that whenever the specification +Male or -Male is referred to the specification +Human (and +Animate, too) is also implicitly understood. Selectional feature specification +[-Male] _____ [+Male] implies automatically another specification [+Human] _____ [+Human]. This convention blocks (53) in an obvious way.

Now there must be two gender agreement rules, one referring to grammatical gender and the other to natural gender. How are these two related to each other? From the examples treated so far it might appear that gender agreement of the participles follows natural gender if natural and grammatical genders conflict. But the whole story is not that simple. In our previous example, (23), a masculine noun phrase has acquired a feminine meaning. Take now the case of the conflict in the opposite direction: a feminine noun which acquires a masculine meaning, as in

(54) La victime qui a épousé Marie.

How does the participle surpris agree with this noun phrase if it becomes the subject of the verb phrase

(55) a été surpris.

If gender agreement follows the natural gender one would get

(56) La victime qui a épousé Marie a été surpris.

However, it is reported that (56) sounds much worse than, say (23). The form

(57) La victime qui a épousé Marie a été surprise.

seems to be preferable to (56), although it is reported to be not quite pleasing to the French ear. Thus, the gender agreement rule would be at best stated informally somewhat as follows:

(58) If the head noun is feminine the participle agrees with the grammatical gender, although the resulting form acquires a somewhat lesser degree of grammaticalness if the natural gender of the noun conflicts with its grammatical gender. If the head noun is masculine the participle agrees with its natural gender.

The fact that the gender agreement rule is more complicated than it may first appear, however, only shows, if anything, that the way selectional restrictions are involved in the syntactic working of the French language is more subtle and complicated. A detailed and more exhaustive account of gender agreement in French is not essentially relevant to our main concern here and naturally is beyond the scope of this paper.

Important to note in the scope of our present study is the essentially syntactic character of gender agreement of French participles. Comparison of this gender agreement with gender agreement in pronominalization will be instructive. In the case of pronominalization one might say, and in fact rightly, that the process of pronominalization to be formulated as in (39) is a semantic process in a certain sense; it is supposed to introduce semantic information during the process of generation of a sentence. In sentences like

(59) A neighbor hurt himself.

(60) A neighbor hurt herself,

pronominalization, possibly even inadvertently, serves to give information on the sex of the referent of the noun neighbor. Even in sentences like (1), where it might appear that the meaning of the noun waitress is solely responsible for the information that the subject of the verb hurt is female and the process of pronominalization is simply syntactic, semantic implication of the process of pronominalization may be pointed out. This is because if the right process of pronominalization is violated and forms like (13) are generated we get, as McCawley rightly observes, semantic anomaly rather than purely syntactic anomaly. In other words, (13) is anomalous in much the same way as (5) is, both resulting in conflict of semantic 'presupposition'. But this is not the case with French gender agreement of participles. It might be possible that the form

(61) Le professeur qui a épousé Pierre sera surpris.

is taken to be semantically anomalous, but this is not the only way (61) would be given an interpretation. It might as well be taken to be a form intended to be semantically natural but syntactically anomalous, violating the syntactic rule of gender agreement. The essentially syntactic character of gender agreement of French participles is more clearly revealed by the fact that neither (56) nor (57) is felt, as is reported to me, to be quite the right form. If gender agreement of French participles is essentially of the same semantic nature that the process of pronominalization is, then anomaly must be explained in terms of conflict of semantic presuppositions.

Note that semantically anomalous forms can be uttered with good intentions of producing some particular semantic effects. But when forms like (56) and (57) are said to be somewhat anomalous it is not meant that they may be uttered successfully with good intentions of producing some particular semantic effects, but rather that the particular intended meaning fails to materialize in forms such as (56) and (57). They are purely syntactically anomalous in this sense and so are, or rather so can also be, forms like (61). This is the reason why one can say that gender agreement of French participles reveals in a more decisive way than the process of pronominalization the fact that the inherent feature Male can be involved in the syntactic process of language.

11. Concluding remarks

Chomsky called a feature "semantic" if it is not mentioned in any syntactic rule. According to Chomsky, the inherent feature Male would not be a semantic feature in this sense. According to McCawley, inherent features are semantic and, furthermore, he claims that selectional restrictions, which are dealt with by means of selectional features in the Chomskian framework, are not to be treated in syntax.

I claimed that McCawley's argument that inherent features are not syntactic in the sense that they are not involved in the syntactic working of language cannot be accepted in general; feature Male is claimed to be syntactic; furthermore, some features which are formally similar to Chomsky's selectional features are recognized as elements of the syntactic component.

This may give an impression that the system of grammar described in the preceding lines is very close to Chomsky's original. But the general implication of the kind of grammatical phenomenon we have been concerned with is not fully revealed in a direct way if our observation is limited to the type of examples discussed so far.

We have seen that in example (23) the noun le professeur obtains feature specification -Male through "selectional" feature specification $+[-\text{Male} \quad +\text{Male}]$ assigned to the verb of the embedded sentence, épouser. Formally speaking, the meaning of the embedded sentence "presupposes", according to Fillmore-McCawley terminology, the femaleness of the subject of the matrix sentence. However, as Fillmore and McCawley rightly point out, selectional features of the kind that the Chomskian framework would allow represent only special instances of "presupposition". In the case of épouser the meaning of the verb and

the natural gender of its object determine the natural gender of the subject of the verb. But consider a verb phrase like wear a skirt. Presumably (except in Scotland), this verb phrase presupposes that its subject is female. But it is not a feature independently inherent in the verb wear or in the noun skirt that is responsible for this presupposition; a male professor may well wear a shirt or buy a skirt. Perhaps, then, one would have to introduce a feature something like To-be-worn-by-female and assume that skirt is assigned feature specification +[To-be-worn-by-female] and wear the selectional feature specification +[-Male] ____ +[To-be-worn-by-female]. But this would still not be sufficient. Any specification, say, P, which gives a description of skirt would give rise to the presupposition that the subject of the phrase wear clothes of the type P (or which are P) is female; one would have to devise machinery to "calculate" the feature specification +[To-be-worn-by-female] from the structure of expression P.

Thus, I could agree with McCawley when he says that selectional restrictions are actually semantic if by this it is simply meant that a variety of operations that would be involved in semantic interpretation are automatically involved in description of selectional restrictions; but I disagree with him when he adds to the above phrase "rather than syntactic" and by doing so means that the syntactic component is independent of matters related to selectional restrictions.

Although the Chomskian and McCawleian frameworks appear to be diametrically opposed to each other, and in fact it is in a certain sense correct to say so, they also share a fundamental characteristic, i.e. acceptance of the assumption that the syntactic working of language is independent of semantics. Or, to put it another way, the formal machinery involved in the description of the former may be separated from that, whatever it may be, which is necessary in the description of the latter. In the Chomskian framework the semantic component is an interpretive system operating on the base component; the working of the syntactic component is independent of the mechanism of semantic interpretation and simply maps the base structure onto the surface structure. McCawley, among other recent theoreticians, disputes or casts serious doubts on the existence of the base in Chomsky's sense and claims that the system of semantic representations is the starting point of grammatical transformations; the syntactic component is to derive surface forms of sentences from their semantic representations. But here again, semantics is semantics and syntax is syntax; on the one hand, all semantic information is assumed to be derived from the semantic representation of a sentence and on the other hand, operation of the syntactic component on the semantic representation is assumed to be independent of semantics once it has started.

The proposal made above is inconsistent with this assumption of separated syntax and semantics; although it may appear to be closer to the Chomskian framework in some respects and closer to the McCawleian framework in others, it is different from both with respect to this fundamental aspect.

One might remark that my discussion is dependent too heavily on a rather marginal phenomenon of the gender agreement in French.¹ The phenomenon might be called marginal because it belongs to a very superficial level of grammar or because it belongs only to one language and hardly represents directly anything universal. The phenomenon, taken by itself, does not reveal directly anything of a very deep nature in the semantic or the syntactic structure. But this marginality hardly invalidates the claims made above about the possibility of involving in syntax some inherent features and features formally similar to Chomsky's selectional features, or more generally, about the possibility of involving in syntax procedures that conceivably would be needed in describing the semantic interpretation of sentences. In fact, I have intentionally avoided leading the discussion to more sophisticated issues beyond the extent necessary to our immediate goals, and have taken the most simplistic position on matters not directly relevant to them.

In some sense I have restored Chomsky's selectional feature, which McCawley discarded. One might object to their rehabilitation because, after all, they can represent only a fraction of the entire phenomenon of selectional restriction or semantic presupposition. But it seems to me to be a mistake to ridicule Chomskian selectional features simply because one can easily enumerate anomalous examples that cannot be excluded by them, such as those given by McCawley: John diagonalized that differentiable manifold, I ate three phonemes for breakfast. Although analogy is not always a very commendable technique in rhetoric or in historical linguistics and may lead to unexpected confusion, it may be permissible to conclude this paper given first at a meeting on mathematical linguistics by saying, or recalling, that the problem of selectional restrictions is of topological rather than algebraic nature. The essential interest in the study of selectional restriction should lie not in locating exactly every single element in the structure of grammaticalness but rather in investigating the structure of approximation of grammaticalness and deviancy. It seems very doubtful that the problem, for example, of determining exactly what items may or may not make a normal or anomalous sentence from the frame I ate _____ is by itself of any real linguistic interest. A complete solution, if possible, of such a problem would only amount to enumerating all eatable things, or if one likes to talk formally, to recognition of a feature something like [+Human - eat _____] and to assigning plus or minus specifications for this feature to

each single noun. It would be more significant to investigate the mutual relationship of redundancy among features like this one. Thus, one could introduce a rule to the effect that abstract nouns are negatively specified as [+Human - eat ____]. This rule would predict the anomaly of I ate three phonemes. But however many redundancy rules of this sort one may establish, it would be easy to ridicule the system of rules by presenting deviant forms that defy the refinement thereby attained, if one's interest remained in just determining whether or not every single form is normal or anomalous. This sort of interest in the problem of selectional restriction may be compared with that of a person who is interested in knowing the exact decimal expansion of π . The mathematician could give him as many consecutive digits of the decimal expansion of π as the person is willing to be satisfied by. Likewise, the linguist may enumerate as many normal and/or anomalous forms with the frame I ate ____ as he wishes. But these would not be mathematically or linguistically interesting problems; only the structure of approximation that is concealed under such problems is worthy of mathematical or linguistic interest. Any criticism against the Chomskian notion of selectional restriction would have to be directed along the line that would show that it is useless, misleading, or mistaken for the purpose of taking a step towards a significant theory of the structure of grammatical approximation.

I am indebted to Nicolas Ruwet for reading an earlier draft of this paper and drawing my attention to more complicated aspects of French gender agreement which are not all taken up in this paper. But I am fully responsible for any mistakes, misjudgments or shortcomings contained in the paper, since he was not given a chance to look at this draft.

Apparently there is some disagreement among French speakers concerning the grammaticalness of certain sentences used in the paper. I have not yet been able to ascertain the nature of the disagreement; perhaps it results from dialect divergence. The theoretic-linguistic point of the discussion has been made, and it is not essential that any dialect of French support it.

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(There are several versions of each of these unpublished papers of McCawley's. The titles and dates given above are those of the versions I consulted. See now "The role of semantics in a grammar", in Universals in Linguistic Theory, edited by E. Bach and R. T. Harms, 1968, Holt, Rinehart, and Winston, Inc.)

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