

## COGNITIVE VERSUS GENERATIVE LINGUISTICS: HOW COMMITMENTS INFLUENCE RESULTS

GEORGE LAKOFF

The Chomskyan framework that Newmeyer assumes without question has been rejected on empirical grounds by a large proportion of the linguistics community, especially those concerned with cognition and communicative function. Since the paper concerns the relationship between cognitive functional theories and the Chomskyan paradigm, a discussion of the differences in background assumptions is necessary. Let us begin by making some distinctions.

### **Empirical linguistics**

This is the scientific study of language in all its manifestations. It is defined by the generalization commitment.

#### *The Generalization Commitment*

The commitment to characterize the general principles governing all aspects of human language. This commitment comes with a phenomenological characterization of aspects of language where generalizations are to be sought:

*In syntax.* Generalizations about the distribution of grammatical morphemes, categories and constructions.

*In semantics.* Generalizations about inferences, polysemy, semantic fields, conceptual structure, knowledge structure, and the fitting of language to what we perceive, experience, and understand.

*In pragmatics.* Generalizations about communicative function: speech acts, implicatures, discourse, deixis, and the use of language in context.

And so on, for morphology, phonology, etc.

Empirical linguistics, in itself, makes no a priori commitment as to whether these are separate subfields, but takes it as an empirical matter as to whether syntax is autonomous, or whether the generalizations governing the distribution of grammatical morphemes, categories, and constructions involve aspects of semantics, communicative function, or other aspects of cognition.

### **Generative linguistics**

Generative linguistics, as Newmeyer observes, begins with the assumption that syntax is autonomous. It is not an empirical question *within* generative linguistics as to whether

semantics, communicative function, etc. might play a necessary role in stating syntactic generalizations: that possibility is simply ruled out a priori. It is important to understand exactly why that possibility is ruled out. It follows from an a priori philosophical commitment.

### *The Chomskyan Commitment*

This is the commitment to describe language in terms of the mathematics of symbol manipulation systems (which are variously described as 'formal systems', 'systems of rewrite rules', etc.). The subject matter of this form of mathematics is the manipulation of abstract symbols without regard for what the symbols mean and without regard for anything outside the symbol manipulation system. Thus, such things as meaning, communicative function, and general cognition *cannot by definition* enter into rules of formal grammars.

The Chomskyan Commitment is more than just a 'working hypothesis' that might be abandoned tomorrow if it fails. It is an overriding philosophical commitment that takes precedence over the Generalization Commitment. If one fully accepts the Chomskyan Commitment, then there could not possibly be a linguistically significant generalization that violates that commitment, because the Chomskyan Commitment itself limits the possibility for what counts as a 'linguistically significant generalization'. In this way, the Chomskyan Commitment changes what is meant by 'empirical linguistics'.

### **Cognitive linguistics**

Cognitive linguistics is defined by the Cognitive Commitment.

### *The Cognitive Commitment*

The commitment to make one's account of human language accord with what is generally known about the mind and brain from disciplines other than linguistics.

The Cognitive Commitment, if one takes it as a primary, overriding commitment, forces one to be responsive to empirical results from cognitive and developmental psychology, cognitive anthropology, neurobiology, etc. Examples include results that indicate the existence of basic-level categories and conceptual prototypes (cf. Lakoff, 1987); results about the nature of color perception and categorization from psychology, anthropology, and neurobiology; results from psychology linking conventional mental imagery and language (cf. Gibbs and O'Brien, 1989).

Adopting the Cognitive Commitment as primary also changes what is meant by 'empirical linguistics'. The reason is that it gives different meaning to the notion 'generalization'. Generalizations are statements about categories. But what a 'category' is is in itself very much at issue. It is an empirical question, within cognitive science, just what counts as a category. The classical position, and the one required by the mathematics used in generative linguistics, is that a category is defined by necessary and sufficient conditions. But empirical research in the various cognitive sciences has shown that this is grossly incorrect for real human categories; instead, the human category system is based on basic-level and prototype-centered categories of various kinds—graded, metonymic, and radial. (For details, see Lakoff, 1987.)

Thus, the Cognitive Commitment is at odds with the Chomskyan Commitment. Both are primary, overriding commitments that change what counts as a possible 'generalization' within an account of empirical linguistics. The Chomskyan Commitment requires formal grammars in the technical sense, which, by definition, exclude such results about general

cognition. That is why one does not see discussions of basic-level concepts and kinds of prototypes in the generative linguistics literature.

Cognitive and generative linguistics are, of course, at odds in another way. Unlike generative linguistics, cognitive linguistics is open to the possibility that aspects of general cognition, semantics, and communicative function might play a necessary role in the generalizations governing syntactic phenomena. Indeed, it studies cases where that occurs. Functional linguistics is a branch of cognitive linguistics that primarily studies the more limited area of how communicative function plays a role in generalizations governing syntactic phenomena.

Incidentally, Newmeyer incorrectly describes functional linguistics. He assumes that functional linguistics must rely on function alone and cannot make use of any formal structure in its principles. Newmeyer assumes a strict dichotomy: only function or only form. Generative linguistics may require only form, but functional linguistics does not require only function. Functional linguistics argues, on empirical grounds, that general principles governing syntactic phenomena may make use of *both* function and form, by stating correlations between them. Similarly, cognitive linguistics argues on empirical grounds that aspects of general cognition and semantics as well as communicative function enter into the statements of general principles governing syntactic phenomena. This is important because a number of Newmeyer's arguments show nothing more than that form plays a role in linguistic generalizations. This is wholly consistent with a functionalist position.

### Innateness

The innateness of autonomous syntax is not a philosophy-free empirical result; it is a consequence of the Chomskyan Commitment. It is required simply because there is no way that such a formal mathematical system could be learned.

From a cognitive perspective, there is no autonomous syntax and hence no innate form of it. It is an open empirical question for us just what is and is not innate. In general, we assume a great deal of innate conceptual structure and processing capacities, and we take these as forming the basis for linguistic universals.

### Newmeyer's claims

Let us begin with a minor place where Newmeyer uses the Chomskyan Commitment in his paper. Newmeyer cites a paper on classifiers by Michael Lee (1988), where Lee, a former student of mine, makes reference to my 1987 discussion of the Japanese classifier *hon*. Lee argues, as I did, that *hon* was extended historically from long, thin, rigid objects like writing scrolls, baseball bats, and swords and staffs via regular conceptual principles to letters, home runs, and wins in martial arts contests to form a *currently existing* radial category whose internal structure reflects the historical extension. Newmeyer presents Lee's work misleadingly, saying (as if it were Lee's conclusion) that 'the net result of all these changes is a classifier lacking a coherent function'. This is the opposite of Lee's conclusion, as well as mine. Moreover, our analysis of *hon* as characterizing a currently existing radial category with a conceptual internal structure has since been confirmed by Yo Matsumoto of Stanford University.

What Newmeyer did here was ignore the conclusion of the author he was citing and present the conclusion that the Chomskyan Commitment requires him to present, namely, that the classifier 'lacks a coherent function'. The notion 'coherent function' for Newmeyer

excludes radial categories structured by general cognitive relations, as it must for any adherent of the Chomskyan Commitment. To those who make the Cognitive Commitment, however, such radial categories as *hon* are excellent evidence of the cognitive-functional organization of language.

### **A central fallacy**

Newmeyer claims to 'deduce the functional need for formal principles of grammar', that is, 'to deduce the selective advantage of autonomous syntax'. He assumes without argument that 'propositional meaning' does not itself have the structure to be mapped directly onto phonology (since it lacks 'temporality' and 'linearity'), and so an intermediate level (with temporality and linearity) is necessary. He then assumes without argument that such an intermediate level must be an autonomous syntax. To say it is autonomous is to say that all generalizations governing permissible distributions of grammatical morphemes, categories and constructions make no reference to general cognition, semantics, or communicative function. He gives no argument that this is the case, presumably since it follows from the Chomskyan Commitment.

The argument fails for two reasons: firstly, he fails to show that the intermediate level must be strictly autonomous. Secondly, he fails to show that there must be such an intermediate level at all. The reason is that he has an impoverished view of semantics. One thing we know from study in the various cognitive sciences (including cognitive linguistics) is that human conceptual structure makes use of conceptual schemas. These schemas are abstract and compose by superimposition. As Langacker (1987a) has shown at length, such schemas have the right structure to map directly onto phonology without any intermediate level. Moreover, radial categories have the appropriate structure to function as what have been called 'grammatical categories'. Moreover, just about every serious student of semantics has postulated linear semantic structures (e.g. role hierarchies, image-schemas, various discourse hierarchies, etc.) which provide the basis for a mapping from the linear aspects of meaning to the linear aspects of sound. Indeed, the literature in cognitive and functional linguistics abounds with discussions of such mappings.

This argument is at the heart of Newmeyer's paper and its failure leaves very little. He is left without his evolutionary justification for the existence of autonomous syntax. But the situation is even worse. The very phenomena he cites do not support the existence of autonomous syntactic principles; indeed, they are used within the cognitive-functional literature to argue that the whole Chomskyan paradigm is mistaken.

### **The negative inversion counterexample**

We saw above that Newmeyer reinterpreted Lee's (1988) paper against the Chomskyan paradigm so that it fits the Chomskyan Commitment, and then claimed that Lee's results confirmed the Chomskyan paradigm. Let me now turn to a case where he does this with a paper of my own.

Newmeyer cites a paper by Claudia Brugman and myself which he describes as giving a 'finer characterization' of purely formal principles governing auxiliary inversion after preposed negative adverbs. Our paper, in fact, provides evidence against the existence of any such principles.

The typical examples of this phenomenon usually cited include:

Never have I seen such behavior.

\*Never I have seen such behavior.

At no time did he leave the building.

\*At no time he left the building.

Nowhere could he be found.

\*Nowhere he could be found.

By no means will he be allowed to stay in the country.

\*By no means, he will be allowed to stay in the country.

Under no circumstances will he be admitted.

\*Under no circumstances he will be admitted.

But not all preposed negative adverbs trigger aux-inversion. While *never*, *at no time*, *at no place*, *by no means* and *under no circumstances* all do, *with no help* does not.

With no help, he moved the piano upstairs.

\*With no help did he move the piano upstairs.

Various other kinds of adverbials marked with *with*:

With no thought for his own safety, he jumped into the river.

\*With no thought for his own safety did he jump into the river.

With no hat on, he went out into the cold.

\*With no hat on did he go out into the cold.

As these cases show, inversion occurs with negative adverbs that entail that the event expressed in the main clause does not occur. For example, since everything that occurs must occur at some time, at some place, and under some circumstances, the adverbs *at no time*, *at no place*, and *under no circumstances* entail that the event in question did not occur. Thus

At no time did I move the piano.

entails

I didn't move the piano.

while

With no help, I moved the piano.

entails

I did move the piano.

A lack of help does not entail the nonoccurrence of the event; hence the semantic condition for inversion is not met.

One might think that it is the lexical choice of prepositions and head nouns that determines invertability, rather than the character of the entailment. But that is not so. For example, if 'amount of' is added to the negative *with*-phrase and the modal is changed to 'could', then the entailment changes, and so does invertability.

With no amount of help could I move the piano.

\*With no amount of help, I could move the piano.

Here it is entailed that I could not move the piano, and correspondingly inversion is required.

Though *with*-phrases are by far the most common of the noninverting negative adverbials, other prepositions can head negative adverbials of this type, again under the condition that they entail the truth of the main proposition:

In no time he left the building.

\*In no time did he leave the building.

(cf. At no time did he leave the building.)

After virtually no discussion, the bill was passed.

\*After virtually no discussion was the bill passed.

As a final case to show that it is conceptual interpretation, not form, that triggers the inversion, consider the effect of reason adverbials. Take the expression *for no reason*. This expression is compatible either with a reasonless action or with the negation of an action-for-a-reason. If *for no reason* designates a reasonless action, we get sentences like:

For no reason, Harry would beat his wife,

where it is entailed that wife-beating does occur. But if *for no reason* is taken as the negation of an action-for-a-reason, then we get sentences like:

For no reason would Harry beat his wife,

where it is entailed that wife-beating does not occur. That is, if we are talking only about actions-for-a-reason and we say there are no such reasons, that entails that there are no such actions. As before, inversion is correlated with the polarity of the proposition: if it is negative, there is inversion. If it is positive, there is no inversion. The next minimal pair provides a similar example:

For no money would she dance naked. (She wouldn't.)

For no money, she would dance naked. (She would.)

These examples show that inversion occurs with preposed adverbials when the nonoccurrence of the main clause event is entailed.

But entailment is a semantic relation. The fact that it is part of the condition for the occurrence of the inversion construction shows that a purely autonomous syntax cannot be maintained while stating the correct generalizations concerning auxiliary inversion. This is not a 'finer characterization' of a syntactic condition; it is evidence against the claim that syntax is autonomous.

### The coordinate structure evidence

Much of generative syntax is concerned with what are called 'long-distance dependencies' or 'movement rules'; for example,

Who did Harry say Bill hit?

is described from the perspective of autonomous syntax as involving a rule that moves 'who' from the position after 'hit' to the beginning of the sentence.

This phenomenon can, however, be described in a completely different way. From a semantic perspective, the sentence consists of a conceptual schema with a role slot unfilled, the schema corresponding to 'Harry said Bill hit—'. Semantically, this partially unfilled schema is predicated of an animate entity whose identity is being sought, an entity expressed by 'who'. That entity fills the slot in the unfilled schema. From a semantic perspective, there is no 'movement' at all; there is only predication, that is, the filling of a slot in a schema, which involves no linear order at all. The constructional link between the semantics and syntax is straightforward: the surface form of argument of this one-place complex predicate precedes the surface form of the predicate.

Since such a semantic description is required in any account of semantics, the question arises as to why the 'movement rule' way of looking at this phenomenon came about at all. The reason is the Chomskyan Commitment. If one makes that commitment, then a purely syntactic level exists and such sentences *must* be described by a movement rule (or the equivalent) at that level. If one does not make the Chomskyan Commitment, then the semantic description suffices unless there is some reason to add the extra autonomous syntactic apparatus of movement rules.

The usual justification for adding this purely syntactic apparatus is the existence of what have been called 'constraints on movement rules', most of which were discovered by Haj Ross (Ross, 1967, 1983). Perhaps the most celebrated of these is the coordinate structure constraint, which is illustrated by sentences such as:

What did John eat and Bill drink?

\*What did John eat pizza and Bill drink?

\*What did John eat and Bill drink beer?

From a syntactic point of view, there is a constraint on 'movement': if an element (such as 'who') is moved out of a coordinate structure, it must be moved out of all conjuncts. This was seen, historically, as a purely formal constraint that was presumably innate, and was taken as confirmation of the Chomskyan paradigm.

I was in the room with Haj Ross when he first proposed the coordinate structure constraint more than 20 years ago. Within minutes, he also discovered a case where it fails. It is a well-known case in which 'movement' is possible from the second conjunct in (1).

(1) What did Harry go to the store and buy?

Goldsmith (1985) cites the converse case, in which extraction is possible in the first conjunct of (2).

(2) How much can you drink and still stay sober?

In an attempt to save the coordinate structure constraint, I observed that the *and* in (1)

is not a simple conjunction and that the semantic relation between the two clauses is the relation that holds between a main clause and a purpose clause (see Ross, 1983, p. 103). I proposed that (1) was not a true conjunction syntactically, but that (in the spirit of the generative semantics of the day) its syntax followed its semantics, and that it functioned essentially like the sentence *What did John go to the store to buy?*

Goldsmith, also attempting to save the coordinate structure constraint, argues similarly that the semantic relationship between the two clauses is like that between a main clause and an adversative clause as in *How much can you drink while still staying sober?* Goldsmith suggests that the semantic relationship between the clauses forces a 'reanalysis' so that the syntactic properties of the sentence accord with its semantic properties. Though different in detail, Goldsmith's analysis was very much in the same spirit as my 1966 proposal.

In 1966, Ross and I, in our haste to explain away apparent counterexamples, failed to apply the most basic test that any first-year syntax student learns to apply—iteration. We simply never checked to see whether multiple across-the-board movements were possible for such cases. As it turns out, they exist. Here are a couple of examples:

(3) What did he go to the store, buy, load in his car, drive home, and unload?

(4) How many courses can you take for credit, still remain sane, and get all A's in?

In (3) across-the-board extraction is applying in the second, third, and fifth conjuncts. In (4) it applies in the first and third conjuncts. The very existence of across-the-board extraction in such cases shows that true conjunction is required, as does the occurrence of final *and* preceded by a comma-intonation sequence. Thus, these sentences have no possible analyses with simple *in order to* and *despite* adverbials. Yet the phenomena are the same as in (1) and (2).

Before we proceed, it is worth looking at a number of such sentences, just to get a sense of the robustness of the phenomenon.

(5) Sam is not the sort of guy you can just sit there and listen to.

(6) Sam is not the sort of guy you can just sit there, listen to, and stay calm.

(7) Sam is not the sort of guy you can just sit there, listen to, and not want to punch in the nose.

(8) This is the kind of brandy that you can sip after dinner, watch tv for a while, sip some more of, work a bit, finish off, go to bed, and still feel fine in the morning.

(9) I went to the toy store, bought, came home, wrapped up, and put under the Christmas tree one of the nicest little laser death-ray kits I've ever seen.

The phenomenon occurs with (at least) questions, relative clauses, and right-node-raising. The extraction patterns are:

In (5): extraction from second of two VPs.

In (6): extraction from second of three VPs.

In (7): extraction from second and third of three VPs.

In (8): extraction from first, third, and fifth of seven VPs.

In (9): extraction from second, fourth, and fifth of five VPs.

In purely syntactic terms, just about any kind of extraction pattern is possible with VP conjunctions of this kind. In short, *there is no purely syntactic coordinate structure constraint!* The coordinate structure constraint is an illusion, a consequence of making the Chomskyan Commitment and seeing everything in terms of that commitment. When one steps outside the Chomskyan Commitment, all these data make perfect sense, but from a semantic point of view.



What makes sense of these phenomena is the choice of the semantic predication analysis over the syntactic movement analysis. Ross' original examples, like *What did Bill eat and Sam drink?* can be seen to involve parallel predication. The conceptual schemas for 'Bill eat—' and 'Sam drink—' both involve food consumption, which is what makes them 'parallel' semantically in 'What did Bill eat and Sam drink?' they form a compound parallel predicate, which is then bound to the same argument, namely, 'what'.

The other examples involve nonparallel complex predication, of which the major type is a 'natural course of events', which can be characterized within frame semantics. The places in such a course of events where so-called 'extraction' does not occur is with those predicates that indicate a setting of scene or a change of state or location. Thus, 'What did John go to the store [change of location], buy—, put— in his car, drive home [change of location] and unload—?'

Both parallel compound predicates and natural course of events predicates can be expressed as conjunctions, via principles of construction grammar, which involve the pairing of semantics and surface syntactic form. For a lengthy discussion of the principles that account for all the above cases, see Lakoff (1986).

### What is a counterexample?

If one does not start out by making the Chomskyan Commitment, then the data just discussed on preposed negative adverbs and coordinate structures count as counterevidence to the very idea that syntax, as characterized by the Generalization Commitment, is autonomous. The linguistics literature contains hundreds of articles with counterevidence of this sort. Why then do not generative linguists just give up in the face of massive counterevidence?

The reason is that, once one accepts the Chomskyan Commitment as an overriding commitment, then there can be no counterevidence to that commitment itself. One can always make any number of other changes to preserve the commitment. Here are some possibilities:

One can reinterpret the data, that is, one can change the interpretation of asterisks, deciding that what were previously seen as syntactically ill-formed sentences are now to be considered semantically or pragmatically ill-formed.

One can add auxiliary hypotheses, for example, 'reanalysis principles'.

One can restrict what the theory is responsible for. For example, one can claim responsibility only for 'core grammar', which is just a tiny portion of the grammar of a language.

All of these options have been taken to preserve the Chomskyan Commitment in the face of counterevidence such as that presented above.

### Conclusion

Newmeyer's entire argument rests on the Chomskyan Commitment. If one does not accept that commitment—say, if one makes the cognitive commitment instead—then his argument collapses, since there is no autonomous syntax and no innate principles of pure syntactic form, but only innate conceptual and processing restrictions.

There are good reasons why so many linguists have given up on the Chomskyan Commitment: it blinds one to the cases where general cognition, semantics, and communicative function play major roles in grammar.

### Science or speculative philosophy

Cognitive and generative linguistics have different primary commitments which have consequences for virtually every analysis of every linguistic phenomenon. But there is a big difference in the nature of those commitments. The Chomskyan Commitment is a commitment as to the form of the answer: it must be in a symbol-manipulation system (which cannot make use of general cognition, meaning, or communicative function). The Cognitive Commitment makes no commitment as to the form of an answer; it is just a commitment to engage in scientific research, to study language as an implicit part of human cognition.

For me, this distinction has the following import. The Cognitive and Generalization Commitments are just commitments to engage in scientific research, whereas the Chomskyan Commitment is a commitment to a program of speculative philosophy: to see what happens if you decide to study language given the metaphor that a grammar of a human language is a symbol-manipulation system in the technical sense. There are a great many linguists who, like myself, were trained as generative grammarians and then moved on to cognitive linguistics because we found that the Chomskyan Commitment was not consistent with what we saw as the scientific study of language.

Finally, Newmeyer's claims about the nature of evolution are based on a speculative philosophy that has been thoroughly refuted, and therefore cannot tell us anything about evolution.

### SOME SUGGESTED READING

For those readers who would like to see a few of the hundreds of studies demonstrating the non-autonomy of syntax, here are some recent ones from the construction grammar tradition.

FILLMORE, C. 1990 Epistemic stance and grammatical form in conditional sentences. In *Proceedings of the 26th Annual Meeting of the Chicago Linguistic Society*. University of Chicago, Chicago.

FILLMORE, C., KAY, P. and O'CONNOR, M. C. 1988 Regularity and idiomaticity in grammatical constructions: the case of let alone. *Language* 64, 501-538.

GOLDBERG, A. 1989 A unified account of the semantics of the English ditransitive. In Hall, K. *et al.* (Eds), *Proceedings of the 15th Annual Meeting of the Berkeley Linguistics Society*, pp. 79-90. Berkeley Linguistics Society, Berkeley.

LAKOFF, G. 1987 *There-constructions. Case Study 3 in Women, Fire, and Dangerous Things*. University of Chicago Press, Chicago.