

# CENTER FOR RESEARCH IN LANGUAGE

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## EDITOR'S NOTE

This newsletter is produced and distributed by the **CENTER FOR RESEARCH IN LANGUAGE**, a research center at the University of California, San Diego, which unites the efforts of researchers in such disciplines as Linguistics, Cognitive Science, Psychology, Computer Science, Communication, Sociology, and Philosophy, all of whom share an interest in language. We regularly feature papers related to language and cognition (1 - 10 pages, sent via email) and welcome response from friends and colleagues at UCSD as well as other institutions. Please forward correspondence to

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**BACK ISSUES**

Back issues of this newsletter are available from **CRL** in hard copy as well as soft copy form. Papers featured in previous issues include the following:

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Department of Linguistics, UCSD

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*Toward Connectionist Semantics*

**Garrison W. Cottrell**

Institute for Cognitive Science, UCSD

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*Dimensions of Ambiguity*

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*Where is Chomsky's Bottleneck?*

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*Transitivity and the Lexicon*

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*Formal Semantics, Pragmatics, and Situated Meaning*

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*A Geometric Conception of Grammar*

**S.-Y. Kuroda**

Department of Linguistics, UCSD

vol. 2, no. 5, June 1988

## ANNOUNCEMENTS

### **Cognitive Science 200 Fall Seminar** Topic: *Cognitive Semantics*

This quarter, the UCSD Cognitive Science 200 seminar will focus on current research in cognitive semantics. This seminar will focus on standard linguistic problems such as meaning, grammatical structure, metaphor, and language change, as well as on knowledge representation and connectionist modeling, and will be comprised of one hour talks, followed by commentary from researchers from other disciplines. Local researchers who will be giving talks include Gilles Fauconnier, Ronald Langacker, Jeff Elman, and others. Nonlocal researchers giving talks include Eve Sweetser, Mark Turner, and John Dinsmore.

Directed by Gilles Fauconnier (UCSD Cognitive Science Department), the regular seminar will meet Fridays from 2-4 in P&L 1110. The section for graduate students will meet on Wednesdays from 12-1 in P&L 3545 (CHIP Conference Room).

### **International Agreement: CRL and CNR Unite**

In August 1988, the **Center for Research in Language (CRL)** and the **Institute of Psychology/Italian National Research Council (CNR)** in Rome completed an agreement regarding academic cooperation which provides for cooperative ventures between the two institutions. These may include:

- Exchanges of faculty
- Exchanges of students
- Joint research projects and publications
- Exchanges of publications, materials, and information
- Joint conferences and workshops
- Special short-term programs and visits

The agreement takes effect August the first, 1988 and continues indefinitely. The first venture will be a jointly sponsored Workshop on Language and Connectionism, to be held in Rome in December, 1988.

### **VIDEOTAPES AVAILABLE**

The Center for Research in Language has available video tapes of recent lectures given by Dr. David Perlmutter. The titles available are:

"Some Basic Ideas of Relational Grammar"

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"A Moraic Theory of American Sign Language Syllable Structure"

The tapes are available in either VHS or Beta2 format. Please contact CRL at (619) 534-2536 or crl @ amos.ling.ucsd.edu for further information.

## Harris and the Reality of Language

S.-Y. Kuroda

Department of Linguistics, UCSD

This is the last part of a three-part article. The first part, "Where is Chomsky's bottleneck?", (the second corrected printing) appeared in the *CRL Newsletter*, vol. 1, no. 7, and the second part, "A geometric conception of grammar", in vol. 2, no. 5.

1. We have so far been concerned only with formal aspects of Chomsky's transformational generative grammar that differentiate it from Harris' conception of transformational theory. Chomsky's transformational generative grammar is productive in the sense that it is a system of rules (among them, transformations) that specifies the set of sentences of a language and assigns each sentence a structural description. It is also derivational in the sense that transformations are virtually components of the overall representation of a sentence (in the LSLT) or relate representations at different levels of a sentence (in the Standard Theory and the subsequent theories that followed it). Harris' transformational theory is neither productive nor derivational. It is much like an algebraic theory of geometric spaces.

The concept of generative grammar that was introduced by Chomsky to characterize his theory, in particular vis-a-vis Harris', however, is associated with certain philosophical/methodological positions. Thus, generative grammar is nontaxonomic and is associated with the "realist" interpretation of linguistic theory. "The notion 'generative grammar' would, in this nontaxonomic approach, be the central notion of linguistic theory ... " (LSLT p.33)<sup>1</sup> "By 1953, I had abandoned any hope of formulating taxonomic 'discovery procedures' and turned my attention entirely to the problems of generative grammar, in theory and in application." (ibid) "In LSLT, the 'realist' position is taken for granted ... A grammar determined by a linguistic theory (given data) constitutes a hypothesis concerning the speaker-hearer's

knowledge of his language and is to be confirmed and disconfirmed in terms of empirical evidence drawn, ultimately, from investigation of the linguistic intuitions of the language-user ... the general theory, now regarded as an explanatory theory, is likewise to be understood as a psychological theory that attempts to characterize the innate human 'language faculty' ..." (ibid p.37) Generative grammar is a nontaxonomic theory associated with the "realist" interpretation. Transformational generative grammar is a generative theory of grammar in this realist sense.

A realist interpretation is also possible for other work. "If one takes a realist interpretation of the work of post-Bloomfieldian theorists, they are proposing certain quite deep linguistic universals ..." (LSLT p.37) In fact, Chomsky goes so far as to state: "... the procedural approaches developed and applied to varied language material are among the most sophisticated and interesting efforts undertaken within a significant (i.e., nonvacuous) empirical framework ... No empirical claim is associated with a particular system of procedures ... However, a careful review of the work in question seems to me to show that a different and more interesting conception was implicit, despite disclaimers: namely, that the procedures determined the true structure of language, a system with 'psychological reality'" (ibid p.36), that is, a realist conception of linguistic theory. The work of post-Bloomfieldian theorists allows a realist interpretation, and if so interpreted despite disclaimers, it would provide interesting, but ultimately false theories of the real structure of language.

2. Nonetheless, according to Chomsky, "this effort [of demonstrating, under the realist interpretation of linguistic theory,

<sup>1</sup> *The Logical Structure of Linguistic Theory*, Plenum Press, New York, 1975. This printed version is based on the revised version of 1956. All the quotes from LSLT are from the *Introduction*, which is dated September 1973.

transformational generative grammar as a theory overcoming inadequacies of the theory of phrase structure] may well be inexplicable to someone who adopts [as post-Bloomfieldians do] a nonrealist interpretation of linguistic theory." Thus, according to Chomsky, "Harris, for example, seems to regard it as a curious aberration, perhaps to be explained in sociological terms. In his view, there are no 'competing theories,' and 'pitting of one linguistic tool against another' is senseless. Alternative theories are equally valid, as alternative procedures of analysis are equally valid. Each can be applied as a 'basis for a description of the whole language' and 'sentences exhibit simultaneously all of [the] properties' determined by application of these theories (ibid). This is, I believe, a faithful interpretation of post-Bloomfieldian structuralism in its more explicit varieties, though, as noted, it leaves much unexplained in the practice of theorists of this persuasion." (Except for the replacement of double quotation marks with single quotation marks, the quote is as given in LSLT, p.38. Footnote 70 is attached after "sociological terms". This footnote reads: "See his 'Transformational theory', *Language* 41, No 3, Part 1, July-September, 1965, pp.363-401, Note 6." The relevant footnote is Note 5, rather than 6, in the Reidel edition.) Chomsky, thus suggests that in these passages Harris makes the post-Bloomfieldian nonrealist position specifically explicit, and, more relevant in the context of our discussion, he further suggests that Harris presents his transformational theory simply as a procedure of analysis equally valid among alternative procedures, not a theory of the structure of language.

Chomsky's "quotes" from Harris are quite misleading, however, as they are assembled from Harris' footnote referred to and Harris' text in the neighborhood of this footnote and are arranged rather liberally. (The "ibid" in parentheses in the quote from Chomsky thus apparently crossrefers to Harris' article cited in footnote 70, "Transformational theory", hereafter, referred to as TT.) In order to understand the meaning of the pieces quoted by Chomsky, we must put them back into proper context. Harris starts TT, a long

exposition of his transformational theory, by noting, "It may be helpful to understand transformational analysis in the light of other styles of grammatical analysis... Different ways of analyzing sentence-structures have been found or proposed; these are characterized by different kinds of aspects in terms of which the sentences of a language are described... Traditional grammar established various distinguished segments of sentences which were hierarchically subdivided into smaller segments (in a manner made explicit by Leonard Bloomfield, as the method of immediate constituents), ... Another decomposition is given by string analysis, in which each sentence is segmented into one center string and a number of adjunct strings which are adjoined to the center or adjunct strings." (TT p.236)<sup>2</sup> Harris then goes on to explain how string analysis differs from constituent analysis in describing sentence structure, and then how "transformational analysis yields yet another decomposition of sentences.." (ibid. p.237) Harris then states: "To interrelate these analyses, it is necessary to understand that these are not competing theories, but rather complement each other in the description of sentences. [Note 5, referred to by Chomsky is attached here; see below.] It is not that grammar is one or another of these analyses, but that sentences exhibit simultaneously all of these properties ... Each of these properties can be used as the basis for a description of the whole language because the effects of the other properties can be brought in as restrictions on the chosen property..." (ibid p.238)

Harris' footnote 5 to which Chomsky refers reads: "The pitting of one linguistic tool against another has in it something of the absolutist postwar temper of social institutions, but is not required by the character and range of these tools of analysis." This footnote of Harris apparently precipitated Chomsky to set the tone of his comment, quoted above, which impresses on us an anti-realist image of Harris: "Harris regards [Chomsky's] effort as a curious aberration, perhaps to be explained in sociological terms. In [Harris'] view, there

<sup>2</sup> Page references are to Z. Harris, *Papers on Syntax*, D. Reidel, Dordrecht, 1981

are no 'competing theories,' and 'pitting of one linguistic tool against another' is senseless." It is not clear from the textual context alone how Harris' comment in this footnote relates to Chomsky's claim that Harris regards his realist effort as a curious aberration, but that is irrelevant. Whatever its worth may be, Harris' reference to the postwar temper of social institutions (and hence any interpretation of it) can be put aside for the proper understanding of the exposition Harris makes in the main text; we may thus not be concerned with the first sentence in the quote from Chomsky above. Footnote 70 of Chomsky attached to this sentence refers the reader to Harris' footnote. The next sentence contains two quoted phrases, 'competing theories' and 'pitting of one linguistic tool against another'. The latter is obviously quoted from Harris' footnote. The sentence to which this footnote of Harris' is attached contains the word sequence *competing theories*, and hence it would be fair to assume that 'competing theories' is *quoted* from this sentence and that Chomsky is commenting on the view of Harris' expressed in this sentence and the footnote attached to it. But Harris in this context does not say "there are no competing theories"; he says, "[these analyses] are not competing theories," quite a different matter.

What Harris tried to explore in the passages quoted above, it seems to me, should be rather clear, particularly with the advantage of historical hindsight. Harris cautions us that his transformational theory is not the sole component of grammar. It is not proposed to replace constituent analysis and string analysis. They are all "characterized by different kinds of aspects in terms of which the sentences of a language are described." "It is not that grammar is one or another of these analyses, but that sentences exhibit simultaneously all of these properties." The point is that they are conceived of, in the current terms, as modules of grammar. That is why "*to interrelate these analyses*, it is necessary to understand that these are not competing theories, but rather complement each other in the description of sentences," and that is why "each of these properties can be used as the basis for a description of the whole language

because *the effects of the other properties can be brought in as restrictions on the chosen property.*" (Emphasis supplied by SYK.) This is a thesis of modularity.

It is pointless to compare the three "analyses" in Harris' modular conception of grammar with the so-called Government and Binding theory module by module. Whether such a comparison is possible or not, or even useful or not, is besides the point. It suffices to appreciate the basic idea of modularity in Harris' conception of the structure of language. Nonetheless, it may be noted that the effect of string analysis is partially compared with X-bar theory applied to an appropriately abstract level. In another respect, however, string analysis, paired with transformational analysis, produces an effect somewhat similar to pairing surface and deep representations in transformational generative grammar.

On the one hand, string analysis is a theory that constrains the form of a sentence (at this abstract level) in terms of "centers" and "adjuncts," independently of transformational analysis. On the other hand, transformations are operations between sentences. Hence, string analysis imposes restrictions on the forms and effects of transformations. (See TT p.238f) One might compare this idea with the idea that transformations preserve the constituent structure, an idea introduced much later in transformational generative grammar by Emonds, perhaps the first step in the direction of modularity in this tradition.<sup>3</sup> Incidentally, Harris also is aware that "the complete statement is a bit more complicated," because of the existence of root transformations, to borrow a concept introduced by Emonds; see TT footnote 6.<sup>4</sup>

<sup>3</sup> J. Emonds, Root and structure-preserving transformations. MIT Dissertation, 1970; *A transformational approach to English syntax*, Academic Press, New York, 1976. See also the idea of structure-preserving along different lines suggested with a reinterpretation of Marty's linguistic theory in S.-Y. Kuroda "Anton Marty and the transformational theory of grammar", *Foundations of Language* 7:183-198. 1971.

<sup>4</sup> The aspect of string analysis I am concerned with here as a component coupled with transformational analysis is more clearly presented in an earlier publication of Harris', *String analysis of sentence structure*, Mouton, The Hague, 1962, than in TT. This monograph, according to Harris, is a revised version of "Computable Syntactic Analysis," *Transformations and*

Chomsky wrote the *Introduction* of LSLT in 1973, and he was to formulate his own thesis of modularity in a couple of years. In the early 70's, naturally, Chomsky could not anticipate Chomsky of the late 70's; he did not see that Harris had anticipated a leading motif of transformational generative grammar in the 80's. Harris' exposition is not lucid, perhaps only suggestive. The idea was only implicit in Harris' work and was not pursued, clarified and developed to any extent comparable to the extent it was later in transformational generative grammar. It is another matter, however, to interpret the passages of Harris' from which Chomsky quotes in the way Chomsky did and see there only "a faithful interpretation of post-Bloomfieldian structuralism in its more explicit varieties."

To sum up, then, if one takes a realist interpretation of Harris' work at the stage of his "Transformational theory", as Chomsky suggests we can for the work of post-Bloomfieldian theorists, we can discern in Harris some quite interesting proposals that can be compared with certain later developments in transformational generative grammar.

3. Before we proceed further in our discussion of Harris, "it is worth noting," as J. J. Katz cautions us, "that Chomsky's terms 'realist' and 'realist interpretation,' contain an ambiguity which may lend undeserved plausibility to [Chomsky's] conceptualist position."<sup>5</sup> Two points which must be separated are implicit in the "realist position" which "in LSTL ... is taken for granted," (LSLT p. 37) and which distinguishes transformational generative grammar from post-Bloomfieldian taxonomic structuralism.

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*Discourse Analysis Papers*, no. 15 (1959), The Department of Linguistics, University of Pennsylvania. "Excerpts" from the 1959 paper is included in the earlier edition of collected papers of Harris, *Papers in Structural and Transformational Linguistics*, Mouton, The Hague, 1970, under the title "Computable syntactic analysis: the 1959 computer sentence-analyzer," but the reader would not get the right picture of string analysis in relevant respects from this version. It is regrettable that in TT Harris did not specifically refer to the 1962 monograph for details of string analysis.

<sup>5</sup> Jerrold J. Katz, *Language and Other Abstract Objects*, Rowman and Littlefield, Totowa, New Jersey, 1981, p. 48.

One is a general point and relates only to the common ground of "realism" understood in a broad sense. As Katz notes, "these terms ['realist' and 'realist interpretation'] have a definite use in the philosophy of science to refer to an anti-instrumentalist position on which theoretical terms denote real objects in the world." Under the "realist" interpretation, in this broader sense of the term, linguistic theory is a scientific theory, true or false, about "reality." "Formalization of alternative linguistic theories is undertaken in an effort to determine precisely what such theories imply, so that they can be accepted, rejected, or modified in terms of their [ ... ] consequences." (LSLT p.38) At this general level we abstract away from the nature of "reality" of which linguistic theories are theories and contrast them with the taxonomic view of post-Bloomfieldian structuralism, according to which "there are 'no competing theories,' ... alternative theories are equally valid, as alternative procedures of analysis are equally valid..." (ibid)

The other point to note with Chomsky's use of the terms "realist" and "realist interpretation" is a more specific one, and relates to the particular sense in which the term "realist" is to be understood when Chomsky characterizes his position as "realist." "A grammar determined by a linguistic theory ... constitutes a hypothesis concerning the speaker-hearer's *knowledge* of his language and is to be confirmed or disconfirmed in terms of empirical evidence ... The general theory, now regarded as an explanatory theory, is likewise to be understood as a *psychological theory* that attempts to characterize the *innate human 'language faculty,' ...*" (LSLT p. 37) (Emphasis added by SYK) The reality linguistic theory is about is *knowledge, human language faculty*; linguistic theory is a *psychological theory*. As Katz summarizes, the latter, more specific, point concerns "Chomsky's conceptualism" and "as such, [the terms 'realist' and 'realist interpretation'] are best thought of as shortened forms of 'psychologically realist' and 'psychologically realist interpretation'," (Katz, *ibid.* p.48) an apt qualification if one can put aside an unfortunate and unwarranted connotation often

associated with the term "psychological reality" that might further obscure the issue.<sup>6</sup> In what follows, I will use the term "realist" without qualification in the broader sense, and qualify the term with "Chomsky's" or "psychologically" to refer specifically to "realist" in Chomsky's more specific sense.

4. I am not suggesting that the realist interpretation of linguistic theory *in the sense Chomsky defines it* is implicit in, or follows from, Harris' conception of linguistic analysis. It is one thing to suggest the possibility of taking a realist interpretation of some aspects of the work of Harris, notwithstanding Harris' earlier and perhaps even concurrent pronouncement for the cause of taxonomic methodology. It would be another thing to claim that a *particular* realist position follows from them. I do suggest, though, that it is, in fact, impossible to give a coherent interpretation to this stage of Harris, if one tries to adhere to a faithful interpretation of post-Bloomfieldian taxonomic structuralism. If one does, one would have to take the different "analyses" Harris mentions as equally valid alternative procedures for organizing data. But this is clearly contrary to what Harris intended with these different "analyses." In my view, then, a certain form of a realist position must be taken for granted in order to understand Harris at the stage of "Transformational theory," even if one finds explicit disclaimers to such an interpretation.

A realist position, in the broad sense of the term, must, I maintain, be taken for granted in Harris' work at the stage of his "Transformational theory," even though he neither formulated nor suggested any specific realist interpretation, and even if he did not realize the need for one. It would be senseless, however, to say that the position Harris held was a realist position *in the broad sense*. For "realist" in the broad sense is a generic

term and one cannot have a realist conception of language only in the broad sense of the term "realist" without having a specific realist conception of language. If Harris held a realist position, what is the existential nature of the reality of language which his linguistic theory is a theory of? But Harris did not formulate, suggest, or perhaps even realize the need to formulate a realist interpretation of his work.

It is one thing, though, to maintain that a realist position must be taken for granted in order to understand Harris' work, and it is another matter to determine whether or not he even realized the need for a realist conception of language at all at that time, or, if he did, what it would have been. One can, as Chomsky suggests, take a realist interpretation of the work done in the Post-Bloomfieldian procedural approaches and see that a different and more interesting conception was implicit in it than recognized by post-Bloomfieldian theorists, despite disclaimers. One *must*, I suggest, take a realist interpretation, of one sort or another, of Harris' work at the stage we are concerned with and obtain a coherent understanding of it, despite possible disclaimers.

I do not, and need not, propose to determine what Harris' conception of the reality of language was at the time he developed his transformational theory. Nonetheless, it is of some interest to try to discern what the taken-for-granted reality of language could have been as much as possible from what Harris actually stated.

We might characterize realist conceptions of language with two independent parameters. On the one hand, we may talk about internalist vs. externalist conceptions of the reality of language, depending on whether the reality of language is taken to be internal or external to the mind. On the other hand, we can distinguish between collectivist vs. noncollectivist conceptions of language. For a collectivist conception, what is real of language are sentences (and perhaps constituents thereof) that are considered to constitute a language. For a noncollectivist conception, the reality of language is not a collection

<sup>6</sup> Katz cautiously distinguishes Chomsky's conceptualism, which he dubs "competencism", from "performancism", the alternative that "abandons Chomsky's claim that a grammar is a theory of the ideal speaker-hearer's knowledge of the language and claims instead that it is a theory of the grammatical information computed in the on-line processing of speech." (Katz, *ibid.* p.18)

of sentences. Note that the collectivist position is incompatible with the internalist position, in so much as the human mind is finite and a human language admits an infinite number of grammatical sentences.

Chomsky's is an internalist, and hence noncollectivist, realist position. What linguistic theory is assumed to be true of is internal to the mind; it is not a language determined as a set of sentences grammatical in that language, not an *E-language* in the recent terminology of Chomsky.<sup>7</sup> It is an internalized knowledge according to which sentences of a language are determined as sentences of that language, it is grammar, in one of the systematically ambiguous senses of the term "grammar," an "I-language" in his recent terminology. A language conceived of as a set of sentences is only an abstraction or a theoretical construct, not reality.

In contrast, Katz's is an externalist and, apparently, collectivist position. What linguistic theory is assumed to be true of is a set of sentences that constitute a language and that exist independently of individual minds, Platonic entities. This Platonic reality is the reality which human knowledge of a language is knowledge of.

5. As I quoted earlier, "it is," for Harris, "possible to find a precise set of transformations in a language without having to state a precise set of sentences for the language." (TT p. 243) Note the way the word "language" is used in this quote. A "language" for Harris, at least in this context, is not a set of well-formed sentences. Indeed, Harris continues: "As happens so often in science, in order to describe a particular set of phenomena we have to start with a class of objects which is different from our initial interest but which is precisely definable and in respect to which we can describe our particular phenomena." (TT p. 243) We must say that for Harris' conception of a language, "a precise set of sentences" is a mere phenomenon, our initial interest, while the transformational structure is real, though he

does not use the term *real*. Crucially, a precise set of sentences for a language is not an objective reality.

Commenting on the first quote from Harris in this paragraph, Chomsky rightly observes: "Harris is skeptical about the [enterprise of stating a precise set of sentences for a language]. It is, [Harris] asserts, a 'fact that there is no well-defined set of sentences in a language.' ([TT p. 242])" (LSLT p. 42f). "Skeptical," however, is perhaps too weak a characterization of the position implied in Harris' statement. The reality of language for Harris, then, must be a "structure," the algebraic structure of transformations being part of it. A language in the collectivist sense is merely a phenomenon that first arouses theorists' initial interest and leads them to the reality of language, or an abstraction by means of which theorists demonstrate this reality.

We can thus rule out a collectivist conception of the reality of language for a realist interpretation of Harris at the stage of "Transformational theory", and the possibility of an internalist interpretation, indeed, more specifically, the realist interpretation in Chomsky's sense, is open. We might entertain the possibility of taking an interpretation of Harris' transformational theory (of which "transformational analysis" would be a module alongside other "analyses") as an analog of the "realist interpretation" of transformational generative grammar, even though Harris' is not "transformational generative grammar" in the two formal senses of this term specified in the second part of this series of articles, "A geometric conception of grammar". The transformational structure of a language is like an algebraic structure by means of which one characterizes geometric spaces as spaces of a specific character, abstracting away from underlying point sets. This structure is reality *represented* in the mind of the speaker/hearer. Linguistic theory may determine universals of the transformational structure as innate characteristics of this mentally represented structure, a mental organ, whose function it is to determine boundary conditions, so to speak, of possible representations that cognitively actualize in real-time in the course of linguistic

<sup>7</sup> See *Knowledge of Language: Its Nature, Origin, and Use*. Praeger, New York, 1986.

performance. A language conceived of as a collection of admissible sentences is either a pretheoretically perceived phantom in which the effects of this structure loom before theorists, or an abstraction by means of which theorists can demonstrate them.

6. The preceding considerations would still leave room for externalist interpretations for the understanding of Harris. However, the Platonist conception of the reality of language is incompatible with our understanding of Harris so long as it is tied with the collectivist position. According to a collectivist Platonist conception, a language, for example, English, is a collection of entities that count as English sentences, themselves Platonic entities. But, for Harris, a language as a set of well-formed sentences is not reality.

The collectivist Platonic realism is suspect, however. The strongest (and perhaps the only) argument for Platonic reality depends on the notion of necessity. Mathematics is necessarily true; it must, one argues, be true of the reality independent of the human mind, whose existence is contingent. But each particular human language does not exist in a form necessary to exist. Only, at best, is its *possibility* necessary. English is, at best, one of the necessarily possible languages. Are we prepared to, do we have to, let necessarily possible things inhabit the Platonic world, too? The doubt undermines the case for a collectivist conception of the Platonic reality of human language.

Nonetheless, necessarily true propositions are expressed in human language. We understand necessarily true propositions through language. Then, for someone to know a human language (perfectly) is partially for him/her to know about necessarily true propositions as necessarily true propositions; knowledge of a human language involves knowledge of necessarily true propositions. But the latter is not knowledge in the sense in which the reality of language is said to be knowledge in the realist interpretation of linguistic theory in Chomsky's sense. It is not cognitively autonomous "knowledge", but knowledge about external reality, Platonic reality.

Linguistic theory, then, is not exclusively about the mind, but would also have to be concerned with the reality external to the mind, in particular since, as Katz argues, there is grammatically based necessary truth, like the proposition expressed by the sentence *bachelors are unmarried*. But what is, one might wonder, the nature of the reality of necessarily true propositions, given the existence of such grammatically based necessary truth? English expresses the concept of "unmarried adult male" by the word *bachelor*. It is conceivable that a human language expresses the concept of "married and never divorced adult male" by a word, say, *squarer*. Then, the sentence *squarers are married* would also express grammatically based necessary truth. Do all such conceivable necessarily true propositions also inhabit Platonic reality?

Here, the insight of Harris that led him to take transformations and not sentences as real objects of theory is pertinent. To recall, Harris took it as a "fact that there is no well-defined set of sentences in a language," (TT p.242) and it is "possible to find a precise set of transformations in a language without having to state a precise set of sentences for the language." (TT, p. 243) Likewise, it is a fact, I maintain, that there is no well-determined set or collection of (grammatically based) necessary truth, either as psychological or as Platonic reality. What is "real" are rather certain relations, certain forms. It should, in principle, be possible to find a precise set of relations and forms for (grammatically based) necessary truth without having to state a precise set of (grammatically based) necessarily true propositions. In our particular examples, we find the classical Kantian formula of analyticity, one concept being contained in another. As far as grammatically based necessary truth is concerned, it suffices, indeed, it is necessary, to take relations and forms, but not necessarily true propositions themselves, as reality with which linguistic theory is concerned.

7. Let me draw conclusions from the considerations on Platonism and Harris' noncollectivist position in the preceding section. First of all, as a general observation, I

maintain that the existence of grammatically based necessary truth should not drive us into a collectivist Platonic interpretation of linguistic theory. A realist interpretation of linguistic theory need not require a language conceived of as an extension of objects (sentences), or an E-language in the recent terminology of Chomsky, either as psychological or Platonic reality.

Secondly, to return to our attempt to provide a realist interpretation to Harris' theory, once the possibility, or rather, the plausibility, of a noncollectivist Platonism is recognized, it would be possible to suggest a Platonic interpretation of Harris' theory without contradicting his anti-collectivist stand. I am not suggesting, though, that grammatical transformations are directly justifiable as Platonic reality only on the basis of the need to account for necessary truth, grammatically based or not; they are not all required as relations that determine grammatically based necessary truth. I am simply pointing out the possibility of a noncollectivist Platonist interpretation, which would appear to be more acceptable than a collectivist Platonist interpretation on plausibility grounds. The collectivist Platonism, however unpalatable it might be, can of course accommodate a realist interpretation of Harris' theory, if one disregards his noncollectivist stand.

8. To sum up, we must, I have argued, take a realist interpretation, in the broad sense, for granted, and we may, but not necessarily, take the realist interpretation in Chomsky's, psychological sense, for a proper understanding of Harris' transformational theory. Harris' conception of language at the stage represented in his article of 1965 anticipated later developments in transformational generative grammar in some respects, such as the modularity thesis, albeit quite implicitly. On the formal side I have also argued in the second part of this series that Harris' transformational theory is open to a "geometric" conception of grammar, interesting potential of its own merits, in terms of which a realist interpretation of Harris can be construed. We cannot say that Harris held any specific realist position. Nonetheless, I have also noted,

Harris took a stand that excludes a *collectivist* realist interpretation. For Harris, interpreted in a realist position, then, a language cannot be an extension, a space itself; the reality of a language, either Platonic or psychological, must be sought in structure, such as the algebraic structure of transformations.

### Appendix

One might say that Harris' transformational theory also shares the productive (but not the derivational) character of transformational generative grammar, in the sense defined in the second part of this series. Harris states, for example, "the kernel is the set of elementary sentences and combinations, such that all sentences of the language are obtained from one or more kernel sentences (with combiners) by means of one or more transformations." (C-OT, p.197)<sup>8</sup> "... the kernel (including the list of combiners) is finite; all the unbounded possibilities of language are properties of the transformational operations." (C-OT, p.201) Thus, not only transformations generate all sentences from kernel sentences; the number of sentences thus generated is unbounded, while the kernel is finite. Harris continues : "This is of interest because it is in general impossible to set up a reasonable grammar or description of a language that provides for its being finite. Though the sample of the language out of which the grammar is derived is of course finite, the grammar which is made to generate all the sentences of that sample will be found to generate also many other sentences, and unboundedly many sentences of unbounded length. If we were to insist on a finite language, we would have to include in our grammar several highly arbitrary and numerical conditions -- saying, for example, that in a given position there are not more than three occurrences of *and* between N. Since a grammar therefore cannot help generating an unbounded language, it is

<sup>8</sup> "Co-occurrence and transformation", Presidential address, Linguistic Society of America, 1955. *Language* 33, 1957. Hereafter cited as C-OT. Page references are to the 1981 Reidel edition cited above.

desirable to have the features which yield this unboundedness separate from the rest of the grammar." (C-OT, p.201f)

If Harris' transformational theory is to be associated with the word "generative", the relevant sense is much like that contained in the mathematical notion of "generator" of a mathematical structure. A subset (B) of the set (A) of elements constituting a mathematical structure (S) is a system of generators of S if all the elements of A are obtained by successive applications of internal and/or external operators that define S to elements of B and to elements thus obtained. The kernel sentences constitute a system of generators of the transformational structure of a language, where transformations are operators that define this structure. To the extent that the theory can be used to enumerate all sentence forms with a finite device, it can be considered as a grammar sharing the "productive" character of transformational generative grammar. Transformations, however, are not "derivational" rules in Harris' theory.