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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, 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:

The Cognitive Perspective
Ronald W. Langacker
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
Peter Norvig
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Where is Chomsky's Bottleneck?
S.-Y. Kuroda
Department of Linguistics, UCSD
vol. 1, no. 7, September 1987
(2nd printing of paper in no. 5, vol. 1)

Transitivity and the Lexicon
Sally Rice
Department of Linguistics, UCSD
vol. 2, no. 2, December 1987

Formal Semantics, Pragmatics, and Situated Meaning
Aaron Cicourel
Department of Sociology
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Rules and Regularities in the
Acquisition of the English Past Tense
Virginia Marchman
Department of Psychology, UC Berkeley
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ANNOUNCEMENTS

RECENT DISSERTATIONS

Kenneth William Cook
Department of Linguistics, UCSD
Title of Dissertation: *A Cognitive Analysis of Grammatical Relations, Case and Transitivity in Samoan*

VIDEOTAPES AVAILABLE

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

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"A Moraic Theory of American Sign Language Syllable Structure"

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RECENT COLLOQUIA

June 6th: **Alan Prince**, of Brandeis University, presented a talk entitled: *Categories and Operations in Prosodic Morphology: the Minimal Word*. The event was sponsored by the UCSD Department of Linguistics.

A Geometric Conception of Grammar

S. -Y. Kuroda

Department of Linguistics, UCSD

This is a continuation of "Where is Chomsky's bottleneck?,"
the second (corrected) printing of which appeared
in the *CRL Newsletter*, vol 1, no 7.

1. Chomsky's remark[1] however, surprised me. I wondered if I might not have misread, or been misled by, Chomsky, if he had this conception of history. I thought that it was significant that Chomsky's transformational grammar was preceded by Harris' theory of transformations.[2] It may be difficult to determine how accurately one can say as a matter of historical fact which one of these *theories* preceded the other, since they might have developed side by side before either of them came to take a sufficiently integral form of a theory. Nonetheless, it is certain that the *term* transformation as well as the initial *idea* of the notion originated in Harris. See, for example, Chomsky's remarks in the Introduction to *Logical Structure of Linguistic Theory* [3]: "When I began to investigate generative syntax more seriously a few years later, I was able to adapt for this purpose a new concept that had been developed by Zellig Harris and some of his students, namely, the concept of 'grammatical transformation'" (LSLT, p.40), although Chomsky cautions that "in LSLT, transformations are understood in a very different sense; it probably would have been preferable to select a different terminology instead of adapting Harris' in this rather different context." (LSLT, p.43)

In Harris' conception, transformations are by definition equivalence relations among sentences, "grammatical equivalences" that "preserve the morphemes and the grammatical relations among them, though in a changed grammatical form."[4] For example, the passive transformation in English is an equivalence between the active N_1 *v V* N_2 and the passive N_2 *v be V en by* N_1, where *v* is an auxiliary. [5] For me, the metaphorical image of Harris' transformation was, and still is, geometric, like a transformation of a space in geometry. Grammatical transformations are transformations of the space of sentences that leave the grammatical relations invariant; transformational grammar, in this vision, is a geometry that studies spaces characterized by grammatical relations as invariants, a study of the form and the nature of a space of sentences so characterized. This conception of grammar as geometry follows the spirit of modern geometry laid out by Felix Klein in his Erlangen Program. Geometries are studies of transformations that preserve invariants which characterize particular spaces. Euclidean geometry is a geometry of transformations that leave the distance between two points invariant; affine geometry is geometry that leaves linear relations invariant, etc.

I wonder if Harris had transformation in this geometric sense in mind when he introduced this term in linguistics, and I wonder if those who were close to him at that time related these two ideas of transformations. Perhaps not. For, the idea of transformation developed in Harris through the idea of equivalence class for substitution operations in structural linguistics and this idea seems to have little to do with transformation in the geometric sense. (I refer the reader in particular to Harris' "Discourse Analysis" to trace this development of the idea.) Nonetheless, it is quite intriguing that Harris' writing evokes the association of the grammatical notion of transformation to the geometric one. On the one hand, Harris was thus

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[1] "The history of transformational grammar would have been more 'rational' if generative semantics had been the original position .." personal communication recorded in Newmeyer, *Linguistic theory in America*, Academic Press, New York, 1980, p.151, fn.10.

[2] For Harris' transformational theory, see his papers collected in H. Hiz ed., *Zellig Harris, Papers on Syntax*, D. Reidel Publishing Co., Dordrecht, 1981.

[3] Hereafter LSLT. LSLT was completed in 1955, but was published in printed form only in 1975. An Introduction was added to this edition. References to LSLT below are all to this Introduction in the 1975 Plenum edition.

[4] "Discourse Analysis," p. 131. Page references to Harris' work are to the 1981 D. Reidel edition cited above. More precisely, one should say transformations are equivalences among sentence *forms*. See below.

[5] Cf. "Co-occurrence and transformation," p. 187.

(one is tempted say, naturally) led to the idea of the algebra of transformations; a geometry in the modern sense is as much the algebraic study of the group of transformations as it is the study of the space itself that the transformations characterize as a relevant space of the geometry. Elementary transformations in Harris' sense are much like "generators" of the algebra of transformations. "The existence of elementary transformations makes it possible to regard all transformations as compounding of one or more elementary ones." ("Co-occurrence and transformation in linguistics" p.195) Compare this with the geometry of a Euclidean space of two-dimensions. "Rotations" and "translations" are "generators" of the group of transformations in Euclidean geometry in the sense that a Euclidean transformation can be obtained as a product of a translation and a rotation. (There are differences in these two cases; in the case of a Euclidean space (over the field of real numbers), those generators are not mutually independent; they themselves can be decomposed into products. To remove this difference, take a Euclidean space over the integers, and one can get a better analogy between grammar and geometry.) On the other hand, if our interest is directed to the space itself, kernel sentences in Harris' sense constitute a canonical "primitive domain" of the space of "transformational geometry" of sentences: all sentences are obtained as transforms of kernel sentences. In comparison, consider a two-dimensional Euclidean space of vectors (rather than points); then, an axis may be considered to constitute a primitive domain (kernel sentences), since all the other vectors can be obtained from them by a rotation. (A Euclidean space of points (rather than vectors) is "transitive" in the sense that any point can be mapped to any other by a transformation, and hence does not serve as a good illustrative example for an analogy with kernel sentences.)

There are certain qualifications I have to add to this rough analogy between the idea of grammatical and geometric transformation. To begin with, the analogy is stated above somewhat inaccurately. In order to accommodate the sentence embedding (compounding) (and hence "nonsequential transformations" in Harris' sense ("Co-occurrence and transformation", p.197), the equivalents of "generalized transformations" in Chomsky's sense) we must include in "sentences", (i.e., "points" in a space of transformational geometry) n-tuples of sentences, for all natural numbers n, which can be considered as conjoined sentences without conjunctions. Furthermore, the "primitive domain" must consist not only of kernel sentences but also of n-tuples of kernel sentences. But this is a trivial extension, once the basic idea of the analogy is given in simpler, if less exact, terms.

Another qualification is in order which is theoretically more substantial. For Harris, transformations are in fact not relations among sentences of a language, but among sentence forms which may or may not be grammatical. "The transformations preserve the acceptability ordering ... It is thus possible to find a precise set of transformations in a language without having to state a precise set of sentences for the language." ("Transformational theory," p.242f.) Thus, the "space" of transformational geometry is not the set of sentences (and their n-tuples); it is the set of sentence forms whose grammaticality may not have to be decided. In fact, what that space is (extensionally) is of less interest than the structure that characterizes the algebra of transformations. The shift of interest is much like in modern geometry, from the space itself to the algebra of transformations that characterizes it. If we wish to talk about a rational history of transformational grammar, as Chomsky does, Harris' theory, it seemed to me, must have a place in it. In fact, it seems to me that awareness of this historical background could serve as a kind of safeguard against a precipitous and misguided identification of transformational rules (in Chomsky's sense) with operations in sentence processing, either speech production or understanding, when the framework shifted from relational to generative.

2. Comparing Harris' and his LSLT framework Chomsky states: "we have here two quite different conceptions, though they are plainly not unrelated. The differences turn on the notion of 'generative grammar,' and it appears, on some perhaps deep-seated assumptions concerning the legitimacy of various abstractions and idealizations, and concerning also the goals of linguistic research." (LSLT, p.45) There is now no fixed notion of generative grammar among linguists. Once a notion or term is introduced, no one has complete control over its use. "Generative grammar" is no exception in this respect just as "grammatical transformation" is not. Linguists started using the term in their own ways. But in the case of "generative grammar", there is an additional dimension of difficulty in fixing the significance of the term, even in the narrow context with which we are concerned, that is, in the context of characterizing Chomsky's transformational grammar as generative in contradistinction to Harris'. Unlike "transformation" in either Harris' or Chomsky's theory, "generative grammar" is not a notion internal to linguistic theory and is not formally defined. Chomsky presents generative grammar as an antithesis to the conception of grammar

which was then prevalent. Harris' theory, in particular, is a specific form of the "thesis," of which Chomsky's theory is an antithesis. Whatever conceptual sense he intended when Chomsky introduced the term, "generative grammar", in Chomsky's sense, once introduced, serves as a proper name for this perceived antithesis. Then, when we are concerned with generative grammar in this context, we must determine which are essential among the properties that Chomsky associates with his conception of grammar for characterizing it in his view as an antithesis in this particular historical development. Such properties are not necessarily formal properties of grammar. The issue which he mentions in a quote cited above concerning the legitimacy of abstractions and idealizations and the goals of linguistic research is as important as the formal characteristics of grammar for distinguishing Chomsky's transformational grammar from Harris' theory of transformation. For the moment, however, we will be concerned only with formal aspects of the difference between Harris' theory of transformations and Chomsky's conception of transformational grammar. We will leave methodological points aside for a separate treatment.

"A grammar of [a] *L*[anguage] is a system of rules that specifies the set of sentences of *L* and assigns to each sentence a structural description. The structural description of a sentence S constitutes, in principle, a full account of the elements of S and their organization." (LSLT, p.5) There is a system of levels of representations, and a sentence S is represented on each level L[evel], by the L-marker. The levels considered in LSLT include that of transformations: the structural description of each sentence contains a T-marker, its representation at the level of transformations. Thus, a T-marker must be part of "the elements of S and their organization" a full account of which the structural description of S constitutes (Cf. the above quote). "The T-marker of a sentence S provides a record of the P-markers [Phrase markers] of the elementary strings from which S is derived (its 'P-basis') and also a record of the 'history of derivation' of S." (p.15f) A transformation thus virtually relates "elements of S" in their organization. The notion of T-markers, as well as the level of transformations as a level of representation, however, is eliminated in the later version of transformational theory formulated in *Aspects of the Theory of Syntax* (1965), the theory now called the Standard Theory. In the Standard Theory transformations do not each relate "elements of S" (contained in its representation at the transformational level); but the transformational component (of grammar) as a whole relates two levels of representations of S, the Deep Structure and the Surface Structure.

In sum, it would be fair to consider two aspects in which transformational generative grammar may be associated with the sense of the word "generate": First, 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, weakly and strongly generating the language. Let us call this aspect of transformational generative grammar the *productive* character of *transformational* generative grammar. Secondly, transformations are, more specifically, rules in such a grammar that relate "elements of S(entence)" and determine "their organization" by deriving one level of representations from another. Transformations are generative in this sense in the conception of transformational generative grammar. Let us call this second aspect the *derivational* character of *transformational* generative grammar. In contrast, in Harris' conception, transformations relate sentences (or, more generally, n-tuples of sentence forms), not elements of a sentence, or representations on different levels of a sentence. In Harris' conception transformations concern the structure of the space of sentence forms; they do not concern "elements and their organization of" the structure of a sentence. Harris' transformational theory is neither productive nor derivational.

3. Transformational generative grammar has undergone a considerable number of changes since the day of the Standard Theory, or even since the day of the Extended Standard Theory (EST) that immediately followed it. The role of rules in grammar has continually decreased; instead, constraints and conditions are taking their place. In the presently upheld theory, the so-called Government and Binding Theory (GB), only one rule, Move-alpha (or, in a more radical version, Affect) is said to be admitted. Grammar defines four levels of representations (D Structure (DS), S Structure (SS), Logical Form (LF), and Phonetic Form (PF)). Putting PF, which is largely ignored, aside, these levels are related by Move-alpha, SS and LF being derived from DS and SS, respectively. The conception of DS and SS in this theory is much different from that of Deep Structure and Surface Structure in the Standard Theory; the notion of LF did not exist before.[6] The notion of derivation that is tied up with rules of grammar almost lost its significance in this conception of grammar. Move-alpha is only an almost deceptive metaphor for expressing the fact that

[6] Cf. N. Chomsky, *Lectures on Government and Binding*, Foris, Dordrecht, 1981; H. van Riemsdijk and E. Williams, *Introduction to the Theory of Grammar*, MIT, 1986.

different levels of representations are subjected to different constraints. Representations at all of these three levels may be said to have the same organization, determined by a single theory, X-bar Theory. They are, however, subjected to different constraints. Move-alpha relates representations in different levels. A sentence is represented on these three levels by structures related by Move-alpha and obeying different constraints. Move-alpha may be called a rule, but it can be considered as defining a relation, not as a rule of derivation. Such seems to be the ultimate destiny of transformations in the development of theory that has increasingly deemphasized the role of rules in transformational generative grammar.

Consider the following sentence:

(0) *who remembers which souvenirs Japanese tourists are likely to buy where*?

This sentence is ambiguous. In one reading *where* is interpreted as an element inside the indirect question. With this reading, a possible expected answer might be: *Bill remembers which souvenirs Japanese tourists are likely to buy where.* In another reading, *where* is taken as an element of the matrix wh-question. With this reading, a possible expected answer might be: *Bill remembers which souvenirs Japanese tourists are likely to buy in New York*. Consider first the first reading, in fact, only the embedded indirect question. The DS, SS, and LF are, with irrelevant details ignored, assumed to be as follows:

(1) DS: +WH *[e PRES be likely [Japanese tourists to buy which souvenirs where]]*
(2) SS: *which souvenirs [Japanese tourists are likely [t to buy t' where]]*
(3) LF: *where which souvenirs [Japanese tourists are likely [t to buy t' t"]]*.

Here, +WH is a complementizer, *e*, an empty category, a nonthematic subject of the predicate *be likely*, and *t, t'* and *t"* are traces left by *Japanese tourists*, *which souvenirs* and *where*, respectively. DS is subjected to the constraint that each argument occupies a position that, depending on the predicate of the sentence, structurally determines the thematic role it has, and conversely each position that structurally determines a thematic role be occupied by an argument that has that role. It follows that a position that lacks a thematic role, and only such a position, is empty (or, occupied by an empty category). Thus, in (1) the subject of *be likely* is empty and *Japanese tourists* occupies the subject position of *buy*, since the Japanese tourists are agents of the act of buying. Likewise, *which souvenirs* and *where* occupy the object and the locative adjunct position of the sentence whose main verb is *buy*. In contrast, SS is subjected to the constraint that each noun phrase be Case-marked. Now, the subject position of an infinitival verb is not a Case-marked position; *Japanese tourists* cannot get Case either from the preceding adjective *likely*, nor from the infinitival verb form *to buy*. Hence *Japanese tourists* must move to the matrix subject position, where it gets Case from the finite verb form *are*. In English, SS is further subjected to a language-specific constraint according to which if the Complementizer is +WH, that position must be occupied by one and only one Wh-phrase. Hence, either *which souvenirs* or *where* must move to occupy the Comp position; in (2) *which souvenirs* has moved. Since both *Japanese tourists* and *which souvenirs* leave a trace, we have SS (2). Finally, LF is subjected to the constraint that operators must be at nonargument position, commanding the traces they left, which function as variables. Since both *which souvenirs* and *where* are operators, *where* must also move to the Comp position, and we have LF (3). Disregarding Phonetic Form, then, the triple [(1), (2), (3)] constitutes a representation of the embedded indirect question of (0), with the first intended reading. The DS, SS, and LF of the entire sentence (0), with this reading are with *t^* being a trace of *who*:

(4) DS: +WH *[who PRES remember [+WH [e PRES be likely [Japanese tourists to buy which souvenirs where]]]]*
(5) SS: *who [t^ remembers [which souvenirs [Japanese tourists are likely [t to buy t' where]]]]*
(6) LF: *who [t^ remembers [where which souvenirs [Japanese tourists are likely [t to buy t' t"]]]]*.

The other reading of the same sentence form (0), i.e., *who remembers which souvenirs Japanese tourists are likely to buy where*, has the following representations:

(7) DS: +WH *[who remembers [+WH [e be likely [Japanese tourists to buy which souvenirs where]]]]*
(8) SS: *who [t^ remembers [which souvenirs [Japanese tourists are likely [t to buy t' where]]]]*
(9) LF: *where who [t^ remembers [which souvenirs [Japanese tourists are likely [t to buy t' t"]]]]*

The wh-phrase *where* is moved to the matrix Comp position in LF, since it is an operator whose scope is the entire sentence. We have the triple [(7), (8), (9)] as the representation of the sentence (0) with the second reading.

In the conception of the Government and Binding Theory the organization of representations at the three levels is determined by a single theory, the X-bar theory. Hence we might as well conceive of these levels as different "regions" of a single "space." Then, Move-alpha might be conceived of as a "transformation" of a space, much like transformations in Harris' sense in this respect. Certain principles of universal grammar (the Projection Principle, the Structure Preserving Hypothesis) might determine what are invariants under this transformation. To put it conversely, transformational grammar is the geometry of the space of syntactic representations defined by transformations whose invariants are determined by those principles. To be sure, the notion of sentence in the Government and Binding Theory is technically quite different from Harris' original theory. In the latter sentences are "points" of the space. A sentence in the sense of the former consists of representations at the three different levels (putting aside another representation at the level of PF), or, in our reinterpretation in geometric terms, of points in three different regions of the space of syntactic representations related by a transformation of the space, "Move-alpha". In Harris' theory an equivalence class determined by the transformations of the geometry is, roughly, a set of sentence forms with the same morphemes related to each other by the same grammatical relations. In the geometrically reinterpreted Government and Binding Theory an equivalence class determined by the transformations of the space is a set of representations that defines a sentence.

4. These recent developments in transformational generative grammar make me wonder if an ideal history of transformational grammar should ever be generative, in the formally characterized sense. If a development from generative semantics through the Standard Theory and then to the Government and Binding Theory is easy to imagine as a rational history of transformational grammar, it is because it's an actual history, partially forward and partially backward. If what interests us is a conceivable ideal history, given the recent trends in transformational grammar, where the notion of derivation has lost much of its significance, one might be able to imagine a path from Harris' geometric conception of transformational grammar to the present and to the future, without going through the idea of "generative" grammar in the sense that so far characterized and is still associated with Chomsky's transformational grammar.

In actual history, representations that are transformationally related in a derivation underwent quite substantial changes, from the LSLT version of transformational grammar to the Government and Binding Theory. Likewise in our imagined ideal history substantial changes could have taken place in the way transformations and representations to which they apply are understood in the geometric conception of transformational theory. In particular, more abstract representations than one usually associates with Harris' theory could have been introduced. Recall that Chomsky suspects that "some deep-seated assumptions concerning the legitimacy of various abstractions and idealizations" separate his conception of grammar from Harris', implying that Harris' is a taxonomic theory engaged only in generalization and classification of observed speech forms. The geometric conception of transformational theory, of course, is not tied up with such a perceived character of Harris' theory.

As a matter of fact, this remark of Chomsky's is not entirely appropriate even for the actual work of Harris. Harris has entertained the idea that the passive transformation is decomposed into two smaller transformations (component "divisor" transformations): "the Passive [is] really the [resultant] of some smaller transformation B operating on the resultant of another, A -- smaller, in the sense that only part of the passive form would be due to B, the rest being due to the A on which B had operated." ("Transformational theory," p.259f) By means of such "decompositions of transformations into divisors" Harris aims at accounting for the appearance of the same "constant" *by* in the Passive and other transforms (he mentions *Ving of N by N* as an example) by a single generalization. ("Transformational theory," p.259f) The explanatory intention of Harris is much like that of the treatment of passive introduced much later at a certain stage of the Extended Standard Theory, and is attained only by introducing syntactic representations that do not correspond to actual sentence forms, as Harris is well aware.

From Harris' theory, it is then quite conceivable, theories might have developed along these lines in which the equivalents of trace theory and the projection principle are introduced, together with necessarily more abstract representations than those in Harris' theory, substantially changing the content of "transformationally related equivalence class" along the way. The space of syntactic representations is expanded by the inclusion of more abstract representations, but fewer representations are related to each other transformationally as geometry gets more constrained. This development might metaphorically be compared with a

shift from the affine geometry of a space over real numbers to the Euclidean geometry of its extension over complex numbers, or perhaps more to the point, a shift from the space of analytic functions of a real variable to the space of analytic functions of a complex variable. Something of an equivalent of the Government and Binding Theory could have finally been attained, without transformational grammar ever being "generative."

5. We have characterized transformational generative grammar as generative with its two characters, productive and derivational. The productive aspect of the notion of generative grammar, the idea that a grammar of a language is a device to generate all the sentences of the language, is implicit, at least, in post-Bloomfieldian structuralism, though it would be fair to say that it took a clear, explicit form in Chomsky's transformational generative grammar. The idea must have originated in logic, given the close connection that existed between formal language theory and linguistic theory in the late 50's and the early 60's; by his own testimony, Chomsky was influenced by the developments in "mathematical logic, in particular recursive function theory and metamathematics," which "were becoming more generally accessible" and which "seemed [to Chomsky] to provide tools for a more precise study of natural language as well." (LSLT p.39) The derivational character of the notion of transformational generative grammar is superimposed on the productive aspect of generative grammar in Chomsky's conception of transformational grammar. This is the idea that transformations are involved in determining the organization of elements in syntactic representations of a sentence. This idea has specifically made Chomsky's transformational generative grammar an innovation and distinguished it from Harris' transformational theory. The derivational sense of generative grammar seems to have taken a clear form in Chomsky's mind first in the idea that developed into generative phonology, which Chomsky pursued in 1951, encouraged, as he recalled on a number of occasions, by Bar-Hillel and Halle. (Cf. e.g. LSLT, p.29, p.31.)

As the way was such as it was in the 1950's in Cambridge, then, the differences between Harris' and Chomsky's conceptions of transformational theory essentially, as quoted above, "turn[ed] on the notion 'generative grammar'." In this perspective, it might indeed make sense to say that a rational history of transformational grammar in Chomsky's sense would have started from generative semantics, and perhaps even from cognitive grammar in the Lakoff-Langacker sense. In generative semantics, transformations derive the surface representations of a sentence from its semantic representation, and cognitive grammar is concerned with the process of symbolization of meaning by sound, even though this process is presumably not stateable in "propositional forms." Transformational theory in Harris' sense would have no place in this "rational" development of transformational generative grammar.

Had there been influences of geometry instead of mathematical logic and phonology, however, a different ideal history of transformational theory could have led us to the present. In such a history, mathematical logic, not to mention the von Neumann-style digital computer, could not possibly have been mentioned as "a guiding metaphor" of transformational grammar.[7] Philosophers conjure up outrageously unreal but possible situations in order to reveal the essential nature of concepts employed in the understanding of metaphysical reality.[8] Fancying a perhaps all but impossible course of history could also be a not entirely vain venture if it helps us to understand the essential nature of historical reality. It may dissolve the spell of a myth or metaphor born of real or perceived but contingent historical connections and employed for a misleading characterization of present reality.

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[7] Cf. "A clarification" by R. Langacker, the *CRL Newsletter*, vol. 2, no. 1, where Langacker suggests that "the generative tradition is 'inspired by' the von Neumann architecture in much the same sense that connectionism is said to be 'neurally' inspired."

[8] Cf. Zeno Vendler, "Philosophy of language and linguistic philosophy," to appear in K. Lorenz et al eds., *Handbuch zur Sprach- und Kommunikationswissenschaft*, Walter de Gruyter, Berlin.