

Chomsky is not Saussure: What Happened after Post-Structuralism

Arthur Kunst

A well-informed reader of recent articles and books on literary theory and criticism will be amazed that the authors take for granted that structuralism is still the prevailing mode of thought in linguistics. In fact, about twenty years ago, there was a radical reinterpretation of the methods and assumptions of linguistics, an historic shift of the sort described by Kuhn in his book, *The Structure of Scientific Revolutions*. Yet even such acutely intelligent works as Frank Lentricchia's history of modern literary criticism, *After the New Criticism*, show little or no awareness that the contributions of Saussure and the other structuralists were by 1964 absorbed into a new conception of linguistics, after devastating and thoroughgoing exposure of structuralism's inadequacies. The leader of this intellectual revolution was Chomsky, and the past two decades have seen numerous publications explaining the significance of Chomsky's generative linguistics. Yet literary circles, whether structuralist or post-structuralist, continue to argue within a framework of ideas developed by Saussure around 1910 and accepted worldwide by figures like Jakobson and Bloomfield in the 1930s. For example, such disparate critics as Derrida and Foucault, while clearly pointing to major faults in the Saussurean position, equally clearly subscribe to a version of linguistic understanding that is still very Saussurean. Whether this lag is due to invincible ignorance or to mere misinformation is not easy to say (in Frederic Jameson's 1972 *Prison House of Language* Chomsky appears as a footnote to some Saussurean notions, and in Jonathan Culler's 1975 *Structuralist Poetics* Chomsky is said merely to have made structuralist practice more exact and mathematical). In any event, what follows here is an attempt to outline some of the principal differences between Chomsky and Saussure (or, more properly, between generative and structuralist linguistics), stressing what might be of interest to a student of literature.

CULTURE/NATURE

In the structuralist view, the systems which are studied by linguistics — phonology, morphology, syntax, semantics — are given by culture. Each individual speaker acquires the system prevailing in his or her culture. The system as such (Saussure's *langue*) is used, perhaps imperfectly yet always obediently, by individual persons in individual acts of speaking (Saussure's *parole*). Each culture has its own peculiar system. Saussure felt that the actual variety of human language systems disproves the existence of universal concepts or syntax patterns or phonemes. The entire means of communication and thought are socially determined; by learning a language, the individual adopts the system which has evolved with the culture up to the moment of adoption. Language learning is simple rote, associative learning; language use is simple application of learned structures to situations of speech and thought.

In the latter decades of structuralist linguistics, a number of thinkers detected fundamental flaws in Saussure or in the assumptions voiced in Saussure's *Cours*. These thinkers, typified by Hjelmslev and Jakobson, mark a recognized *post-structuralist* period in linguistics. It was a melange of Saussurean orthodoxy and post-structuralist revisions that reached the literary world (through Benveniste) in the 1960s. With a critic's compulsion to treat a great text as authoritative, the French structuralists were often puzzled by the 'contradictions' between the summaries of structuralism given to them by Benveniste and the statements of doctrine that they could read for themselves in Saussure. (See for example the distress often felt by Barthes in *Elements of Semiology*, 1964.) The cause is obvious: a patchwork of revisions and corrections in Saussurean doctrine had already taken place. Many of the post-structuralist criticisms that were later to be voiced in literary circles had been uttered twenty or thirty years earlier in linguistic circles.

Let us consider some of the most characteristic post-structuralist revisions. First, the reinstatement of innate *universals*. Saussure had said that, given the fact that concepts were different from language to language and culture to culture, the old notion of *innate ideas or concepts* would definitely have to be abandoned. However, the post-structuralists (both Jakobson and Hjelmslev) pointed out that the facts only excluded the existence of an unvarying set of innate concepts; this they called the doctrine of *strong universals*, that there is one set of concepts (or features of concepts) and that every language has

them all. In place of the doctrine of strong universals, they called forth the doctrine of *weak universals*, that there is one set of concepts (or features of concepts) and that every language must select some of them. The linguist, looking at the universal corpus of all languages, could show that each culture has made its selection of concepts (or features of concepts), which are obligatory within that culture. Thus both Cartesian innateness *and* Saussurean relativist determinism can be affirmed.

Second, the dethronement of speech and the recognition of *writing*. Saussure had said that the plane of expression of the sign was in the phenomenal substance of *phonic* images, and that writing was to speech as phonemes were to concepts. In the 1930s, Hjelmslev especially argued against the retention of this hoary dogma of alphabetic tradition, and for an understanding of *expression substance as pure form*, which could (in psychology or physiology) be manifested either as sounds or graphs (or whatever). The study of acoustical or articulatory organs could be left to fields outside linguistics proper. Hjelmslev then divided Saussure's plane of expression into expression-substance (phonic or graphic images, etc., to be drawn from the store of innate universal images) and expression-form (the abstraction system of differential features selected by a given language). By analogy, semantics could be expected to divide the plane of content into content-substance (presumably the innate store of universal concepts) and content-form (the predicted system of differential features selected by a given language). In Hjelmslev's version, the study of *langue* becomes pure inductive phenomenology. But in the American (or behaviorist) version, all references to mental phenomena are discouraged and allowed only for heuristic purposes (as in commutation). The phonic images could be assumed to be, as Saussure describes them, imprints of sensory material, and one could limit oneself to the abstract description of the 'laws,' governing the behavior observed in relation to articulation (diagrams of the tongue, the oral cavity, etc., are here displayed) or acoustics (the neurophysiology of the ear is anticipated to be forthcoming). In the behaviorists' version, *langue* becomes pure inductive generalization. In both versions, the correspondence between *sound* and *sound-image* is assumed, and simultaneously mystified.

The post-structuralists noticed that, within a language-delineated 'culture' there were in fact numerous *dialects* and *usages*, each of which could be said to employ a system of signs, with their predictable selections on the paradigmatic and syntagmatic axes. Indeed, dialects often overlapped geographically and chronologically, while usages (the subsystems associated with different

classes or different occupations even of the same person — on the job or at home, formal speech versus vulgar talk) often occurred simultaneously and concentrically. Some critics, among them Hjelmslev, advocated the duty of linguistics to observe and describe all such *langue* systems. If each *langue* were a selection among innate universals, then it mattered little whether an individual observed one or *many predeterminedisms* within the greater underlying predeterminism.

Jakobson in particular was a fertile source of difficult questions: what was the position of *proper names* and *numbers* in the lexicon of *signs*? If these are units of *parole*, how comes it that their meaning is systematic and predictable? If they are in fact signs, how can we tolerate signs whose *differential distinctiveness* requires an infinite number of features? If *langue* indeed could be contemplated in the assumption that *parole* was only imperfect manifestation and instantiation, then what are we to make of *metalinguage* statements on the one hand (concepts of concepts of concepts of concepts . . .) and deictic *pronouns* (or 'shifters') on the other hand? Hjelmslev's unsuccessful attempts to answer these questions were incautiously accepted by the structuralist critics, just at the moment when the whole structuralist edifice came tumbling down, as we shall see. The most fundamental post-structuralist paradox, however, was the realization that the whole activity of linguistics was nothing but a kind of *parole*. Unlike most culture- or *langue*-bound individuals, the linguist appeared to adopt a superior culture-free posture. How could one *know*, as Saussure claimed to do, that each culture had a different set of concepts? How could one *know* that the universe of cultures drew on a universe of innate sound and concept potentials? As an *inductive* enterprise, didn't structuralist, even post-structuralist, achievements rest upon an inductively untenable assumption? These were the kind of questions put by the inductive logician Quine, undercutting the privileged position of the linguists themselves in their own would-be empirical 'science.'

At the end of the structuralist quest for absolute empirical knowledge of the nature and structure of language, an irritating philosophic paradox had emerged. Quine's paradox grew from taking the empiricist enterprise at its word. The accumulated linguistic 'knowledge' was at two self-imposed removes from empirical *truth*: linguistic doctrine was nothing but an imaginative web of propositions spun in the *parole* of persons from within a modern culture whose selection of concepts would be the *langue* (or *sublangue*) spoken abstractly by linguists in that culture; beyond that culture or *langue*

they were blindly projecting their own culture — what privileged omniscience carried them uniquely across the inescapable limitations of one's own system of signs? As a matter of fact, what omniscience carried them observationally across the chasms between all speakers and their implicit, innate meaning systems? Considered as an empirical project, structuralist linguistics was self-disproved, Quine argued. *Reality* was a pretense projected outward by the system of signs: the *system of signs* was a manufactured whole projected by the *parole* of certain linguists, who, by their own rules, could not prove to each other they were even discussing the *same* problem. Chomsky, Quine's student, answered: so what if the theory is underdetermined by the empirical evidence — it also is in physics, chemistry, biology, and geology — let linguistics be like they are, then.

Do the post-structuralist criticisms and revisions sound familiar? Of course: they are the stock-in-trade of post-structuralist literary criticism. The reinstatement of *writing* (Derrida); the recognition of *dialects* and *usages* (Foucault); the *paradox of empirical omniscience* (Derrida again). Linguistics, in the 1930s and 1940s, had no Chomsky in another country, but structuralist criticism did have. For Barthes *et al* there is the excuse of natural French backwardness in the 1960s with respect to linguistics and philosophy, but for Americans in the 1970s and 1980s to remain in whilful ignorance of a revolution in language and epistemology that occurred in their own country is a tribute to the intellectual isolation of literary persons in the modern world. Todorov confesses, in Macksey and Donato's 1966 symposium *The Structuralist Controversy*, that "all of us who have spoken of linguistics here have drawn on a few articles by Benveniste and not on the latest acquisitions in linguistics." And as late as 1975, Culler was still saying "linguistics has always attempted to discover the rules of *la langue* and this will always involve segmentation, classification, and the formulation of oppositions and rules of combination." Out of context, it shows that Culler knew nothing of contemporary linguistics; in context [page 27], it is all the more outrageous, because it misleads the literary reader into thinking that Chomsky is nothing but a more mathematical structuralist. As for the lively discussions of the *post-structuralist* dilemma still going on now in literary journals, we can only suppose that humanists are either incorrigible ill-bred or incredibly ill-read. Post-structuralism in linguistics came to an end over twenty years ago with the Chomskyan revolution.

In the generative view, learning a language is not the adoption by an individual of a culturally-determined entity. The speed and richness of

language acquisition can only be explained if we posit innate learning capacities more complex than those assumed by the structuralists. The *language faculty* should be seen as a part of the biological makeup of the human individual. The acquisition of a language should be understood on a par with the growth of arms and legs, the symptoms of aging, the ability to recognize faces, or the rest of the familiar biological traits of human organisms. Moreover, linguistics should attempt to understand not (just) the variety of human language systems, but (more importantly) the innate biological structures that would account for the known powers and limitations of those language systems. By means of these innate schematisms, the child is capable of constructing a grammar, given a small amount of social exemplification and care.

Generative linguistics takes for granted that phonology refers to systems of contrast and combination in sounds, and that syntax, too, refers to systems of contrast and combination in words. (Saussure called these paradigmatic and syntagmatic associations; Jakobson called them systems of substitution and combination.) The lexicon is still divided into categories, and the words are still organized into sentence syntagms by rules of category combination. Each language still has its own peculiar systems. However, the acquisition of this set of systems is far too rapid and complex to be accounted for by the mechanisms proposed by the structuralists — rote imitation, generalization or induction, association — the facts of language-learning require more sophisticated biological mechanisms. Nor should a science of linguistics rest content to describe, like a company of taxonomists, just the fact of the systems without attempting to understand the nature of the mental capacities which they imply. The acquisition of language is not due to some mysterious social force, but to the unmiraculous interaction of an innate mental (biological) capacity predisposed toward language behavior and toward maturing that predisposition in a normal human environment. The mechanisms proposed by Chomsky and the generativists are attempts to be both psychologically real and unmiraculously concrete.

Structuralist tradition imagines culture as evolving and then handing on a finite set of phonemes, a finite set of possible phoneme combinations, a finite set of conceptual distinctions, a finite set of possible concepts, a finite set of words, and a finite set of possible sentences combining those words syntactically. In structuralism, everything is ready-made, and culture-given. Structuralism provides a methodology of abstract classification and assumes but does not prove an explanation. Structuralism maintains the *langue-parole*

distinction to divide that which abstractly determines all language use from the use itself. *Langue* is the determining factor, whether expressed in sets of *signs* or sets of *syntagms*, whether based on systematic *contrast* or systematic *combination patterns*. *Parole* is of no great interest, because it merely reflects the passive applications of the ready-made *langue* units, by individuals, sloppily and approximately, on particular occasions.

Chomsky rejects outright the assumption of predetermined meaning structures. At all levels, a proper characterization of language requires that we credit the biological individual with computational capacities that are greater than rote imitation, association, and induction. The individual has to have the crucial capacity for system-making, and the culture has only the superficial capacity for transmitting the constants of those systems. Structuralism should not have prejudged the issue in favor of cultural determinism; and the evidence of language-learning and language-use in any case force us to credit the individual with more complex mental machinery than that assumed by the structuralists. Linguistics should not pretend that it is describing *la langue*, nor should linguistics perceive individuals as passively filling pre-computed structures with prearranged concepts in acts of supposed *parole*.

Generative linguistics defines grammar as the schematism which mediates between actualizable phonological representations, on the one hand, and particularized semantic representations, on the other. The two major functions of *parole* — external manifestations of phonic images in sounds, and instantiation of concepts in messages — are now centrally incorporated in linguistic abstraction. That is, a generative grammar goes from actual sounds to particular sentences, by means of systematically formulated *syntax rules* and a *lexicon* of word entries. A language is not perceived statically as a set of structures, but dynamically, or computationally, as algorithms operating upon structures and translating from one structural record to another.

In language-learning, too, the attention has been shifted away from the description of structures to the modelling of the mental schematisms that could build and evaluate such structures. If the evidence requires that the individual have the capacity to construct systems of phonemic and semantic contrast, then we can no longer assume that every individual is content to play with culturally prepackaged *signs*. If the evidence requires that every individual has the capacity to create an infinite number of distinct semantic combinations in well-formed sentences, without the aid of culturally prepackaged *syntagm patterns*, then the whole structuralist tutelage of literary criticism must be abandoned — for it is founded on just such assumptions.

In generative linguistics, there is no *langue*, no *parole*, no *signs*, no *expression-plane*, no *substances* or *imprints* or *images* or other phenomenological phantoms; and there are no innate or predetermined ideas, images, syntagms, or grammars. There are only *innate biological computational capacities*. In bringing about generative linguistics, Chomsky accomplished an intellectual revolution, though one whose trumpet-calls have been dimly heard in the corridors of literary theory; the revolution came about because Chomsky showed that structuralism (and post-structuralism) could not be considered a science, and because even on its own terms, structuralism could never hope to solve the riddle of syntax.

TAXONOMY/EXPLANATION

For the structuralists after Saussure, it was easy to foresee the program implied by structuralist theory: to examine all the world's languages, and to characterize their linguistic systems. Each sound system had a finite number of distinctive sounds; and even the total number of ways those sounds could be combined into syllables and words could theoretically be displayed, once the rules of sound combination were generalized from the corpus of existing syllables and words. Similarly, the total vocabulary of the language could be examined in search of the finite number of distinctive meaning contrasts necessary to represent the semantic system. And finally, just like the language-ready child, the linguist could study the corpus of all known sentences in search of the rules of syntactic combination that were being obeyed – and from those generalized rules, in theory, all possible syntagms could be imaged. Failure to assemble the total corpus could be remedied by adjusting the earlier contrast-systems or combination-rule-systems to accommodate the overlooked evidence. And so, linguistics would proceed by observation, generalization, and observational correction toward greater and greater inductive reliability.

For Noam Chomsky, trained in philosophy as well as linguistics, there were two insuperable problems with this program. The first problem was that no educated person in the 1950s could take the old characterization of science as 'observation, measurement, generalization, and experiment' seriously. The second problem was that the program of observing the corpus of actual syntagms could not be carried out. The linguistic program set by the structuralists appeared to leave linguistics at the pre-scientific stage of taxonomy, where vast amounts of evidence were being collected and classified. While aspiring to scientific status and mistakenly characterizing the nature of scientific endeavor, the structuralists were forever abandoning the quest for

behavioral laws and explanations in the name of a spurious objectivity. Whereas in fact physics, chemistry, and biology were conjecturing the existence of structures and relations beyond the reach of direct observation, the American structuralists, especially, were cautioning each other against 'mentalist' speculation and 'unverifiable' hypotheses. Why could not linguistics, freed of the propensity to see a 'ghost in the machine,' also construct models of internal behavior that would be tested against falsifying evidence by mathematical deduction, just as in the 'hard' sciences? The impossibility of ever achieving the preliminary structuralist goal of listing a corpus of syntax patterns for some language like English (noun intransitive verb, noun transitive verb noun, noun linking verb noun, noun linking verb adjective, noun linking verb preposition noun, adjective adjective adjective noun preposition adjective noun relative pronoun transitive verb adjective adjective adjective noun preposition, etc.) convinced Chomsky that there were practical as well as philosophical objections to the structuralist program for linguistics. The actual scientific method of observation, study, conjecture, and refutation, coupled with mathematical models from which falsifiable implications could be derived, had better be adopted.

Chomsky's lasting contribution to linguistic science appears to be his conception of a mathematical model suitable for representing the biological human capacity for language acquisition. Contrary to what you might expect, this conception is *not* transformational grammar, which is merely one possible expression of that model. The model hypothesizes that human language capacity corresponds to a schematism which constructs and evaluates grammars in the form of computational algorithms. The hypothesis predicts that the grammars will have a computational power greater than a finite state automation and certainly no greater than that of a linear bounded automation. If grammars can be found for actual languages that need only the power of a finite state automaton or more than the power of a linear bounded automaton, Chomsky's hypothesis is falsified, and some other account of the mental capacity of human language-users will have to be found. But we won't go back to structuralist taxonomy. (One problem with transformational grammars has been that they do have too much power, and so Chomsky has been forced to revise his own candidate for the implementation of the model.)

As literature students, you are not expected to understand computational theory, but as contemporary persons, you are assumed to know a little about computers and computer programs. The kind of computer program, or algorithm, which would correspond to the abilities of the grammars produced

by the human language faculty, would have to fall within the upper and lower bounds set by Chomsky's model. Chomsky showed that the program which corresponded to the structuralists' notion of syntax rules had the power of a finite state machine, and hence fell below the lower bound of the model. He also showed that if the program of syntax rule computations were extended, as proposed by some structuralists, to include recursion and iteration, the program would then have the power equivalent to his model. These extensions, recursion and iteration, would greatly simplify the statement of the rules, though at the cost of abandoning the cherished structuralist 'explanation' of learning by imitation and memorization.

But what about the clannish structuralist habit of 'verifying' their own or each other's grammars by treating them as generalizations over a corpus of data? Again, Chomsky proposed a computational solution in the spirit of actual scientific practice. Rather than dignifying the eliciting of data from native informants with the name of 'experimental observation,' grammars should be constructed (after study of the evidence) as algorithms that would produce all the sentences and only the sentences of a language, taking as input the lexicon and the syntax rules and submitting its output sentences for the inspection of native speakers. If any sentences output are rejected as "not English" (or whatever language), the grammar is falsified; if there are any sentences it could not produce, this could be tested by having native speakers input sentences to it, and if it rejected any as ill-formed that the native speaker would accept as "English", the grammar would be falsified for not producing all the sentences of the language.

Such falsifiable grammars would be the experimental machinery by which the overall hypothesis about the human language capacity could be indirectly proved. Like all scientific hypotheses, the generative hypothesis shows how it can be falsified, expresses its model in mathematical form, relates the model to experimental validation, and, above all, remains only a best model until a better one comes along and supersedes it.

The methodology of structuralism was more appropriate to a primitive prescientific phase of activity — the detection and classification of significant properties of language systems and language units. A long classical tradition of language study, a reliance on intuitive good sense, could be combined with the adherence to a supposedly inductive procedure. For each new language, a linguist could hope to collect something approaching the total vocabulary, and then to guess intelligently at its component morphemes, their sound-sequences, and the underlying system of phonemic contrasts — all finite. In

practice, one could use one's knowledge of meaning to help decide questions of 'significant' and 'nonsignificant' distinctions because the vocabulary, though large, was still finite in size; and the word-patterns, though highly productive, could still only underwrite a finite set of possible words. Until Chomsky, few suspected that syntax was not the same kind of inductive problem: a finite set of actual sentence patterns, and a larger but still finite set of potential sentence patterns.

Chomsky would find that the set of potential sentences was infinite and that the inductive task of studying the set of sentence patterns was intractable. Attempting to get round the failure of induction by utilizing the *commutative* heuristic of meaning-contrast was of no help: the problem of characterizing meaning was as inductively intractable as that of syntax. Nevertheless, *literary structuralists* in the decade following Chomsky's discoveries proceeded to create a *textual grammar* and a *textual semantics* (Greimas, Lévi-Strauss, Todorov) in supposed imitation of linguistic precedent.

THE SYNTAGMATIC AXIS

After Saussure, structuralist theory developed most fruitfully in phonology, especially in Czechoslovakia in the 1930s, with Trubetzkoy and Jakobson. Saussure had envisioned a system of *contrasts* by which all the meaningful sound differences in a language could be drawn into a single unified system. Trubetzkoy worked out the first complete version of *contrastive features* of sound, by which the linguist could formally notate the system for a language. Jakobson then differentiated the *phonemic* features of a single language from the universe of *phonetic* features which were known to occur as distinct sounds in any and all languages. (Jakobson showed mathematically, that any system of contrasts could in principle be converted to a binary feature system.) This provided the noble example to other areas of linguistics. Semantics remained inscrutable. With the advent of computers, optimistic and confident structuralists anticipated overcoming the quantitative strain presented by the program of enumerating all possible syntagm patterns, and began a series of machine translation projects. The outcome, dismal failure, and a realization that traditional assumptions were either confused and vague or downright untrustworthy, especially with respect to syntax. At that moment Chomsky made his proposals for a new, generative linguistics and sketched out his project for a transformational syntax.

Classical syntax was a matter of designing means by which even

schoolchildren could confront written sentences, identify the syntactic categories of the words, and then indicate the syntactic linkages between the words with the help of the rules governing the syntactic categories — i.e. rules of *combination*. Then the interpretation of the meaning of the words could be correctly imposed. While the structuralists from Saussure on made a series of revolutionary changes in phonology (and to some extent in morphology), they left classical syntax theory undisturbed. Syntactic relations, relations of co-occurrence and ordering, were simply set down, beside substitutional (or 'paradigmatic') relations, as the *other kind* of relations, with no new formalization. Not until the time of Chomsky were any strenuous efforts made to actually see if allowable patterns of syntax combination could be treated as a generalization of corpus.

Chomsky showed that the corpus of actual syntagms is potentially infinite. He also showed that even the contemporary generalizations of rule patterns that incorporated iteration and recursion would produce unworkably vast numbers of such rule patterns. That is, if the structuralists had followed their own inductive program, they would never have any syntax rules at all. If they ignored their own disciplinary principles, and constructed rule patterns of the current types anyway, they would merely end up with an incredible mess. Together with the revolutionary strictures that caused the abandonment of Saussurean structuralism (as we have seen), he advocated an approach that would preserve the classical approach to syntax via rule patterns, and accept the new understanding of rule pattern computations that allowed for iteration and recursion. This approach was *transformational* grammars, in which a core of rule patterns was supplemented with transformational rules, so that by applying the transformational rules to the output of the rule patterns, the total possible rule patterns would be computationally derived. Thus, it seemed, by applying a few transformational rules to a few core rule patterns of a traditional kind, all the rule patterns of a language could be produced in a mechanical and efficient way.

It only remained to be seen if the transformational rules put the resulting grammar outside the bounds of Chomsky's model (they did), and whether anyone could actually find a set of core rule patterns and a matching set of transformational rules for some existing natural language (no one could). Transformational grammar has been through three editions, the 1957 (Syntactic Structures) edition, the 1965 (aspects) edition, and the 1977 (Trace Theory) edition. All the editions have protected the classical commitment to processing syntax in terms of rules of combination (rule patterns). All the

editions have sought to simplify the presentation of rule patterns by combining a core of rule patterns with a supplement of transformational rules. The editions have differed about the point in processing at which semantic interpretation (and lexical choice) should take place. (In the latest editions, semantic interpretation takes place in the final rule patterns.) In the course of the editions, the symbols in the rule patterns have changed from arbitrary names (N, V, DET, etc.) to complexes of features; the core of rule patterns has grown as candidates for transformational equivalence have been reluctantly given up; the dependence on syntactically relevant information attached to the lexical entries has increased, as has the information (in complexes of features) in the lexical entries; and the claims of early partisans for psychological correspondences between the mechanisms and procedures of the grammars and psychological reality have receded from view.

Perhaps this detail is not necessary, were it not important to distinguish between Chomskyan linguistics and Chomsky's transformational approach to syntax problems. Even if, as seems likely, transformational grammars go out of style, there is little likelihood that Chomsky's fundamental changes in the nature and purposes of linguistics or our understanding of language will soon pass away. One has to say this to literary people, because the whiffs of generative linguistics which have gotten into the literary realm are just those that come from transformational syntax. Even then, as Chomsky notes is passing in *Language and Representation*, the literary versions have had little or no connection with generative grammar.

The astute reader will note that, in this brief presentation of transformational syntax, nothing has been said about "deep" or "surface" structures. We have seen that, rather than present all the rule patterns of a language, transformational grammars propose to select a few of them as a core of rule patterns, and to derive all rule patterns, as needed, by means of transformational rules. In the earlier days, the core of rule patterns was referred to as producing a deep structure or rule, and the various rule patterns which could result after the transformations had been applied were referred to as being the surface structures or rules. Terms like "earlier" and "later" (or "left" and "right") could have been used with equal accuracy. The term "deep" expressed the fact that the core rules used for it were few, while the "surface" contained any one of the huge total of rules. The term "deep" also expressed the quandary of the linguist, trying to hypothesize a minimal core of essential rule patterns, while studying a vast number of known rule patterns and blindly trying to imagine transformational rules which could link them.

What has happened to this (un)happy turn of phrase in the hands of literary persons? First, "deep" is taken to mean simply "profound". Second, under mistaken structuralist influence, the "deep" rule patterns are taken to be generalizations of the "surface" rule patterns, or reductions or simplifications of the "surface" rule patterns, or abstract entities which aren't even rule patterns at all, but something "deeper" (and here, "profound" enters in, and we find ourselves in semantic underworlds). While the "deep" rule patterns may not appear on the "surface" at all, they are still rule patterns, and the transforms which turn them into "surface" rule patterns are mathematical operations which take note of the syntax categories, phrase boundaries, and other familiar attributes of rule patterns which appear in them.

To *demonstrate* a structuralist (or even classical) grammar, one needs a lexicon of words arranged by category, and a set of rule patterns which will select words according to category and then combine them according to the ordering and cooccurrence preferences for the language system being represented. Compared to this thoroughness, the ideas of the literary structuralists are only imaginary blueprints for proposed structures. The literary structuralists are content to describe what a structuralist project would be like, and, having nothing specific to demonstrate, instead follow the critical convention of ad hoc categorizing and suggestive paraphrase of already existing texts, such as narratives. In a word, whatever its virtues as criticism, literary structuralism is *not even* taxonomy, let alone anything more than taxonomy.

Perhaps what appealed to the Cullers, Kristevas, and Van Dijks of the early 70's was the statement in the first versions of transformational grammar that the "semantic interpretations" would be "introduced" at the "deep level" and then would reach the "surface level" by "meaning-preserving" transformations. (In a later version, the "semantic interpretations" were inserted at the "surface level," however.) What must have been difficult to understand in all the versions of transformational grammar was the peculiar way in which the transformations mediate between the "deep" and "surface" levels and the peculiar way in which syntax mediates between semantic interpretations and phonological representations. The term *generate* was being used in a mathematical sense, not a historical sense: Chomsky claimed that the transformations corresponded only mathematically to the mental schematism, not procedurally. It was sufficient that transformational syntax could mathematically carry the burdens of turning semantics into phonology: any real processor would be mathematically equivalent to it, though possibly quite different in time-space actualization. Having abandoned the

langue-parole distinction, Chomsky now created a new distinction, that of *competence* and *performance*.

IDEAL/REAL

Chomsky's proposal of transformational syntax as a solution to the problem of the proliferation of rule patterns in traditional syntax helped to promote the cause of the generative revolution in linguistics. However, by accepting rule pattern procedures that allowed recursion, Chomsky was departing somewhat from the standards of his own computational model. A grammar algorithm that calls for recursion implies that the computational mechanism corresponding to human language capacity has the power of a pushdown automaton, as he himself proved. By the scientific criteria he had just discovered, either the innate capacity did not include recursion (in which case traditional rule patterns could not be defended) or else the existence of recursive abilities necessarily implied the occurrence of languages with sentences like "the editor the authors the newspaper hired liked died" as well as "the editor the authors liked died." But in fact, while sentences with the latter amount of recursive embedding do occur, sentences with the former amount (or more) of recursive embedding do not occur, and cannot even be understood (without memorizing translations into non-recursive formats). Rather than give up either rule pattern syntax or the computational model of language capacity, Chomsky chose a compromise position: he would account for the discrepancy between the ideal automaton (demanded by rule pattern syntax) and the real behavior of language by attributing the limit upon recursion to a deficiency in actual human memory size. Thus arose the distinction between *competence* (the ideal) and *performance* (the real).

In these terms, the proficient speaker of a human language shows an innate internal competence corresponding to that of a pushdown automaton (a syntax with recursion) but whose real performance must be adjusted to allow for a limited memory space (not much recursion). Similarly, Chomsky describes the linguistic theorist as idealizing "away from" reality in search of abstract mathematical behavior, and then attaching a complex of mathematical exceptions to the neat abstract rule in order to exactly predict concrete reality. It would be neater and more elegant if a mathematical model could be found which would account for the behavior without any corollaries whatsoever, but so far none has been found. There is a 'fit' between ideal and real with a little adjustment of the theoretical formulations, but in the

absence of anything neater, linguistics must be grateful for the one fully explanatory (if inelegant) theory that it has.

It is Chomsky's practice to use the competence/performance distinction to cover all cases where there is no neat 'fit' between theory and actuality, plus all cases where theory does not pretend to 'fit' actuality, neatly or otherwise. For example, actual speakers will hem and haw, interrupt themselves, restart and stammer. No current theory aims to cover that behavior, but eventually some theory might do so, once the current issues are resolved. Chomsky calls such behavior 'performance' behavior, not to be modelled by 'competence' models. (Saussure also places it out of bounds, as mere '*parole*.)' Chomskyan theory does not pretend to offer a fit with some hypothetical *langue*, but neither does it pretend to be the behavior of some given individual speaker at some historical location: rather, Chomsky says, it is an 'idealization' of the speakers of the language which a grammar proposes to show. And, as we have seen, where theory does not fit neatly with reality, the adjustments to an ideal competence grammar necessary to get it to generate all and only the sentences of the actual language as used in reality, are referred to as performance adjustments. (Were there no such adjustments, the falsification tests on a proposed grammar could never be carried out.)

It is easy to see why Culler erroneously made the declaration that Chomsky's *competence/performance* was equivalent to Saussure's *langue/parole*. (Also why Jameson sees Chomsky as having merely reversed Saussure, identifying *competence* with *parole*, and *performance* with *langue*.) In generative grammar, there is no need for *langue* at all, either in relation to competence or performance. The memory limitations posited in order to account for the performance of speakers relative to their innate recursive capacities are just as biological as their language capacities — but they are not algorithmic in nature (they have to do with memory or storage capacity). The idealized speaker, whose usage the grammar will generate sentences for, seems, on a hasty reading, to resemble the idealized Saussurean *langue*. But the Saussurean *langue* is a metaphysically ideal object, while the idealized speaker is an attempt to show what the grammar model corresponds to, and how its output should be judged. (It would have been better had Chomsky referred to the grammar mechanism as representing simply *another* speaker, with *only* the human language abilities and no others.) It must be admitted that Chomsky uses the competence/performance distinction in at least three different ways, and as usual, the layman seizes on the readiest interpretation of the terminology, skipping the dreadful explanations of what is really

meant.

SEMANTIC INTERPRETATION

The 1965 (*Aspects*) edition of transformational grammar included the first attempt to specify what might be meant by 'semantic interpretation.' Even then, Chomsky seems to have felt that his computational model of language learning in no way depended upon specification of the semantic portion of language, though semantics might well have computational mechanisms of their own; it was sufficient to show where the mathematical exchanges between the syntax computations and the semantic computations would occur, from the point of view of syntax computation (the 'autonomy' hypothesis). Nevertheless, the 1965 edition included, almost as a bonus, a version of the *semantic component* suggested by two young MIT theorists, Katz and Fodor. In more recent editions, Chomsky has given his blessing to explorations of the semantic component, but it no longer appears appended to the syntactic, transformational component, and instead, the later editions merely indicate where semantic interpretation would take place. Nevertheless, this version of semantics, as first suggested by Katz and Fodor, has become a part of generative linguistics.

The *semantics* of Katz and Fodor is adjusted to blend into the framework of the 1965 transformational syntax edition, but in fact is their attempt to carry out the old Saussurean program of a *contrastive semantics* without the assumptions of Saussurean structuralism. In particular, one can now assume that the system is comparable to generative phonology, and that there are biological cognitive capacities comparable to the auditory and articulatory capacities assumed in phonology. As in Jakobson's phonology, one will draw a distinction between the total humanly available sounds (*phonetics*) and the selection from that total used in a given language (*phonemics*): only here, there will be an inventory of linguistically available cognitive distinctions (*semantics*) and an inventory of the selection of cognitive distinctions used in a given language (*sememics*).

Following Chomsky's psychological hypotheses, Katz and Fodor postulate an innate organization of sensory schematisms, that process sensory information entering the brain. (In this, Chomsky is much like Kant, with his sensory 'filters', but unlike Kant in proposing a model by which such a hypothesis could be scientifically tested.) The output of these Kantian schematisms can be very much simplified, as for example, the ability to detect motion or

orientation in space. But Katz and Fodor postulate that even this phenomenal output is too rich to serve as the basis of semantics, and they suggest a distinction between the phenomena that are linguistically available and the phenomena that are outside the range of linguistic attention. In traditional structuralist semantics, the goal of a *minimal set of distinctive contrasts* is to be pursued with respect to one's ability to distinguish all the *words* in the lexicon; only such *features* are to be introduced that would be necessary in pursuit of the goal of minimal contrastiveness within the finite lexical set — all other imaginable features, even though phenomenally real, are irrelevant to linguistic semantics. Language, then, is thought of as kind of an indexing system to the data of mind, some of which results from interaction with sensory information. In Katz and Fodor's semantics, the goal of distinctive features is also to be pursued with respect to one's ability to distinguish allowable syntactic combinations (e.g. subject & predicate, modifier & head, preposition & object). Only such features are to be introduced as would be necessary to explain our knowledge of allowable versus nonsensical syntactic combinations. (The standard example of syntactic combinations that violate semantic restrictions is "Colorless green ideas sleep furiously.")

Katz and Fodor's new criteria — syntactic combinations — grew out of a simplification of syntax that was obtained in the 1965 edition. This was, as we have mentioned, to allow the category symbols to be expressed as complexes of features. Because of this innovation, the difficulty of matching up a third-person singular verb with a third-person singular subject, even a subject at a considerable distance, was overcome. Since syntax could now express relations of syntactic co-occurrence in features, it was obvious that semantics could also express relations of co-occurrence in features. For example, the lexical entry for a verb, such as "think," could specify that its subject must have the semantic feature '+Human', while the lexical entry for "frighten" might specify that its object must have the semantic features '+Animate±Human', etc.

Human beings learning a language, then, are taken to have an innate ability to construct systems of contrastive features for phonology and semantics. According to Katz and Fodor, it should be possible to arrive at a special set of semantic features (sememic features) for each language. However, in the generative model, the features and values are not just an arbitrary gift of the culture (or *langue*). The selection of features is associated with the language, but the ability to construct a selection which allows successful expression of thought and negotiation with others is inherent in

the child. Furthermore, the features are given *values* (+, -, ±) in relation to (filtered) experience, not as arbitrary givens acquired from social indoctrination. For example, the meaning of "frighten" is learned in the context of sentences in which the object is sometimes '+Animate -Human' and sometimes '+Animate+Human' but never '-Animate'. Similarly, after the child establishes this conjectural entry ('+Animate±Human'), it can conjecture the meaning of novel words out of experiential context (e.g., "frightened the unicorn"), and it can construct lexical entries for items on its own, without instruction (e.g., "Fido" is seen to be '+Animate-Human').

Having postulated a nexus between (filtered) experience and *semantic content*, and having attributed to the human language user an innate ability to construct semantic representations sufficient to account for language acquisition and language use, there is no need for generative semantics to ponder the structuralist problem of *variability* in belief or conception. The structuralist prejudice for a hypothetical social entity called *langue* seemed to include a concomitant prejudice for a semantic social entity called *ideology*.

The generative linguists showed that structuralism's intelligent innovations could be assimilated to a real linguistic science in the mode of other sciences, with mathematical models and experimental procedures. A complete demonstration of a grammar for a language could include both a semantic and a syntactic-phonologic component, and the output to be subjected to native speaker review would be expected to be both syntactically and semantically well-formed. (But in the absence of a workable syntax component, the semantic component cannot be validated.)

LANGUAGE CHANGE/HISTORIC CHANGE

Saussure has been criticized for lack of any clear notion of how *langue* systems change: some have suggested that such social entities disappear when societies disintegrate; others have suggested that the *langue* is just a snapshot of an ever-changing organic whole; still others have suggested that a *langue* is like a species, subject to genetic drift and other invisible and arbitrary sources of mutation and alteration. For Chomsky, the interesting question of change has shifted from the grammars created by the biological language faculty to the evolution of the biologic faculty itself. Changes in the grammars he places amongst the inscrutable 'mysteries' of our present state of knowledge (which he divides into 'problems' worthy of scientific investigation now, and 'mysteries' for which there seems to be no current hope of a scientific

solution). However, it should be noted that the interest in the structuralist grammar or *langue* derived from its all-determining power over the habits and thoughts of the individual users; when the determining structures for language are biologically innate, interest wanes in the reasons for the accidental sources of the current set of syntax rules, phonological and semantic features (who feels oppressed by the obligation to put verbs before objects, as in English, rather than after objects, as in Japanese?). If the content of semantic features is not rigidly determined by social indoctrination but instead is an interchange between the deterministic innate capacities of the individual, the individual's own experience, and the cultural inheritance, then the question of change is both more complicated and less puzzling.

Chomsky is well known for his battles with the behaviorists and the empiricists. He is perhaps even better known for his battles against social oppression, communist and capitalist, in which his pronouncements are both very easy to follow and weighted with his mandarin status. He is an ardent advocate of a kind of anarcho-syndicalism. And there are visible temperamental connections between his linguistic and his social predilections. For instance, he despises the forces which he sees to be viewing human nature as a *tabula rasa* on which they can impress some ideological code; certainly his intellectual energies have been spent in making the philosophical-scientific foundations of empiricism and social determinism appear to be ridiculous and empty of content. He clearly states our ignorance as to the 'hows' and 'whys' of human beliefs and 'common sense' generally, but that did not prevent him from being a major opponent of the Vietnam War and a fiercely imaginative accuser on the American political scene. None of the privileges of (equal) ignorance are refused, either.

Except for those in the state of mind which submits to the judgment of "great men" in all things, no one appears to have been confused by Chomsky's social-political pronouncements. But Chomsky's uses of philosophical history have been quite confusing, as he is clearly engaged, in an informed way, in a revolution in epistemology in our times. He has aligned generative linguistics with various figures of *rationalist philosophy* from the past, especially Descartes, Leibniz, and Kant. It is clear that he sees his epistemology on one side of empiricism, and locates an older rationalist tradition on the other, earlier side. But professional philosophers find his interpretations of Cartesian rationalism (and the rest) perverse, maddening, and at least misguided. Chomsky's attitude toward the great works of the past appears much like that of the New Critics — historically aware but not inhibited by historic

distance, insouciantly producing reading without any conscious sign that one is reading oneself into the texts. In *Language and Responsibility*, after taking much philosophical flak on this basis, he remarks:

Let me offer an analogy. I am not proceeding in the manner of an art historian so much as that of an art lover, a person who looks for what has value to him in the seventeenth century, for example, that value deriving in large measure from the contemporary perspective with which he approaches these objects.

Thus he had called his model “Cartesian” despite the fact that it denied *both* indoctrination *and* innate ideas, because Descartes at least allowed for innate mechanisms of thought in the way of explaining our human capabilities. And so on, with Leibniz, Kant, Russell, and others. Thus it is *not* helpful to read Descartes in order to understand Chomsky better; on the contrary, Chomsky’s remarks about Descartes are unintelligible until you have studied Chomsky over several times.

Chomsky’s most maddening habit, however, is not the exposition of his theories with reference to supposed parallels in notably different philosophic systems. His most confusing expository habit is a sort of *Humpty Dumpty’s Rule*: “when I use words, they mean what I want them to mean; the question is, who is to be master?” — as Humpty Dumpty says to Alice in *Through the Lookingglass*. At the beginning of his various works, popular and technical, he defines the key terms on which all else will rest; having done that much, he then uses the key term as if we had immediately absorbed the peculiar meaning he has given to it. This would not be so bad, except that many of the key terms do not sound odd much of the time, so we fall back into the habit of reading them in the normal way — until a perverse-sounding assertion arises. This is the case with his use of terms like *theory*, *knowledge*, *hypothesize*, *believe*.

For example, in Chomsky, a ‘theory’ is a computational algorithm, and he tells you so at the beginning of *Reflections on Language*, which is designed to be a popular introduction to his views. For modern persons still not familiar with computers and programming, he even defines how an algorithm works: a procedure which will output results of a certain type, and which has declared types of input. So that later, when he attributes to the child an ‘unconscious theory’ of language, he is honestly saying that the child has an unconscious algorithm whose output will be a grammar and whose input will

include the sentences it hears. The grammar that the child 'hypothesizes' is also a 'theory' — a 'theory' of English (or Hebrew or whatever), that is, an algorithm for processing English sentences, given certain output/input criteria. Using this terminology, with a certain acknowledged ambiguity, he can also say that the linguist 'hypothesizes' a grammar 'theory' for English, just as the child does. And so he does, if he is a Chomskyan — the linguist will construct an algorithm for processing English sentences, and that is the algorithm whose output is expected to resemble the sentence output of an ordinary English speaker.

A theory (in the ordinary sense) is an idea, which may include a representation of an algorithm (or 'theory') in its meaning. The child *has* an unconscious 'theory' of language, whereas the linguist must seek his theory. The linguist's theory is about the world, including parts of the biological world that are not accessible to introspection. In the child and the adult, the algorithm for creating grammars is irretrievably unconscious; in the linguist, the algorithm must also be consciously surmised. Chomsky evidently feels that the act of abstraction that produces a scientific hypothesis is so amazingly prompt and apt that there should be some serious explanation of it. One could argue for an innate conjectural capacity — an algorithm for hypothesis-making — but not an innate theory or set of theories. (Remember that for Chomsky there are neither innate ideas nor innate grammars; not even the 'deep' syntactic structures are predetermined.) Yet, Chomsky quotes Peirce's neo-Kantian description of abductive reason with approval:

"Man's mind has a natural adaptation to imagining correct theories of some kinds If man had not the gift of a mind adapted to his requirements, he could not have acquired any knowledge."

We should, following Chomsky's homiletic practice, substitute the Chomskian meaning of 'theory' for "theory," the Chomskian meaning of 'knowledge' for "knowledge," etc., arriving at the first reading below:

Man's mind has a natural adaptation to constructing correct grammars of some kinds If man had not the gift of a mind adapted to his requirements, he could not have acquired any language systems.

And, turning to the level of theory rather than 'theory,' we may rid Peirce of his Victorian sense of 'progress' and 'preordainment':

Man's mind has a natural adaptation to imagining immediately attractive and subsequently corroborated theories of some kinds If man had not the gift of a mind adapted to his needs for intelligible and testable hypotheses, he could not have acquired any sciences.

Or, with tough-minded Kuhnianism:

Perhaps man suffers from a natural adaptation that compels him to imagine theories that are intelligible and corroboratibel only in certain areas But if man had not inherited a mind as limited in input as it was in computational schemas, he would not have computed any results at all.

Indeed, Chomsky is so close to Popper, Hempel, and Kuhn, that he tends to emphasize the naturalness of conviction over the naturalness of skepticism; if transformational syntax is the *best* theory, or the *only* theory, one is almost obliged to believe it, and he can make nothing of critics (inside linguistics) who label it 'psychologically unreal' and yet offer no theory in its place.

BEYOND THE SENTENCE

Chomsky happily assigns to others the study of the semantic component and the study of *discourse*. The 1977 transformational grammar has shown an acknowledgment that the old school logical semanticists were right in suggesting that semantic interpretation would have to be att he "surface" structure level, and that problems of pronoun reference, scope of negatives and quantifiers, etc., should be taken into consideration by grammar-writers. (Most post-transformational grammars are scrupulous about how the semantic representations are built, especially with regard to logical semantics.)

There is no reason why a generative linguistics semantics of the Katz and Fodor type could not record sentence-by-sentence information in much the same way that semantic representations are built up within the sentence. This, obviously, would be of much greater interest to literature, and to the theories of how meaning is derived from readings of discourse in texts.

FREEDOM AND CREATIVITY

Chomsky shows that in place of social determinism, we need only posit

innate biological determinism, to account for language structures and systematic behavior in language. The kind of determinism here is not one of innate ideas (or innate theories, either, in the ordinary sense): rather the deterministic structure is an algorithm, which characteristically specifies open variables in its input, and whose processing yields an open class of output. The 'rules' of syntax are unconscious, and we cannot help learning them (given opportunity and care); we can choose not to speak at all or to deliberately violate the rules (metaphor appears to be a system parasitic upon semantic rule violation), but we cannot will another schematism. Nor can we do other than recognize faces, etc., by the unconscious algorithms which have been biologically determined for us.

Within this determinism, Chomsky speaks of a sort of 'freedom' but it is the freedom to generate an endless variety of syntactically well-formed sentences; and a sort of 'creativity,' but it is the creativity of a syntactic system that is adapted to ever novel syntax patterns, which can always be fitted to a rule. About other creativity and freedom, there is not much to be said, in the present state of knowledge about syntax, semantics, sensory schemata, and the like.

When generative linguistics replaced structuralism, it overthrew the structuralist commitment to cultural predeterminism of meaning and meaning-structures. It cannot be said that generative linguistics has affirmed the vague classical notion of human freedom, for that would substitute one assertion for another: Chomsky has opened up the problem for possible scientific investigation. Structuralism, in its several varieties, is marked by a commitment to something that is, for the individual, no better than the innate ideas and innate propositions of rationalism — cultural predeterminism is, for you and me, the same as divine predeterminism. Against structuralist determinism, Chomsky has shown that innate computational capacity suffices to account for systematic behavior, and the results need not be thought of as pre-computed and placed (by gods or ruling classes) in memory storage. Against empiricist determinism — whether the Greek tradition that concepts passively reflect natural kinds or the British tradition that ideas accumulate on a *tabula rasa* under the bombardment of sense data — Chomsky has shown that the computational requirements for what is known to be learned demands something more from innate human biology. As Kuhn suggests, we appear to have passed a watershed in the history of epistemology.

SUGGESTIONS FOR FURTHER READING

A literature student, whom I assume to know the literary items mentioned, might want to begin with any of the following:

- Chomsky, Noam. *Reflections on Language*. Pantheon Books, 1975.
- Chomsky, Noam. *Language & Responsibility*. Pantheon Books, 1977.
- Chomsky, Noam. *Rules & Representations*. Columbia UP, 1980.
- Newmeyer, F. J. *Linguistic Theory in America*. Academic Pr, 1980.
- Lyons, John. *Language & Linguistics*. Cambridge UP, 1981.
- Kuhn, Thomas. *The Structure of Scientific Revolutions*. Chicago UP, 1970.
- Medawar, Peter. *Pluto's Republic*. Oxford UP, 1982.
- Winograd, Terry. *Language as a Cognitive Process*. Addison-Wesley Pr., 1983.

