DOCUMENT RESUME

ABSTRACT
    It is important that we reflect on the conceptual
framework from which our study of language has emerged, since the
problems, methods, and aims of what has been called modern
linguistics are rapidly being replaced by the concerns of another
framework or paradigm. Such new paradigms, to be viable, must not be
distorted by starting points that unduly restrict analysis and
research. Therefore, since the transformational (and
neo-transformational) model is able to probe more deeply into the
reality of language, often compensating for the inadequacies of the
structural approach to account for the data, it is to be preferred.
These richer theories illustrate advance through their demonstration,
though incomplete and provisional, of the laws of language on a
global scale. However, the charge of onesidedness as applied to the
now-dominant perspective(s) is not easily answered. To the extent
that it cannot be answered, the current "rationalist" efforts must be
viewed as too limiting to account satisfactorily for the phenomena
(language) they are attempting to explain. In the future, the mode of
abstraction and directive for research must be critically appraised
for the way they inform theory, fact, research, and application. The
ultimate criterion for evaluation cannot incontrovertibly be an
appeal to the concept "science"; the critic must be aware of his
pre-scientific grounds for judgment. (Author/DB)

"From Paradigm to Practice in Linguistics"

Dan Hendriksen

Western Michigan University

As we move ahead--and at times slip back--in linguistic
studies, what ought to gain in respect is that whatever analyses
uncover or suggest about the nature of language, these analyses
cannot replace their source in significance or honor. The richer
the theory, the more complex and mysterious the phenomena of
language appears to be. To this extent science is not king;
the grammar book--traditional, structural, tagmemic, transfor-
mational, neotransformational, stratificational--is not the
'sourcebook' of grammar, but only a second hand account of that
source. Both Miss Fidditch and Mr. Modern Grammarian have a
conscious knowledge of grammatical rules that lend insight,
accompanied by varying degrees of distortion and incompleteness,
into the rather extensive preanalytical grammar that small chil-
dren 'understand' and use skillfully, integrating sound, syntax,
and semantics in ways that still pit the best theorists against
each other for explanation. This is not to deny the achieve-
ments of linguists, for such achievements have significantly
contributed to these observations.

As we push into the 1970's, we do well to reflect on the
conceptual framework out of which our study of language has
emerged. This is especially relevant since the problems, methods,
and aims of what has been called modern linguistics (Chomsky

still calls it that) are rapidly being replaced by the concerns
of another conceptual framework or paradigm (to use a word that
has various shades of meaning in Thomas Kuhn's "The Structure
of Scientific Revolutions"[1]).

Says Susan Langer of a philosophy (cf, philosophy of science):

> It is characterized more by the formulations of its
> problems than by its solution of them. Its answers
> establish an edifice of facts; but its questions make
> the frame in which its picture of facts is plotted.
> They make more than the frame; they give the angle of
> perspective, the palette, the style in which the
> picture is drawn--everything except the subject. In
> our questions lie our principles of analysis, and our
> answers may express whatever those principles are able
> to yield.

For reasons that should become increasingly evident, it is
important to be reminded of our recent history in linguistics
and the effects in practice of the still struggling paradigm.

Structural linguistics was to be 'scientific', with all
the claims to precision and objectivity that are so often
associated with that word. For example, no longer would we
study language through notional definitions inconsistently
mixed with functional criteria for establishing parts of speech.
No longer would we attempt to use Latin grammar as a model for
English grammar or pretend that there was any real significance
to a universal grammar. Languages differed and must be con-
sidered on their own merit. The way of science was the way of
inductive generalizations from observables. We would, in other
words, stick to the facts as we saw them--or better, as they
revealed themselves to us. Some would note the correlation of
differing linguistic structures to differing cultural patterns

3

and develop theory of linguistic relativity. Attention to
the observable surface features of language would culminate in
theory that was as accurate and objective a summary of that
data as possible. Language could be defined as a system of
vocal signals or simply as speech, writing being an incomplete
representation of speech. Moreover, languages were arbitrary--
not as much revealing logic, but reflective of changing customs,
times, and places. Defining the phoneme would involve primarily
articulatory and acoustical conditions, the closer we could
stay to what was retrievable from the sound stimulus, the more
precise and objective would be our account. For Bloomfield the
definition of the phoneme would hopefully come out of the lab-
oratory.

In the structural tradition, scientific methodology demanded
only the "study of phenomena and their correlations"[3] (Twaddell).
Mentalistic assumptions were fraudulent. Linguistic description
should be characterized only by consistency, convertibility,
and, perhaps, simplicity and convenience.[4] The subjective def-
initions of grammatical units were to be replaced by those which
recognized the observable signals in grammatical structure. For
many (most?) mixing linguistic levels was taboo, and for certain
purists in the tradition the ultimate in objectivity would be a
grammar whose structures are kept apart by means of audible
differences in the sound stimulus--in stress, pitch, and juncture.
Such a grammar appeared in 1958 (Archibald Hill).

All this would be accomplished in the name of science, or
to use Kuhn's expression designating the going body of scientific

4

assumptions implicit at a given time--'normal science'. Of
course, there were exceptions to the trend. Certain important
assumptions of Sapir became and remained unpopular. As far back
as the 1940's Pike was holding out for grammatical prerequisites
to phonemic analysis. And Jakobson's feature analysis, with its
implications for the universal, was later to be used by the
revolutionists. But the main lines identifying theory construc-
tion in this country are quite discernible, and they are also
reflected in the kinds of questions taken into the laboratory.

Laboratory questions would fit the theoretical formulations
suggested above. Typical were experiments calling for response
to differences in plus juncture involving grammatical boundaries.
Some tests inquired into what part pitch and stress play in iden-
tifying and contrasting syntactic structures. Attention to the
role of sound features establishing phonemes extended from
features characteristic of phones and allophones to conditioning
factors related to the immediate sound environment. Amid exag-
gerated claims, positive contributions to an understanding of
sound phenomena resulted from these investigations. However,
we here wish to note the limitations imposed on experimentation
by the paradigm concerns of a rather strict empirical science.
For example, rarely would one find, among the mass of recorded
experiments on sounds, an experiment testing for the effects of
broader contexts upon the sound. Outside the country, some
research by Bruce[5] in England and Mol[6] in Holland proved ex-
ceptions. The same restrictions on experimentation did not apply
in these cases. American psychologist George Miller experimented

5

with sequential constraints in perception and recall of strings
of words, but later realized that even this assumed too narrow
a context for determining psycholinguistic primes.[7]

It is again important to emphasize that the answers de-
rivable from an experiment are restricted to the questions one
is willing to ask, so that even negative answers are negative
in respect to these questions. The structuralist's questions
were reflective of his paradigm, which, in turn, circumscribed
the significance of the answers forthcoming from the laboratory.
Thus, though one could test for the relative importance of cer-
tain sound features or contrasts over others, he could not,
within this paradigm, test for the effects of higher level
(syntactic and semantic) constraints on phoneme identity. Doing
so might jeopardize the concept of the phoneme that tests were
meant to validate. To this extent the structuralist was hindered
from determining the role sound played, while his autonomous
phoneme exaggerately attempted to do just that. To ask the
larger, contextual question could not only challenge conven-
tional concepts of the phoneme, but also the paradigm base from
which it developed. Kuhn puts the matter in historical perspec-
tive when he states:

> No part of the aim of normal science is to call
> forth new sorts of phenomena; indeed, those that
> will not fit the box are often not seen at all. Nor
> do scientists normally aim to invent new theories,
> and they are often intolerant of those invented by
> others. Instead normal scientific research is dir-
> ected to the articulation of those phenomena and
> theories that the paradigm already supplies.[8]

Grammar texts espousing structural linguistics concentrated
on surface features involving word order, structure words,

inflections, intonation, etc. The distribution of an item in various contexts was sometimes called on in order to 'objectively' identify its syntactic role, although some recognized the 'subjective' circularity of this procedure.

Introductory textbooks in linguistics, in keeping with the heavily attended-to area of sound phenomena largely emanating from the directive in science influencing this attention, introduced the student to phonology first, and then extended this introduction over a disproportionate part of the book. It is hardly necessary to say how the grammar was accounted for, although the same degree of emphasis was not accorded the varying surface features from one text to another. Positively speaking, benefits which accrued from these attempts include the examination of language features that had been largely neglected, scarcely explored, or unsystematically described; but the limitations governing what was to be studied and how--what was methodologically respectable--are quite in evidence. What was 'fact', moreover, was to no small degree informed by the principles that developed from the then normal science of linguistics in America.

In teaching English to non-native speakers--or teaching any foreign language--we were to emphasize the differences between languages as these suggested interference problems in the areas of sound, syntax, and vocabulary. And in the matter of teaching-technique the positivistically oriented linguist found the similarly inclined behavioral psychologist to be a good bedfellow. Stimulus, response, reinforcement, generalization,

and habit formation were the stock in trade of the behaviorist;
to the linguist these had the advantage of dealing with the
observable--overt 'causes' and overt 'effects'--expressing ess-
entially the same conceptual framework in science that the
linguist was accustomed to. Language behavior, like other kinds
of behavior in animals and men, was 'habit forming.' Pattern
practice would help establish new habits in the acquisition of
the foreign language.

The structuralist's contribution to the subject of Reading
reflects his phonological emphasis. Spelling patterns highlighted
phoneme/grapheme correlations, as did such attempts as the
International Teaching Alphabet. The prevailing notion of lan-
guage composed of building blocks from sound to sense is reflected
in assumptions about the reading process. Thus it appeared
important to those using a spelling pattern approach that begin-
ning readers first perceive the grapheme in the syllable pattern
of the word, and having so identified it to determine the phoneme
which it represents before going up the ladder to levels of syntax
and semantics. At least, 'reading for meaning' was considered
misguided until and unless the alphabetic (phonemic) principle
had been conquered. The effectiveness of materials employing
these principles may now be established as this applies to certain
situations, but their overall effectiveness or necessity is
largely a function of the degree of insight involved in the
theoretical claims that underlie them.

Enter Noam Chomsky and the revolution. The unresolved
anomalies and the felt inadequacies of the 'limited' appeal in

science to account for many phenomena or to support much of the aforementioned theory laid the groundwork for change. A positive approach (the transformational-generative model) to the solution of several of these problems favored the upcoming revisionists. The ongoing revolution in linguistics, with its 'new' (renewed) stance in science, is the result. Although something of the method, certain of the findings, and much of the rigor of the structuralists have been taken over by the revolutionists, the degree of change is phenomenal. The extent to which Chomsky's position in rationalism and the modern linguist's position in empiricism are compatible is controversial, but the changes in theoretical direction and in practical consequences are revolutionary. It is important at this point briefly to sketch the shift in emphasis, and then to see how this has affected applications.

The innate is now receiving much attention, as are universal features that identify all languages and contribute to the uniqueness of man as the language possessor among creatures. Accompanying an admission of much ignorance as to language acquisition, exposure to language (stimuli and reinforcement) is viewed as a condition necessary to draw out (trigger) rules and relationships that have a genetic origin.

The linguistic explanation of sentences currently involves underlying and surface structure. (In the latest revision, the deepest structure is conceptual entailing unordered roles of a semantic nature.) The notion of grammaticality, which appeals to the intuition to judge the well-formedness of sentences, made

9

its entrance amid continued accusations of mentalism.

The claim has also been made that a developing science must go beyond observational adequacy and even descriptive adequacy to explanatory adequacy, though for some these concepts are not easily separable, and the structuralist within his perspective may have often thought himself to have travelled the route all the way to explanation. Moreover, it has become abundantly clear that what is "added" by the new paradigm is no mere accretion, but a reevaluation and reordering of the data.

Receiving increasing emphasis is the creative aspect of language use which is said to allow even the pre-school child to understand and produce one novel sentence after another, apparently defying explanation in behavioristic terms. These 'facts' also reflect the essential difference between animal message systems and language. Behavioral concepts such as analogy and generalization are regarded as empty of content (i.e. scientifically vacuous according to their usual definitions). And reflecting on complex systems such as the mind of man, with its innate 'knowledge' of language, Chomsky finds evolutionary explanations equally vacuous.[9]

Since languages share universal features, roles, rules, and relationships, they together reflect language. Languages, then, are essentially the same, however much they may differ or appear to differ. All demonstrate a kind of language-logic. Therefore, the concept of linguistic relativity, especially in its strong form, is seen to be a gross exaggeration that underplays both the commonality of all languages and man's consequent

rule-governed freedom through language to transcend customs and conventions.

Automonous phonemics has been replaced by systematic pho-nemics (morphophonemics), since the former is a product of forced conclusions from the data, motivated by circumscribed attention to sound features and sound environments, which moti-vation is attributed to the narrow concerns of a limited view of science. Postal puts the matter in sharp focus when he writes:

> Theoretical positions are defined largely by the questions they ask. The great limitations of auton-omous phonemics are due to asking the wrong ones. The fundamental question which autonomous phonemics has asked is, essentially, how may a description system-atically distinguish those phonetic features which differentiate contrasting forms from those which do not. Metaphorically 'how are utterances kept apart by sound?' This question turns out to be wrong because it involves many implicit assumptions which turn out to be false, assumptions which exclude com-plete overlapping, which entail the nonlogical truth that phonetic contrasts directly yield phonological contrasts, and which insist that phonological struc-ture is independent of grammar and completely based on phonetic considerations.

On the previous page, the same author cites the structural-ist's "attempt to view sound change as a physical, phonetic phenomenon having to do with the performance process of articu-lation" as largely an error "motivated by underlying physicalist, positivist, behaviorist, and antimentalist tendencies" obscuring "the rule character of sound change."[10]

The "rule character" of language applies to competence which is to be distinguished from performance, though the former plays a major role in the realization of the latter. This is a significant departure from the 'older' paradigm's conception of language as a system of vocal signals, or its identification of

language with speech.

Experimental problems have correspondingly changed to
accommodate the paradigm shift. Research on universals pre-
dominates; that on language differences recedes, except where
the latter shed light of the former. Before the 'new look',
subjects were requested to extend their power of perception to
alleged stress contrasts such as on the up in pairs like: They
ran up a bill/They ran up a hill; or to differentiate "market"
from "mark it" by recognizing an external open juncture in the
last case but not in the first. But with the new directive for
research, the subject's ability to realize two interpretations
of strings like "flying airplanes can be dangerous" is shown to
depend on no necessary difference in the physical stimulus, but
on a built-in knowledge of grammatical possibilities for that
string, involving different underlying rules. Thus, where
differences between grammatical structures consistently correlate
with intonational contrasts, the latter merely cooperate with
the assignment of possible structure(s) to help identify the
grammar of the sentence.

Typical of the influence of the now popular paradigm on
laboratory efforts is an experiment which, among other things,
locates clocks within segments to see if the hearer will relocate
them at major segment boundaries in spite of their physical
occurrence elsewhere.[11] One experiment, testing for syntactic
and semantic constraints on the perception and free recall of
varying strings of words, finds G. Miller conceding that the
results are common sense, yet discouraging if one's "theory of

In the area of language learning, the sequence of stimulus, response, reinforcement, habit formation presents itself as quite misguided by the rationalist's assumptions. In opposition to others, T. Grant Brown defends the continued use of pattern practice but acknowledges that its original basis in theory is quite faulty according to current concepts, especially those of the neo-transformationalists (generative semanticists), and that its foundation in behavioristic psychology must be recognized as too simplistic. He argues, however, that the concept of pattern practices can be salvaged and made to fit current theory if these practices are seen to perform the task of "reorganizing automatic cognitive processes," rather than "forming a new habit system."[15] Here again, practice is seen as outgrowth of paradigm, although in this case, if Brown is right, the differing outlooks allow for the same teaching device.

With the demise of the autonomous phoneme, the attempts in reading materials to match phoneme to grapheme or to present similarly motivated spelling patterns is seen as ill-conceived and rarely necessary, since conventional orthographic symbols represent feature sets in an underlying sound system. These, in turn, are employed by the higher level structures that the, child uses while reading. Thus, the altered 'facts' concerning phonology in theoretical linguistics have their consequences in altered 'facts' on how the reading process transpires and what materials are desirable for use.

As the definitions, methods, and goals related to science change from those of the pre-revolutionary linguist to those of the revolution (or post-revolution) a battle of words ensues over

who is really 'doing' science. Kuhn reveals that in such cases
the supporters of one paradigm often refer to the adherents of
the other one as unscientific, speculative, or metaphysical.[16]
This has a familiar ring in the recent history of linguistics.
Thus, Hockett finds the followers of Chomsky to have "abandoned
'scientific linguistics' in favor of the speculations of a neo-
medieval philosopher"[17] (i.e. the rationalism of Descartes).
However, Chomsky claims that the Modern Linguist "shares the
delusion that the modern 'behavioral sciences' have in some
essential respect achieved a transition from 'speculation' to
'science.'"[18] Moreover, Chomsky refers to the "behariorists'
account of language use and acquisition" as "pure mythology,"[19]
while the chief spokesman for that account (B. F. Skinner)
regards mentalistic psychology to be nonexistent and decries
Chomsky's reintroduction of the concepts of mind and the innate.
To Skinner such ideas are parts of a conglomerate which he
blesses (?) with the label "mythical machinery."[20] Yet it is
well known that Skinner claims objectivity and science for his
own operant behaviorism and denies being involved with metaphysics.

The preceding indicates a final relationship of paradigm to
practice--the practice of attributing science to one's own para-
digm commitment and speculation or myth to that of the opposition.
Chomskyian (and post-Chomskyian) linguistics can be regarded as
both older and newer than structuralism. Each has charged the
other with being out-of-date--a suggested correlate of its less-
than-scientific, mythological character. Kuhn's remarks at this
point are instructive:

If these out-of-date beliefs are to be called
myths, then myths can be produced by the same sorts
of methods and held for the same sorts of reasons
that now lead to scientific knowledge. If, on the
other hand, they are to be called science, then
science has included bodies of belief quite incom-
patible with the ones we hold today. Given these
alternatives, the historian must choose the latter.
Out-of-date theories are not in principle unscien-
tific because they have been discarded. That choice,
however, makes it difficult to see scientific devel-
opment as a process of accretion.21

It is here contended that these charges and counter-charges
of myth and out-of-dateness have their source in a pre-scientific
choice of paradigm. The chosen paradigm not only serves as
directive for scientific endeavor, but also as judge over what
is and what is not to be taken as science.

By way of summary and conclusion, it bears reemphasis that
the mode of abstraction and directive for research will indicate
the paradigm bias of the linguistic scientist (or any scientist);
that this directive must be critically appraised for the way it
informs theory, fact, research, and application; that the ulti-
mate criterion for evaluation cannot incontrovertibly be an
appeal to the variously interpreted concept 'science'; that the
critic must thereby be aware of his pre-scientific grounds for
judgment; and that no amount of proof, reason, reference to ex-
planatory power, etc., commands the acceptance of a new paradigm.
Instead, as Kuhn has established through extensive research into
the nature of scientific revolutions, to pass from one paradigm
to another requires that one be converted.22 In other words,
to go along with a paradigm shift necessitates a leap of faith.
Nevertheless, an increase in knowledge is often the contribution

of ongoing research representing scientific endeavor exemplifying a 'new' paradigm. Moreover, distortion seems especially to characterize those starting points that unduly restrict analysis and research. Therefore, since the transformational (and neo-transformational) model probes more deeply into the reality of language, often compensating for the inadequacies of the structural approach to account for the data, it is to be preferred. These richer theories illustrate advance through their incomplete and provisional demonstration of the laws of language on a global scale. However, the charge of onesideness as this applies to the now dominant perspective(s) is not easily answered. To the extent that it cannot be answered, the current 'rationalist' efforts must also be viewed as too limiting to satisfactorily account for the phenomena (language) they are attempting to explain. With that observation a rereading of the first paragraph of this paper constitutes an appropriate finale.

References

1. Kuhn, T.S., _The Structure of Scientific Revolutions_, The University of Chicago Press, 1962.

2. Langer, S.K., _Philosophy in a New Key_, A Mentor Book, p. 16, 1959.

3. Twaddell, W.F., "On Defining the Phoneme," _Readings in Linguistics_, ed. Martin Joos, Washington, p. 57, 1957.

4. Chomsky, N., _Current Issues in Linguistic Theory_, Mouton and Co., The Hague, p. 97, 1964.

5. Bruce, D.J., "The effect of listerners' anticipations on the intelligibility of heard speech," _Language and Speech_, Vol. 1, pp. 79-97, 1958.

6. Mol, H. and H. Uhlenbeck, "Hearing and the concept of the phoneme," Lingua, Vol. 8, pp. 161-85, 1959.

7. Miller, G.A., _Language and Communication_, Mc Graw-Hill Book Co., Inc., 1951, cf. Miller, G.A., "Some Psychological studies of grammar," _American Psychologist_, Vol. 17, pp. 748-62, 1962.

8. Kuhn, _Ibid._, p. 24.

9. Chomsky, N., "Language and the Mind," _Psychology Today_, Vol. 1, No. 9, p. 68, February 1968.

10. Postal, P.M., _Aspects of Phonological Theory_, Harper and Row, pp. 309-11, 1968.

11. Fodor, J. A., and Bever, T.E., "The Psychological Reality of Linguistic Segments," _Journal of Verbal Learning and Verbal Behavior_, Vol. 4, pp. 414-20, 1965.

12. Miller, G.A., "Language and Psychology," _New Directions in the Study of Language_, ed. Eric H. Lenneberg, The M.I.T. Press, 1966.

13. Kuhn, Ibid., Chapter XI.

14. Polanyi, M., _Personal Knowledge_, University of Chicago Press, 1958.

15. Brown, T.G., "In Defense of Pattern Practice," _Language Learning_ Vol. XIX, Nos 3 and 4, 1969.

16. Kuhn, Ibid., pp. 37, 102, 147.

17. Education, _Time_, February 16, 1968, p. 69.

18. Chomsky, N., <u>Language and Mind</u>, Harcourt, Brace and World, Inc., p. v, 1968.

19. Chomsky, N., <u>Cartesian Linguistics</u>, Harper and Row, p. 104, 1966.

20. Hall, M.H., "An Interview with Mr. Behaviorist B. F. Skinner", <u>Psychology Today</u>, p. 70, Sept. 1967.

21. Kuhn, Ibid., pp. 2-3.

22. Kuhn, Ibid., Chapter XII.

PAPERS FROM THE

MICHIGAN LINGUISTIC SOCIETY MEETING

October 3, 1970

Edited by

David Lawton

President, Hans Fetting 1970-71

Treasurer, James Stalker 1970-71

Editor, David Lawton 1970-71

Volume 1, Number 2