

## CHOMSKY'S GRAMMAR AS A PARADIGM?

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### *O. Introduction*]

Thomas S. Kuhn's book on *The Structure of Scientific Revolutions* was first published in 1962. Soon after, it met a critical reception by historians and philosophers of science, the year 1965 marking a first culminating point through a London conference on the philosophy of science, and through a dispute between Kuhn, Popper, Lakatos, Toulmin, Feyerabend and others. It was soon clear that Kuhn's book — as Stegmüller (1973 : 154) put it — “was presumably the most important documentation of what was felt to be — varying according to one's philosophical position — a rebellion against the philosophy of science or a revolution of the philosophy of science itself.”

It is not amazing, therefore, that Kuhn's claims have not only been discussed by historians and philosophers of science, but that they have also been applied by scholars and scientists to their respective fields; fields that Kuhn had not undertaken to consider in his book, such as the study of literature as e.g. by Jauss (1970), who called for a new so-called paradigm in this field. Even in the field of the education of subnormal children (Bleidick, 1977) a new paradigm was claimed to exist.

In linguistics, too, Kuhn's claims have been discussed and applied in a variety of ways. My subject in the following will be to approach the question if Noam Chomsky's generative-transformational grammar can be regarded as a paradigm in the Kuhnian sense, — in spite of Labov's (1975 : 128) rather sarcastic verdict: “... the construction of such paradigms is a favourite occupation of those who would prefer to discuss the limits of knowledge rather than add to it.”

#### 1. *A survey of Kuhn's claims*

At least some of the central factors have to be enumerated which — according to Kuhn — are decisive for scientific revolutions and the establishment of scientific paradigms. Since Kuhn's book contains a wealth of examples drawn

from the history of physics and chemistry, this task cannot be solved in a totally satisfactory manner. The structure of Kuhn's thirteen-chapter essay — as he himself calls his book — does not allow too concise a rendering. As a first approach to Kuhn's claims I would like to quote a view of science that Kuhn rejects:

The man of science... surveys the results of earlier students and applies his energies at the point where they left off. Instead of always starting over again from the beginning science progresses cumulatively and with acceleration. (Bloomfield 1933 : 40).

This purely scientific view was to be the dominant one in American linguistics — at least in its descriptivist mainstream — for the following thirty years. According to Kuhn, however, the development of science is quite different in its decisive steps: the quoted cumulative view of science applies only during certain stages. Such stages are called "normal science" by Kuhn, i.e. "research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundations for its further practice" (Kuhn 1970 : 10).

The activity of scientists working within normal science can be described as "a strenuous and devoted attempt to force nature into the conceptual boxes supplied by professional education" (Kuhn 1970 : 5).

If the afore-mentioned achievements meet two particular characteristics, they are a scientific paradigm; they have to be firstly "sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity" (Kuhn 1970 : 10) and secondly "sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve" (Kuhn 1970 : 10).

Copernican astronomy is such a paradigm in Kuhn's view. Paradigms are — among other things — characterized by the fact that they are "guiding research" (Kuhn 1970 : 44); this does not imply, however, that there are no different opinions among scientists within one paradigm on procedural questions and the like. A further important characteristic of a paradigm is that the normal activity of a scientist within a paradigm can be regarded as "puzzle-solving" (Kuhn 1970 : 35).

An important trait of this activity is that these puzzles are considered as solvable on principle; a failure to solve a puzzle is due to the scientist, not to the theory.

A puzzle, therefore, is a normal problem that sometimes, however, can develop into a so-called anomaly, it "resists the reiterated onslaught of the ablest members of the group within whose competence it falls" (Kuhn 1970 : 5). It is at this point where — according to Kuhn — a non-cumulative development of science begins. Anomalies that are sufficiently disturbing will lead to a recognized crisis and from normal science to extraordinary science (Kuhn 1970 :

82ff.). What begins as a puzzle becomes in the end — *via* anomaly — a counter-instance (Kuhn 1970 : 79) that forces the scientists to question their old paradigm itself. "A reconstruction of the field from new fundamentals" (Kuhn 1970 : 85) becomes necessary. The transition towards a new paradigm, the scientific revolution has started. What used to be an anomaly turns out to be an expected result. Against current views and in defence of the term 'revolution' Kuhn emphasizes that the old paradigm and the new one are not compatible with each other, e.g. "Einstein's theory can be accepted only with the recognition that Newton's was wrong" (Kuhn 1970 : 98). "The transition from a paradigm in crisis to a new one is far from a cumulative process" (Kuhn 1970 : 84); this view is directly opposed to Bloomfield's.

A last important characteristic of new paradigms has to be mentioned, particularly with regard to an application of this concept to linguistics: "The success of a paradigm... is at the start largely a promise of success discoverable in selected and still incomplete examples" (Kuhn 1970 : 23f.).

The following normal science within a new paradigm tries to fulfil this promise of future success.

Before investigating a possible application of these ideas to Chomsky's grammar, two major difficulties have to be made clear that arise in the course of such an application and that are left open by Kuhn's essay. Firstly, possible transitional phenomena in the course of a scientific revolution are treated only in a few examples, particularly their duration remains open, and secondly Kuhn enumerates only necessary but not sufficient criteria by which to recognize anomalies, new paradigms etc.: "[What] makes an anomaly seem worth concerted scrutiny... to that question there is probably no fully general answer" (Kuhn 1970 : 82).

## 2. *Recent evaluations and positionings of Chomsky's grammar*

Is it possible to describe Chomsky's grammar on this background? How is it to be evaluated with regard to its achievements? I will begin with some evaluations which do not explicitly draw on Kuhn and proceed with some which do. Then I will investigate two candidates for the paradigmaticity of generative grammar, i.e. the transformations and the concept of explanatory adequacy. Finally, I will discuss some objections against the view of generative grammar as a new paradigm and will try to come to a realistic view concerning its validity.

Robert B. Lees's review of Chomsky's *Syntactic Structures* (1957), appearing also in 1957 has played a vital role in the linguistic positioning of Chomsky's grammar. Having a good quarter of the length of the book under review, it is a masterly attempt to distinguish a certain theory as something absolutely new and better from all its predecessors. Until then, linguistics was in a "pre-

scientific stage of collection and classification of interesting facts" (Lees 1957 : 376) and — so Lees held — had at its disposal only an "arbitrary set of descriptive labels which has become fossilized within linguistic tradition" (Lees 1957 : 377). According to Lees, Chomsky's is one of the first serious attempts to establish a comprehensive theory of language which is at the same time on the height of scientific standards. In the wake of Lees's statement, this view is repeated again and again. Special emphasis is laid on the point that any linguistic predecessors were totally different in all respects from Chomsky. So Bar-Hillel draws a sharp distinction between Chomsky and his teacher Harris and comments very bluntly on the latter's *Discourse Analysis*: "I feel there is no point in flogging dead horses" (Bar-Hillel 1970 : 164). Among the professors of English linguistics in Germany, Carstensen was probably the first to speak of a Chomskyan revolution — without reference to Kuhn's then very recent book. Chomsky and Lees — in his view together with Trubetzkoy, Saussure, Bloomfield, and Fries — "are frontline fighters in the rebellion against tradition" (Carstensen 1964 : 305). Last, but by no means least, Chomsky himself has always emphasized the fundamental difference of his grammar compared with others. Looking back, he draws an explicit parallel between the history of physics and that of linguistics and looks upon descriptive linguistics as an enterprise totally different from his; its methods — so he holds — are wrong on principle, since they are not able to describe the biological prerequisites of language learning (cf. Chomsky 1979 : 108, 116). So it is quite obvious that the historical and the theoretical positioning and evaluation of their approach has been taken very seriously by the adherents of generative grammar from the very beginning and that it has always been part of their programme.

It is not astonishing, therefore, that very soon also Kuhn's concept of paradigm was used in this positioning of generative grammar. As a professional philosopher of science, Stegmüller (1979 : 34) regards Chomsky's grammar as a Kuhnian paradigm. Searle (1972), too, calls it a revolution in linguistics, explicitly referring to Kuhn. Roughly speaking, this view is shared by Wells (1963), Thorne (1965), Chafe (1968), Grace (1969), Koerner (1974), Kanngieber (1976), Newmeyer (1980), partly by Hymes/Fought (1981 : 189f.) or Anders (1984). Newmeyer (1986) claim a Chomskyan revolution, explicitly rejecting, however, it to be a Kuhnian revolution (Newmeyer 1986 : 7). Often, we find no arguments for the applicability of Kuhn's categories, but it is simply taken for granted, e.g. by Thorne (1965 : 74), who sees a Kuhnian revolution beginning with the *Syntactic Structures* in 1957. Sometimes, one cannot help feeling that the postulate of a new paradigm is used to establish this selfsame paradigm first of all in the sense of a self-fulfilling prophecy. Thus Chafe deftly pleads the paradigmaticity of Chomsky's grammar with ample reference to Kuhn only to state anomalies within this paradigm — anomalies concerning

the idiomaticity of expressions, which is one of his own major fields of research — and ends up with postulating a new and more Chafian paradigm in linguistics. Kuhn provides no barriers against using the concept of paradigm in the sense of a self-fulfilling prophecy. Perhaps he would not even want to do that, for there is no obvious reason why a paradigm established — among others — by that means should not be a paradigm.

### 3. Transformations and explanatory adequacy in generative grammar

There are two important components in Chomsky's grammar and theory of grammar which I would like to use as touchstones of paradigmaticity, investigating in how far you can not only state, but argue that case. The first of these components is the concept of transformations. Chomsky and others emphasize that the transformations used by Chomsky's teacher Harris are something quite different from those of generative grammar. Harris's transformations are said to establish systematic relations between sentences, between surface structures (cf. Chomsky 1979 : 120), whereas Chomsky's transformations are said to transform one abstract sentence representation — the deep structure — into another abstract sentence representation — the surface structure (cf. Chomsky 1979 : 123). A first remarkable point is that there are quite different views on the relationship between Harris's and Chomsky's transformations. So Hermanns (1977 : 186), in his historical study on the development of Chomsky's grammar, claims that the essence of transformational grammar has been formulated by Harris. Heringer, Strecker, Wimmer (1980 : 99) emphasize that Harris's (1957) transformational rules "are in their basic idea exactly what Chomsky and his followers have meant by transformations until the present day." A second remarkable point is that the status of transformations has changed decisively in the course of the several revisions of generative grammar, beginning with the *Syntactic Structures* (Chomsky 1957) via the *Aspects*-version (Chomsky 1965) and the *Extended Standard Theory* (Chomsky 1972) up to the *Government and Binding Theory* (Chomsky 1981). In assuming a close relationship between Harris's and Chomsky's transformations, one questions the revolutionary claim of discontinuity made by Chomsky and others. In focussing on the several changes of the character and function of transformations, one questions their status as basic tools of a new normal science under a new paradigm. The last turn of the screw in this respect — for the time being — is Newmeyer's (1986 : 6) contention that transformations are not at all a relevant criterion of the — to him obvious and indubitable — revolutionarity of generative grammar, since e.g. Chomsky himself "has always (e.g. 1957 : 6) credited Harris with originating them" (not quite fitting Chomsky's remarks). This is a sophisticated version of the continuity claim on transformations.

Two claims will be made on this basis: 1) It is not decidable a) which view of the transformations is correct resp. b) if the said change of the status of transformations makes them unsuitable as parts of the basis of a new paradigm or not. 2) One can rather a) use the fact of different views on the transformations itself as a confirmation or as a refutation of the existence of a new paradigm. Very briefly, the arguments on the one hand would be as follows:

The controversy on transformations is a typical phenomenon of a transition between paradigms, thus the assumption of a new paradigm is confirmed. On the other hand: The controversy on transformations is proof of the existence of competing schools, thus the assumption of a new paradigm is refuted. One can also use the change of the status of transformations as a confirmation or as a refutation of the existence of a new paradigm. The arguments on the one hand would be: Once established concepts are persistently clung to under the new normal science, thus we have a new paradigm. On the other hand: The changing status shows that there are no really basic methods of a new paradigm, thus there is no new paradigm.

The second component of generative grammar which I want to discuss is more basic in its claims. It is the promise of explanatory adequacy. Explanatory adequacy does not refer to the adequacy of a certain grammar, but of a linguistic theory, which chooses between different descriptively adequate grammars. This theory thus "offers an explanation for the intuition of the native speaker on the basis of an empirical hypothesis concerning the innate predisposition of the child to develop a certain kind of theory to deal with the evidence presented to him" (Chomsky 1965 : 25f.). That this programme implies very far-reaching consequences for, and demands on, linguistics is well-known and does not have to be elaborated here; a title such as *The Generative Enterprise* (Chomsky 1982) is characteristic of the self-assessment of quite a few generative grammarians. For Stegmüller (1979) this promise is an important reason for his decision to regard generative grammar as a new paradigm in linguistics. But again also with explanatory adequacy we find such a confirmation of a paradigm dubious and ambiguous: Is explanatory adequacy a promise or an empty speculation? The fact of a controversy on this question can again itself be taken as a confirmation or as a refutation of the assumption of a paradigm.

#### 4. On the decidability of paradigms

The fact that there are controversies on the historical positioning of generative grammar is nothing particularly new to state; nor is that there are difficulties in applying Kuhn's concept of a paradigm to linguistics. What remains to be examined, however, is in how far existing positions and arguments concerning the status of generative grammar differ from the stance taken here.

Two types of arguments against the applicability of Kuhn's concepts to

linguistics will be examined, trying to avoid delivering a mere further piece of exegesis of Kuhn's book. The first type of argument is concerned with scientific ethics. Percival is afraid that "some linguists might feel impelled to give premature assent to any novel theory which they observed gaining wide support, for fear of ending up as isolated adherents of a discarded paradigm" (Percival 1976 : 292). This is a version of the above-mentioned self-fulfilling-prophecy-view. The danger mentioned by Percival, however, has seemed to exist already without any knowledge of Kuhn, and if such tendencies should be increased by knowing Kuhn, this would rather be an argument for his analysis. The aims of a historiography of science do not have to be or even must not be committed to ethical considerations within the sciences described. The second type of argument principally denies the applicability of the concept of paradigm in linguistics. There are several backings for this argument, only one of which will be discussed here. This backing refers to insufficiencies of Kuhn's theory, particularly to the fact that he does not list sufficient criteria for the existence of paradigms. Percival states that Kuhn does not give the hint of a solution how to distinguish between a new paradigm and a variant of an old one (cf. Percival 1976 : 290f.) and Kohrt states disapprovingly: "... the use of the term 'paradigm' as an analytic category is properly speaking impossible" (Kohrt 1976 : 151). This may well be true, but it also means asking too much of Kuhn. The Kuhnian concepts of paradigm and revolution are historical ones. One cannot expect them to provide an algorithm to categorize past or future events. That implies, of course, that there will always be difficulties of the kinds mentioned here when trying to apply these concepts. These difficulties in the historical evaluation will be the greater, the nearer the phenomena in question are to our present time, as it is certainly the case with generative grammar.

#### 5. Conclusion

The central aims of this essay were 1) to give a survey of Kuhn's fundamental hypotheses; 2) to give a survey of positionings of generative grammar in its historical and theoretical aspects, especially with regard to an explicit application of Kuhn's concept of paradigm; 3) to evince the considerable difficulties in giving a systematic and historical evaluation of generative grammar; 4) to emphasize Kuhn's position as a historian rather than a philosopher of science.

Thus, as a result of this investigation we have to state that we do not know which historical distance is necessary to overcome the said difficulties in applying Kuhn's concepts to linguistics; we do not even know if growing historical distance will make a consensus on the applicability more probable. It seems that a decision on the title question of this essay depends on a decision on the question in how far Kuhn's concepts themselves form a paradigm for the histo-

riography of science. It would be not appropriate, therefore, to deny the possibility of being a new linguistic paradigm to generative grammar on principle, but it would neither be appropriate to claim that a well-founded historical answer is possible at present; it is not.

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