THE DIMENSIONAL MODEL OF LANGUAGE UNIVERSALS

1. Introduction

It gives me great pleasure to inaugurate this new journal. The title, FUNCTION, is new—at least in the linguistic literature—and yet the notion of function is at the very heart of linguistics and of the sciences of man altogether. It encompasses two further central notions, viz, invariance and variation, which are in mutual complementary relationship: invariance is conceivable only where there is variation, and vice versa. Function encompasses the invariance/variation complex in a twofold manner: 'function' as denoting a certain class of expressions in a logical model of grammar, and 'function' used in a teleonomic analysis of the functioning of natural language. The relationship between invariant and variation, as described in the Dimensional Model, can be represented in the first sense of function, viz. as

$$f(a) = x$$

where f, the function, is the invariant, and a, the argument, is variable, and x, the value of the function, changes with the choice of the argument. E.g. if f is POSSESSION, and a is CASE MARKING, then x is a possessive case. Function in the second, the teleonomic sense is the relationship between a concept and the invariant/variation complex. E.g. if the concept is "appurtenance", and the invariant/variation complex is POSSESSION, then the relation is teleonomic and consists in the purpose of representing "appurtenance" in language (see below, Fig. 1).

In this paper I want to point out a few characteristics of a model of language universals research and typology as proposed by this writer and the UNITYP research group at the University of Cologne. The pivotal notions of the model are, in fact, those of function, invariance, and variation. Actually, a complete characterization would be quite beyond the scope of a relatively short paper. The reader must be referred to the extensive body of publications produced thus far by the UNITYP

research group.[1] The main publication organs are:

akup (= *Arbeiten des Kölner Universalienprojekts*). Edited by Hansjakob Seiler. Cologne: Institut für Sprachwissenschaft. 61 numbers published thus far.

LUS (= *Language Universals Series*). Edited by Hansjakob Seiler. Tübingen: Gunter Narr Verlag. 5 volumes published.

Continuum. Schriftenreihe zur Linguistik. Edited by Hansjakob Seiler. Tübingen: Gunter Narr Verlag. 4 volumes published.

An updated bibliography of UNITYP papers and publications till June 1983 is presented in Seiler, Brettschneider (eds.) 1985: 63ff.

I shall now first present the dimensional model in an overview. After that I shall comment on what the model does with a particular dimension—that of DETERMINATION. Then, I shall conclude with a renewed appraisal of the relation between function and the invariants/variation complex.

2. Overview of the model

I take it to be of primary importance that one states one's goals: Why should we engage in language universals research and typology? What do we want to explain? It is a fact that, although languages differ significantly and considerably indeed, no one would deny that they have something in common: How else could they be labelled 'language'? — There is obviously unity among them, no matter how vaguely felt and for what reasons: scientific, practical, moral, etc. Neither diversity nor unity is what we want to explain. We consider both as given. What we want to explain are such facts as the comparability of languages, the translatability from one language to another, the learnability of any language, language change—all of which presuppose that speakers intuitively find their way from diversity to unity, and back again to diversity—and this is a highly salient property that deserves to be brought into our consciousness. Generally then, our basic goal is to explain the way in which

language-specific facts are connected with a unitarian concept of language—"die Sprache"—"le langage".

The foremost notion here is that of a process, as against the conception of languages as a "formal" or "abstract object"—as some transformationalists would have it—in short, a thing. Let us exemplify this with translation, where the processual nature is, perhaps, most immediately evident. We know the input and the output. But what goes on in between? Here is a sequence of increasingly complex models of representing the process.

Model 1: A child, five years old, in a series of experiments carried out by former co-workers of J. Piaget, where children between four and nine years of age were asked to explain the role of a translator and the associated process (Sinclair et al. 1985:50ff.). What the child said, amounts to this: A translator is someone who teaches. He has to teach each of the monolingual participants of a conversation the language of the other; after that they can understand each other. Little is spelled out here about the process of conversion from one language into another.

Model 2: An old Greek peasant with whom I chatted—in Modern Greek—while travelling by train from Pyrgos to Olympia. I had told him that I was a Swiss, and that I was teaching in Germany. At the end he remarked: "I am glad that for the first time I have managed to speak German." — A shortcut model, so to speak, comparable to the one behind the miracle of Penticost: "... for everyone heard them talking in his own tongue" (Acta Apostolorum, Chapter 2).

Model 3: The layman's view. The translator selects words and constructions of the target language in such a way that their meaning will match the meaning of words and constructions of the source language. This leaves the most important part of the process in the dark: Not only are the shapes of the words in languages different, their meanings don't match either. To achieve even an approximate matching nevertheless, we need a basis of comparison, a tertium comparationis.

Model 4: Some semanticists. The tertium comparationis is that which is to be expressed in language, independently of any particular language—i.e. the conceptual-cognitive content, "das Gemeinte". The translator goes from the sound sequences and meanings of the source language first to a conceptual-cognitive content *X* of the basis of comparison and from there to the sound sequences and meanings of the target language. Here too, important aspects remain in the dark: If it is true that the meanings of the forms in different languages don't match, how do we know that they can nevertheless be correlated with a common content? The postulation of a further intermediate level seems unavoidable: The level of invariants.

Model 5: UNITYP. This is a model not only for translation, but for universals and typology as well.

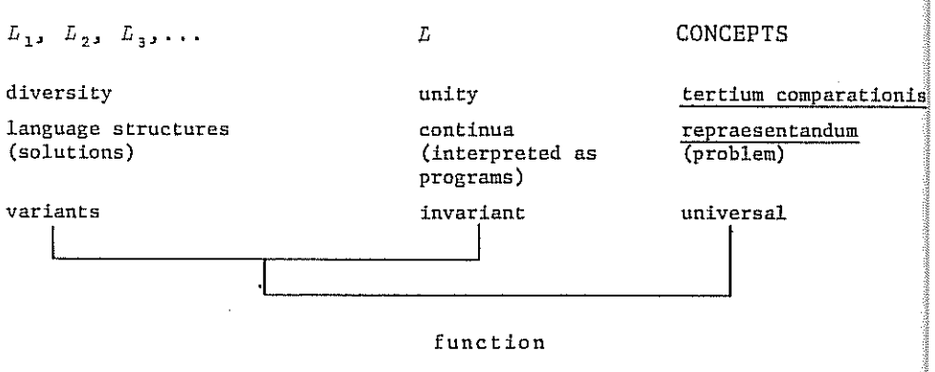

Fig. 1

It visualizes the ways in which language-specific facts are related to the invariant and to the universal. L_1, L_2, L_3,... symbolize the data of different individual languages, whereas L stands for the unitarian concept of language. The reconstruction of this relationship is carried out under two different aspects, one deductive, the other inductive. Under the deductive aspect we posit cognitive-conceptual entities as tertia comparationis. Every grammarian does that. For example, when he assembles and interprets language data pertaining to determination, i.e. a relation between a determinans and a determinatum, he must have

some idea of what this relationship is about—cognitively and conceptually. This means that he presupposes a concept of determination. Inasmuch as he applies such a concept to the study of any language, it is precisely the **concept** that may be said to have a truly **universal** status. The concepts should not be confused with the meanings of particular linguistic structures. The latter, as we know, differ from one language to another, no matter how much they may have in common in particular instances. But difference and sameness must be judged on the basis of one common ground—the tertium comparationis.

The inductive aspect of our research concerns the ordering of data assembled under a common concept. Here, we make generalizations regarding their form and their meaning, and we try to bring them into an order according to sameness and difference. The construct of a continuum with the notions of negatively correlated gradiences is our most important tool in this task. Once the **continuum** is established, we can then extract a common functional denominator representing the **invariant**, while the positions on the continuum are the corresponding **variants**. Thus, the invariant has an epistemological status which is different from that of the universal: The latter belongs to deduction and apriorism, the former to induction. But the invariant is the authority that avails itself to be directly compared with the universal.

Now, as pointed out in the introduction, the notion of function as conceived of in this model, is of a Janus-like character: Under the aprioristic, the deductive view it represents the purpose to be fulfilled, or the problem to be solved—while the diversified structures which we find in the diversified languages represent the corresponding solutions. Under the inductive aspect it represents the invariance/variation complex as related to a common cognitive concept.

The chart in Fig. 1 symbolizes a goal-directed process. The CONCEPTS are not only the tertium comparationis but also the repraesentandum or exprimendum, i.e. that which is to be represented or expressed by means of language. This representation is not a matter of course but a constant problem to be solved

by the speaker and listener. The initial stage of the problem solving process are the repraesentanda, the final stage, the output, the result, are the various linguistic structures in the different languages—in the case of our examples: the structures pertaining to determination. Our major task then consists in showing how these variants relate to an invariant, and how such an invariant matches the presupposed conceptualization. The principal claims which we make consist in saying 1. that the data pertaining to one particular conceptual repraesentandum can be ordered in continua according to two complementary functional principles, 2. that these constitute the invariant, 3. that the invariant matches the universal, and 4. that continua represent the programs followed by the language users in finding their way from diversity to unity.

The UNITYP model is significantly distinct from most of the current language universals research in that we seek the invariant and the universal—that which all languages have in common—not in a certain selected property or set of properties present in all languages, but rather in the path-ways that speakers and listeners follow, in the programs. In simple words: The speaker-listener of all languages use ultimately one and the same program. If we succeed in bringing this to consciousness, it would have far-reaching consequences for such disciplines as computer science, etc.

3. *The dimension of DETERMINATION*

It belongs to our earlier research, and some of the published statements need further elaboration. I have nevertheless chosen it because it is relatively straightforward and the facts are fairly well known.

At the beginning is the insight that there is a presupposed concept—however vague—of a relation between determinans and determinatum. There is an intuition that this may have something to do with the purpose of narrowing down the range of intended objects. "Red apples" are certain determined apples, and "these apples" are certain determined apples too. We have a feeling

both of sameness and of difference, and in linguistic terminology this state of affairs is also reflected: Determination can be taken in a wider sense—as is mostly the case in the European tradition—where it covers any kind of modification of a nominal; or it can be taken in a narrower sense—mostly in the American tradition—where it refers to the identification of reference with predominantly grammatical means (by a determiner such as an article or a demonstrative). In our dimensional model we consider the maximum range in accordance with the unitary concept from which we started, and we find that the regularities of the continuum are apt to account both for samenesses and for differences. In fact, the borderline between determination in the wider and in the narrower sense coincides fairly well with the location of the turning point which we postulated for several independent reasons.

In my 1978 paper on determination I have concentrated on the noun phrase in Modern Standard German, with some observations on interlanguage comparison, and I have broadened the scope to practically include all possible "items" that may appear within a noun phrase (Seiler 1978:307ff.). The admittedly artificial example was

(1) *All* $\underbrace{\textit{diese meine}}_{\textit{die}}$ *erwähnten zehn schönen roten hölzernen Kugeln Karls auf dem Tisch, die ich dir jetzt gebe, ein Geschenk.*

'All $\underbrace{\text{these my}}_{\text{the}}$ afore-mentioned ten pretty red wooden balls of Charles' on the table, which I am now giving to you, a gift.'

Note that for determining the relative orderings it is, of course, not necessary that all "items" appear together in the same NP. Note furthermore that only nested constructions were considered: If we symbolize and number the prenominal (or the postnominal) "items" starting from the head noun (HN) *Kugeln* 'balls' as D_1, D_2,..., etc., then D_1 pertains to HN, D_2 to the

complex of HN + D_1, D_3 to the complex of HN + D_1 + D_2, etc. The normal order as it appears in (1) I have charted as follows:[2]

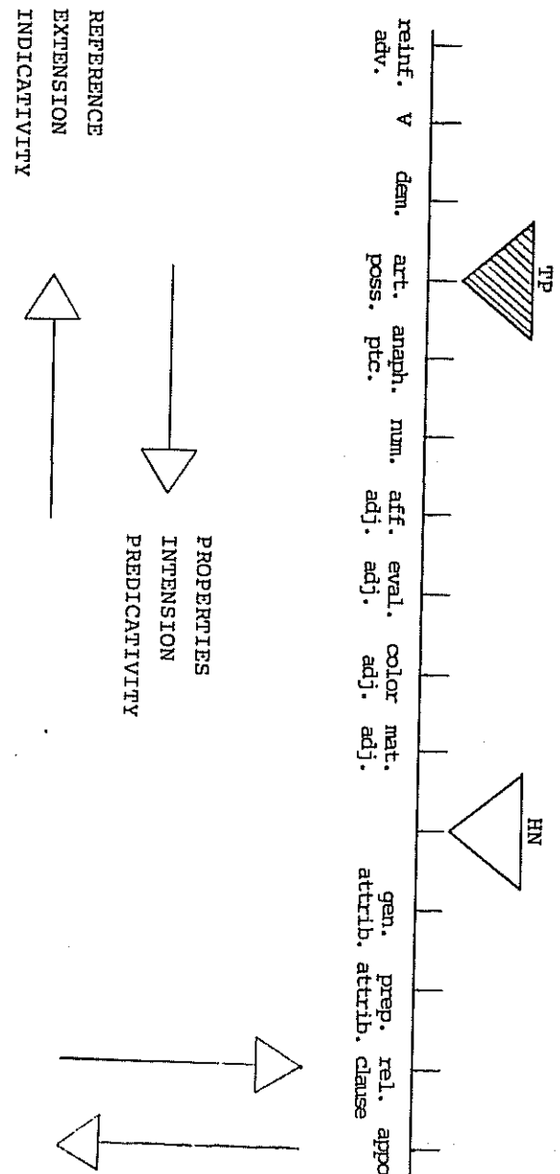

Fig. 2

On the basis of experimenting with varying orderings and by taking markedness into account I have proposed the following two regularities (R_1 having two parts):

(R_1)(i) The range of head nouns for which a 'determiner' *D* is potentially applicable increases with the positional distance of that 'determiner' from the head noun HN.

(ii) The potential of a 'determiner' *D* for singling out the object referred to by HN increases proportionally with the positional distance of *D* from HN.

(R_2) 'Determiners' indicate properties pertaining to the concept represented by the head noun. The degree of naturalness of such pertaining decreases proportionally with the distance of *D* from HN.

For a detailed justification of the gradient, continuous character of R_1 and R_2 the reader must be referred to my earlier publication (Seiler 1978:307ff.). The peculiarity of this dimension that makes it appear somewhat different from the other dimensions which we studied consists in the fact that the determiner classes corresponding to the different positions may appear <u>in praesentia</u>, i.e. in one and the same syntagm along with one head noun or <u>determinatum</u>. The ordering of the data pertaining to DETERMINATION is thus iconically reflected in the sequential ordering of determiners with regard to a given head noun. As the chart indicates, R_1 corresponds to the principle of extension. This principle narrows down the reference of the object denoted by HN. It does so by pointing or deixis, where the category of demonstratives is the prototypical instance. R_2 corresponds to the principle of intension. It narrows down the content denoted by HN. It does so by stating its qualities, thus by predicating. These regularities and correlated principles were first extracted from word order constraints in the prenominal domain. The postnominal "items" do show the same principles, although their manifestation is less by means of an ordering with regard to HN than by morphosyntactic evidence within each of these categories: It is the

contrast that appears, e.g. within relative clauses, between restrictive and non-restrictive ones. This is symbolized by the two converse vertical arrows, in contradistinction to the two horizontal ones in the prenominal domain, which reflect word order regularities. To the extent that it can be shown that all "items" in the schema participate in the same two converse regularities, we may be entitled to subsume them under a common term: Determination. The entire domain where the two converse principles corresponding to R_1 and R_2 hold, we call a **dimension**: the dimension of DETERMINATION. In a first approximation we may define nominal determination as follows:

(Def) Determination is a relation between a determinatum and one or more determinantia. The relation serves the purpose of narrowing down the range of possible designations of objects. The narrowing down is effected according to two converse principles: that of indicativity (extension, reference) and that of predicativity (intension, properties). Both principles are co-present in every relevant structure, but with varying degrees of dominance. The structures represent different options of narrowing down the range of objects and can be ordered in a continuum, called a dimension, according to the two inversely correlated gradients of dominance.

Note that nothing is specified about any particular means of expression. In languages like English and German, word order is a very conspicuous device, but it is neither the only available means—especially considering the postnominal sector of the continuum—nor is it the device preferred by all languages. Note furthermore that nothing is specified about any particular categories involved. Of course, we will need categories for our descriptions; but categories are subject to variation and must be understood within the framework of the continuum, not inversely: the continuum within the framework of categorization.

Categorization and continuity do not exclude, but rather condition each other in our description. Fig. 2 shows a major incision point constituted by the position of the HN. Post-nominal

structures differ from pre-nominal ones by the fact that they all contain an additional N and are thus more complex. This in turn may lead to the hypothesis that they may assume other functions beside that of determination. In the pre-nominal sector of the continuum I have located a turning point indicated as TP on the chart. This is a "catastrophe point" (see R. Thom 1978), where several structural properties change. Note that this is not in contradiction with the continuity of the two gradients, which goes on before and after the TP. The differences are mainly these:

1. Determiners to the right of TP admit positional variation, whereas those to the left cannot be permuted.
2. Positions to the right of TP may be relativized, i.e. they may be transformed into a predication, whereas this is not possible with positions to the left.

Intensionality and extensionality are the particular manifestations in this dimension of a still more general complementarity, viz. that between **indicativity** and **predicativity**. Thus we can say that the relation of DETERMINATION is linguistically represented either by pointing it out—deictically—or by qualifying and characterizing it—predicatively. Accordingly, deictic determiners such as demonstrative and possessive pronouns are at one end of the continuum, and relative clauses and appositions at the other. Now, a principal claim is that the intermediate positions show gradience in inverse proportion of the two functional principles: An increase in extensionality/indicativity is correlated with a decrease in intensionality/predicativity, and vice versa. The gist of the argument is that both functional principles are co-present in all structures pertaining to DETERMINATION: This superposition is what constitutes the invariant. The corresponding variation is constrained by the regularities R_1 and R_2.

The regularities studied thus far are manifested by word order. For English they are almost the same as for German. For many languages we find similar, or analogous, orderings, as has been shown in a number of studies that were prompted by my earlier

publication on the subject.

However, basically the same variation on the theme of determination with the same invariant and basically the same categorial positions involved can be represented by linguistic means which, at first sight, have nothing to do with word order. This is the lesson which we learn from the so-called bondedness hierarchy which W.A. Foley established for the Philippine languages (Foley 1980:171ff.). Here, the appearance of a ligature of linking element between a determinans and a determinatum is distributed among these languages in such a way that with relative clauses the linker is obligatory everywhere, whereas with articles and deictics it is obligatory only in Tagalog and Palauan; and the distribution with regard to the intermediate determiner classes clearly shows gradience. As Foley rightly pointed out, the underlying principle is that of bondedness, i.e. of the varying strength of the tie or cohesion between the different kinds of determiners and the head noun: The cohesion is strongest with predominantly referential/extensional determiners such as ART and DEICT; it is so to speak inherent in them. This is why they can easily do without a special linking element. Now this same argument can be used to explain why, in the word order type of representing the relation of determination, referential/extensional determiners are farthest removed from the head noun in the great majority of languages: the cohesion is strong enough. On the contrary, with the predicative/intensional determiners the cohesion is weaker. This is why they are closest to the head noun, with which they form a **semantic** unity. Actually this is a case of Behagel's law.

A further lesson which we learn from widening our perspective to inter-language comparison is that the two converse gradients are concerned with different operational subsystems of language behavior: Intensionality/predicativity is represented by semanto-syntactic phenomena. Extensionality has to do with reference to the speaker and the speech act and related phenomena that can be subsumed under the term of pragmatics. The gradients point out directionalities and a dynamism of two forces "pulling" in opposite directions. This in turn has the far-reaching implication

that the continua are the locus of language change. Thus, we observe that whenever a language develops a definite article, it nearly always originates from demonstrative pronouns (Romance, Germanic, Greek); and on the continuum of the dimension the two are in adjacent positions. This is a shift to greater predicativity and lesser indicativity. On the other hand, indefinite articles tend to develop from the numeral 'one'; and again, numeral and article are found in adjacent positions on the dimension. This, then, is a shift to greater indicativity and lesser predicativity. For synchronic-systematic reasons we claimed that the article is at the turning point of the two gradients. This is supported by the fact that articles are generally an unstable category that varies a great deal both in its formation and in its use.

We are still a long way from having established the interlanguage dimension of DETERMINATION that would cover all languages. Ideally this would have to be done by superposition of the intralanguage dimensions—and it has in fact been achieved for other dimensions such as APPREHENSION (the representation of things) (Seiler, Lehmann, eds., 1982; Seiler, Stachowiak, eds. 1982; Seiler 1986), POSSESSION (Seiler 1983) and PARTICIPATION (the relation between a process or state and its participants) (Seiler, Brettschneider, eds., in preparation). As with all these, the dimension of DETERMINATION would ultimately assume the following graphic representation:

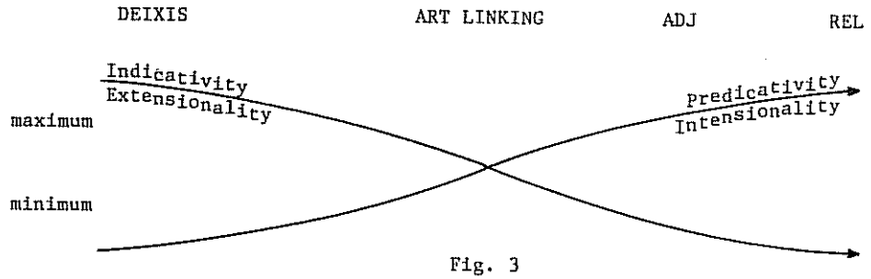

Fig. 3

Here it is important to keep in mind that the fillers of the positions are not separate categories such as 'the demonstrative' 'the adjective', but continua again, thus subcontinua, or rather: clusters of subcontinua. Within these, a particular morphosyntac-

tic category acts as the prototypical instance of that subcontinuum, such as the demonstrative pronoun for the subcontinuum of DEIXIS. The different kinds of adjectives found in the serialisation rules of German would also have to be relegated into a subcontinuum; and likewise the variation in nominal vs. pronominal inflection of the pronominal adjectives—a subcontinuum that was claimed for Sanskrit (Kölver & Kölver 1980). As the latter case quite clearly shows, the same two complementary principles valid throughout the dimension are also valid in the subcontinuum.

4. Invariance and variation

Let us now return again to this basic problem. In the quest for the essence of this relationship the focus has mainly been on a thing-like entity such as a particular word, or category, with its various meanings. The UNITYP model, in contradistinction, claims to subsume linguistic structures differing widely, both in form and in meaning, as variants of one and the same invariant. This necessitates a new orientation and a shift of focus from the basically static view on the particular morpho-syntactic category or relation to the dynamic aspects of the interrelation of morpho-syntactically different structures in a model of goal-oriented language behavior. Dynamics in synchrony was one of Roman Jakobson's most cherished ideas, and so was its corollary, the convertibility of synchronic and diachronic dynamics.

The price which we have to pay for this widening of our scope from categorial to operational invariance consists in greater complexity of the apparatus of criteria for making our claims accessible to testing and to eventual falsification. It will no longer suffice to use a categorial base as criteria and ask whether, given such and such initial conditions, a particular category or syntactic relation appears or does not appear in the data. Instead, we need a set of criteria that can be shown to cluster under a common denominator for each of the two complementary functional principles. For all the dimensions which we studied, it turned out that indicativity vs. predicativity are the two basic complementary functional principles, and it can

now be hypothesized that these are the constituents of invariance in language throughout. The clustering of criteria under each principle can be visualized as follows (Seiler 1986:3ff.):

Indicativity	Predicativity
more cohesion	less cohesion
more grammaticalized	less grammaticalized
less regular	more regular
less information	more information
lexical	syntactic
more open to pragmatics	less open to pragmatics
instant recognition	step-by-step recognition

Turning point
neutralization
instability
catastrophe

Fig. 4

What these criteria establish are two converse rankings—not taxonomic rankings based on purely quantitative considerations, but rather qualitative ones that bear resemblance to a preference theory. Instead of norms, the continua reflect options to be chosen by the language user; and instead of gradience alone, the continuum reflects implicational hierarchy; and instead of one hierarchy in a gradient leading from somewhere to nowhere, it reflects two converse hierarchies. It appears that the price of increased complexity of the model is worth paying, since we get powerful constraints and an explanatory potential that is promising.

The model includes a basic premise which I explicitly stated at the beginning and which I should like to recall at the end of this address: Cognitive-conceptual entities represent the initial stage of the problem-solving process that is at the basis of language behavior. Knowledge of these concepts is assumed and presupposed, albeit it is very imperfect and vague knowledge. On the other hand, the invariants which we reconstruct give us a clearer insight into the feature composition of the concept. As for determination, we learn that it is a relation where the de-

terminans narrows down the range of the determinatum extensionally and intensionally with varying dominance.

Clearly, there is a certain amount of circularity involved. In current linguistic methodology it seems that circles are considered vicious per se. I think, on the contrary, that a circle is a model of great aesthetic beauty, and, above all, a model for a kind of movement, not a rigid thing. And, when seen under the movement aspect, it appears that you can enter a circle. In literary science it is called a hermeneutic circle. I think it is valid for the study of language as well. In the course of our research we never start from absolute zero. Rather, we make premises and on this basis uncover regularities which in nuce are already contained in the premises. This has essentially to do with the fact that language is at the same time the object and the medium of our description, and that man is both the subject and the object in his quest for the essence of language.

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FOOTNOTES

UNITYP abbreviates the descriptive title of that group and stands for "Sprachliche Universalienforschung und Typologie mit besonderer Berücksichtigung funktionaler Aspekte" (= Language Universals Research and Typology with special consideration of functional aspects). The group has its center at the Institut für Sprachwissenschaft of the University of Cologne. It is funded by the Deutsche Forschungsgemeinschaft, which is hereby gratefully acknowledged.

See the more up-to-date version in Seiler 1985:435-448.

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N.B. No existiendo información suficiente en español sobre el proyecto UNITYP que el Prof. Seiler acaba de presentar en este artículo, añadimos a continuación un esbozo histórico de su origen y desarrollo, acompañado de una bibliografía completa de los trabajos publicados bajo su signo. [Los editores.]