

Chapter 35

Philosophy of linguistics

Esa Itkonen

1. Introduction

A. Purpose

Katz (1985) is a decent attempt to establish philosophy of linguistics as a field of its own. It seems eminently reasonable that this field should be “conceived as a branch of philosophy parallel to the philosophy of mathematics, the philosophy of logic, and the philosophy of physics” (p. 1). What is less recommendable, however, is the openly expressed wish to single out those issues that might be of interest to philosophers at large. There is no need to convince any particular part of the general audience that philosophy of linguistics is valuable. Just like the philosophy of any other academic discipline, it possesses an intrinsic value.

B. Definition

The philosophy of linguistics is indistinguishable from the methodology of linguistics. Linguistics is not, however, a monolithic whole, but comprises several subdisciplines, which may overlap to a higher or lower degree: grammatical theory, typology, diachronic linguistics, sociolinguistics, psycholinguistics, and so on. The methodology of each of these subdisciplines has an equal right to be taken into account. To be sure, the greatest amount of philosophical reflection has been devoted to grammatical theory.

Philosophy of linguistics must not be confused with philosophy of language, as expounded e.g. in Blackburn (1984). The two overlap in semantics. To philosophy of linguistics, however, phonology is just as important as semantics, whereas philosophy of language (as this term is currently used) has no interest in phonology. Moreover, if in the domain of philosophy an analogue has to be found for philosophy of linguistics, it is not philosophy of language but philosophy of philosophy, or metaphilosophy (cf. Pap 1958, Cohen 1986, Wedgwood 2007).

C. A question of authorship

It goes without saying that history of linguistics concentrates on the leading representatives of each period. Thus, to put it bluntly, the history of linguistics deals with the **best** linguists. (This entails that any purportedly value-free approach is doomed to failure.) It may seem self-evident that these very same personages will reappear in the history (or, rather, historiography) of the philosophy of linguistics. But this cannot be quite right. ‘Philosophy of subject matter X’ presupposes methodological self-awareness of what it means to study X and, in the historical context, some written record of this self-awareness. This means that the best linguists need not be the best philosophers of linguistics, for two reasons. First, one may have left no written record of one’s methodology. Second, even where some record exists, it is not unusual for one to be a good linguist but a bad philosopher of linguistics.

It follows that in that type of history that will be dealt with below, the authorship of ideas is less clear-cut than in the history of linguistics. The ‘philosophy of person Y’ may have been formulated by Y him-/herself; or it may have been extracted from his/her writings by somebody else.

D. Choosing the focus

There have been significant linguistic traditions outside of the West, especially in India and in Arabia (understood as a cultural rather than geographical area). For reasons of space, these other traditions will not be treated here in their own right, but some of their contributions will be briefly mentioned in a proper context. For some 2000 years, synchronic grammatical analysis constituted the sole type of linguistic inquiry in the West. Other linguistic subdisciplines, although just as important methodologically, will therefore be treated more succinctly or not at all.

E. First beginnings

For a long time, the three traditions mentioned above have been monolingual, which means that they have not been brought into existence by awareness of cross-linguistic differences (cf. Auroux 1989: 25–26). Rather, the original motivation for linguistic inquiry has been **exegesis** of some canonical text, even if grammar-writing later established itself as an independent form of research (cf. van Bekkum et al. 1997: 287). It seems natural to think that the same hermeneutical interest may continue to imbue even the modern-day linguistics to some extent. To be sure, in the West another impetus for linguistic inquiry came from general philosophy (see below).

The invention of writing has often been cited as the principal facilitating factor that enabled linguistics to come into being. This view, inspired by Goody (1977), certainly sounds plausible, but it overlooks some important facts. Pāṇini composed his grammar of Sanskrit around 400 BC, but there are no written records of either Sanskrit or its descendant Prakrit before the edicts of the emperor Asoka (c. 250 BC). By comparison, the (Harappan) language of the Indus valley civilization (c. 2200–1800 BC) has been preserved in numerous (albeit brief) documents carved on stone, metal, or bone. “It is unheard of that any people having a script never use it on hard materials” (Masica 1991: 134). It follows that Pāṇini had no written medium at his disposal, a view confirmed by a visiting Greek who flatly stated c. 280 that the Indians have no knowledge of written letters (*op. cit.*, p. 135).

It is customary to claim that Pāṇini could not have achieved his grammar without the aid of writing, but this is just another instance of Eurocentrism. “Inference of the existence of writing from the feats of textual preservation and analysis accomplished by the ancient Aryans does an injustice to the remarkable mnemonic powers developed by them” (*ibidem*). Some of the mnemonic techniques are discussed in Rubin (1995). The over-emphasis put on **literacy** tends to conceal what the human mind is capable of (cf. Itkonen 1991: 13–14).

2. Antiquity

In his dialogue *Cratylus* Plato (428–348 BC) raises the question concerning the nature of language: does it exist *nomōi* or *phusei*? These are dative forms of *nomos* and *phusis*, respectively. The former means ‘law’ and ‘convention’ while the latter means ‘nature’ in the sense of ‘essence’. If language exists *nomōi*, it is conventional or arbitrary. If it exists *phusei*, it is an **instrument** that has been devised by a mythical or imaginary ‘name-giver’ (*onomathetēs* or *nomothetēs*) so as to reveal the essence of its referent; and this it can do insofar as it is a **picture** of the latter.

The actual examples that are marshalled to support the *phusei* view are rather unconvincing, as Plato (or his mouthpiece Socrates) is himself willing to admit. Still, he claims that this is what language would be like in an ideal world: “For I believe that if we could always, or almost always, use likenesses, which are perfectly appropriate, this would be the most perfect state of language, as the opposite is the most imperfect” (435C).

Here the central question is whether or not there is something like ‘correctness of of names’ (*orthotēs onomatōn*). It may be of some interest to note that the same question lies at the heart of the most influential philosophical doctrine in China, namely that of Confucius:

whether or not it is possible to (re-)establish the situation consonant with *cheng ming*, generally translated as ‘rectification of names’ (cf. Fung Yu-lan 1952: 60).

In his dialogue *Sophist* Plato formulates the first rudiments of sentence analysis. He notes that (correct) statements are not just strings of words like **Walks runs sleeps* or **Lion stag horse*. Rather, when one is uttering a (correct) statement of the “simplest and shortest possible kind” like *A man understands*, one is “putting a thing together with an action by means of a name and a verb” (*suntheis prāgma prāxei di’ onomatos kai rhēmatos*). As a consequence, “just as some things fit together, some do not, so with the signs of speech; some do not fit, but those that do fit make a statement” (262D–E).

Aristotle (384–322 BC) does not investigate language for its own sake but rather as part of his logic, rhetoric, or poetics. Here the emphasis will be placed on the connection with logic.

Aristotle identifies logic with syllogistic. A syllogism is an **inference** with two premises and one conclusion. The premises and the conclusions are **sentences** with the core structure *X is Y* (cf. below). Both X and Y express (lexical) meanings ultimately definable in terms of ten **categories**. Thus, preliminary to his logic proper, expounded in *Analytica Priora* (to use the Latin name), Aristotle had to write the books on categories (= *Categoriae*) and sentences (= *De Interpretatione*). As documented by Arens (1984), the two or three opening pages of the latter book have had a lasting influence on the Western linguistic tradition.

The following three relations of signification are stated to exist: written language (*grammata*) → spoken language (*phōnai*) → mental experiences (*pathēmata* or *noēmata*) → things (*prāgmata*). The link between language and mental experiences is conventional (*kata sunthēkēn*, synonymous with *nomōi*). By contrast, mental experiences are pictures (*homoiomata*) of things, which means that the two must be linked by a *phusei*-type connection. Unlike the linguistic expressions, the mental experiences and the things are common to the mankind. Even if the reality (as constituted by things) is always conceptualized or ‘mind-penetrated’, mind and reality must nevertheless be postulated as two distinct realms. There has to be mind because there clearly are some mental experiences with no extramental counterparts. But there also has to be reality: “that the substrata which cause the sensation should not exist even apart from sensation is impossible” (*Metaphysica* 1010b, 30).

There are different types of sentences, of which statements, i.e. those admitting of truth or falsity, are singled out as those needed in syllogistic. A statement has a subject (*onoma*, also ‘noun’) and a predicate (*rhēma*, also ‘verb’); as we have seen, these terms were already used

by Plato. A statement is given both a semantic and an ‘actionist’ interpretation: The subject both signifies a substance and is that about which the predicate asserts something. The predicate is thought to contain an either implicit or explicit copula, which means that all statements are reduced to the canonical form *X is (not) Y* required by syllogistic. This entails that all types of predicates must, rather unnaturally, be reinterpreted as one-place predicates: e.g. *Socrates loves Plato* → *Socrates is Plato-loving*, *Socrates gives books to Plato* → *Socrates is books-to-Plato-giving*. The copula has no lexical meaning but only a grammatical meaning: it does not signify (*sēmainein*) but only consignifies (*prossēmainein*). An affirmative statement combines the meanings of X and Y, while a negative statement separates them.

As explained in more detail by Kneale and Kneale (1962: II, 5–6), syllogistic deals with four distinct types of sentences, traditionally designated by the following letters:

A = Every S is P

E = No S is P

I = Some S is P

O = Some S is not P

These are the ‘general’ sentence-types, of which A and E qualify as ‘universal’ while I and O qualify as ‘particular’. A and O, on the one hand, and E and I, on the other, are contradictories while A and E are contraries. E and I are ‘convertible’: *No S is P = No P is S* and *Some S is P = Some P is S*. S and P can be understood as standing for ‘subject’ and ‘predicate’, respectively. This choice of letters anticipates the conclusion of the syllogism, which has the form S – P. In addition to the conclusion, a syllogism contains two premises such that one states a relation between S and a ‘middle term’ M and the other states a relation between M and P.

This issue is slightly complicated by a discrepancy between Aristotle’s original formulations and their modern translations. In general, Aristotle uses a schema of the following type: “If P is predicated of every M and M is predicated of every S, then it is necessary that P should be predicated of every S.” This particular schema may be exemplified by the following syllogism:

‘Patriot’ is predicated of every maniac

‘Maniac’ is predicated of every soldier

The syllogism given above is an instance of figure 1). Moreover, each line of a syllogism must exemplify one of the four alternatives A, E, I, and O. A given constellation of these alternatives is called a ‘mood’. For instance, our example has the mood AAA (with the traditional label *Barbara*); hence, its figure and mood label is 1-AAA or SAM and MAP and SAP. Each figure contains $4 \times 4 \times 4 = 64$ possible moods. Because there are 4 figures, there are 256 possible moods in all. Originally, Aristotle recognized only 14 moods that are valid in the sense that it is necessarily the case that, if the premises are true, the conclusion is true (Kneale and Kneale 1962: 72–73). Valid conclusions of the form P – S are also possible, but they are not part of the Aristotelian syllogistic.

It is a characteristic of figure 1) that its four valid moods produce, exactly, four conclusions of the A, E, I, and O type. As we just saw, the *Barbara* mood produces an A conclusion. The other three moods are as follows: *If every S is M, and no M is P, then no S is P* (1-AEE, traditionally called *Celarent*); *If some S is M, and every M is P, then some S is P* (1-IAI); *If some S is M, and no M is P, then some S is not P* (1-IEO). Aristotle regarded only these valid moods of figure 1) as “perfect” or intuitively self-evident. The validity of moods in other figures may indeed be quite difficult to grasp, for instance: *If some S is M, and no P is M, then some S is not P* (2-IEO); *If every M is S, and every M is P, then some S is P* (3-AAI); *If some M is S, and no P is M, then some S is not P* (4-IEO) (cf. Johnson-Laird 1983: 102–103).

A syllogism is demonstrated to be valid by being derived from (or reduced to) *Barbara* or *Celarent*. More informally, several generalizations have been stated about the premises of a valid syllogism, for instance: i) If one premise is particular, the conclusion is particular. ii) If both premises are particular, there is no valid conclusion. iii) If both premises are affirmative, the conclusion is affirmative. iv) If one premise is negative, the conclusion is negative. v) If both premises are negative, there is no valid conclusion.

Aristotle’s syllogistic is a logic of classes or, alternatively, of one-place predicates: “That one term should be included in another as in a whole is the same as for the other to be predicated of all of the first” (*Analytic Priora* 24b,25). The main difference vis-à-vis modern formal logic concerns the interpretation of A-sentences. For Aristotle, their truth presupposes the existence of some S, whereas the comparable universal sentence of modern logic, formalized as $\forall x(Sx \rightarrow Px)$, has no such “existential import”. Assuming that there are no ghosts, the sentence *All ghosts are friendly* is false for Aristotle and true for modern logic. It is only the existential import that justifies the validity of a syllogism such as 3-AAI above.

The existential import also justifies the “partial conversion” *Every S is P > Some P is S* (via *Some S is P*).

Aristotle’s authority was pervasive and long-lasting. Writing in 1787, Immanuel Kant still claimed that in logical theory no progress at all has been achieved during 2000 years because Aristotelian syllogistic is “complete and perfect” [*geschlossen und vollendet*]. From today’s perspective, however, this kind of logic seems arbitrary insofar as it lacks its natural foundation, i.e. propositional logic, and ignores the existence of relations. Even as an analysis of its chosen topic, it has been characterized as “unnecessarily complicated and unelegant” (Reichenbach 1947: 206). Yet it has its own justification: “For many centuries all the relations asserted by Aristotle were accepted without much questioning by the thousands who studied his work. It is therefore likely that his work is a faithful reflection of the normal usage for sentences constructed with words like ‘every’ and ‘some’ ” (Kneale and Kneale 1962: 59). Hence, little needs to be changed in the way that Aristotle described negation and quantification in natural language.

Aristotle’s *Metaphysics* contains a ‘Philosophical Lexicon’ where e.g. the following conceptual distinctions are defined: one vs many, same vs different, quantity vs quality, necessary vs possible vs impossible, prior vs posterior, active vs passive, part vs whole. It is not difficult to see that these overlap with **grammatical meanings** that every language of the world has to express in one way or another.

In sum, Allan (2010: 58) seems eminently justified to say of Aristotle that “his legacy is overwhelming”.

After Plato and Aristotle, the Stoics constructed an ambitious theory that was supposed to encompass the entire universe. It has three components: ethics, ‘physics’ (including psychology), and logic. Logic is in turn subdivided into dialectic and rhetoric. Within dialectic it is possible to further distinguish between grammatical analysis and the theory of valid inference. Unlike Aristotle, the Stoics investigated language for its own sake and not just as a precondition for doing logic.

In general, the Western tradition assumes that mental experiences are the **meanings** of linguistic forms, ascribing — rightly or wrongly — this view to Aristotle. The Stoic metaphysics is strongly materialistic in the sense that as many entities as possible (including qualities and relations) are interpreted as being of corporeal nature. It is therefore only the more remarkable that, according to the Stoics, linguistic meanings (*sēmainomena* or *lekta*) are

incorporeal and thus clearly distinct from the corresponding mental experiences (*phantasiai*), which belong to ‘physics’. Of course, linguistic forms (*sēmainonta*) too are part of ‘physics’.

Distinct types of sentences are recognized insofar as they express different speech acts, for instance, statements, questions, and requests. A verb like ‘teaches’ is an incomplete predicate (and an incomplete *lekton*); a verb phrase like ‘teaches Dion’ is a complete predicate but an incomplete *lekton*. A statement like ‘Plato teaches Dion’ is a complete *lekton*. A negation plus a statement forms a statement. Likewise, two statements conjoined form a statement. Because statements qua *lekta* are true or false while this cannot be said of sentence-meanings, it is only as a first approximation that *lekta* have been equated here with meanings. It would be more accurate to say that to a declarative sentence-form there corresponds, as its *lekton*, that which it asserts to be the case.

Both verb and noun morphology have become objects of systematic analysis in the Stoic grammar. It influenced both Varro and Apollonius (see below).

Chrysippus (282–206 BC), the leading Stoic thinker, constructed a propositional logic, which Aristotle had failed to do. He assumed five inference schemas as basic. For simplicity, they will be presented here with the modern notation:

1)	2)	3)	4)	5)
$p \rightarrow q$	$p \rightarrow q$	$\sim(p \wedge q)$	$p \vee q$	$p \vee q$
p	$\sim q$	p	p	$\sim p$
-----	-----	-----	-----	-----
q	$\sim p$	$\sim q$	$\sim q$	q

Here $p \rightarrow q$ = ‘if p , then q ’, $\sim q$ = ‘not- q ’, $p \wedge q$ = ‘ p and q ’. The schemas 1) and 2) are known as Modus Ponens and Modus Tollens, respectively. Taken together, the schemas 4) and 5) show that the disjunction ‘or’ ($= \vee$) is not inclusive, as in modern formal logic, but exclusive: ‘ p or q but not both’. Of course, the inferences 4) and 5) are also valid if the second premise is either q or $\sim q$, with $\sim p$ and p as the respective conclusions. In the schema 3) the negation ($= \sim$) and the conjunction ($= \wedge$) combine to define an inclusive disjunction (‘not- p or not- q or both’). The inference is valid if the second premise is either p or q , with $\sim q$ and $\sim p$ as the respective conclusions. But if the second premise is $\sim p$, neither q nor $\sim q$ follows, because the truth of both is compatible with the truth of the premises; and the same applies, mutatis

mutandis, to $\sim q$ as the second premise. The law of the excluded middle, i.e. $p \vee \sim p$, which is abandoned by some schools of logic, is unquestioningly endorsed by the Stoics.

The five basic or ‘indemonstrable’ schemas are used by Chrysippus and his followers as starting points from which an indefinite number of other valid schemas or sentences could be derived as theorems. (The Stoics were perfectly well aware that inference schemas can be transformed into conditional sentence-schemas, e.g. Modus Ponens into $[(p \rightarrow q) \wedge p] \rightarrow q$.) Thus, what they were trying to do was construct **axiomatic** (propositional) **logic**. On the basis of the extant evidence it is difficult to appreciate the extent to which they actually carried out this program. At least the following theorems were proved (cf. Kneale and Kneale 1962: 165–169).

- (i) If the first, then if the first, then the second; but the first; therefore the second = by two applications of schema 1): $[p \rightarrow (p \rightarrow q)] \wedge p$ yield $(p \rightarrow q)$, and $(p \rightarrow q) \wedge p$ yield q .
- (ii) If the first and the second, then the third; but not the third; on the other hand the first; therefore not the second = by one application of schema 2 and one application of schema 3: $(p \wedge q) \rightarrow r$ and $\sim r$ yield $\sim(p \wedge q)$, and $\sim(p \wedge q)$ and p yield $\sim q$.
- (iii) Either the first or the second or the third; but not the first; and not the second; therefore the third = by two applications of schema 5: $[p \vee r]$ and $\sim p$ yield $(q \vee r)$, and $(q \vee r)$ and $\sim q$ yield r .
- (iv) If the first, then the first; but the first; therefore the first = by one application of the schema 1: $p \rightarrow p$ and p yield p .
- (v) Either the first or not the first; but the first; therefore not not the second = assuming the law of the excluded middle and applying schema 4: $p \vee \sim p$ and p yield $\sim\sim p$.
- (vi) Either the first or not the first; but not not the first; therefore the first = assuming the law of the excluded middle and applying the schema 5: $p \vee \sim p$ and $\sim\sim p$ yield p .

Taken together, theorems (v) and (vi) establish the equivalence $p \equiv \sim\sim p$. Theorem (iv) is important because it shows that the same methods must be applied to prove any non-basic schema, regardless of whether it is felt to be intuitively non-obvious or obvious. This is something that the critics of Stoic logic failed to understand. Apparently also the following theorem was proved: $[(p \rightarrow q) \wedge (p \rightarrow \sim q)] \rightarrow \sim p$. This is the all-important inference schema known as *reductio ad absurdum*, which says that a sentence is false if it contains a contradiction.

Although many aspects of Stoic logic survived in fragmentary comments, the basic insight, i.e. the invention of propositional logic, fell into oblivion. It was rediscovered only in the 20th century, thanks to Łukasiewicz (1935). Thus, it is part of the “hidden history” of the Western thought. While Stoic logic remained without genuine influence, Euclid’s *Elements* provided the generally acknowledged model for axiomatic thinking until the end of the 19th century. It is interesting to note that Pāṇini’s grammar too exemplifies the idea of axiomatics (cf. Ikonen 1991: Ch. 2, esp. pp. 38–44). Comparable to the *Elements*, it was for more than 2000 years the cornerstone of higher education in India.

After Plato and Aristotle, linguistic inquiry received two types of impetus. One came from Stoic philosophy. Another came from Alexandrian philology, starting in the third century BC. Marcus Terentius Varro (116–27 BC) was influenced by both lines of thinking. The aspect of Varro’s methodology that will be singled out here is the notion of **explanation** in his book *De Lingua Latina*.

This is the crucial passage: “The origins of words are therefore two in number, and no more: *impositio* and *declinatio*; the one is as it were the spring, the other the brook. Men have wished that imposed nouns should be as few as possible ... but derivative nouns (*nomina declinata*) they have wished to be as numerous as possible” (VIII,5).

Impositio designates the original act of name-giving, and Varro refers to “those who first imposed names upon things” (“*illi qui primi nomina imposuerunt rebus*”) (VII,7). This is Varro’s counterpart to Plato’s *nomothetēs*, with the difference that the Varro-type name-giver is an ordinary, occasionally fallible human being. *Declinatio* designates the process by which new words are produced from the original simple words. In practice it covers inflection and derivation.

If *declinatio* is applied to e.g. 1000 words resulting from *impositio*, millions of new words can easily be shown to result (VI,36–39). First of all, it may be admitted that the original 1000 words are unexplainable. Still, it is no mean feat for the grammarian to have explained such a large number of the new words. The term for ‘explaining’ is here either *ostendere* or *expedire*.

But secondly, this is not all that the grammarian can do. The very disproportion between few imposed words and many derived words is explained by the fact that it imposes a minimum load to memory. Such and similar functional explanations are ultimately based on the **instrumental** character of language: “I grant that speech has been produced for utility’s sake” (“*Ego utilitatis causa orationem factam concedo*”) (IX, 48; also VIII, 30). Now, language would be a very bad instrument if every word had to be learned separately.

Third, we need not admit that *impositio* operates in a totally arbitrary way: “nature was the man’s guide to the imposition of names” (VI, 3). On the one hand, the lack of plural forms in mass-nouns is ontologically motivated (IX, 66). On the other, the lack of gender distinctions in the names of non-domestic (and thus less important) animals is functionally motivated (IX, 56). Varro is here outlining a moderate version of the *phusei* view.

Much of the discussion is carried out in terms of the ‘analogy vs anomaly’ dichotomy. For instance, inflection is correctly asserted to be more analogical and less anomalous than derivation. A phenomenon is explained by exhibiting its place in a larger analogical structure. For instance, Varro (X, 47–48) gives the following account of the Latin tense/aspect system:

INFECTUM		PERFECTUM	
Imperfect	Present	Pluperfect	Perfect
$\left\{ \begin{array}{l} \text{legebam} \\ \text{-----} \\ \text{lego} \end{array} \right.$	$\left\{ \begin{array}{l} \text{lego} \\ \text{-----} \\ \text{legam} \end{array} \right.$	$\left\{ \begin{array}{l} \text{legeram} \\ \text{-----} \\ \text{legi} \end{array} \right.$	$\left\{ \begin{array}{l} \text{legi} \\ \text{-----} \\ \text{legero} \end{array} \right.$
Present	I Future	Perfect	II Future

The generalization implicit in the data is presented here by means of a complex analogy. On both sides, the **first**-level analogy is **temporal**: the relation of past to the present is the same as the relation of the present to the future. The two sides of each analogy share a common member (= present), which means that each is an *analogia coniuncta*. Moreover, both INFECTUM and PERFECTUM contain the same (temporal) analogy, which means that they are analogous to each other at the **second** level. They have no common members, which means that each is an *analogia disiuncta*. This second-level analogy is **aspectual**. The only weakness of this elegant description is that the aorist function of the perfect remains unaccounted for.

The Varro-type analogy is not just language-internal, but extends — *phusei*-like — also to the relation between language and extralinguistic reality: “The basis of all regularity (*analogia*) is a certain likeness, that, as I have said, which is wont to be in things and in spoken words and in both” (X, 72; also IX, 63). Finally, Varro (IX, 23) justifies analogy in language by referring to the ubiquity of analogy in general: *Quae enim est pars mundi quae non innumerabiles habeat analogias?* (‘For what part of the world is there which does not have countless regularities?’)

The oldest extant sentence-analysis in the Western tradition is given in *Peri suntaxeōs* by Apollonius Dyscolus (c. 80–160). This title should not be translated as ‘syntax’, because the book deals equally with the meaning and the form of sentences.

Apollonius exhibits considerable freedom in inventing and manipulating his data. Consider the following example (I, 14):

ho	autos	anthrōpos	olisthēsas	sēmeron	kata-epesen
art	pron	noun	participle	adv	prep-verb
The same	man	slipping	today	down-fell	

This sentence has been so constructed as to contain all word-classes except the conjunction. The idea of name-giving (*thesis tou onomatos*) still survives, in the sense that the word classes are supposed to have been invented in the order of their importance: first the noun, then the verb, and so on. Now, it is of course Apollonius’ own **linguistic intuition** that assures him of the correctness of this self-invented example sentence. Next, the words of this sentence are deleted one by one, on the correct assumption that only those words whose deletion results in incorrectness are necessary to sentencehood; and, again, the only criterion of incorrectness is Apollonius’ own intuition. In this way the original sentence is reduced step by step to *anthrōpos epesen*. Looking back, we realize that it was Plato’s intuition, and nothing else, that distinguishes the correct *The man understands* from the incorrect **Walks runs sleeps*.

All this is self-evident if the data of grammatical analysis is taken to be the normal linguistic usage which is by definition accessible to intuition. The grammarians of antiquity, however, view the data in more complex terms. Varro distinguishes between usage (*consuetudo*) and reason (*ratio*), even if he admits that they often coincide: “Therefore as each one ought to correct his own usage if it is bad, so should the people correct its usage. ... [T]he people ought to obey reason, and we individuals ought to obey the people” (IX, 6). Hence a nation should correct its language if it is contrary to *ratio*, but an individual has no choice but to follow the *consuetudo* of his/her nation.

Apollonius echoes the same view: “I rely not merely on poetical citation ..., but on common everyday usage, the practice of best prose-writers, and **most of all**, on the force of theory” (II, 49; emphasis added). The resulting attitude vis-à-vis the data is somewhat “warped”. One is forced to accept the usage as it is, but then one counteracts by trying to find a rational justification for it even where none exists in fact. “This notion that everything in

grammar must have a reason, that nothing is arbitrary or random, pervades A.D.'s work" (Householder 1981: 43).

As far as Apollonius' methodology is concerned, this is the crucial passage: "So we'd better stop and explain what the actual cause of the ungrammaticality is, not by mere citation of examples as some linguists do, pointing out the ungrammaticality without explaining its cause. But if you don't grasp the cause, it is an exercise in futility to cite examples" (III, 6). The central explanatory notion is *akolouthia* (or *katallēlothēs*), translated as 'concordance'. It subsumes agreement and government, but is not restricted to these two. Examples are given throughout the book, the most revealing ones in III, 22–34. This is the general constraint: "No part of speech [combined with another] can be ungrammatical with respect to a category which it fails to distinguish" (III, 51). Looking back, we realize that Plato's distinction between *A man understands* and **Walks runs sleeps* is based on pretheoretical use of *akolouthia*.

Apollonius makes extensive use of the descriptive apparatus 'deep structure – transformation – surface structure', connecting e.g. the following types of sentences: *N V1-ed and (then) he V2-ed*, *N V1-ed and V2-ed*, *N who V1-ed V2-ed*, *V1-ing N V2-ed*. He also postulates uniform performative deep structures for sentences expressing different speech acts. This just goes to show that the history of linguistics is shorter than one might have been led to think. The very ontology-*cum*-methodology of grammatical analysis must possess some peculiar feature that makes this possible.

Because the Hellenistic Greek utilized by Apollonius is fully comprehensible only to a small group of experts, *Peri suntaxēōs* remained practically unknown until Householder's 1981 translation. Therefore, as surprising as it may sound, no adequate understanding of the Western linguistic tradition was possible, in practice, before 1981.

3. From the Middle Ages to the End of the 18th Century

The scholastic grammarians, called Modistae (c. 1250–1320), constructed a universal grammar (*grammatica universalis*) which had the following general structure. First, there are the ontological categories of thing, action, and quality, called the "modes of being". Second, there are the corresponding mental concepts, called the "modes of understanding". Third, there are the corresponding word classes, i.e. noun, verb, and adjective, called the "modes of signifying". There is a general **iconicity** between the three levels, but none of them is redundant: "Although things cannot be understood apart from the modes of understanding, the

human mind makes nevertheless a distinction between the things, on the one hand, and the modes of understanding, on the other” (Boethius de Dacia 1980 [c. 1280]: 70). Considering the iconic relation between thing and noun, on the one hand, and action and verb, on the other, we now see that Plato would have been able to build a more convincing case for the *phusei* view, if he had been speaking about word classes instead of individual words.

According to Aristotle, both the reality and the mind are universally the same whereas languages which express what’s in the mind vary arbitrarily. The Modistae found this inconsistent, and correctly so. If universally valid distinctions are expressed by the various languages, these too must possess some universal core which is just hidden behind superficial differences.

The Modistic universal grammar is an ambitious theory insofar as the *modi significandi* are meant to be **explained** — via the *modi intelligendi* — by the *modi essendi*. This is language-external explanation. The *modi significandi* are meant to provide language-internal explanations in the sense of Apollonius-type *akolouthia*.

There is a grave discrepancy between what the Modistae tried to achieve and what they achieved in fact. Because their data basis remained restricted to Latin, they were caught in a vicious circle: the existence of a linguistic category suggests the possible existence of a corresponding ontological category, which is then used to ‘explain’ the former. Furthermore, the levels of language and ontology came to be conflated in practice.

The same confusion hampers Modistic syntax. On the one hand, the verb is thought to depend on the noun, because the action (qua the ontological counterpart of the verb) depends on the thing (qua the ontological counterpart of the noun). On the other hand, there is an attempt to separate linguistic criteria from ontological ones: “The sentence is made complete by the word-class which governs the others and is governed by none, namely the verb” (Sigerus de Cortaco 1977 [c. 1330]: 51). Let it be mentioned that Sibawaihi (d. c. 795), the founder of the Arab linguistic tradition, applied the notion of dependency systematically in a purely language-internal sense (see Owens 1988).

Plato and Aristotle had regarded thinking as a form of silent speaking. The Stoics assumed the existence of a mental language which is free from the quirks of the oral language. The Modistae took the existence of a mental language for granted. Perhaps the most precise definition of a mental sentence (*propositio mentalis*) is given by William Ockham (c. 1285–1349) in his book *Summa Totius Logicae*.

William assumes that there are no universal concepts like ‘man’ and ‘white’ (referred to by the corresponding terms S and P), but only individual men and, as it were, individual occurrences of whiteness (referred to by the corresponding individual-names $S-i$ and $P-j$). Hence, the meaning normally expressed by *This man is white* ought to be expressed by an identity-sentence like $S-7 = P-29$. The Aristotelean general sentences are now transformed accordingly, in two steps. First, universally and existentially quantified sentences like *Every S is P* and *Some S is P* are reduced to simple or non-quantified sentences, i.e. either conjunctions $S-1$ is P **and** $S-2$ is P **and** ... or disjunctions $S-1$ is P **or** $S-2$ is P **or** ... This was already “an interesting novelty” (Kneale and Kneale 1962: 268). Second, subject~predicate schemas X is Y and X is not Y are replaced by identity schemas $X = Y$ and $X \neq Y$. As a result, the general sentences are given the following truth-conditional definitions (cf. Loux 1974: 28–31):

- A) Every S is P $[(S-1 = P-1) \vee (S-1 = P-2) \vee \dots] \wedge [(S-2 = P-1) \vee (S-2 = P-2) \vee \dots] \wedge \dots$
 E) No S is P $[(S-1 \neq P-1) \wedge (S-1 \neq P-2) \wedge \dots] \wedge [(S-2 \neq P-1) \wedge (S-2 \neq P-2) \wedge \dots] \wedge \dots$
 I) Some S is P $[(S-1 = P-1) \vee (S-1 = P-2) \vee \dots] \vee [(S-2 = P-1) \vee (S-2 = P-2) \vee \dots] \vee \dots$
 O) Some S is not P $[(S-1 \neq P-1) \wedge (S-1 \neq P-2) \wedge \dots] \wedge [(S-2 \neq P-1) \wedge (S-2 \neq P-2) \wedge \dots] \wedge \dots$

Thus, the A-sentence is reanalyzed as a (finite) conjunction of disjunctions of identity-sentences: this S coincides with this P *or* that P *or* etc. and that S coincides with this P *or* that P *or* etc. and etc. The E-sentence is reanalyzed as a conjunction (of conjunctions) of negated identity-sentences. And so on. It goes without saying that this type of reanalysis (which is supposed to be metaphysically motivated) entails a huge gain in logical simplicity. Certainly, the analysis of sentences with proper names as subjects is less natural: asserting Socrates to be a man amounts to asserting that Socrates is identical with Socrates or with Plato or with Hermogenes, etc.

Next, sentences of increasing complexity are subjected to the same type of reanalysis. The logical structure of a complex sentence (*exponibile*) is revealed by reducing it to a set of simple sentences (*exponentes*) so as to ultimately reach the level of affirmative or negative identity-sentences. Consider the sentence *Socrates, insofar as he is a man, has a colour*. Mechanical rules are given to reduce it to the following more basic sentences: *Socrates has a colour*; *Socrates is a man*; *Every man has a colour*; *If a man exists, then something which has a colour exists*.

This type of *expositio* analysis was also practiced, even if less rigorously, by the Modistae. For instance, the sentence *Sedentem ambulare est impossibile* ‘It is impossible for a sitting person to walk’ was analyzed as having the following three-level (‘deep’) structure: [[[*qui est sedens*] *ambulat*] *est impossibile*].

In its austerity William Ockham’s metaphysics has strong affinities with the Stoic metaphysics and differs sharply from the one generally adopted by the Modistae. Since the existence of universal concepts is denied, it seems natural to assume that it is only by their **names** that things are kept together, as it were. Hence the designation ‘nominalism’. As the redefinitions of the A, E, I, O sentences eloquently show, logical simplicity is achieved at the cost of extreme outward complexity. Certainly the language constructed by William could not function as a mental language in the sense of “silent speaking”.

The Modistic universal grammar concentrates on ontological explanation of simple sentences while logical linguistics as represented by William Ockham concentrates on truth-functional definition of complex sentences. In spite of their metaphysical disagreements, these two approaches should be thought of as complementing rather than contradicting each other. The linguistics of Renaissance stays far behind what was accomplished in the Middle Ages. This teaches an important lesson. It is perfectly possible that people come to reject a theory not because they have cogent arguments against it, but just because they are — or think they are — fed up with it.

The Aristotelian/Modistic heritage was exploited by all non-pedagogical grammars written in the 16th and 17th centuries. For instance, *Grammaire générale et raisonnée* or the Port-Royal Grammar (1660) by Antoine Arnauld and Claude Lancelot concentrates on the first two terms of the Aristotelean trichotomy ‘concept – sentence – syllogism’. Peter Abelard had already postulated three mental processes corresponding to these three levels (plus a specific process for forming disjunctive/conditional sentences). In the same vein, the Port-Royal grammarians and logicians (see below) postulate the three processes of conceiving (*concevoir*), judging (*juger*), and inferring (*raisonner*). Conceiving produces an “idea”, and judging consists in combining two ideas to make an affirmation. (Inversely, a negation entails separating the two ideas.) A judgment is called a “proposition”; what is affirmed is called “attribute” while that about which it is affirmed is called “subject”; the subject is combined with the attribute by means of an explicit or implicit copula. There are two basic ontological categories, namely substance and accident, with noun and adjective/participle as their linguistic counterparts.

If someone says *I just saw a dog*, what (s)he means is that (s)he saw a certain thing, not that (s)he saw an idea of this thing. In his authoritative formulation of the ‘language – mind – reality’ trichotomy in *De Interpretatione*, however, Aristotle clearly states that words signify ideas (or “mental experiences”), not things; it is by ideas that things are signified. This unfortunate formulation gave rise to misunderstandings, which are still perpetuated in the philosophy of the 17th and 18th centuries, including the Port-Royal grammar. As against this, William Ockham echoes Peter Abelard in asserting quite explicitly that both spoken words and ideas (= “mental words”) signify things, even if the former do so “in subordination” to the latter.

According to the Port-Royal grammarians, the complex sentence, or “figurative construction”, *Dieu invisible a créé le monde visible* (‘The invisible God has created the visible world’) is derived from the following “simple constructions”: *Dieu est invisible, Dieu a créé le monde, Le monde est visible*. This is a continuation of the medieval *expositio*. And of course, Apollonius Dyscolus had already noted the transformational relations between participle constructions, relative constructions, and co-ordinate constructions.

The three above-mentioned mental processes are dealt with in the first three parts of *La logique, ou l’art de penser*, or the Port-Royal logic (1662), by Antoine Arnauld and Pierre Nicole. In conformity with Descartes, innate ideas are assumed to be identical with those in God’s mind. Ideas qua mental terms may be either singular or general, their linguistic counterparts being proper nouns and common nouns. The intension (*compréhension*) of a general term X is the set of attributes which constitute it. This encompasses not just the meaning of X but also what it entails. The extension (*étendue*) of X encompasses, somewhat inconsistently, both the subtypes of X and the individuals to which X applies. The intension and the extension of X are inversely proportional. The “quasi-mathematical” presentation of syllogistic by Arnauld and Nicole “continued to dominate the treatment of logic by most philosophers for the next 200 years” (Kneale and Kneale 1962: 319–320). The fourth part of the Port-Royal Logic, which deals with general methodology, shows the influence of *Discours de la méthode* by Descartes. Special emphasis is placed on axiomatics: “[One ought] to prove all propositions which are at all obscure, using in the proof of them only preceding definitions, agreed axioms, and propositions already demonstrated.”

The tradition of the Port-Royal grammar was continued by César Chesneau Dumarsais (1676–1757) and by Nicolas Beauzée (1717–1789), each of whom produced his own version of general grammar.

4. The Modern Era

A. The Modern European Tradition

From the beginning of the 19th century, the history of languages became the focus of attention. Karl Ferdinand Becker tried to revitalize the tradition of general or philosophical grammar in his *Organism der Sprache* (1827, 2nd ed. 1841), but his work was largely ignored. The same is true of Anton Marty's (1847–1914) efforts to elicit the “inner form” of language. Similarly, Edmund Husserl's (1859–1938) notion of a “pure grammar”, as defined in his *Logische Untersuchungen* (2nd ed. 1913), failed to have an impact on linguistics. Parret's (1976) interpretation of Marty and Husserl is informed by more recent developments in linguistics.

Hermann Paul (1846–1921) is a central figure at this juncture insofar as his methodology constitutes a synthesis of general linguistic theory and of diachronic linguistics. For quite some time, most of his successors in the field of general theorizing showed little interest in diachronic linguistics. Ultimately, however, there has been a massive *de facto* return to the position held by Paul (see Section 5 below). It is not easy to summarize all these vicissitudes into a coherent historiographical narrative, but first I will pursue the story of general linguistic theory until the present day; second, I will take up the subsidiary story of diachronic and typological linguistics.

The following account of Paul's views is based on the Introduction and Chapters I–II of his *Prinzipien der Sprachgeschichte* (‘Principles of the History of Language’, first edition 1880). Methodology (*Prinzipienlehre*) is the key for transcending the outdated dichotomy between philosophy and science. Each science has its own methodology. There are two basic types of science, namely nomothetic sciences (*Gesetzeswissenschaften*) and historical sciences (*Geschichtswissenschaften*). Experimental physics is a typical nomothetic science. Nomothetic science does not coincide with natural science, however, because there are also sciences that concentrate on the history of either inorganic or organic nature (in particular, evolutionary theory). All cultural sciences are historical sciences. Among the cultural sciences, linguistics has achieved the most exact results, which has created the misconception that linguistics is actually a natural science. Experimental psychology (which was just emerging) is the most important auxiliary science of linguistics; although nomothetic in nature, it is separated from natural sciences by the presence of the “psychic element”.

Historical grammar is **scientific** in the sense that it explains the **causal** connection (*Kausalnexus*) between successive states of language. No non-causal account can be genuinely explanatory. A given state of language of language (*Sprachzustand*) is described by a corresponding (synchronic) descriptive grammar, exemplified by Paul's own grammar of Middle High German (Paul and Mitzka 1960 [1881]). Because states of language are abstractions, descriptive grammars are non-causal and *prima facie* non-scientific in character. Yet they qualify as scientific in a secondary sense insofar as their existence is presupposed by historical grammar. Any descriptive grammar remains insufficient until it is completed by a psychological grammar of the same state of language. Although the two sets may overlap, grammatical categories, which result from conscious reflection, must be clearly distinguished from psychological ones, which belong to the unconscious mind. For instance, grammatical subject and predicate are quite different from psychological subject and predicate (cf. Elffers-van Ketel 1991: 253–256). Apart from actual non-correspondence, the difference consists in the fact that grammatical structure is categorical ('either-or') whereas psychological structure exhibits a huge number of subtle gradations ('more-or-less'). Finally, grammatical structure must also be distinguished from (purely) logical structure. (Occasionally, 'psychological' and 'logical' are also used as synonyms.)

The subject matter of a descriptive grammar is *Sprachusus*, i.e. the usage of a linguistic community, which averages (*Durchschnitt*) over idiolects. Linguistics differs from other cultural sciences insofar as there is no division of labor among its subjects apart from the speaker vs hearer dichotomy. It is this homogeneity of the data that has made it possible for linguistics to achieve such exact results. It is for the same reason that the usage can be investigated in practice by concentrating on a single individual. When this is the grammarian him/herself, careful self-observation is needed.

Language usage is constantly renewed in social interaction. The language of every individual is influenced by the language of others. Unlike in biological evolution, "parents can become children of their own children". The contact between two minds is possible only by means of an external physical signal sent by one person and received by the other. What we know or assume about other minds is based on the analogy of our own mind. There is no collective mind in addition to individual minds. Finally, there is the central question of linguistic methodology: how do the social *Sprachusus* and the linguistic activity of an individual (*individuelle Sprechfähigkeit*) influence each other?

Georg von der Gabelentz (1840–1893) raises the same question in his *Sprachwissenschaft* ('Linguistics' 1901 [1891]), assuming a dichotomy between *Einzelssprache* or *Sprachzustand* ('a language') and its concrete manifestation, i.e. *Rede* ('speech'). The former is a system whose parts are related in such an organic way that none can be changed or removed without affecting the whole (*op. cit.* p. 481).

The same question is also raised by Ferdinand de Saussure (1857–1913) in his (1916) book *Cours de linguistique générale*. For him the social aspect (*langue*) is clearly primary vis-à-vis the individual aspect (*parole*) and constitutes therefore the genuine subject matter of linguistics. (Remember that according to Paul the equivalent of *langue* is the subject matter of descriptive grammar which remains subordinated to historical grammar.) Yet it is enough to investigate the consciousness of individual speakers (i.e. their linguistic intuition), in order to elicit the properties of *langue*.

Saussure uses the term *langage* to designate the superordinate concept which subsumes both *langue* and *parole*. *Langage* in turn issues from the language capacity (*faculté de langage*), which is 'natural', rather than social (like *langue*) or mental (like *parole*). Moreover, since *parole* is characterized as an "act" (of speaking and understanding), it must encompass the psycho-physiological performances, on the one hand, and the physical utterances, on the other.

Saussure's overall conception is narrower than Paul's. Diachrony is of secondary importance only; *parole* is clearly subordinated to *langue*; and there is no room for psychological grammar (as study of the unconscious mind).

The "linguistic sign" is characterized as a mental entity (*entité psychique*) consisting of a "concept" and an "acoustic image", also called "signified" and "signifier", respectively. *Langue* is said to be constituted by linguistic signs, but this is inconsistent because *langue* is defined as "a social institution" whereas, as we just saw, the linguistic sign is individual-psychological. The same contradiction recurs in the passages where *langue* is located "in the brain".

A further distinction is introduced within both components of the linguistic sign, namely that between "substance" and "form". The substance of the signifier is constituted by the whole spectrum of vocal sounds while the substance of the signified is something like thought without conceptual distinctions. By "form" is meant the way that each language structures the two substances. The notion of form is defined more narrowly as that of **value**. The values, or

identities, of linguistic units are determined by their mutual relations. This is the core idea of structuralism.

Linguistic signs are simultaneously situated on two dimensions, namely syntagmatic and associative. The latter term is used in its etymological sense, i.e. as standing for the relation between a linguistic sign X and anything that X can make the speaker think of, due to the similarity of either form or of meaning. Thus, “associative relation” is identical with what Paul called *Verbindung zwischen Vorstellungsgruppen*.

In his (1939) *Grundzüge der Phonologie* Nikolaj Sergejevich Trubetzkoy (1890–1938) solves the contradictions that beset Saussure’s language-conception (see the sections “Phonologie und Phonetik”, pp. 5–17 and “Zur Definition des Phonems”, pp. 37–41). Because *langue* (now called *Sprachgebilde*) is a social institution, its units — represented here by the **phoneme** — cannot be reduced to psychological or physiological phenomena, which belong to *parole* (now called *Sprechakt*). As normative entities, phonemes belong to the “world of relations, functions, and values”, and not to the “world of empirical phenomena”. “The norm ... cannot be determined by measurement and computations. ... The system of language is beyond ‘measurement and number’. ... [In] the natural sciences there is no equivalent for the dichotomy *Sprachgebilde* vs *Sprechakt*.” Because structure is created by function, structuralism **is** functionalism. It is regrettable that Trubetzkoy’s philosophical contribution has remained either ignored or misunderstood.

In his (1963 [1943]) book *Prolegomena to a theory of language* Louis Hjelmslev (1899–1965) summarizes Saussure’s language-conception as the following set of dichotomies: system vs process, expression vs content, form vs substance, syntagmatic vs paradigmatic. These dichotomies are integrated into a closely-knit theory, and three “functions” are added between formally defined units, namely “interdependence” (= if A, then B, and vice versa), “determination” (= if A, then B or not-B, and if B, then A), and “constellation” (= if A, then B or not-B, and vice versa). Hjelmslev seeks to use these three functions as the basis for constructing a universally valid descriptive technique tantamount to a **universal grammar**. First, grammars of particular languages and, second, all and only correct sentences of each language ought to be derived from the overall theory. This approach, called “glossematics”, seems to result in a somewhat skeletal view of language. But it is precisely for this reason, on the other hand, that it provides a plausible framework for general **semiotics**.

Glossematics is presented as an axiomatic theory. Therefore it is natural that when alternative descriptive techniques are evaluated, “that procedure must be chosen which

ensures the simplest possible result of the description” (Spang-Hanssen 1966 [1949]: 234). But there is no absolute notion of simplicity. Rather, “the simplicity of a description ... is a relative concept, which has significance only if the purpose to which the description is applied is indicated” (p. 235).

B. American Structuralism and its Aftermath

At this point we must go back to the beginning of the 20th century in order to pick up the story of American structuralism. Franz Boas (1858–1942) edited the *Handbook of American Indian Languages*, whose first volume appeared in 1911, and it laid the foundations of anthropological linguistics. The Introduction of this book entails an interesting tension. On the one hand, the purpose is to capture the “inner form of each language”, with the consequence that “no attempt has been made to compare the forms of the Indian grammars with the grammars of English, Latin or even among themselves” (Boas 1911: 81). On the other hand, it is clear that “the occurrence of the most fundamental grammatical concepts **in all languages** must be considered as proof of the unity of the fundamental psychological processes” (p. 71; emphasis added).

The same tension is evident in Edward Sapir’s (1884–1939) *Language*, published in 1921. In his sentence analysis (pp. 35–36) Sapir unknowingly follows the example of Apollonius. Consider the sentence *The mayor of New York is going to deliver a speech of welcome in French*. This sentence can be simplified by deleting *of New York*, *of welcome*, and *in French*, but at this point the “process of reduction” must stop. For instance **Mayor is going to deliver* would be incorrect. What remains is the familiar Aristotelian dichotomy of “subject of discourse” and “predicate”, which combine to constitute “the linguistic expression of a proposition”. This is also the definition of “sentence”. The sentence analysis has an ontological justification: “We must have objects, actions, qualities to talk about, and these must have their corresponding symbols in independent words or in radical elements” (p. 93). While “subject” and “predicate” are functional notions, the corresponding formal notions are “noun” and “verb”, which have thing and action as their extralinguistic counterparts. Nothing seems to have changed since antiquity.

However, the accumulated evidence of American Indian languages induces Sapir to boldly assert that “no logical scheme of parts of speech ... is of the slightest interest to the linguist. Each language has its own scheme” (p. 119). But then the following concession has to be made immediately: “No language wholly fails to distinguish noun and verb.”

Like Hermann Paul, Sapir regards linguistics as a cultural science but, unlike Paul, he wishes to keep linguistics strictly separate from psychology: “We can profitably discuss the intention, the form, and the history of speech ... as an institutional or cultural entity, leaving the organic and psychological mechanisms back of it as something to be taken for granted” (p. 11). Let it be added that when Sapir (1933) deals with the “psychological reality of phonemes”, what he has in mind is conformity with “phonemic/phonological intuitions”, not some unconscious structure to be elicited by experimental psychology.

In his 1933 *Language* Leonard Bloomfield (1887–1949) shares Sapir’s view of the proper relation between linguistics and psychology: “... we can pursue the study of language without reference to any one psychological doctrine” (p. vii). “The findings of the linguist, who studies the speech signal, will be all the more valuable for the psychologist if they are not distorted by any prepossessions about psychology” (p. 32). Indeed, Hermann Paul is criticized precisely for having tried to include psychological grammar in linguistics: “[Paul] accompanies his statements about language with a paraphrase in terms of mental processes which the speakers are supposed to have undergone. The only evidence for these mental processes is the linguistic process; they add nothing to the discussion, but only obscure it” (p. 17). This criticism applies with more justification to the Aristotelian-cum-Modistic tradition that preceded Paul than to Paul himself because, instead of just paraphrasing, he actually tried to show that “mental processes” and “linguistic processes” do **not** coincide. Certainly, as he freely admits, he was hampered in this attempt by the nascent state of experimental psychology.

Bloomfield has been hugely criticized for not heeding his own advice and thus dismissing the analysis of lexical meanings in the name of crude behavioristic psychology. This agrees with his endorsement of ‘logical empirism’, or the prevalent philosophical doctrine of the 1930s, which advocated methodological monism, with physics as the model science. But the criticism is not quite accurate. Being a grammarian, Bloomfield is interested in grammatical rather than lexical meanings; and his treatment of grammatical meanings (= “[epi]sememes”) is in no way distorted by any behaviorist prepossessions. This is just as true of an “episememe” like “action” (p. 166) as it is of a “sememe” like “more than one thing” (p. 216). Bloomfield’s behaviorism merely exemplifies the all-too-common gulf between one’s self-professed methodology and the methodology implicit in one’s actual descriptive practice.

In principle, Bloomfield (1933) portrays grammatical description from the perspective of a field linguist who has to start from scratch: “Suppose we hear a speaker say *John ran* and a

little later hear him or some other speaker say *John fell*. ... [I]f we are lucky, we may hear some one utter the form *John!* ... we may later hear the form *Bill ran* ... we may hear a form like *Dan fell*” (p. 159). In practice, however, no corpus of actually uttered sentences is ever used in this book. Rather, Bloomfield just lets his own linguistic intuition produce the data, as he did in the passage just cited.

The practice of the ordinary working grammarian is sanctioned in the following way: “In no respect are the activities of a group as rigidly standardized as in the forms of language. ... A linguistic observer therefore can describe the speech-habits of a community without resorting to statistics” (p. 37). The implications of this fact for the general philosophy of science have been spelled out by Hymes and Fought (1981: 175): “It was considered a decisive accomplishment to show the existence of qualitative structure in a sphere of human life ... Linguistics was a demonstration of the possibility of rigorous formal analysis of a sort not requiring sampling, statistics, or other techniques derivative of a natural science orientation.”

Zellig S. Harris (1909–1992) and Charles F. Hockett (1916–2000) further develop the structuralist approach. For Bloomfield (1933: 247–251), a “substitute” is a minimal unit (like *I* or *did*) that can replace any member of a given form-class. Harris (1946) concentrates on “extending the technique of substitution from single morphemes (e.g. *man*) to sequences of morphemes (e.g. *intense young man*)”. Expressions of whatever length that pass the “substitution test” are members of one and the same “substitution class”. Substitution classes constitute the basis for a bottom-up sentence analysis. Wells (1947) reformulates substitution as “expansion”. For instance, the sentence *The king of England opened Parliament* is an expansion of the sentence *John worked*. Expansion is the inverse of, and conceptually equivalent to, reduction as practiced by Apollonius and Sapir. Expansion constitutes the basis for a top-down sentence analysis in terms of immediate constituents (= IC). Typically, the IC analysis is binary in the sense of breaking up a unit into two lower-level units, but a constituent may also have three (or more) parts, as in *A, B, and C*. Also discontinuous constituents are allowed: an indefinite number of adjectives may occur inside the constituent *the ... king*.

Harris (1946) recommends choosing those descriptive devices “in terms of which we get the most convenient total description”. As in glossematics, the ultimate criterion for preferring one description to another is the overall simplicity.

Echoing Varro, Bloomfield (1933: 275) notes that, as far as speech-forms are concerned, “the possibilities of combination are practically infinite”. Hockett (1948) makes the same point: the linguist must “account also for utterances which are **not** in his corpus ... he must be able to predict what **other** utterances the speakers of the language might produce”. Hockett (1949) adds that grammatical description constitutes a “recurrent cycle of prediction, checking, gathering of new data, modification of predictions, and rechecking”. Harris (1951: 17) agrees: “when the linguist offers his results as a system representing the language as a whole, he is predicting that the elements set up for his corpus will satisfy all other bits of talking in that language.”

Bloomfield (1926) purports to present his language-conception in the axiomatic format of metalinguistic “assumptions” and “definitions”. In a similar way, Harris (1951: 372–373) assumes that his grammar-conception amounts to a “deductive system with axiomatically defined initial elements and with theorems concerning them. The final theorems would indicate the structure of the utterances of the language”. Such a description would “enable anyone to synthesize or predict utterances in the language”. In practice, Harris’s “deductive system” is much too intricate to be applied by just “anyone”. Hockett (1954) uses the term *generate* instead of *synthesize*.

Harris (1951) views utterances as purely physical phenomena which should be described with no recourse to meaning. This position is so extreme that none of the contemporary reviewers of the book was willing to accept it wholesale (cf. Hymes and Fought 1981: 146–147). “No one has ever really done linguistics in that way”, as Chafe (1994: 14) was to observe later.

Saussure (1916), Hjelmselv (1943), Sapir (1921), Bloomfield (1933), and Harris (1951) are not concerned with any of those psychological or biological mechanisms that ‘support’ language. By contrast, Hockett (1948) claims that insofar as the linguist is acting like a genuine scientist, his “analytical process thus parallels what goes on in the nervous system of a language learner, particularly, perhaps, that of a child learning his first language”. Thus, it is the speaker, and not the linguist, who creates linguistic structure: “The child in time comes to **behave** the language; the linguist must come to **state** it”.

In the 1940s Harris was perceived as advocating a conception of “linguistics as a game”, to such an extent that Hockett (1968: 35) could later refer to “Harris’s theoretical nihilism”. But Harris (1954) clearly involves a change of attitude: “Mathematical and other methods of

arranging data are not a game”. Nor is language viewed anymore as an entirely self-contained entity: “the position of the speakers is after all similar to that of the linguist”.

In his 1955 dissertation Noam Chomsky (1928–) subscribes to Bloomfield’s antimentalism (p. 86) and declares his concern with the “physical properties of utterances” in the sense of Harris-type distributional analysis (p. 127, p.63, n. 1). Unlike his predecessors, he restricts his data to English. His 1957 *Syntactic Structures* is based on a set of 39 self-invented sentences. Some of these are grammatical and either simple like *The man comes* or compound like *John enjoyed the book and liked the play*. Others are either just ungrammatical like **Lunch is eaten John* or very ungrammatical like ***Of admires John*. The grammar that he outlines has two components (apart from morphophonemics). Phrase structure (= PS) rules assign a tree-structure derivation to strings identifiable as simple sentences, while transformational (= T) rules operate either on one string with a specific derivation or on two such strings to generate more complex sentences. T-rules are needed because PS-rules (wrongly identified with IC analysis) cannot handle discontinuous constituents, active–passive relations, and *NP-and-NP* or *S-and-S* conjunctions: “[T-rules] lead to an entirely new conception of linguistic structure” (p. 44). The resulting bipartite grammar is supposed to give an adequate description to all grammatical sentences, whether simple or complex, of any language.

But this is the real novelty: “the set of ‘sentences’ of some formalized system of mathematics can be considered a language [and vice versa]” (Chomsky 1957: 13). More precisely, “the idea of a generative grammar emerged from an **analogy** with categorial systems in logic. The idea was to treat grammaticality like theoremhood in logistic systems and to treat grammatical structure like proof structure in derivations” (Katz 1981: 36, emphasis added). This is a striking illustration of how scientific discovery is driven by analogy (see Itkonen 2005: 16–19, 190–196). As a result, a generative grammar turns out to be, technically speaking, an **axiomatic system** (cf. Wall 1972: 197–212). The initial S-symbol qualifies as the sole axiom while the function of inference rules is performed, first, by structure-expanding PS-rules and, second, by structure-changing T-rules. It is only the terminal string of the entire derivation that is supposed to qualify as grammatical. (An axiomatic **theory**, by contrast, has a property, i.e. either empirical truth or validity, which is transferred from axioms to theorems by inference rules.) Thus, in *Syntactic Structures*, it is the **formalization** of morphosyntax that is genuinely new. The grammatical analysis itself is thoroughly traditional, starting with the Aristotelian *NP + VP* dichotomy.

What is the methodological status of generative description? This question is answered in very dissimilar ways. First, generative description is identified with conceptual analysis as practiced in philosophy: “We thus face a familiar task of explication of some intuitive concept — in this case, the concept ‘grammatical in English’” (Chomsky 1957: 13). But then it is the natural sciences that provide the model: “[A chemical theory] might be said to generate all physically possible compounds just as a grammar generates all grammatically ‘possible’ utterances” (p. 48). In the same vein, grammatical categories (like *NP* or *T*) are equated with hypothetical constructs (like ‘electron’), and grammatical rules (like $NP \rightarrow T + N$ and $T \rightarrow the$) are equated with laws of nature (p. 49).

Thus, Chomsky does not merely perpetuate the axiomatic tradition in linguistics, but makes it fully explicit. The commitment to axiomatics is also evident from the central role that he, like Hjelmslev, ascribes to **simplicity**: “the only ultimate criterion in evaluation is the simplicity of the whole system” (p. 56). He even speculates (p. 51) about an algorithm (called “evaluation procedure”) for choosing the simplest grammar from among several alternatives. No such algorithm has been or, most probably, will ever be found: “Let us call a theory which obeys Ockham’s razor ... functionally simple. ... Ockham’s razor seems difficult or impossible to formalize as an algorithm” (Putnam 1981: 133).

After 1957, the generative grammar of English as envisaged by Chomsky has undergone radical modifications. It has also been given radically new interpretations. In *Aspects of a Theory of Syntax* (1965) it became both a mentalistic theory and the basis for a universal grammar. In the mid-70s it became a biological theory: now language is a module (or “organ”) of the biologically-based mind, and syntax is the central module of language. Yet Chomsky’s approach to data has not changed at all. In the 21st century he still investigates distributional properties of such English sentences as his own intuition deems to be either grammatical or ungrammatical.

For Paul (1880, esp. Ch. III), **variation** was a necessary part of linguistic change. While endorsing the non-statistical nature of synchronic grammatical description (cf. above), Bloomfield (1933) was fully aware that any realistic account of linguistic change would be statistical in character: “These changes could be observed only by means of genuinely statistical observation through a considerable length of time; for want of this, we are ignorant of many matter concerning linguistic change” (p. 38). But the situation has changed dramatically since Bloomfield’s time. In the mid-1960s **sociolinguistics**, through the

‘variationist paradigm’, was developed to deal with exactly those types of phenomena that Bloomfield placed beyond the ken of linguistics.

To be sure, what is at issue is not just variation in change, but variation in general. As formulated by William Labov (1927–), “the problem is how observation and experiment are to relate to intuitive data” (1975: 54). He provides a balanced answer with many gradations, which may be summarized as follows. As far as the so-called clear cases are concerned, “we can ... study the social aspect of language through the intuitions of one or two individuals” (p. 9). Consider these sentences: *That John told him was a shame* and **John told him was a shame*. Here the difference in grammaticalness is so clear-cut that “no one has as yet found any disagreements that would move us to begin a program of observation and experiment” (p. 8). Outside the clear cases, however, linguistic intuition is not enough, and it is here that a **statistical** approach becomes a necessity. Two principal cases may be distinguished: either the data are so complex or otherwise indeterminate that intuitions diverge; or the data are constituted by frequencies of occurrence, and here intuition is unreliable by definition. Rather than being ‘free’, variation typically turns out to be conditioned, and thus explained, by extraneous linguistic or non-linguistic factors.

For the most part, linguistic distinctions are not categorical but gradual. This is true of, e.g., ‘grammatical vs ungrammatical’, ‘obligatory vs optional’, ‘noun vs not-noun’, etc. (But notice that the difference between the two extremes of a continuum is absolute, not relative.) Just as categorical distinctions are based on two-valued logic, continuous distinctions are based on **fuzzy logic** (which is in turn a direct descendant of Jan Łukasiewicz’s many-valued logic; cf. Kosko 1994). Any adequate linguistic theory should be able to deal not just with variation but also with fuzziness.

Such and similar concerns brought it about that the methodological status of linguistics in general, and of generative linguistics in particular, became the object of intense controversy in mid- and late 1970s, see the collections of articles such as Cohen (1974), Cohen and Wirth (1975), and Perry (1980).

In the 1970s and 1980s Chomsky claimed that linguistics is part of cognitive psychology and cognitive psychology is part of biology. Montague (1974) and Katz (1981) countered by claiming linguistics to be a branch of logic or mathematics. Many felt that generativism offered a much too impoverished view of what cognition is really about. As a result, the school of Cognitive Linguistics came into being: “it opened language description to a rich new landscape of conceptual phenomena and mechanisms interrelated in multiple ways with

the whole of human experience and shaped in accordance with patterns of human imagination” (Harder 2007: 1247–1248).

The ‘first-generation’ cognitivists like Lakoff (1987), Langacker (1987), and Talmy (2000) make use of exactly the same data basis as their generativist predecessors, namely their own respective intuitions (almost exclusively of English). To members of the ‘second-generation’ cognitivists, this is not enough. Rather, contacts have to be (re)established with main-stream psychology by adopting a set of statistical-cum-experimental techniques (cf. Gonzalez-Marquez et al. 2007). On the other hand, the exclusive concern with the individual mind has to be transcended by squarely accepting the primarily social nature of language (cf. Zlatev et al. 2008).

5. Diachronic and Typological Linguistics

August Schleicher (1821–1868) was a champion of diachronic linguistics: “If we do not know how something has come into being, we do not understand it.” But he is no less a champion of typological linguistics: “We do not comprehend the essence of a language unless we relate it to other languages.” In his 1850 *Linguistische Untersuchungen* (quoted from Arens 1969: 251–255) he follows the preceding tradition insofar as he divides the object of diachronic linguistics into two clearly separate parts. The prehistory of languages is characterized by progress whereas their documented history is characterized by decline. The former contains an ascending three-stage development ‘monosyllabic structure (*Einsilbigkeit*) > Agglutination > Flexion’, on the analogy of ‘mineral > plant > animal’. The latter contains a degeneration of synthetic into analytic languages, as had already been proclaimed by August von Schlegel (1767–1845) in 1818 (cf. Arens 1969: 189).

In 1850 Schleicher regards diachronic linguistics as a natural science pure and simple, and in 1863 he reasserts this position. Methodological monism is unmistakably the order of the day (“Die Richtung der Neuzeit läuft unverkennbar auf Monismus hinaus”; op. cit., p. 259).

In his 1875 book *The Life and Growth of Language* William Dwight Whitney (1827–1894) too recognizes what is the *Zeitgeist* “in these days when the physical sciences are filling men’s minds with wonder at their achievements” (p. 310–311). But he prefers to go against the current: “There is no way of claiming a physical character for the study of [linguistic] phenomena except by a thorough misapprehension of their nature” (p. 311). Why is it a misapprehension? Because no linguistic change “calls for the admission of any other efficient force than reasonable action, the action for a definable purpose, of the speakers of language”

(p. 144). And reasonable actions flow from “the faculty of adapting means to ends, of apprehending a desirable purpose and attaining it” (p. 145). Every change is the result of a “choice” prompted by the “human will” even though all this happens “without any reflective consciousness” (p. 146).

In essence, Hermann Paul’s conception of linguistic change is the same as Whitney’s. All languages share the **goal** (*Ziel*) of establishing a one-to-one correspondence between meanings and forms (“für das funktionell Gleiche auch den gleichen lautlichen Ausdruck zu schaffen”, p. 227). But this “symmetry of the form system” is constantly being destroyed by sound change. The principal **means** (*Mittel*) of mending the damages caused by sound change is analogy. Thus, from a bird’s-eye view, the history of any language is an eternal tug-of-war, governed by a means-ends strategy, between two opposite tendencies, namely material and intellectual (p. 198). In the same spirit Roman Jakobson (1896–1982) later outlines a “means-end model of language” (1990: 56–61).

Saussure (1916: 115–116) regarded linguistic change as affecting single units only, which means that diachronic linguistics, unlike synchronic linguistics, cannot be a systematic or structure-based discipline. This is clearly not true, as was noted by Roman Jakobson in his 1931 article *Prinzipien der historischen Phonologie*. The prime example of diachronic structuralism is given by André Martinet (1908–1999) in his 1955 book *Économie des changements phonétiques*, which adds an important correction to Paul’s view of linguistic change. Instead of merely being a destructive force, sound change contains its own tug-of-war: on the one hand, there is the intellectual effort to maintain the “stability” of phonological systems; on the other, due to “the inertia and the asymmetry of the articulatory organs”, there is the tendency to disrupt this stability (p. 89, 101). Martinet notes (p. 67, 97) that he was to some extent anticipated by Trubetzkoy who mentioned in 1933 that sound change is characterized by a “tendency towards harmony”.

If linguistic change is explained as being a means that speakers (subconsciously) consider adequate for achieving a given **goal**, then the corresponding explanation must qualify as **teleological**. (Alternative designations are “functional explanation”, “explanation by reasons”, and “rational explanation”.) This type of explanation may be difficult to accept because it is nonexistent in the natural sciences. This is why Martinet hesitates (p. 18, 97) to call his explanations “teleological”, although he otherwise agrees (p. 16–17) with Paul that what he is trying to do is give **causal** explanations of linguistic change. There is another problem as well. Natural-science explanations are not just non-teleological, but they are also

nomological, i.e. based on either deterministic or statistical laws. Thus Lass (1980), for instance, sees little or no value in diachronic linguistics because of its non-nomological character. The other option is, obviously, to accept the basic fact that linguistic behavior (like intelligent human behavior in general) is prompted by a non-nomological type of causation (see Itkonen 1983).

Since the 1990s it has become fashionable to view linguistic change in Darwinist terms. This is an interesting return to the position that Schleicher held in the 1860s. But the analogy between biological evolution and linguistic change is clearly defective. In general, those who subscribe to Darwinism are willing to admit that linguistic change involves some sort of problem solving. In maximally general terms, adopting a given means is a solution to the problem of attaining the end. But this produces a contradiction: “No evolutionary change of any kind came about through the application of intelligence and knowledge to the solution of a problem” (Cohen 1986: 125).

Von der Gabelentz and Sapir are among the pioneers of typological thinking. The foundations of modern typological linguistics were laid by Joseph Greenberg (1915–2001) in the two books edited by him, *Universals of Language* (2nd ed. 1966) and the 4-volume *Universals of Human Language* (1978). The basic thesis is that, as conjectured by Plato and Varro, and confirmed by cross-linguistic regularities, grammatical categories and/or constructions have been shaped, and should accordingly be explained, by the **functions** they serve. For instance, such explanatory notions have been proposed as iconicity, economy, cognitive salience, and animacy hierarchy (i.e. 1/2 SG > human > animate > inanimate). It seems clear enough that the access to such notions is provided, ideally, by the linguist’s **empathy**, or his/her capacity to reconstruct those thought processes that the speakers of the various languages must have undergone.

This view is as old as typological linguistics itself: “we need to put ourselves precisely in the nomenclator’s place, apprehending just his acquired resources of expression and his habits of thought and speech as founded on them; realizing just his insight of the new conception and his impulses to express it” (Whitney 1875: 143). According to Paul (1880: 349), such a process as suffixation must be made “psychologically understandable” [*psychologisch begreifbar*]; this is what historical explanation amounts to in practice. Havers (1931: 211–212) demands that, however difficult it may be, one must get rid of the thought habits of one’s mother tongue in order to achieve a “total empathy (*Einfühlung*) with the mental reality of the alien language”. Hockett (1955: 147) correctly points out that “we know of no set of

procedures by which ... a machine could analyze a phonologic system. ... The only rules that can be described are rules for a human investigator, and depend essentially on his ability to empathize”. Talmy Givón (1936–) concludes this list of methodologically crucial citations: “the scientist merely recapitulates the bio-organism” (2005: 204).

Whitney (1875) describes the genesis of new word forms as follows: “suffixes of derivation and inflection are made out of independent words, which ... gradually lose their independent character, and finally come to be ... mere subordinate elements ... in more elaborate structures” (p. 124). This process, which of course encompasses more than just suffixation, is called *Komposition* (= ‘condensation’) by Paul (1880), who characterizes it as “the normal way that anything formal emerges in a language” (p. 325). Today it is called **grammaticalization**. It was the central topic of the 19th century linguistics, launched by Franz Bopp. Eclipsed by synchronic structural and/or generative analysis during most of the 20th century, it was rediscovered in the 1970s.

The process of grammaticalization has been shown to follow a large set of well-documented “paths”, many of which are listed by Heine and Kuteva (2002). This means that linguistic change, though still non-nomological, has become predictable at least to some extent. Now that grammaticalization theory has been integrated into typological linguistics, it is generally agreed that any synchronic description not embedded in a wider historical context is just as deficient as any description without typological background. “The linguist who asks ‘Why?’ must be a historian” (Haspelmath 1999: 205). Following the spiral (rather than cycle) of history, we have returned — ‘at a higher plane’ — to Schleicher’s and Paul’s position.

6. Conclusion

In what precedes, the need for, and the nature of, explanation as well as the idea of axiomatics were shown to be central themes in recounting the philosophy of linguistics. Katz (1981: 52, 64–68) outlines the notion of an “optimal grammar” which, free from any non-grammatical (i.e. psychological, sociological or neurological) constraints, should be based on the notion of overall simplicity. Here ‘optimal’ clearly equals ‘axiomatic’, and Pāṇini’s grammar, “the most complete generative grammar of any language yet written” (Kiparsky 1993: 2912), is so far the most likely candidate for being an optimal grammar. A few qualifications, however, need to be added.

Even within formal logic, axiomatics is by no means the only alternative. For instance, the so-called dialogical logic dispenses with the “traditional recourse to the axiomatic method”

(Lorenzen and Lorenz 1978: 19). Being a “reconstruction” of the norms of everyday language and thus embodying the **social** nature not just of language but also of logic, it is clearly superior to axiomatic logic (see Itkonen 2003: Ch. IV).

Within linguistics, furthermore, the axiomatic ideal applies only to the grammatical theory, i.e. the subdiscipline discussed in Itkonen (1978). Everywhere else, that is, in diachronic linguistics, sociolinguistics, and psycholinguistics, causal explanation is to be preferred. This view was adumbrated by Hermann Paul, and it also agrees with the more recent developments within the philosophy of the natural sciences: “A scientific theory admits of many different axiomatizations, and the postulates chosen in a particular one need not, therefore, correspond to what in some more substantial sense might count as the basic assumptions of the theory, ...” (Hempel 1970: 152). This “more substantial sense” refers to the **causal structure** of the research object, to be described by a corresponding causal model.

Salmon (1984) comes to the same conclusion: “It now seems to me that the statistical relationships specified in the S[tatistical]–R[levance] model constitute the **statistical basis** for a bona fide scientific explanation, but that this basis must be supplemented by certain **causal factors** in order to constitute a satisfactory scientific explanation” (p. 34, original emphasis). It is this aspect of linguistics that is focussed on in Itkonen (1983).

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