

with adjectives and pronouns; the remainder as well as the first part of the third is devoted to verbs, before treatment of word formation. The fundamental handbook of Indo-European linguistics until about 1870 was limited in this way essentially to morphology. It is scarcely surprising that references to it today characterize it as only of historical interest.

Yet treatment of sound systems had also come to be pursued, and more precise information was gradually being assembled. At the time Bopp was working on his grammar, August Friedrich Pott (1802–87)⁵ was publishing a work called "Etymological investigations in the sphere of the Indo-Germanic languages" (1833–6). This work relied heavily on phonetic analysis for its grammatical observations; in addition it contained a comparative account of verbal roots, in this way leading to an etymological dictionary for Indo-European. The expanded version of 1859–76 occupied ten volumes. Through phonological study and attention to derivational morphology, the lexical stock of the language family was being mastered. Pott's work supplemented the grammar of Bopp with a dictionary; his work, like Bopp's, was revised in accordance with increasing information and accuracy.

Attempts to account for the exceptions to Jacob Grimm's set of rules relating the obstruents of Germanic to those of Sanskrit, Greek and Latin (1819/1822–37) also led to better understanding of individual sounds and their treatment in various environments. This understanding was greatly amplified from other sources – physicians who were interested in problems of the deaf. One of these, Ernst W. von Brücke (1819–92), produced a descriptive treatise on the sounds of language: *Grundzüge der Physiologie und Systematik der Sprachlaute* (1856 [1876]). Through such publications the classification of sounds by classical grammarians, as into the broad sets called Tenuis, Mediae and Aspiratae, was replaced by identification based on articulatory characteristics.

Brücke was also important as one of the scientists who introduced the methods of chemistry and physics into medical and biological study. His influence in linguistics may have added to the practice of analysing and classifying languages, as well as sets of sounds and forms, much like the objects of study in these sciences. Even earlier, linguists had profited from the methods of comparative anatomy that had led them to apply similar procedures to the classification of languages, as our terminology still indicates. By identification of selected characteristics, languages were assigned to "families" such as Carl von Linnæus (1707–78) had set up genera for plants. But the linguistic terminology was less formal than the botanical. Languages with similar characteristics are said to be related; in keeping with the feminine gender of German *die Sprache*, subsequent stages of a language are referred to as "daughter" languages. The term "Indo-Germanic family" was introduced in 1810, subsequently to be replaced by Indo-European. A framework to classify languages by selected characteristics, somewhat like the classification of Linnæus, was in this

way established and is maintained to this day. Moreover, sets within individual languages or groups of languages are analysed for their common features, whether with diachronic or synchronic aims.

In short, the sixty years between the date of Schlegel's publication and Bopp's death had led to more specific aims in Indo-European studies than those pursued by Schlegel, but also to greater precision in pursuing those aims and in stating the findings. The results provided Indo-Europeanists, especially the younger members, with increasing confidence. That attitude led to restatement of the phonology, the grammar, and the lexicon, with ever greater restriction of aims; extensive monographs were now published that dealt with specific sets of forms, such as the perfect (Osthoff 1884). Profiting by this achievement, the generation after Bopp's death set out to treat the original language much like languages spoken today, applying methods that they considered as reliable as those of the physical sciences.

1.3 THE NEOGRAMMARIANS

In this situation of increasing mastery of the essential procedures of diachronic linguistics accompanied by upgraded production of the central handbooks, a number of capable and dedicated young scholars appeared, centered around the **University of Leipzig**. There they had the advantage of excellent training directed by a distinguished classicist, Georg Curtius (1820–85). And even before Bopp's death a highly systematic linguist, August Schleicher (1821–68) had published "A compendium of the comparative grammar of the Indo-Germanic languages" (1861) that introduced important innovations over the treatment by Bopp and his contemporaries.⁶ Moreover, the dominant intellectual current now was not a Romantic search for origins, but a concern for the processes of development, most notably expressed in the evolutionary ideas of Charles Darwin (1809–82). Somewhat scornful of their elders, as bright young students often are, these linguists were labeled by their teachers as neogrammarians. Intelligent enough, like the early Christians, to adopt a pejorative label, they inaugurated probably the most important group of linguists that has appeared in the study of language.

Like any such group, their tenets and major figures have received various interpretations from subsequent scholars (see Jankowski 1972). What is clear is their insistence on rigor. Moreover, they sought to deal with language much as their colleagues in the natural sciences dealt with their selected topics. In their day the faculty of philosophy had not only developed much more widely than had the other three traditional faculties – law, medicine, theology – but it also came to be fragmented. Its major components were labeled "the natural sciences," which treat those areas where universally valid laws apply, and "the historical sciences," where generalizations apply differently in different periods and differing societies; today the second is generally further divided into the social sciences

and, in the USA, the liberal arts or human sciences. An awareness of the structure of academic concerns and structure at that time is important because later the term "historical" has been interpreted by current views as diachronic. Equation of nineteenth-century "historical" with terms such as "social" or "behavioral" and "human" would be more accurate if these are taken to apply to all the areas not dealt with in the "physical" and "biological" sciences, which themselves cannot be equated directly with the early classification "natural sciences."

The major figures among the neogrammarians display varying temperaments and approaches. Among the more eminent, August Leskien (1840–1916) was the most insistent on attention to rigor as well as the oldest. More restrained, Karl Brugmann (1849–1919) laid down the fundamental principles of the group in an admirable essay, going on to brilliant observations and to producing its most distinguished work in his "Comparative grammar of the Indo-Germanic languages" (1897–1916, 2nd edn).⁷ By contrast with Brugmann's concentration on phonology and morphology, his early colleague, Berthold Delbrück (1842–1922), carried out basic studies in Indic, Germanic and Indo-European syntax that are still highly important; fortunately for linguistics, he was defeated in his political ambitions, so that he continued a distinguished career as a cultured academician in Jena some distance away from the hectic center of the group. His biography produced by Eduard Hermann provides an excellent account of scholarship in what Hermann accurately labels "Germany's great era." Hermann Osthoff (1847–1909) was another collaborator of Brugmann, also highly productive, but less accurate in his judgements, somewhat like Jerzy Kurylowicz at a later time. The youngest of the group, Eduard Sievers (1850–1927), was probably the most brilliant, hitting on "Verner's law" before its credited discoverer, and generous enough never himself to mention the letter in which he had stated his finding (see Streitberg *et al.* 1927–36: 287–8); fortunately, he has enough remarkable contributions to his name, such as concluding that the Old English *Genesis* was an adaptation of an Old Saxon poem before that poem came to be known through discovery of a manuscript in the Vatican. Others might still be mentioned, but these five make up the nucleus that established Leipzig as the center for linguistic studies through the second decade of the twentieth century. Virtually all contemporary students in the Indo-European languages spent some time there, many completing their doctoral degrees under the direction of one of these eminent scholars.

Yet two more figures need to be mentioned, each located elsewhere. Hermann Paul (1846–1921) in Munich wrote the acknowledged theoretical handbook of the group in his "Principles of language history," first published in 1880 and, after translations into other languages, formulated in final form by the author in its fifth edition of 1920, subsequently reprinted under the unfortunate label of further "editions."⁸ Its title as well as its unfortunate, leading linguists today to assume that it is a handbook on

diachronic linguistics: to be sure it treats language as changing, rather than as a socially abstract *langue* or as an "ideal language of an ideal speaker in an ideal society." But unlike these conceptions of language in subsequent theoretical works, Paul's *Prinzipien* does not downplay concern with language in use; nor does it make the sharp distinction between synchronic and diachronic linguistics that has often brought unfortunate consequences to the field. Like the other leading neogrammarians, Paul produced substantial works on language, notably his grammar of German, but also a Middle High German grammar in the frequently republished texts of the series based on the pattern of Wilhelm Braune's (1850–1926) Gothic grammar. The production of such works, in addition to theoretical writings that inevitably become outdated, is a major reason for the continued esteem in which the neogrammarians are held. Moreover, as we may note briefly, their chief tenets are irrefragable and have set the standards of linguistic study from the time they were formulated.

Yet first we may note the most highly acclaimed student of the many who came to Leipzig, Ferdinand de Saussure (1857–1913). The treatise that he published while in Leipzig on the system of vowels in Proto-Indo-European not only cites the leading scholars there – Curtius, Leskien, Brugmann, Osthoff as well as Sievers and Delbrück – but also carries out their ideas of rigor to the ultimate. As is well known, the young Saussure in his monograph proposed a virtually mathematical scheme for Indo-European roots; thereupon, through brilliant analysis of patterning, he hypothesized consonants that were nowhere attested (1879).⁹ Following his period of study in Leipzig and Berlin, Saussure accepted a position in Paris, where he provided the inspiration that made it under Antoine Meillet (1866–1936) the center of linguistic study after the decline of Leipzig. Moving from Paris to his native Geneva, Saussure capped his earlier triumph by lectures whose publication is generally credited as shifting the goals of linguistics from those of his neogrammarian teachers (1916). Yet much of the shift involved repudiation of concerns narrower than those of Brugmann's "neogrammarian manifesto," while Brugmann and the others were almost completely occupied with production of the handbooks that represent the advances in a field.

1.3.1 The neogrammarian "manifesto"

The so-called manifesto was published as preface to a series established by Osthoff and Brugmann (1878: iii–xx). Although not so noted, it was written by Brugmann. A selection of its tenets is given here, with reference to the English translation (Lehmann 1967: 198–209). Since, while brief, it is crisply formulated, excerpts cannot make up for reading the entire essay. In view of the current preoccupation with "theory," contemporary linguists may be amused, and one may hope also instructed, by Brugmann's inveighing against the "hypotheses-beclouded atmosphere of the workshop"

language, it may be extended, as the contrast between the simple noun and the form with plural -s has been in English. The complexities of such extension of the early vowels after changes had taken place were so great that a half century of devoted study was required to sort them out. The investigations that succeeded in this achievement also contributed to assurance in the comparative method.

Much of the eventual clarification of Indo-European ablaut is attributed to Hermann Hirt (1865-1936), who sketched the steps that led to his views (1921-37). The first step in clarification for the nineteenth-century Indo-Europeanists came when Bopp realized that for historical explanation it would be necessary to posit the guna form as basic (1836). For, as Hirt pointed out, deriving guna and vridhhi forms of roots like *ped- "foot" from *pd- would seem to be creating vowels from zero. Bopp's observation led to the eventual rejection of Sanskrit as equivalent to the parent language. And the guna form was now taken as historically prior; but Bopp did not make further advances in the understanding of ablaut.

The next major step came when Adolf Holtzmann (1810-70) proposed a cause for the vowel variation (1844). He aligned it with shifts in accent. However, the relationship remained unclear because he and others found it difficult to determine the precise relationships between accent and vowel grades. The forms for "I know, we know" indeed show the expected relationship in the Sanskrit perfect *véd-a, vid-más*; but their Greek cognates, do not, i.e. *oid-a, id-men*. Similarly, "I go, we go" indeed show the appropriate relationship with the accent in Sanskrit *é-mi, i-más*, though not in the Greek cognates *é-mi, i-men*. Many more such difficulties might be cited. The two languages considered oldest then failed to provide unambiguous support for Holtzmann's proposal; and the other dialects that preserved a variable accent, Baltic and Slavic, added further difficulties.

The situation was not clarified until Verner proposed his solution for the voiced fricatives corresponding to Proto-Indo-European voiceless stops, as in Gothic *fadar*. When he pointed out that this correlation applied if the accent stood on the vowel after the voiceless stop, it became clear that at one time Germanic had a variable accent like that of Sanskrit. The phonological explanation has strong morphological support; for example, the past tense of verbs with medial voiceless stop, like PIE **werr-* "turn, become," have consonant variation in Old High German that is parallel to the position of the accent in Sanskrit, i.e. *ward, wurium*. Verner's article, then, as a further contribution showed the way to the solution of Indo-European ablaut. It demonstrated that some dialects, notably Vedic and Proto-Germanic, maintained the earlier accent, but that others, such as Greek, redistributed it in accordance with accentual principles in their own language.

In this way it contributed further to assurance in the comparative method, for it demonstrated decisively that, after a sound change or any change takes place, the results may be determined even when they are

redistributed on other grounds. Generally, these grounds are morphological, though they may also be lexical. In view of such redistribution, mere examination of subsequent forms may fail to disclose the earlier situation. The patterning in a language some centuries and millennia later may differ markedly from the situation at the time when a sound change has taken place.

This finding is repeatedly disregarded, as in the evidence for treatment of Sievers's law. For recent material, such as distribution of umlaut in German, the situation can be readily determined, if at some pains (Paul 1916-21 II: 9ff.) A sentence of Paul's on page 9 is especially worth notice: "Although it was only by chance originally that plural forms [of the noun] were distinguished from the singular by means of umlaut, this has gradually developed into a characteristic feature of the plural." We can determine such developments for umlaut in German; it is far more difficult to do so for early or reconstructed languages. But if we choose to deal with them, we are required to apply the same rigorous procedures that have been applied in determining the redistribution, as of German umlaut vowels.

Shortly after the publication of Verner's article, Brugmann published the statement that provided the theoretical basis for the explosion of fruitful historical studies in the last quarter of the nineteenth century (1878). From this point the comparative method in careful use merits the characterization "proofed procedure," as Diebold put it (1987: 25). Such use yields accurate solutions when the data to which it is applied are taken from the same chronological period; further, when they are parallel in environment. These provisions are by no means trivial, as Hoenigswald's careful elaboration of the method indicates (1960); but when they are observed, the results may be regarded with great confidence.

2.3 THE METHOD OF INTERNAL RECONSTRUCTION

The second central method in historical linguistics relies on data in only one language rather than comparison of comparable data in three or more languages. The method of internal reconstruction (IR) is based on the fact that sound change takes place by specific environments. Items parallel morphologically may nonetheless include differing environments, or may differ in form; for example, parallel Indo-European roots like **b^her-* "bear" and **b^herd^h-* "dig" differ in environment through the presence of two aspirates in the second; roots like **ag-* "lead" and *(*s*)*it^h-* "stand" differ in form from the canonical CVC structure of Indo-European roots, such as **sed-* "sit."

If Grimm's rules had been applied, **b^hernd^h-* would be reconstructed from Gothic *bind-*; but Sanskrit was considered closer to the parent language, and accordingly the contrast between the Sanskrit root *bandh-* and the Gothic form was considered an exception in Germanic. Grassmann found the decisive evidence for this so-called exception by noting that the

forms varied in Sanskrit and Greek, rather than by relying on Germanic; for example, the future of *bandh-* in Sanskrit has an initial aspirate, e.g. *bhantiyati*. It is also clear that strict reconstruction from Germanic alone, that is internally, would have resulted in the correct form of the root in Proto-Indo-European. In short, by internal reconstruction the problem could have been solved.

But rather than Grassmann's solution, a rigorous analysis of irregular Indo-European roots provided the first and ultimately most impressive demonstration of the method. That demonstration was produced by Saussure when he was a student in Leipzig (1879). Assuming that Indo-European roots have a canonical form consisting of Consonant-Vowel-Consonant, Saussure examined especially those roots that failed to meet the pattern. Among these were some of the most widespread, such as **ag-* and **(s)h₂-* cited above. Applying his conclusion to these as well, Saussure proposed that at an earlier stage they also had CVC structure; and he proceeded to reconstruct the missing C. Long viewed as a daring step that could not really be accepted, Saussure's proposal was demonstrated to be accurate when in 1927 Kurylowicz determined that the missing C in some words is attested in Hittite, where it is transliterated with *h*, for example Hittite *hark-* "hold," Latin *arceo* "enclose", Hittite *haran*, Old High German *aro* "eagle" (see also Kurylowicz 1935: 27-76, 253-5). After this demonstration, internal reconstruction was accepted as a second important method for historical study.

The comparative method was supported by comparable procedures in other sciences, as we have noted. If we wish to account for the development of the method of internal reconstruction, we may ascribe it to observations on language patterning. Sound changes take place by phonological environments. These may not coincide with the structure of morphological classes, as illustrated by the examples above of Proto-Indo-European roots. When applying the method to them, a standard or canonical form is proposed, such as CVC. Thereupon deviations are noted, such as the root **ag-*, which includes only VC elements. Finally, one proposes possible explanations and reconstructions. These are provided by drawing on one's knowledge of structures and processes in language generally, that is, from typological investigations.

Somewhat similar procedures have been fruitful in manuscript study. For example, one of the most highly regarded biblical manuscripts, the Codex Sinaiticus, includes a strange sequence in I Maccabees 5.20. The text there has the equivalent of "six or three thousand" where it should have "eight thousand." The problem was solved when it was proposed that this codex, like many others, was written down from dictation. The reader presumably could not make out the writing of the earlier manuscript, and said "six or three," which the scribe conscientiously put down. Knowledge about the production of manuscripts led to the solution.

The method is most effective when one can determine canonical forms.

As we have seen, the canonical form of roots in Indo-European is CVC; in Semitic, on the other hand, it is CCC. Some Semitic roots consist of only two consonants; for many of these a further consonant is posited, and then the posited element is reconstructed on the basis of modifications it has left on other elements of forms. Similarly, the consonants that Saussure reconstructed for Proto-Indo-European left modifications in some roots. For example, the length of vowel in **(s)h₂-* is ascribed to compensatory lengthening on loss of the earlier consonant; French *tête* "head" from Latin *testa* provides an example of such compensatory lengthening. And the *a*-vowel of **ag-* is similarly ascribed to the earlier consonant; for the typical vowel of Indo-European roots is *e*, but in the neighborhood of some laryngeals it was colored to *a*. Similar processes have been attested in other languages. In applying the method, one calls on such information in the effort to achieve a credible hypothesis.

While the method is applicable to attested languages, it is especially useful for reconstructed languages. In attempts to relate them to other reconstructed languages, such as the repeated proposals of relationship between Indo-European and Afro-Asiatic or similar proposals about Amerindian languages, internal reconstruction is the primary method for arriving at the structure of the languages when the two proto-languages were closer to one another. The results then may be treated with the comparative method. However, internal reconstruction is also highly important in attempts to account for phenomena in one language family, such as ablaut in Proto-Indo-European.

2.4 FURTHER APPLICATIONS OF THE METHOD OF INTERNAL RECONSTRUCTION

After the publication of Saussure's monograph of 1879, linguists were equipped with the two important methods of historical linguistics. Furthermore, solution of the so-called exceptions to Grimm's law, as it was now called, gave them great confidence for clearing up the problems posed by earlier study. Chief among these was the vowel system, and ablaut.

In 1876 Osthoff provided one advance by proposing vocalic liquids - *r* and *l* for the proto-language. Having seen his article in manuscript, Brugmann reconstructed vocalic nasals in a publication of the same year (1876; cf. Lehmann 1967: 190-5). Shortly thereafter, Sievers proposed that such vocalic elements varied with consonantal counterparts in accordance with their environment (1878; cf. Lehmann 1967: 210-16); the formulation is known as Sievers's law, also as the Sievers-Edgerton law. For instance, with *y/* as example, the vocalic variant shows up in the Sanskrit first person plural *i-más* of "go," the consonantal variant in the third person plural *yánti*. Using data assembled by Benfey, Sievers demonstrated additional variation after long versus short syllables, as in Sanskrit *arýá* : *kárvá*, both with the suffix -*ya-*; after a long syllable the -*ý-* variant of -*y-* appears,