4. The History of Linguistics

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1 Introduction

Many "histories" of linguistics have been written over the last two hundred years, and since the 1970s linguistic historiography has become a specialized subfield, with conferences, professional organizations, and journals of its own. Works on the history of linguistics often had such goals as defending a particular school of thought, promoting nationalism in various countries, or focussing on a particular topic or subfield, for example on the history of phonetics. Histories of linguistics often copied from one another, uncritically repeating popular but inaccurate interpretations; they also tended to see the history of linguistics as continuous and cumulative, though more recently some scholars have stressed the discontinuities. Also, the history of linguistics has had to deal with the vastness of the subject matter. Early developments in linguistics were considered part of philosophy, rhetoric, logic, psychology, biology, pedagogy, poetics, and religion, making it difficult to separate the history of linguistics from intellectual history in general, and, as a consequence, work in the history of linguistics has contributed also to the general history of ideas. Still, scholars have often interpreted the past based on modern linguistic thought, distorting how matters were seen in their own time. It is not possible to understand developments in linguistics without taking into account their historical and cultural contexts. In this chapter I attempt to present an overview of the major developments in the history of linguistics, avoiding these difficulties as far as possible.

2 Grammatical Traditions

A number of linguistic traditions arose in antiquity, most as responses to linguistic change and religious concerns. For example, in the case of *the Old-Babylonian tradition*, when the first linguistic texts were composed, Sumerian, which was the language of religious and legal texts, was being replaced by Akkadian. This grammatical tradition emerged, by about 1900 BC and lasted 2,500 years, so that Sumerian could be learned and these texts could continue to be read. Most of the texts were administrative lists: inventories, receipts, and rosters. Some early texts for use in the scribal school were inventories (lists) of Sumerian nouns and their Akkadian equivalents. From this, grammatical analysis evolved in the sixth and fifth centuries BC; different forms of the same word, especially of verbs, were listed in a way that represented grammatical paradigms and matched them between the two languages (Gragg 1995, Hovdhaugen 1982).

Language change also stimulated the *Hindu tradition*. The Vedas, the oldest of the Sanskrit memorized religious texts, date from ca. 1200 BC. Sanskrit, the sacred language, was changing, but ritual required exact verbal performance. Rules of grammar were set out for learning and understanding the archaic language. Pāini's (ca. 500 BC) description (which contains also rules formulated by his predecessors, in a tradition from the tenth to the seventh centuries BC) originated in comparisons between versions called *padapā a* (word-for-word recitation) and *sa a* (continuous recitation, of divine origin, unalterable) of the same Vedic texts. The grammatical rules were devised

for this comparison and for checking textual accuracy, and technical methods of grammatical description were developed in connection with the formulation of these rules. In addition to Pāini, Kātyāyana's rules of interpretation (ca. 300 BC) and Patañjali's commentary (ca. 150 BC) are important in this tradition. Grammar was considered the most scientific of the sciences in India, and the scholars in other areas aspired to the ideal embodied in the Hindu grammatical tradition (Staal 1974).

The Greek grammatical tradition, which also owes its origin to language change, was developed originally by schoolmasters, though it is known only from later writings of philosophers. Homer's works (ca. 850 BC) were basic in early Greek education, but the Greek of the fifth to the third centuries BC had changed so much that explanations of Homer's language were important in the school curriculum. Observations taken from earlier school grammar are found in works of Plato, Aristotle, and the Stoics (Hovdhaugen 1982: 46). Themes important in the ancient Greek tradition have persisted throughout the history of linguistics, such as the origin of language, parts of speech (grammatical categories), and the relation between language and thought, to mention just a few. A persistent controversy was whether "nature" or "convention" accounted for the relationship between words and their meaning, and this had implications for the history of language and for the origin of words. Earlier opinions on the matter are contrasted in Plato's (427–347 BC) *Cratylus*. At issue was whether language originated in "nature" (*phúsis*), with the first words supposedly imitating the things that they name, or in "convention" (*nómos* or *thésis*), that is, in usage or naming, whether of human or divine invention, or in a synthesis of the two. Aristotle (384–322 BC) in *De interpretatione* favored convention over nature; the Stoics held that language originated in nature.

For the Greeks, morphology (word structure) was mostly a historical matter, about the creation of the structure of words (part of "etymology"). Syntax was not described directly, but aspects of syntax were treated in rhetoric and logic. With respect to parts of speech, we see in Plato's division of the sentence into *ónoma* ("name") and *rħêma* ("utterance") an example where the interpretation of the past has been based too much on present understanding. Plato's terms are at times equated with the modern categories "noun" and "verb," respectively, but they equally had shades of "subject" and "predicate," and "topic" and "comment," or even entity and relation. The parts of speech (grammatical categories) as understood in traditional grammar developed more fully with the Stoics and others (Hovdhaugen 1982: 41, 48).

Roman linguistics continued Greek themes. Aelius Donatus' (fourth century AD) *Ars minor* and *Ars major* and Priscian's (sixth century AD) *Institutiones grammaticae* (18 volumes) became exceedingly important in the middle ages. Except for Varro (116–27 BC) and Priscian, Roman grammarians also did not treat syntax (only parts of speech); rather, morphology dominated in an approach focussed on noun declensions and verb conjugations (Hovdhaugen 1982: 87).

The Arabic grammatical tradition had roots in the Greek grammatical traditions, especially following Aristotle. For Arabic grammarians, the Arabic language was sacred and immutable as enshrined in the Qur'ān, and they were concerned with explaining why Arabic was perfect. For example, the system of inflectional endings was believed to be proof of the symmetry and logicalness of the language. The major impetus for grammatical study came from linguistic change and the desire to preserve the integrity of the holy language of the Qur'ān. While no change was acknowledged in formal Arabic after the eighth century, the realization that the spoken Arabic of the eighth and ninth centuries was changing stimulated the development of Arabic grammatical study. Abū'l-Aswad ad-Du'alī (died ca. 688) is reputed to be the inventor of this grammatical tradition, which commenced seriously in the writings of al-Khalīl (died 791) and Sībawayhi (died 804) (a Persian) (Owens 1988). *The Hebrew linguistic tradition* began with concern for establishing the correct Hebrew text of the Old Testament. Hebrew grammarians borrowed descriptive methods wholesale from the Arabic linguistic tradition and developed a system of analysis for the morphology (analysis of words into their meaningful parts). Between 900 and 1550, 91 authors composed 145 works on grammar that we know of. Saadya ben Joseph al-Fayyūmī (a.k.a. Saadya Gaon) (882–942) is generally held to be the first to produce a Hebrew grammar and dictionary (Téné 1995: 22). Ibn Janā of Cordova's *Kitāb al-Luma'*, written in Judeo-Arabic, was the first complete description of Hebrew. For Ibn Janā (born 980 AD), Hebrew, Arabic, and all other languages had three parts of speech: noun, verb, and particles (as in the Arabic tradition, inherited from Aristotle). The tradition reached its peak in David Qimi's (ca. 1235) grammar, *Sepher mikhlol*, whose main features were analysis of verbal forms with a set of affixes and roots. This kind of analysis came to have a strong impact on European linguistics. Johannes Reuchlin's

(1506) comprehensive *De rudimentis Hebraicis* introduced the Hebrew method of morphological analysis in Europe, and Theodor Bibliander (1548) recommended this analysis of words into roots and affixes for the study of all languages. He thought languages described in the Hebrew manner would be "in conformity with nature" and could therefore be meaningfully compared (Percival 1986).

Early Christian writers returned to the philosophical themes of Aristotle and the Stoics. Classical Latin grammars, mainly Donatus' *Ars minor*, were adapted to church education. Teachings of Roman grammarians were mixed with folk views in a Christian frame. In the seventh and eighth centuries, Donatus predominated, though ca. 830 Priscian's *Institutiones* replaced Donatus as the basic grammar, resulting in a new tradition of commentaries, the first steps towards the shift of interest in the eleventh and twelfth centuries which gave rise to the theory-oriented speculative grammar of the thirteenth and fourteenth centuries. The origin of languages was also of natural interest to the multilingual early Christian world, with notions of Babel and of taking the "word" to the nations of the earth (Hovdhaugen 1982:109). In this environment, the hypothesis that Hebrew was the original language from which all others sprang became predominant.

3 The Rise of Universal Grammar

Around AD 1000, a shift began in which logic came to dominate linguistic thought. Prior to 1100, most scholars adhered faithfully to Donatus and Priscian; from the twelfth century onwards there was a return to dialectics. The recovery through Arabic scholarship of Aristotle's lost writings was an important factor, and Arabic commentators were quoted amply. Grammarians followed Aristotle's view that scientific knowledge is universal or general and applies to all subject matter, including grammar, hence universal grammar. Semantic analysis (or logical theory) came to dominate Europe for the next four centuries. Pierre Abailard's (Abelard's) (1079–1142) *Dialectica* (ca. 1130) systematized logic as expressed through the structure of ordinary language, building on Aristotle and placing logic at the highest level of contemporary science. Robert Kilwardby (died 1279) insisted on the universal nature of grammar, a concept more fully developed by Roger Bacon (1214–1294), both Englishmen who taught in Paris. Bacon is famous for his statement that "grammar is substantially one and the same in all languages, although it may vary accidentally" (Bursill-Hall 1995: 131).

"Speculative grammar" developed, with concern for the notion of *modi significandi* "ways of signifying." Some 30 authors, called *Modistae*, most connected with the University of Paris, integrated Donatus and Priscian into scholastic philosophy (1200–1350), that is, the integration of Aristotelian philosophy into Catholic theology. According to the *Modistae*, the grammarian's job was to explain how the intellect had created a system of grammar; in language the grammarian expressed understanding of the world and its contents through the modes of signifying (Bursill-Hall 1995: 132). Such a grammatical system had to mirror reality as grasped by understanding; that is, grammar was ultimately underwritten by the very structure of the universe (Breva-Claramonte 1983: 47). The *Modistae* compiled lists of modes of signifying for Donatus' and Priscian's parts of speech, distinguishing essential modes (the same in all languages) from accidental ones. For example, "predication" (verb) was essential to communication, but "tense" was accidental, since its function could be signified by something else, for example by temporal adverbs. "Noun" was the most essential (echoing Aristotle).

In the fourteenth century, teaching grammars began to compete with the scholastic commentaries, and the Modistic approach faded; however, there was a revival of philosophical grammar in the sixteenth century, begun with Julius Caesar Scaliger's (l'Escale) (1484–1558) *De causis linguae latinae* (1540). For Scaliger, grammar was part of philosophy, including the causation or creation of language from nature (hence the *de causis* in his title) (Breva-Claramonte 1983: 62). Francisco Sánchez (Sanctius) de las Brozas (1523–1601) in *Minerva, seu de causis linguae latinae* (1587) attempted to reconcile Plato and Aristotle by explaining that the "convention" favored by Aristotle was "reasoned," and, since reasoning is universal, God-given, it comes from "nature," which is what Sanctius believed Plato to have favored. Thus Sanctius' philosophy of language was "a rational discovery of the underlying 'perfection' or logic of language from which actual speech is derived" (Breva-Claramonte 1983: 15). Sanctius' universal grammar, in turn, influenced Arnauld and Lancelot's *Grammaire générale et raisonnée de Port Royal* (1660), and James Harris's (1709–1780) *Hermes* (1751), seminal in universal grammar theory.

In medieval manuscripts, the inflectional paradigms of Latin were explicated or annotated with forms from the vernacular languages. This pedagogical practice was combined in the seventeenth century with the revival of scholastic logical grammar in the *Grammaire générale et raisonnée de Port Royal* (Arnauld and Lancelot 1660). Following René Descartes (1596–1650), with human understanding taken to be the same for all people, scholars held the basic forms of thought to be the basis of every grammar; the particular grammatical systems of existing languages were merely approximations of the universal ideal, partly corrupted by neglect in usage. The principal concern was with the manifestation of universal semantic concepts in individual languages. In the seventeenth century, language studies came to be based on new theories of cognition and the philosophy of language, in particular on John Locke's (1632–1704) *Essay Concerning Human Understanding* (1690).

4 The Rise of the Comparative Method

Through voyages, conquests, trading, and colonialization from the sixteenth century onward, Europe became acquainted with a wide variety of languages. Information on languages from Africa, Asia, and America became available in the form of word lists, grammars, dictionaries, and religious texts, and attempts at classifying these languages followed. Historical linguistic interests had a background in the Greek tradition's nature-versus-convention debate about language origins and its interest in etymology, as well as in the biblically based notion of Hebrew as the original language (*Lingua Adamica, Lingua Paradisiaca*) from which all others were assumed to descend after the confounding of tongues at Babel. From the catalogue of languages and peoples in Genesis came the tradition of *Sprachlisten*, "inventories of known languages of the world successively fitted into the Biblical ('Mosaic') framework, usually placing Hebrew at the head, between the third and seventeenth centuries" (Robins 1990: 86, Borst 1959).

Large-scale word collections for language comparisons were a notable feature of the centuries after the Renaissance. Some landmarks were Konrad Gesner 1555, Gottfried Wilhem Leibniz 1717, Johan Christoph Adelung 1782, 1806, Lorenzo Hervás y Panduro 1784, 1800, Peter Simon Pallas 1786, among others. These played an important role in the development of comparative linguistics.

The development of comparative grammar is subject to interpretation, explaining why each of the following at one time or another has been considered the "father" of comparative linguistics: Giraldus Cambrensis 1194, Dante 1305, J. J. Scaliger 1610 [1599], Georg Stiernhielm 1671, Andreas Jäger 1686, Ludolf 1702, Adriaan Relander [Hadrianus Relandus] 1706, Edward Lhuyd 1707, Philip Johan Tabbert von Strahlenberg 1730, Johan Ihre 1769, Jo[h]annis [János] Sajnovics 1770, Sir William Jones 1798, Christian Kraus 1787, Sámuel Gyarmathi 1799, Franz Bopp 1816, 1833, Ramus Rask 1818, and Jacob Grimm 1818, among others. Hoenigswald's summary of the points upon which seventeenth- and eighteenth-century scholars agreed concerning criteria for establishing language families is telling:

> First, … there was "the concept of a no longer spoken parent language which in turn produced the major linguistic groups of Asia and Europe". Then there was … "a Scaliger concept of the development of languages into dialects and of dialects into new independent languages". Third came "certain minimum standards for determining what words are borrowed and what words are ancestral in a language", and, fourth, "an insistence that not a few random items, but a large number of words from the basic vocabulary should form the basis of comparison" … fifth, the doctrine that "grammar" is even more important than words; sixth, the idea that for an etymology to be valid the differences in sound – or in "letters" – must recur, under a principle sometimes referred to as "analogia".
>
> (1990: 119–20)

From the fifteenth century onward, etymology had been shifting away from its sense in classical antiquity of unfolding the true meaning of words toward a historical search for earlier stages in languages and the origin of words (Robins 1990: 86). Etymology thus became important in attempts to establish linguistic relationships. The *Dutch etymologists*, such as Scrieckius 1614, de Laet 1643,

and ten Kate 1710, had a lasting impact. Their analysis of words into roots and affixes (prefixes and suffixes), which was inspired by the Hebrew grammatical tradition, became fundamental to the comparative method. They utilized three principal criteria for establishing family relationships which were to become standard: basic vocabulary, sound correspondences, and grammatical agreements.

4.1 The Scythian hypothesis and the notion of Indo-European

Eventually, comparative linguistics came to have Indo-European languages as its main concern. Early recognition of the family relationship among Indo-European languages is connected intimately with the "Scythian hypothesis." The *Scythae* of Classical writers (Herodotus, Strabo, Justin, etc.) were a nation on a sea in the north in extreme antiquity. Josephus and early Christian writers took them to be the descendants of Japheth (son of Noah), the assumed father of Europe (Droixhe 1984: 5), and the Scythian linguistic hypothesis emerged from these notions. Various proposals attempted to identify Scythians with different language groups of Europe and Asia, but proposed Indo-European associations came to dominate. With Johannes Goropius Becanus' (Jan van Gorp van Hilvarenbeek's) (1518–1572) (1569) emphasis on "Scythian," recognition of Indo-European as a language family began. Raphelengius (Ravlenghien) reported correspondences between Persian and Germanic languages. Marcus Zuerius Boxhorn(ius) (1602–1653) relied both on matches in words and on grammatical similarities to prove "that these people all learned their language from one same mother" (Muller 1986: 10). Others also advanced the Scythian hypothesis: Claudius Salmasius (Claude Saumaise) (1588–1653) (1643), Georg Stiernhielm (1598–1672) (1671), Andreas Jäger (1660–1730) (1686), Leibniz (1646–1716), and so on. So well known was the Scythian hypothesis that in 1733 Theodor Walter (1699–1741), a missionary in Malabar, "recognized similarities between Sanskrit, Greek, and Persian numerals and explained these with … Scythian theory" (Fellman 1975: 38).

4.2 Sir William Jones

The most repeated passage in linguistic history is Sir William Jones' (1746–1794) statement in 1786:

> The *Sanscrit* language, whatever be its antiquity, is of a wonderful structure; more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either; yet bearing to both of them a stronger affinity, both in the roots of verbs and in the forms of grammar, than could possibly have been produced by accident; so strong indeed, that no philologer could examine them all three without believing them to have sprung from *some common source*, which, perhaps, no longer exists. There is a similar reason, though not quite so forcible, for supposing that both the *Gothic* and *Celtick*, though blended with a very different idiom, had the same origin with the *Sanscrit;* and the old *Persian* might be added to the same family, if this were the place for discussing any question concerning the antiquities of *Persia*.
>
> (Jones 1798: 422–3)

Based on this, Jones is usually credited with founding comparative linguistics and discovering the relationship among Indo-European languages. However, this is a most unfortunate misreading of the history of linguistics. Jones neither initiated the comparative method nor discovered Indo-European, as a comparison of a remarkably similar quote from Andreas Jäger in 1686, one hundred years earlier, reveals:

> An ancient language, once spoken in the distant past in the area of the Caucasus mountains and spreading by waves of migration throughout Europe and Asia, had itself ceased to be spoken and had left no linguistic monuments behind, but had as a "mother" generated a host of "daughter languages," many of which in turn had become "mothers" to further "daughters." (For a language tends to develop dialects, and these dialects in the course of time become independent, mutually unintelligible languages.) Descendants of the ancestral languages include Persian, Greek, Italic (whence Latin and in time the modern Romance tongues), the Slavonic languages, Celtic, and finally Gothic and the other Germanic tongues.

(Andreas Jäger 1686, cited by Metcalf 1974: 233)

In fact, there were several notable predecessors to Jones (in addition to the supporters of the Scythian hypothesis mentioned above). For example, Edward Lhuyd (1707) compared several Indo-European languages (Celtic, Germanic, Slavic, Persian, etc.), presenting a long list of cognates, sound correspondences, and sound changes. He even discovered part of Grimm's law (which has to do with sound correspondences between Germanic and the other Indo-European languages), long before Rask and Grimm made it famous (see below). Johannis (János) Sajnovics (1770) demonstrated the relationship between Hungarian, Lapp, and Finnish. He used clear methods which were followed frequently in later work, and his work was very influential in the subsequent development of historical linguistics. For example, Rasmus Rask (1787–1832) (1993 [1818]: 283), famous early Danish historical linguist, felt confident of the evidence he presented for the kinship of Germanic with Greek and Latin because it compared favorably with Sajnovics' "proof that the Hungarian and Lappish languages are the same," which, Rask said, "no one has denied since his day." Some Africanists cite Abbé Lievin Bonaventure Proyart' s *Histoire de Loango, Kakongo, et autres royaumes d'Afrique* from 1776 as a rival to Jones for its historical linguistic clarity. He pointed out that Kakongo and Laongo differ in many respects from Kikongo, but that "several similar articles [presumably prefixes], and a great number of common roots, seem, however, to indicate that these languages had a common origin" (quoted by Gregersen 1977: 97). Before Jones' famous pronouncement was published (in 1798), Jonathan Edwards, Jr (1745–1826) (1787) demonstrated the family relationship among the Algon-quian languages; Edwards listed "some 60 vocabulary items, phrases, and grammatical features"; Jones, in contrast, presented no linguistic evidence.

Connections among Indo-European languages had been observed by many before Jones. Also, the relationship between Sanskrit and other Indo-European languages, which is generally attributed to Jones, also had already been observed by several others. For example, De Guignes (1770: 327) reported that "an infinity of travellers have already noticed that in the Indian languages and even in Sanskrit, the learned tongue of these peoples, there are many Latin and Greek words" – Jones cited de Guignes and also referred to the Scythian hypothesis.

In fact, Jones had little interest in linguistics. His plan was to write a history of peoples of Asia, and language was only one source of information, used together with information from philosophy and religion, remains of sculpture and architecture, and documents of sciences and arts (Jones 1798: 421). His interest in the history of the human "races" rather than in language was typical in eighteenth – and nineteenth-century scholarship, shared by Leibniz, Hervás y Panduro, Monboddo, Vater, Schlegel, Grimm, Humboldt, among others. Their linguistic comparisons were just part of a broader history of the nations and races of the world. This theme of language in concert with other sources of evidence to determine the history and classification of nations and races was to persist into the early twentieth century. In fact, with this orientation, Jones incorrectly classified many languages, both Indo-European and non-Indo-European ones. Nevertheless, Jones was famous before he went to India as a judge; he had written a famous Persian grammar and was renowned for his scholarship involving numerous oriental languages. People expected big things of him, and indeed through his translations of Hindu legal texts he made Sanskrit well-known in Europe. As a result, his contribution came to be interpreted too enthusiastically.

Rather than being the initiator of Indo-European and of methods of comparative linguistics, Jones reflected the thinking of his day. For example, Christian Jakob Kraus (1753–1807) (1787) reviewed the assumptions concerning the comparative study of languages at that time. He indicated that similarity of words alone may or may not be indicative of family relationship, but if the grammatical structures of compared languages contained far-reaching similarities, the conclusion was in favor of a genealogical relationship (Hoenigswald 1974: 348). Very influential, and much more sophisticated than Jones' work, was Sámuel Gyarmathi's (1751–1830) *Affinitas linguae Hungaricae cum linguis Fennicae originis grammatice demonstrata* (1799), which both reflected and led the intellectual concerns of the day, emphasizing grammatical comparisons. Holgar Pedersen (1867–1953) (1962 [1931]: 105), in his famous history of linguistics, considered Gyarmathi's comparative grammar "the principle which became the lodestar of incipient Indo-European linguistics," the key to "comparative grammar." Notably, Gyarmathi warned against arguing for a genetic relationship based on similarities

due to universal grammar:

> it is beyond dispute that there are universal syntactic rules shared by most nations … I believe that it is much more appropriate for my demonstration to bring up the kind of examples which are specifically found in Hungarian, Lapp and Finnish and which can hardly be expressed at all in Latin, German and other European languages.
>
> (Gyarmathi 1983 [1799]: 33)

With Friedrich von Schlegel [1772–1829] (1808), "comparative grammar" became a continuing focus of historical linguistic studies. Schlegel drew from biology and comparative anatomy, and employed the notion of a family tree. Grammatical structure was his main criterion of family relatedness; two languages were considered related only when their "inner structure" or "comparative grammar" presents distinct resemblances (Schlegel 1808: 6–7).

Rasmus Rask (1818) wove together the historical linguistic currents leading to his day and laid out explicitly "the principles one considers it most proper to follow" (1993 [1818]: 9). He stressed the importance of comparing grammatical structures according to Sajnovics' and Gyarmathi's methods, applying etymological principles to the genetic classification of languages (Rask 1993 [1818]: 11, Diderichsen 1974: 301). As Rask explained, "grammatical agreement is a much more certain sign of kinship or basic unity" (Rask 1993 [1818]: 33–4), but he also relied on sound correspondences and basic vocabulary as evidence (Rask 1993 [1818]: 34). Rask discovered the set of sound correspondences which later became known as Grimm's law (though Rask's version seems somewhat clumsy in hindsight; Rask 1993 [1818]: 161–2).

Grimm's law was a major milestone in the history of Indo-European and thus also in historical linguistics. Jakob Grimm [1785–1863], of Grimm Brothers' fairytale fame, is one of the largest luminaries in historical linguistics. In the second edition of his *Deutsche Grammatik* (1822) he included the section inspired by Rask's formulation of sound correspondences among Indo-European languages later called "Grimm's law." Grimm recognized the importance of sound correspondences as evidence of family relationships, saying his law had "important consequences for the history of the language and the validity of etymology" and that it "provided sufficient evidence for the kinship of the languages involved" (Davies 1992: 161). Grimm's law treats a series of changes in certain consonants from Proto-Indo-European to Proto-Germanic:

> p, t, k became f, θ [like "th" of *thing*], h, respectively
>
> b, d, g became p, t, k, respectively
>
> bh, dh, gh became b, d, g, respectively

(Not all the consonants involved are mentioned here.)

Some examples which illustrate Grimm's law are seen in figure 4.1, where the words in English (a Germanic language) show the results of the changes, whereas their cognates in French (not Germanic) did not undergo the change.

	French	*English*
*p > f	pied	foot
*t > θ:	trois	three
*k > h:	cœur	heart
*d > t:	dent	tooth (< tanθ)
*g > k:	grain	corn
*bh > b:	frère (from *bhráter)	brother

Figure 4.1 Examples illustrating Grimm's law

While Grimm's law accounts for the systematic correspondences between Germanic and non-Germanic languages, it had some exceptions. However, subsequent discoveries, in 1862, showed that these exceptions have satisfactory explanations, and this led to a major development in linguistics. In Sanskrit and Greek, as a result of Grassmann's law, two aspirated stops within a word regularly dissimilated so that the first lost its aspiration (bh, dh, gh became b, d, g, respectively), and as a consequence, some sound correspondences between Sanskrit and the Germanic languages do not match expectations from Grimm's law, as seen in figure 4.2.

Proto-Indo-European	Sanskrit	Gothic	
*bheudha-	bōdha	biudan	"to wake, become aware, bid"

Figure 4.2 Example illustrating Grassmann's law

In Sanskrit, the **bh* dissimilated to *b* due to the **dh* in this word (giving Sanskrit *b* though *bh* would have been expected). In the Gothic cognate, which means "to bid", by Grimm's law we expect the *b* of the Sanskrit word to correspond to *p* in Gothic, and we expect the Gothic *b* to correspond to Sanskrit *bh*. This exception to Grimm's law is explained by the fact that Grassmann's law deaspirated the first aspirated consonant in Sanskrit. In 1877 Karl Verner (1846–96) accounted for other exceptions to Grimm's law in a change known as Verner's law, illustrated in figure 4.3.

Proto-Indo-European	Sanskrit	Gothic	
*septém-	saptá	sibun	"seven"

Figure 4.3 Example illustrating Verner's law

By Grimm's law, we expect the *p* of Sanskrit to correspond to *f* in Gothic, not the *b* found in this Gothic word, and given the *b* of Gothic, we would expect Sanskrit to have *bh*. Verner's law explains this exception to Grimm's law. When the Proto-Indo-European accent followed the sound in question (and it was not the first sound in the word), as seen in Sanskrit *saptá* (*á* is accented), **p* became *b* in Germanic, as in the Gothic word; otherwise, Grimm's law applied.

4.3 The Neogrammarians

This success in accounting for what had originally appeared to be exceptions to Grimm's law spawned one of the most notable developments in linguistics. It led the Neogrammarians to the confidence that sound change was regular and exceptionless. The Neogrammarians, beginning in about 1876 in Germany, became extremely influential. They were a group of younger scholars who antagonized the leaders of the field by attacking older thinking and loudly proclaiming their own views. They were called *Junggrammatiker* "young grammarians" in German, where *jung-* "young" had the sense of "young Turk," originally intended as a humorous nickname for these rebellious and strident young scholars, although they adopted the name as their own. They included Karl Brugmann (1849–1919) (the most famous linguist of his time), Berthold Delbrück (1842–1922), August Leskien, Hermann Osthoff (1847–1909), Hermann Paul (1846–1921), and others. The Neogrammarian slogan, "sound laws suffer no exceptions," or, more precisely, "every sound change, in as much as it occurs mechanically, takes place according to laws that admit no exceptions," was declared virtually as doctrine in the so-called "Neogrammarian manifesto" of Hermann Osthoff and Karl Brugmann (1878), written mostly by Brugmann. This became an important cornerstone of reconstruction by the comparative method. By "sound laws" they meant merely "sound changes," but referred to them as "laws" because they linked linguistics with the rigorous sciences which dealt in laws and law-like statements.

Some scholars, many of them dialectologists, did not accept the Neogrammarian position that sound

change is regular and exceptionless, but rather opposed this and the "family tree model" which represents languages related by virtue of descent from a common ancestor. The "family tree model" is often associated with August Schleicher (1821–1868), prominent pre-Neogrammarian figure in Indo-European linguistics (see Schleicher 1861–2). This model is typically linked in the literature with the development of the comparative method and eventually with the Neogrammarian notion of the regularity of sound change (though this connection is not necessary). The opponents' slogan was "each word has its own history." This slogan is often attributed to Jules Gilliéron (1854–1926), author of the *Atlas linguistique de la France* (1902–10), the dialect atlas of France, although it really comes from Hugo Schuchardt (1842–1927), a contemporary of the early Neogrammarians, of whose claims he was critical. The alternative to the family tree model which was put forward was the "wave theory," usually attributed to Johannes Schmidt (1872) though it, too, was actually developed earlier, in 1868 and 1870, by Hugo Schuchardt (Alvar 1967: 82–5). Interestingly, Schuchardt and Schmidt were both students of Schleicher, as were several of the leading Neogrammarians. The "wave theory" was intended to deal with changes due to contact among languages and dialects, where changes were said to emanate from a center as waves on a pond do when a stone is thrown into it, and waves from one center of dispersion (where the stone started the waves) can cross or intersect outward moving waves coming from other dispersion centers (started by other stones thrown into the water in other locations). Changes due to language contact (borrowing) were seen as analogous to successive waves crossing one another in different patterns. The dialectologists' slogan, that every word has its own history, reflects this thinking – a word's history might be the result of various influences from various directions, and these might be quite different from those involved in another word's history; hence each word has its own (potentially quite different) history.

Although some scholars have thought that dialectology naturally led to challenges to the Neogrammarian position, in fact the Neogrammarian founders gained support for their position in dialect study. They were impressed by Jost Winteler's (1876) study of the Kerenzen dialect of Swiss German in which he presented phonological statements as processes, modeled after Pawini's ancient rules for Sanskrit. This "regularity" which Winteler saw in the dialect's modern rules – for example that in Kerenzen every *n* became è [like "ng" in English *sing*] before *k* and *g* – inspired them to have confidence in the exceptionlessness of sound changes (Weinreich et al. 1968: 115). Today it is recognized that both the family tree and the wave model are necessary to explain change and that they complement one another (Campbell 1998: 187–91).

5 Philosophical-Psychological (-Typological-Evolutionary) Approaches

While the Neogrammarian tradition has dominated the history of linguistics, there was another once influential orientation, a philosophical-psychologicaltypological-evolutionary outlook on the nature and evolution of language, now largely forgotten.

In the nineteenth century, there was a clash between views of linguistics as a *"Naturwissenschaft"* (physical science) and *"Geisteswissenschaft"* (humanities). Leading linguists attempted to place linguistics in the natural (physical) sciences, denying any value for the more humanistic, "sentimental" intellectual orientations. A close analogy of linguistics with biology had been insisted upon by Schlegel, Rask, and many others, a view associated especially with Schleicher (1861–2). Nevertheless, many in the past did not clearly separate language, race, nation, and culture. As seen above, Jones, Leibniz, Hervás y Panduro, Adelung, Rask, and others believed they were working out the history of races and nations in their linguistic works, rather than that of mere languages. Folk (or national) psychology, coupled with the assumed stage of social evolution attained by its speakers – often called "progress" – was thought to determine a language's typology and its history, the sort of gross linguistic history later eschewed by the mainstream as too psychological. In the eighteenth century, interest began to concentrate on the origin of differences in languages and cultures, and this led to the idea of the particular "genius" of each language and through this to a "typology" of languages. These types were often viewed as both descriptive and historical. Traditional etymology and theories of language relationship were merged with logical grammar in an evolutionary scheme. Languages were classified into types according to their morphological structure, the types taken as representing or being correlated with evolutionary stages. Structural change in a language was taken as nothing more than the result of social evolution. For many, following Wilhelm von Humboldt (1767–1835), the typological categories – isolating, agglutinative, flexional, and

incorporating – were taken as reflecting the level of social evolution attained by the speakers of the language (a typical equation was: isolating = savagery, agglutinative = barbarianism, inflectional = civilization). For example, for Friedrich Müller (1834–1898), social evolution, racial type, and language type were correlated, so that hair shape and linguistic morphology (structure of words) could be associated with one another.

The notion of "inner structure" was persistent in this orientation. Johann Gottfried von Herder (1744–1803) (1772) had spoken of the "inner development of language," and the notion of "inner structure" was prominent in the work of Adelung, Schlegel, Bopp, Humboldt, Steinthal, and others.

Franz Bopp's (1791–1867) (1816, 1833) comparative grammar contributed significantly to growing interest in comparative grammar, but also incorporated aspects of the philosophical–psychological–typological–evolutionary outlook. Schleicher's (1861–2) *Compendium der vergleichenden Grammatik der indogermanischen Sprachen* is the acknowledged synthesis of nineteenth-century comparative linguistics for its time. Schleicher followed Humboldt's (1822) types, expounding the view that languages evolve, or "progress," from isolation to agglutination (with affixes arising from full words) and move onward to flexion, with gradual progress in the direction from simple to complex forms. Schleicher believed that "growth" (through agglutination) took place only in the prehistoric phase when languages were still young and capable of word-formation, during the period of *Sprachbildung* ("language formation"), whereas only changes of "decay" (by sound change and analogy) took place in the later historical period, after the growth process was assumed to have ceased entirely, during the period of *Sprachgeschichte* ("language history").

This view, that modern languages are but dim reflections of their more perfect progenitors, was called "glottogonic"; it characterizes the work of many early comparativists, but was severely criticized by Neogrammarians. They rejected Schleicher's and others' orientation as "glottogonic speculation." They denied its separation of stages, insisting that the same kinds of language changes apply to all phases of linguistic history; analogy and sound change operate throughout a language's history (Paul 1920 [1880]: 174, see Davies 1986: 154, Harris and Campbell 1995: 17–19).

Aspects of the philosophical–psychological–typological–evolutionary outlook endured into the twentieth century, although it was played down in the official histories written mostly by Neogrammarians, e.g. Pedersen (1962) [1931]; see Boas, Sapir, and Whorf, below; Campbell (1997: 27–9, 37–43, 55–66).

6 The Rise of Structuralism

Thinking which led to the replacement of the historical orientation in linguistics by emphasis on the study of living languages and their structure came from a number of quarters at roughly the same time. For example, incipient notions of the "phoneme" developed in several areas at about the same time, so that it is not possible to attribute it to any one person or school. The phoneme is a central concept of linguistics whose definition varies from school to school but which basically means the significant units of sound, the minimal unit of sound capable of changing the meaning of words. Some speculate that in the wake of World War I, linguists were happy to free themselves of the German domination represented by the Neogrammarian historicism which had been predominant until then, and indeed the new currents, partly convergent but also with individual characteristic differences, came not from Germany, but from Switzerland with de Saussure, Russia with Baudouin de Courtenay, and America with Boas.

6.1 Ferdinand de Saussure (1857–1913)

After early influential Neogrammarian work on the vowels of Indo-European in 1878, published when he was 21, and a doctoral dissertation in 1881 on the genitive in Sanskrit, Saussure published little else, nothing on the topics for which he is best known, and yet he became one of the most influential scholars in twentieth-century linguistics and modern intellectual history. The extremely influential *Cours de linguistique générale* (1916), published after his death in 1913, was compiled from his students' notes from his course in general linguistics (given three times between 1907 and 1911) at the University of Geneva. This book is credited with turning the tide of linguistic thought from the diachronic (historical) orientation which had dominated nineteenth-century linguistics to interest in

the synchronic (non-historical) study of language. Defining linguistics was a main goal of the book.

Saussure emphasized the synchronic study of language structure and how linguistic elements are organized into the system of each language. His theory of signs has been very influential. His linguistic sign is a union of the *signifiant* ("signifier," the form, sound) and the *signifié* ("signified," the meaning, function); the particular form (sounds) and the particular meaning in individual signs are arbitrarily associated with one another; their connection is purely conventional; that is, the sound-meaning association in signs is not predictable from one language to the next. The thing signified, say the notion *tree*, is arbitrarily associated with the sounds (signifier) which signal it, for example with the sounds of *Baum* in German, *kwawitl* in Nahuatl, *rakau* in Maori, *tree* in English, and so on. In Saussure's view, linguistic entities were considered members of a system and were defined by their relations to one another within that system. He compared language to a game of chess, a highly organized "algebraic" system of relations, where it is not the actual physical attributes of the pieces which define the game, but rather the relation of each piece to the other pieces in the system which give it its definition, a system *où tout se tient* ("where everything holds together," where everything depends on everything else, that is, where everything is defined in terms of its relations to everything else), in the famous saying of Antoine Meillet (1866–1917) (student of Saussure).

Saussure, influenced by the social thinking of Emil Durkheim (1858–1917) (founding figure in sociology), held that language is primarily a "social fact" (rather than a mental or psychological one, as others had held), that is, that there is a "collective consciousness" which is both the possession of society at large but also defines society. ("Social fact" and "collective consciousness" are terms associated with Durkheim, which Saussure used.) Saussure's famous dichotomy, *langue* (language, as socially shared and as a system) versus *parole* (speech, the language of the individual), reflects the French social thinking of the day. The goal, naturally, was to describe *langue*, but, since the individual's speech would reflect and represent the language as possessed by society generally, the social (general) character of language could be approached through the study of the language of the individual.

Today, nearly all approaches to linguistics are "structuralist" in some sense and reflect Saussure's monumental influence. Saussure's structuralism has also had a strong impact on anthropology, literary criticism, history, psychology, and philosophy, promoted and modified by Jakobson, Lévi-Strauss, Foucault, Barthes, and Derrida, among others.

6.2 The Prague School and its antecedents

Jan [Ignacy Niecisław] Baudouin de Courtenay (1845–1929), born in Poland, was developing structuralist ideas at the University of Kazań in Russia at about the same time as Saussure was lecturing in Geneva. Saussure was familiar with Baudouin de Courtenay's thinking and parts of the *Cours* reflect this very directly; Saussure had said that Baudouin and his student Mikołaj Kruszewski (1851–1887) were the only European scholars who contributed to linguistic theory (Stankiewicz 1972: 4–5). Baudouin de Courtenay's thinking was instrumental in the development of the notion of the "phoneme," though the concept developed with influence also from several other directions at once. Baudouin and his students contributed the terms "morpheme," "grapheme," "distinctive feature," and "alternation," all basic terminology in modern linguistics. His thinking survived most vividly through linguists whom he influenced who became associated with the Linguistic Circle of Prague.

Serge Karcevskij (1884–1955), who had been in Geneva from 1906 to 1917, brought Saussure's thinking back to the Moscow Linguistic Circle, with its formalist movement. Roman Jakobson (1896–1982) and Prince Nicholai S. Trubetzkoy (1890–1938) recognized areas of convergent thinking with Saussure. Later, Jakobson and Trubetzkoy (two Russians) became the best known representatives of the Prague School of linguistics. Jakobson, Trubetzkoy, and others of the Prague School developed aspects in structuralism which are important in current theories, for example "distinctive features," "markedness," "topic," and "comment," and the notion of "implicational universals," as well as "linguistic areas" (*Sprachbund*). Jakobson, who emigrated to the US in 1942, had a strong impact on the development of generative phonology both through his student, Morris Halle, and through his influence on Noam Chomsky (see below).

6.3 Franz Boas (1858–1942)

Franz Boas is considered the founder of American linguistics and American anthropology. A major concern for him was to obtain information on Native American languages and cultures before they disappeared, and indeed his is the last, sometimes the only, significant data on a number of now extinct languages, for example, Lower Chinook, Cathlamet, Chemakum, Pentlach, Pochutec, and Tsetsaut. He passed his sense of urgency for fieldwork on to his students, a dedication to getting accurate information while it was still possible. The methods Boas and his followers worked out for the description of such languages became the basis of American structuralism, a dominant force in twentieth-century linguistics.

This approach reflects Boas' famous "linguistic relativity" and his emphasis on avoiding generalization. At that time, many erroneous claims were about, such as that certain South American Indians could not communicate in the dark, since, it was asserted, their language was so "primitive" they had to rely on gestures (which could not be seen in the dark) to convey concepts such as "here" and "there" or "yesterday" and "tomorrow" to make up for the assumed severe limitations of their vocabulary; that change in "primitive" languages could proceed so fast that grandparents could not understand their grandchildren; that the pronunciation of "primitive" languages could vary unpredictably and be so imprecise as to make learning such languages all but impossible; and so on. In particular, earlier descriptions of so-called "exotic" languages frequently attempted to force them into traditional European grammatical categories, missing or distorting many distinctions significant to these languages. The different categories available in human languages are far more extensive than had been supposed from the generalizations being made which were based on the more familiar European languages. In face of so many bad generalizations, Boas believed it important to avoid preconceptions and to describe each language and culture in its own terms – on the basis of information derived internally from an analysis of the language itself rather than imposed on it from outside. His students made this a matter of principle, an orientation to linguistics with emphasis on description and against generalizing, against theorizing about language. This orientation prevailed in American Structuralism until Noam Chomsky's views reoriented the field towards universals, generalizing, and linguistic theory (see below).

The notion of "inner form" became the core of Boas' view of ethnology and linguistics. Boas used Humboldt' s concept of "inner form" to deal with the diversity of American Indian languages, seeing languages as conditioning the world view of their speakers. He was strongly opposed to the evolutionism of philosophical-psychological-typological-evolutionary views of the past, but maintained a Humboldtian psychological orientation. Nevertheless, he succeeded in turning attention against the evolutionary determinism characteristic of this way of thinking. He showed that the traditional typological-evolutionary views of grammar were inaccurate and ethnocentric. His view is revealed in his conception of the *Handbook of North American Indian Languages* (Boas 1911) as a "morphological classification" of American Indian languages. The languages he selected for inclusion in the *Handbook* were chosen to represent as many psychologically distinct types of language as possible, with the goal to reveal their "morphological classification and psychological characterization" and to serve as "a uniform series of outlines of Indian languages to be published in synoptic form for use in comparative studies by the philologists [historical linguists] of the world." "His emphasis was on the diversity of linguistic structures and accompanying mental worlds to be found in North America" (Campbell 1997: 64). After Boas, with help from Sapir and Kroeber, the view of morphological types as representatives of stages of social evolution died out. The two most influential American linguists after Boas were Sapir and Bloomfield.

6.4 Edward Sapir (1884–1939)

Sapir (Boas' student) was highly admired during his life and is still something of a hero to many linguists. He published extensively in both linguistics and anthropology, did first-hand fieldwork on many American Indian languages, contributed to historical linguistics (in Indo-European, Semitic, and numerous Native American families; for example, he established once and for all the Uto-Aztecan family and proposed the once controversial but now established Ritwan-Algonquian family), and wrote theoretical works, for example on the phoneme, still read with profit today. His impact in these areas was monumental. At the same time, he was also no stranger to the psychological-typological current of thought. Trained in Germanic linguistics, he fully understood the Humboldtian psychological tradition. His 1921 book, *Language*, insightfully dealt with the broad morphological

typologies of the past century, but without the evolutionism which characterized them in earlier views. His own typology rested on the tradition extending from the eighteenth and nineteenth centuries represented by Schlegel, Bopp, Humboldt, Schleicher, Müller, Steinthal, Wundt, and others. However, like Boas, he rejected the evolutionary prejudice that typified traditional typological studies: "all attempts to connect particular types of linguistic morphology with certain correlated stages of cultural development … are rubbish" (Sapir 1921: 219). He did not accept the notion of significant racial differences in the "fundamental conformation of thought," the belief that differences in linguistic forms (believed to be connected with the actual processes of thought) could be indexed to racial differences. However, he did uphold the psychological orientation of the earlier typological tradition and passed it along to his student Benjamin Whorf (1897–1941), in whose hands it was transformed into the Whorf (or Sapir–Whorf) hypothesis, which holds that a speaker's perception of the world is organized or constrained by the linguistic categories his or her language offers, that language structure determines thought, how one experiences and hence how one views the world. This became a lasting theme in linguistics, anthropology, psychology, and philosophy, though many are unaware of its pedigree from German Romanticism. In his descriptive work, Sapir maintained the mentalism and non-generalizing of Boas' approach.

6.5 Leonard Bloomfield (1887–1949)

Bloomfield is credited with giving American structuralism its fundamental form, making linguistics an autonomous field. His principal concern was to develop linguistics as a science. Bloomfield's (1933) *Language* is considered a milestone in linguistics, the foundation of American structuralist linguistic thinking. Of this book, Bloomfield reported that it showed Saussure's thinking on every page. Bloomfield was also heavily influenced by behaviorist psychology. He accepted the Boasian prohibition against generalizing but at the same time he denied the relevance of "mind"; that is, he opposed the mentalism that had characterized the American linguistics of Boas, Sapir, and their students. This left American structuralism (represented by Bernard Bloch, Zellig Harris, Charles Hockett, Henry Lee Smith, George Trager, and others – sometimes called the "Bloomfieldians") with essentially nothing more than method, the "discovery procedures" against which Chomsky later argued so effectively. With a mentalistic orientation but no theoretical assumptions (no generalization), followers of Boas and Sapir could hold their description of a given language up to some external measure to decide whether it was accurate or not, namely, by determining whether it reflected what native speakers knew of their language. However, Bloomfield and his followers were left with no means of validating a description – by denying generalizations (theory), they could not evaluate the description of a given language according to how well it conformed to an understanding of human language in general, and by denying "mind" (mentalism) they could not judge a description against the extent to which it matched what native speakers knew of the structure of their language. Thus, nothing remained except method, "discovery procedures," the search for contrast and complementary distribution in the data recorded by linguists. This is a particularly impoverished state for a "science" to find itself in – all method and no theory. Given this state of affairs, it is not surprising that Chomsky was able to bring about a revolution in linguistics.

7 Noam Chomsky and Linguistic Theory since 1957

The mainstream of linguistics since 1957, the year in which Chomsky's *Syntactic Structures* appeared, has been dominated by Noam Chomsky (1928–). It is difficult to overestimate Chomsky's impact on both linguistics and contemporary ideas in general: "Chomsky is currently among the ten most-cited writers in all of the humanities [and social sciences] (behind only Marx, Lenin, Shakespeare, the Bible, Aristotle, Plato, and Freud) and the only living member of the top ten" (Pinker 1994: 23). It is common to speak of "the Chomskian revolution," so radically distinct is Chomsky's program from that of his American structuralist predecessors. Unlike the Bloomfieldians, Chomsky brought back mentalism. For him, the goal of a grammar is to account for the native speaker's "competence," defined as what a native speaker knows, tacitly, of his or her language. Since speakers know, among other things, how to produce an infinite number of sentences, many of which are novel, never having been produced before (talked about as linguistic "creativity"), an account of "competence" would require the formal means to produce or generate these new sentences, hence a "generative grammar." A grammar was seen as a theory of a language, constrained and evaluated just as any other theory in the sciences. Unlike most of his predecessors, Chomsky focussed on syntax, and in so doing, laid the foundation

for explaining this “creativity.” The notation of generative grammar was invented to make explicit the notion of “competence”; a generative grammar is a formal system (of rules, later of principles and parameters) which makes explicit the finite mechanisms available to the brain to produce infinite sentences in ways that have empirical consequences and can be tested as in the natural sciences.

Unlike the Boasians and the Bloomfieldians, Chomsky gave linguistics the goal of generalizing, of attempting to determine what languages hold in common and to establish a rich theory of human language. Chomsky's approach is often called “generative grammar” or “transformational-generative grammar.” Transformations were essentially rules for relating one syntactic structure to another, for example, as in early versions where questions, such as Is *Pat here*?, were derived by transformation from the corresponding declarative, *Pat is here*. However, in later versions of the theory, transformations no longer play a significant role. In Chomsky's theorizing about language, universals hold a central place. He rejected the “discovery procedures” of his American structuralist predecessors, those inductive procedures for deriving the grammatical description of a language through the application of procedures sensitive essentially only to the distribution of elements in a corpus of data from the language. The primary task of the linguist, according to Chomsky, should not be to discover the structure of the language from a body of data; rather, the goals should be to describe and explain the knowledge of the structure of the language which the native speaker has. This shifted attention from actual behavior (or recorded data) to the system of knowledge that underlies the production and understanding of language, and, further, to the general theory of human language lying behind this knowledge. This was a radical reorientation of the field, rejecting the anti-mentalism of the Bloomfieldians and the anti-theorizing of the Boasians and Bloomfieldians.

Chomsky redirected the goal of linguistic theory towards attempting to provide a rigorous and formal characterization of the notion “possible human language,” called “Universal Grammar.” In his view, the aim of linguistics is to go beyond the study of individual languages to determine what the universal properties of human language in general are, and to establish the “universal grammar” that accounts for the range of differences among human languages. The theory of grammar relies on certain general principles which govern the form of the grammar and the nature of the categories with which it operates. These principles are conceived of as universal properties of language, properties that are biologically innate. The notion of innateness, developed by Eric H. Lenneberg (1960), was adopted by Chomsky and became central to his thinking. He argued that much of our knowledge about language is universal and innate, that is, in-born, genetically endowed, a language instinct, part of our biological birthright. Chomsky attacked a standard view at the time that children are born with minds that are essentially “blank slates” (the view of the behaviorist psychologists), that the human psyche is largely molded by the surrounding culture. Chomsky maintained that rather than being born blank slates, children have a genetic predisposition to acquire linguistic knowledge in a highly specific way. He posited innate principles that determine the form of acquired knowledge.

Chomsky's (1959) review of Skinner's *Verbal Behavior* became the basic refutation of behaviorist psychology (which had so influenced Bloomfield and his followers). B. F. Skinner (1904–1990) (1957) had claimed to be able to explain language as a set of habits gradually built up over the years – as in experiments with rats rewarded with pellets of food in their trial-and-error learning (*operant conditioning*), which Skinner assumed to be the mechanism by which the vast majority of human learning takes place, including language learning. Understand the “controlling variables” (stimuli) and responses, and you understood language learning, he claimed. Chomsky's criticism showed that rat behavior is irrelevant to human language learning and that Skinner had misunderstood the nature of language. Human utterances are not predictable in face of a particular stimulus; we might not say only “oh what a beautiful picture” when seeing a painting, but also, “it clashes with the wallpaper,” “it's hanging too low,” “it's hideous,” etc. In caretaker-child interactions, says Chomsky, parents approve / reward statements which are true rather than those which are grammatically correct. A child's ungrammatical utterance, “Teddy sock on,” is approved by the mother when the child shows her a teddy bear wearing a sock, but “Look, Teddy is wearing a sock” receives the mother's disapproval when the child shows the mother a bear without a sock. Perhaps some human activities, say learning to drive or to knit, may seem to be learned as the rats learned, but not language. Language structure is very complex, but children do not go through a prolonged trial-and-error phase. In Chomsky's words:

> A consideration of the character of the grammar that is acquired, the degenerate quality and narrowly limited extent of the available data, the striking uniformity of the resulting grammars, and their independence of intelligence, motivation, and emotional state, over wide ranges of variation, leave little hope that much of the structure of the language can be learned by an organism initially uninformed as to its general character.
>
> (Chomsky 1964: 58)

As evidence of innateness, the following have been offered. Language is extremely complex but children acquire it in a remarkably short period of time. The stimulus or experience children have with the language around them appears to be too poor to provide the basis for acquiring the mature linguistic capacities that they ultimately attain. The language around them that children experience consists partly of degenerate data which have little effect on the capacity which emerges; the speech children hear is full of unfinished sentences, mistakes, slips of the tongue (performance errors). It contains few or no example sentences to illustrate some of the complex structures that children "learn." Children's experience is finite (limited), but the capacity eventually attained includes the ability to produce an infinite number of grammatical sentences. This is often called "the poverty of stimulus argument." The acquisition of language is relatively independent of intelligence – the language learning ability of dim children is not noticeably inferior to that of bright children; all but those on the lowest rungs of mental deficiency learn language, and language emerges at about the same time in children all over the world, uniformly regardless of language environment, culture, or ethnicity. Skill or ability seem to have nothing to do with it; however, for most other learned tasks, like roller-skating, piano-playing, etc., there are enormous differences from child to child. Finally, the direct correction of children's language mistakes (as Skinner's model advocates) has been noted by numerous researchers to be pointless; children's production changes not with adult correction, but only as the grammar they acquire goes through the normal stages of language development in children.

Since this theory began, it has evolved through versions called "Standard Theory," "Extended Standard Theory" (and "The Lexicalist Hypothesis"), "Trace Theory," "Government and Binding" (later called "Principles and Parameters" approach), and finally "the Minimalist Program." It has also spawned a number of theories which compete in some ways but which nevertheless share most of the Chomskian goals of linguistics and many of the underlying assumptions, for example, "Case Grammar," "Generalized Phrase Structure Grammar," "Generative Semantics," "Head-Driven Phrase Structure Grammar," "Lexical-Functional Grammar," and "Relational Grammar."

8 Typology

An orientation to linguistics which contrasts with the "generativist" approach is that of the "typologists," sometimes called the "functional-typological" or "Greenbergian" approach. Typology, broadly speaking, is the classification of languages according to linguistic traits and the comparison of patterns (structures) across languages. The typological approach attempts to explain the patterns through appeal to language function in cross-linguistic comparison. Languages can be typologized according to almost any linguistic trait, and indeed classifications based on widely varied attributes have been proposed in the history of linguistics. For example, Wilhelm Wundt (1832–1920) (1990: 436) dealt with twelve oppositions or types, including prefixing versus suffixing languages, free versus fixed word-order languages, and languages with more extensive grammatical apparatus of verbs versus those with more elaborate treatment for nouns. Such typologies rest on a tradition extending from the eighteenth and nineteenth centuries represented by Schlegel, Bopp, Humboldt, Schleicher, and others. Typology throughout the nineteenth century was primarily morphological – the structure of the word (morphology) alone was held to determine a language's whole character.

Several concepts fundamental to modern approaches to typology come from the Prague School, for example, implicational universals – if a language has a trait *x*, then it is expected also to have a trait *y;* for example, the presence of nasalized vowels in a language implies that language will also have plain, non-nasalized vowels. Roman Jakobson (1958) brought implicational universals to broader attention and this marks the beginning of modern work on typology and universals. It inspired Joseph

H. Greenberg's (1915–) classic article on word order (1963); Greenberg is generally considered the founder of modern typology. Typological study has contributed to the understanding of many concepts of grammar and of how they interact with one another, how they function, and how they are distributed in the world's languages. Typological research also incorporates many assumptions about how languages can change, and "grammaticalization" has become the subject of extensive discussion. Though notions of grammaticalization have a long earlier history in linguistics (Harris and Campbell 1995: 15–20, 45–7), Antoine Meillet (1912) introduced the term, which has come to mean primarily changes in which an independent word changes to become a grammatical marker, or where some less grammatical entity becomes more grammatical. A standard example is change from *will* with its original meaning of "want" to the grammatical "future tense" (Traugott and Heine 1991: 2).

9 Conclusions

In a brief survey of the history of linguistics such as this, much of significance goes unmentioned, though the major developments have been described here. Suffice it to say that linguistics is commonly held to be one of the most successful of the social sciences and as such has contributed both methods and models of rigor to other disciplines. As well as having its own robust history, linguistics has contributed richly to the general history of ideas and can be expected to continue to do so. Therefore to conclude, it may be appropriate to attempt to anticipate the future, what the continuing history of linguistics will bring. We may guess from the current "hottest" topics in linguistics what some future areas of high activity may be. Endangered languages will continue to be a major concern – languages are becoming extinct at an alarming rate; it is estimated that within the next 100 years, 50 percent to 85 percent of the world's 6,000 or so languages will become extinct or so near to extinction they cannot be revived. Human cognition and connections with formal grammar are a major focus of the discipline, and this is likely to grow rather than diminish. Interfaces between linguistics and computer science are growing and are likely to be of high interest to future linguists. Investigation into language universals and typology, within both formal and functionalist approaches, will no doubt persist, aimed at understanding language universals, the properties of universal grammar, and the function of language (and how function may help shape language structure). The extent to which these approaches will converge or diverge even further is anyone's guess. Reports in the non-linguistic media make the issue of remote language relationships appear to be one of the biggest concerns of present-day linguists. In fact, it is the concern of very few linguists; nevertheless, efforts to work out the history of human languages and their more distant family relationships will continue, though it is hoped that a more rigorous and careful methodology will be applied and that some progress will be made. Advances will be made in the explanation of how and why languages change. A favorite pastime of some linguists today is to speculate about what will happen to linguistics when Noam Chomsky retires and his personal influence no longer determines much of the central activity in linguistic theory. Here, speculations run rampantly in many directions. It will be fascinating to see what the future will bring.

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