

1 Introduction

Western grammatical theory has been influenced by it [= Pāṇini's grammar] at every stage of its development for the last two centuries. The early 19th century comparativists learned from it the principles of morphological analysis. Bloomfield modeled both his classic Algonquian grammars and the logical-positivist axiomatization of his *Postulates* on it. Modern linguistics acknowledges it as the most complete generative grammar of any language yet written, and continues to adopt technical ideas from it.

– Kiparsky (1993)

In the sphere of grammar it is a gratifying custom of present-day linguists to pay lip-service to the greatest of descriptive grammarians, the ancient Indian Pāṇini.

– Allen (1953)

The modern Western tradition of linguistics owes a great debt to the linguists of ancient India.¹ Yet the vast majority of linguists working within the modern Western tradition know very little about this debt. Most modern linguists today know little or nothing about the sophisticated and extensive tradition of linguistics which flourished in ancient India for more than two thousand years, and which has – as noted by Kiparsky (1993) in the quote given above – had a considerable influence on the development of the modern Western tradition. Many introductory linguistics courses begin with passing reference to Pāṇini, and many linguistics students may be made aware that standard linguistic terminology such as *sandhi* and *bahuvrihi* are Sanskrit terms, borrowed into modern

¹ Throughout this work, I use and contrast the terms 'modern (Western) linguistics' and '(ancient) Indian linguistics'. These terms are used for ease of reference, though they naturally obscure the finer detail. In referring to the tradition of 'modern Western linguistics', I mean to refer to the tradition(s) of linguistic analysis which developed primarily in Europe and North America in the nineteenth and twentieth centuries, growing out of the Classical (Hellenistic and Roman) traditions of linguistics, and which is now an established field of academic study the world over. By 'ancient Indian linguistic tradition', I mean to refer to the tradition of linguistic analysis which, as discussed below, originated in the Indian subcontinent in the second or first millennium BC, which flourished across the subcontinent well into the early modern period, and which survives today as a living tradition of linguistics within the traditional Indian scholarly community. Thus 'modern Western linguistics' is today not exclusively 'Western', and 'ancient Indian linguistics' is not exclusively 'ancient'. Yet the terms are not without meaning and reflect real historical and intellectual differences. One of the aims of this book is to explain some of the historical relations between the two traditions, and to point out similarities and differences between the traditions in how they approach and analyse common linguistic questions.

linguistics from ancient India. But beyond a name and a few technical terms, the ancient Indian tradition, and its influence on and continuing relevance to modern Western linguistics, is a mystery to anyone who has not been fortunate enough to have had the opportunity to learn Sanskrit and to study the ancient tradition through its original – mostly highly complex and intractable – works. Even the many English translations and commentaries on important texts such as the *Aṣṭādhyāyī* and the *Vākyapadīya* are incomprehensible to anyone not well versed in Sanskrit linguistic concepts and terminology. In parallel manner, most students of Sanskrit language and literature know that the ancient Indians had a sophisticated linguistic tradition, but few of them study that tradition in detail, and fewer still know anything but the barest facts about modern linguistics, and about its relations with the Indian tradition.

This book is intended as a first step, albeit a limited and uncomprehensive step, for linguistics students and scholars in the modern Western tradition to begin to address this knowledge gap. My aim is to introduce modern linguists to the ancient Indian linguistic tradition, and to explore both the Ancient Indian tradition of linguistics in the light of modern linguistics and key ideas of modern linguistics in the light of the Indian tradition. In so doing, I will show that many of the issues addressed by the Indian tradition are issues that are still of great importance in linguistics today, and the assumptions and choices made by that very different tradition shed new light on the assumptions and choices that modern linguists make today. Thus, this is not merely a matter of historical interest, a topic for students of the history of linguistics rather than for students of linguistics itself: to expand on the quote given at the start of the Acknowledgements, from the great philosopher-grammarians Bhartṛhari (VP 2.489), it is only by understanding and engaging with systems and traditions of analysis different from our own that we can make progress both in understanding the data we seek to analyse and in advancing and improving our own analytical procedures. If we are unable to look beyond our own tradition's ideas of how language works, and of how one or another phenomenon should be understood and analysed, we can never hope to do more than continue that tradition, as opposed to advancing and improving our analysis and coming closer to a true understanding of language.² The ancient Indian tradition was by far the most sophisticated and insightful tradition of linguistics in the ancient world, the most sophisticated and insightful tradition of linguistics to have existed (as far as we know) before the advances of modern Western linguistics in the twentieth century, and it therefore stands as the primary point of comparison for the tradition of modern Western linguistics. My hope is therefore not only that readers of this book might fill a gap in their knowledge of the history of linguistics, but that they might see the value of understanding and engaging with

² The same may be said of sub-traditions within modern linguistics, e.g. the various traditions of contemporary syntactic theory.

different traditions – even different modern traditions – for their own work in linguistics.

In the rest of this chapter I introduce the ancient Indian linguistic tradition, its origins and history, and survey its influence on the tradition of modern linguistics to date. In Section 1.4, I provide a brief initial foray into the connections and comparisons between the two traditions, by investigating the concept of the ‘sign’ in modern linguistic thought and the concept of *sphoṭa* in ancient Indian thought.

This book treats the ancient Indian linguistic tradition in the very broadest sense, going beyond the central Indian school of *vyākaraṇa* ‘grammatical analysis’ and its figurehead, Pāṇini. Nevertheless, because *vyākaraṇa* was the central and most developed field of linguistics in ancient India, and because Pāṇini holds so central a place not only in Indian linguistic thought but also in terms of Indian influence on Western linguistics, this book necessarily focuses more on Pāṇini, and his grammar of Sanskrit, the *Aṣṭādhyāyī*, than on any other scholar or text of the Indian tradition. Pāṇini and his *Aṣṭādhyāyī* are central to Chapters 2 to 6. In introducing the Indian tradition, I therefore begin by introducing Pāṇini himself.

1.1 Who Was Pāṇini?

Pāṇini – in ancient texts referred to also as Dākṣīputra ‘son of Dākṣī’ – is the reputed author of the *Aṣṭādhyāyī*, widely regarded as the most important product of the ancient Indian linguistic tradition. Although it is clear that the *Aṣṭādhyāyī* was not an isolated creation but rather the product of a long and sophisticated tradition, it does not seem unlikely that the particularly sophisticated and ingenious nature of the grammar, which rendered the whole of the preceding tradition so obsolete that it has not survived, is attributable to the work of a single, particularly brilliant, scholar.³ His date and location cannot be known for certain, though the latter is subject to less controversy. Pāṇini is reputed to have come from the ancient province of Gandhāra, and more specifically a settlement called Śalātura, located near modern-day Chota Lahor in the far north-west of the Indian subcontinent, in modern-day Pakistan. Given that Taxila, at the time the most important centre of learning in the subcontinent, was less than fifty miles from Śalātura, it seems likely that Pāṇini would have studied and worked there, though there is no evidence for this.

Dating almost any text or author in ancient India, particularly in the period BC, is highly problematic. This is because few historical events or persons (such as kings) can be dated with certainty, due to a lack of chronologically

³ There is no reason to doubt the existence of a single primary author/compiler of the *Aṣṭādhyāyī*, even granted the (in certain respects arguable) evidence for inconsistencies and layers of composition in the *Aṣṭādhyāyī*. For discussion of these issues, compare Joshi and Roodbergen (1983) and Cardona (1999: 112–140).

reliable histories and firm archaeological evidence. Moreover, most ancient Indian texts do not in any case locate themselves relative to any person, event, or thing that is firmly (or not firmly) dateable. The wide disagreements over the date of perhaps the most important historical figure from the first millennium BC, Gautama Buddha, are a case in point.⁴

It is possible to date Pāṇini relative to later authors. The *Mahābhāṣya* of Patañjali is widely agreed to have been written around 150 BC.⁵ This is a commentary primarily on Kātyāyana's *Vārttikas*, which are themselves a commentary on the *Aṣṭādhyāyī*. Kātyāyana therefore necessarily precedes Patañjali, and Pāṇini necessarily precedes Kātyāyana by some time, since it is clear that there was a break in the tradition between Pāṇini and Kātyāyana, which resulted in Kātyāyana and all later authors lacking a full understanding of certain aspects of Pāṇini's grammar.⁶ But how long an intermission should be assumed between Pāṇini and Kātyāyana is impossible to determine.

Pāṇini has been dated absolutely as early as 700 BC, and as late as the Mauryan dynasty, that is, the late fourth century BC. As discussed by Cardona (1976: 260–268), although the evidence is uncertain, most modern scholars believe that Pāṇini lived before the conquests of Alexander the Great and thus cannot be later than the first half of the fourth century.⁷

Gandhāra was one of the sixteen traditional *mahājanapadas*, or kingdoms/realms, of India in the mid-first millennium BC. Around 520 BC the Persians captured Gandhāra and neighbouring Kamboja, and these remained as provinces of the Persian (Achaemenid) empire until the coming of Alexander the Great in 327 BC. Although Persian influence in the region waned in the decades preceding Alexander, it is therefore possible that Pāṇini was technically a subject of the Persian empire. But the cultural and intellectual tradition in which Pāṇini worked was thoroughly Indo-Aryan and shows no sign of Persian influence.

Pāṇini's importance in the development of Indian scientific thought has been compared to that of Euclid in the West (e.g. by Staal 1965b). The *Aṣṭādhyāyī* is the earliest surviving monument of Indian scientific thought, and it was highly influential in the development of the later scientific and mathematical traditions in India. In this sense the status of the tradition of vyākaraṇa in ancient India was more like that of mathematics or physics in the modern Western world: it was in some sense the original, the prototypical science and a fundamental influence on all other fields of science. Beyond India, the Indian linguistic

⁴ For a discussion of the Buddha's date, see Cousins (1996).

⁵ Cardona (1976: 263–266).

⁶ See, for example, Kiparsky (1979: 235–249).

⁷ It is worth noting, however, that Patañjali believed Pāṇini to have lived in the Mauryan period, i.e. following the Alexandrian conquests.

tradition has also had a significant influence on the development of Western linguistics.

1.2 Pāṇini's Influence on Modern Linguistics

There are differing opinions on the degree to which modern linguistics has been influenced by the ancient Indian tradition, and in particular by Pāṇini.⁸ The quotation from Kiparsky (1993) given at the start of this chapter exemplifies one side of the debate, taking Pāṇini's influence as pervasive; the following assessment concurs:

Although often not explicitly acknowledged by the influential linguists indebted to it nor recognized by historians of linguistics, Pāṇinian grammar has had a profound influence on modern linguistics. (Scharf 2007: 78)

In contrast, Allen (1953), as quoted at the start of this chapter, and similarly Cardona, below, consider Pāṇini's influence on modern linguistics more debatable:⁹

I also think one should avoid overestimating the influence of Pāṇini on modern linguistics, where it is customary to pay little more than lip service to that brilliant grammarian. (Cardona 2000)

The truth lies somewhere in between. It is certainly not true, as Kiparsky (1993) claims, that modern linguistics widely, or as a whole, 'acknowledges [Pāṇini's *Aṣṭādhyāyī*] as the most complete generative grammar of any language yet written, and continues to adopt technical ideas from it', though that may be true of Kiparsky himself. Yet it is true that ancient Indian linguistic thought has influenced modern linguistics at multiple points in its development, in particular in the latter's genesis in the early nineteenth century, in the work of arguably the most important pre-generative linguist, Leonard Bloomfield, and in the work of one of the most important linguists of the generative era, the aforementioned Paul Kiparsky.

To start at the beginning, the birth of modern linguistic analysis in the West was, arguably, the direct result of early Western encounters with Indian linguistic thought. The very earliest grammatical descriptions of Sanskrit to reach the West were all based on or influenced by native Indian grammars.¹⁰

⁸ On the wider influence of Sanskrit and the encounter with India on Western thought, see Rabault-Feuerhahn (2008) and Turner (2015).

⁹ Compare also Pontillo (2021).

¹⁰ On the 'discovery' of Sanskrit in the history of the development of linguistics, see Morpurgo Davies (1992: 59–82).

Probably the earliest grammatical account of Sanskrit to reach the west was the *Grammatica linguae Sanscretanae Brachmanum Indiae Orientalis*, written in the 1660s by Father Heinrich Roth, SJ (1620–1668), and based on Anubhūti Svarūpācārya's *Sārasvatavyākaraṇa*.¹¹ The early English language grammars of Sanskrit, in particular those by Henry Colebrooke (1805) and Charles Wilkins (1808), likewise derived their insights from the Indian grammarians they learned the language from.¹² It was from these early grammars that the early nineteenth-century linguists, most prominently the pioneering Indo-Europeanist Franz Bopp, learned about Sanskrit.

It was Franz Bopp's first publication, Bopp (1816), which inaugurated the academic field of comparative grammar, that is, which first established the comparison of the linguistic systems of related languages as a serious academic undertaking carried out in a systematic and scientific way.¹³ Crucially, Bopp's method involved the morphological segmentation of words into their parts, a procedure not familiar to traditional Western linguistics, but central to Indian grammar, and it was from Colebrooke (1805) and Wilkins (1808) that Bopp took this procedure.¹⁴ Thus it was not simply the 'discovery' of Sanskrit which brought about the birth of comparative linguistics, but specifically the 'discovery' of Sanskrit as analysed (with morphological segmentation) by the Indian grammatical tradition.¹⁵ That the Indian grammatical tradition was the catalyst for the development of comparative linguistics in the West (and therefore of modern linguistics in general) has been recognized by certain prominent authors over the last two hundred years, but largely remains forgotten.¹⁶

¹¹ See, e.g., Filliozat (2011), Schneider (2022), Wielńska-Soltwedel (2022). Other early Jesuit grammars of Sanskrit were likewise based on native, primarily non-Pāṇinian, grammatical texts. So the *Grammatica Grandonica* of Father Johann Ernst Hanxleden, SJ (1681–1732) was based on the *Siddharūpa* and Dharmakīrti's *Rūpāvatāra*, while the *Grammatica Sanscritica* (1730s) of Father Jean-François Pons (1698–1752) was based on Vopadeva's *Mugdhabodha* and Kramadīśvara's *Samkṣiptasāra* (Filliozat 2020). Further on the early history of Indology, see Petit and Rabault-Feuerhahn (2019).

¹² Other early grammars contemporary with those of Colebrooke and Wilkins were by Forster (1810) and Carey (1806).

¹³ As described by Thieme (1983: 3).

¹⁴ See in particular Chapter 4. Bopp commented that Colebrooke (1805) was as instructive as an introduction to the native grammarians as it was unsatisfactory and impenetrable as a manual of the language!

¹⁵ Technically, the Indian grammars which had most influence on the early European grammars were 'non-Pāṇinian', in the sense discussed in §1.3.4. In particular, Vopadeva's *Mugdhabodha*, which was the basis of most of Pons' *Grammatica Sanscritica*, was very popular in Bengal at the end of the eighteenth century when Colebrooke, Wilkins, and others were learning Sanskrit in Calcutta. Colebrooke was the first to move away from Vopadeva to Pāṇini, and it was he who promoted the first publication of Pāṇini's grammar in 1809 in Calcutta (Bābūrāma 1809). On Colebrooke's importance in the early history of Indology, see Rocher and Rocher (2012).

¹⁶ E.g. Bloomfield (1929: 268–270; 1933: 11–12) notes that it was specifically acquaintance with Indian grammar which enabled Western linguistics to advance towards a science in the nineteenth century. The same point is made by Emeneau (1955: 149–150). For a more moderated view of Pāṇini's influence, see Bronkhorst (2017: 34–35).

Bopp's comparative work, in particular Bopp (1833–1852), was central in the development of Indo-European comparative linguistics, and more generally the science of language, in the nineteenth century.¹⁷ Through the work of Indo-Europeanists like Jacob Grimm and Karl Verner, systematic 'sound laws' were established for the Indo-European language family, enabling linguistic study to be treated as a scientific discipline where principles and laws of linguistic change could be derived systematically from linguistic data. The nineteenth-century tradition of comparative linguistics culminated in the work of the so-called 'Neogrammarians', who pushed this scientific approach to comparative linguistics to its logical culmination. Alongside the development of comparative historical linguistics, the development of phonetic science in the West has been clearly linked to the encounter with Indian linguistic thought, for example by Emeneau (1955: 149–150) and especially Firth (1946: 118–120), who says (p. 119), 'Without the Indian grammarians and phoneticians whom he [=Sir William Jones] introduced and recommended to us, it is difficult to imagine our nineteenth-century school of phonetics.'¹⁸

The next major step in the development of modern linguistics was in the work of Ferdinand de Saussure, sometimes called the 'father' of modern linguistics. Although direct influence of the Indian grammatical tradition on Saussure is hard to prove, indirect influence, at least, is clear.¹⁹ As Professor of Sanskrit and Indo-European at the University of Geneva from 1896, Saussure taught Sanskrit and Indo-European regularly. Saussure had taught himself Sanskrit in 1874 using Bopp's Sanskrit grammar (Morpurgo Davies 2004: 14). He studied Indo-European linguistics between 1876 and 1880, around the time of the 'Neogrammarian revolution', during which time he published a highly influential book *Mémoire sur le système primitif des voyelles dans les langues indo-européennes* ['Dissertation on the primitive vowel system in the Indo-European languages'] (Saussure 1879) and completed his doctorate, *De l'emploi du génitif absolu en Sanscrit* ['On the use of the genitive absolute in Sanskrit'] (Saussure 1880); both these works make reference (albeit obliquely) to Pāṇini. The Neogrammarian focus on rules and laws is likely to be at least partially influenced by Indian grammar, given the foregoing

¹⁷ Martineau (1867: 305): '[Bopp], one of the greatest Philologists of our time, without whose life and labours, indeed, the Science of Language might not have been. . . Bopp must, more or less, directly or indirectly, be the teacher of all who at the present day study, not this language or that language, but language itself.' Saussure (1916: 14, 16) refers to 'la science fondée par Bopp' ['the science founded by Bopp'], and says that 'il est douteux que Bopp eût pu créer sa science – du moins aussi vite, – sans la découverte du sanscrit' ['it is doubtful that Bopp could have created his science – at least so quickly – without the discovery of Sanskrit'].

¹⁸ See also Hock (2014), who discusses connections between the Indian phonetic/phonological traditions and Western linguistics in some detail, and Ciotti (2019), who traces the history of Indian influence in the development of Western linguistic thought all the way from Colebrooke through to Bloomfield, specifically in relation to the term *sandhi*.

¹⁹ On the possible influences on Saussure in his contemporary intellectual environment, see Seuren (2016).

discussion, and this in turn influenced Saussure, who was envisaging algebraic expressions of linguistics by 1894 (Staal 2005). As discussed below, there are close relations between Saussure's theory of the linguistic 'sign' and Indian conceptions of language. It has even been suggested that the Indian conception of language can be implicated in Saussure's radical refocusing of linguistics on synchrony.²⁰

Saussure (1916) inaugurated the era of Structuralist linguistics, which held sway until the (supposed) generative revolution brought about by Chomsky. The most important figure in American Structuralism, and again one of the most important figures in the history of modern linguistics, was Leonard Bloomfield. Bloomfield was a great admirer of Pāṇini²¹ and even published a paper on a section of the *Aṣṭādhyāyī* (Bloomfield 1927). It seems likely that Bloomfield was introduced to Pāṇini by the great Neogrammarian Jacob Wackernagel, and in a 1919 letter (Bloomfield 1919), he claims Pāṇini and the work of Wackernagel as his models for linguistic analysis. Pāṇini's influence on Bloomfield's approach to linguistics was considerable and has been well-researched, for example by Rogers (1987) and Emeneau (1988), in particular in his approach to word formation and his use of ordered rules and morphological zero.²²

The rise of generative linguistics, initially in the work of Chomsky (1957, 1965), is often presented as a revolution in linguistic thought which rendered obsolete all or most of the linguistic theorizing that preceded it. Yet it is worth noting that the central aspect of Chomsky's early work was the use of substitution rules. Far from being an innovation which overturned the Structuralist approach to language, substitution rules for syntactic and morphological analysis were familiar within the American Structuralist tradition, prominently appearing in important papers by Zellig Harris (1946) and Rulon Wells (1947); the initial contribution of Harris' student Chomsky (1957) was simply to formalize and popularize such substitution rules.²³ The use of substitution rules can be traced back, through both Bloomfield and the Neogrammarians, to the Indian tradition.²⁴

²⁰ The question of the influence on Saussure's linguistic theory from the ancient Indian grammatical tradition was explored in detail by Vajpeyi (1996).

²¹ Bloomfield (1929: 268): The *Aṣṭādhyāyī* is 'one of the greatest monuments of human intelligence... an indispensable model for the description of languages.' Bloomfield (1929: 274): 'For no language of the past have we a record comparable to Pāṇini's record of his mother tongue, nor is it likely that any language spoken today will be so perfectly recorded.' Similarly Bloomfield (1933: 11).

²² See also Wujastyk (1982).

²³ And of course more importantly, and most prominently in Chomsky (1965), to integrate a psychological perspective on language into the application of formal analyses; this too had Structuralist precedents, particularly in the work of Edward Sapir.

²⁴ On the origins of generative grammar and the influences on Chomsky, including from Bloomfield, see especially Encrevé (2000), who also makes valuable observations regarding

Indian influence, and Pāṇinian influence in particular, on modern Western linguistics has continued in the generative era, most notably through the work of Paul Kiparsky, who has been both one of the most prominent theoretical linguists in the last fifty years, and at the same time one of the most important Western scholars of Pāṇini. As we will discuss in Chapter 3, Kiparsky's influential theory of Lexical Phonology shows clear influence from Pāṇinian grammar; and modern approaches to rule systems and rule interaction in grammar are likewise heavily indebted to the Indian tradition, most famously in the notion of 'Pāṇini's principle' or the 'elsewhere condition', popularized by Kiparsky (1968b, 1973b).²⁵ Furthermore, as discussed in more detail in Chapter 5, Pāṇini's *kāraka* system was the inspiration for what Kiparsky (2009: 50) calls 'the first modern formulation of linking theory', by Ostler (1979), a student of Kiparsky's at MIT.²⁶

This brief survey will in certain respects be fleshed out in later chapters, but at this point aims merely to demonstrate the pervasive and ongoing influence of the Indian tradition on modern Western linguistics. In the next section, I turn to a survey of the Indian tradition itself, seeking to set in their historical and intellectual contexts the various texts and authors, and their approaches to language, which we will treat in the rest of this book.

1.3 The Ancient Indian Linguistic Tradition

In Western discussions of ancient Indian linguistics, it is usually Pāṇini who gets the accolades, and (too) often Pāṇini, and specifically his *Aṣṭādhyāyī*, which receives the primary or sole focus of Western linguists. In many respects, this is for good reason and accords with Pāṇini's status in much of the Indian tradition itself. But as Bronkhorst (2002) says, in agreement with Houben (1999), we should not treat Pāṇini as an 'isolated genius', nor his grammar as the product of 'pure science' *ex nihilo*, but should understand him in his historical and cultural context. Pāṇini's work was the culmination of centuries of linguistic analysis in ancient India; at the same time, it became the single greatest influence on all later Indian linguistics, which nevertheless extended in a variety of new directions. In this book most of our focus on the Indian tradition will be on Pāṇini and the *Aṣṭādhyāyī*, but in places other parts of the Indian tradition will take centre stage. In the following sections, I provide an overview

the importance of understanding the cumulative history of academic theorizing. On the Structuralist nature of Chomsky's generative grammar, see also Moro (2017: 85–88).

²⁵ See also Anderson (1969). Anderson (2001) attributes the origins of the 'elsewhere condition' in modern linguistics to Anderson (1969) and not to Kiparsky (1968b), so I refrain from saying that Kiparsky definitely introduced the notion himself.

²⁶ That Pāṇini inspired Ostler (1979) is directly claimed in Kiparsky (2009), though it is not explicitly acknowledged in Ostler (1979); Ostler (p.c., 2017) has agreed with Kiparsky's claim.

of the Indian traditions of linguistic analysis, from the very beginnings to the start of the modern period.²⁷

1.3.1 Early Origins

Evidence for linguistic awareness and developing linguistic analysis can be found throughout the earliest Sanskrit literature, the Vedas.²⁸ The first clear indications of linguistic awareness are the use of names for poetic metres, *Gāyatrī* and *Triṣṭubh*, in the *Ṛgveda*, a collection of the oldest surviving Sanskrit material, likely dating to the second half of the second millennium BC. That different poetic metres were already distinguished by name at this early period implies an existing tradition of metrical analysis (for which the Sanskrit term is *chandas*, the word Pāṇini uses to refer to the Vedas themselves). Although metrical analysis is not linguistic analysis, metrical analysis (of the types of metre used in the *Ṛgveda*) requires recognition of syllables, and of the distinction between heavy and light syllables, and may well have served as a precursor to more strictly linguistic analysis.

Linguistic thought in India ultimately developed in the context of understanding, analysing, and preserving the earliest Vedic texts, including the *Ṛgveda*, which were central to the religious and ritual activity of the culture.²⁹ These ‘texts’ were not written but composed and transmitted orally, and alongside metrical analysis sophisticated recitation patterns were developed to ensure precise and error-free memorization and transmission of the Vedas. The earliest known recitation system is the *Padapāṭha* of the *Ṛgveda*, attributed to Śākalya: this is a word-by-word breakdown of the *Ṛgveda*, which in standard ‘continuous’ (*saṃhitā*) recitation only distinguished word boundaries at the end of hemistichs and larger metrical units.³⁰ For example, on the basis of the *saṃhitā* recitation of RV 2.12.8ab as given in (1a), the *pada* (word-by-word) recitation is as given in (1b):³¹

²⁷ For surveys of the Indian linguistic tradition, see Scharfe (1977), Staal (2005), Scharf (2013), and Aussant (2018), with further references.

²⁸ For a detailed survey of the origins of linguistics in ancient India, see Liebich (1919: 3ff.).

²⁹ As noted by Jacobsen (1974: 41), the concern for preserving a classical literature composed in an increasingly obsolete language likewise underlies the rise of grammatical study in ancient Mesopotamia and ancient Greece; the same can be said also of ancient China.

³⁰ The historical development from analysis of verse lines to words is attested in the terminology: the original meaning of *pada* ‘word’ was ‘verse line’, and this is the only sense known to Mahidāsa, compiler/editor of the first six books of the *Aitareya Brāhmaṇa* (Liebich 1919: 4). The use of the term *pāda* ‘foot’ to mean ‘verse line’ is secondary, after the metaphor of a four-footed animal.

³¹ This hemistich can be translated ‘Whom the two war-cries, clashing together, call upon in rivalry – the enemies on both sides, here and over there –’ (Jamison and Brereton 2014: 417). The meaning is not relevant to the point at hand, of course.

- (1) a. Saṃhitā: *yám krándasī saṃyaṭī vihváyete páre 'vāra ubháyā amítrāḥ* |
 b. Pada: *yám* | *krándasī íti* | *saṃyaṭī íti sam-yaṭī* | *vihváyete íti vihváyete* | *páre* | *ávare* | *ubháyāḥ* | *amítrāḥ* |

In the *padapāṭha* ‘word-by-word recitation’, the words of the saṃhitā are individually repeated with a pause between each word; the pauses are marked by vertical lines in (1).³² Since words are pronounced in isolation, sandhi between words, applied regularly in the *saṃhitāpāṭha* ‘continuous recitation’, does not occur in the *padapāṭha*; for example, the first word here, *yám*, shows lenition of the final *m* to *ṃ* (*anusvāra*) before a consonant, as seen in the *saṃhitāpāṭha*, but this does not occur in *pausa*, as evidenced by the *padapāṭha*.³³ Likewise, the saṃhitā form of the antepenultimate word, *ávare*, shows elision of the first vowel and alteration of the final vowel due to sandhi, but the word appears in its *pausa* form in the *padapāṭha*.

The *Padapāṭha* shows clear evidence of linguistic analysis beyond the basics of word division, and the consequent undoing of sandhi at the end of words. A degree of abstract analysis of sandhi patterns is revealed by a device called *itikaraṇa*, that is, the appending of the word *íti* ‘thus’ to certain word forms which are, or – more importantly – which could be, ambiguous in terms of their sandhi. This is seen in (1), where the second, third, and fourth words are all so marked: they are duals, the final vowels of which in certain contexts do not undergo the sandhi expected for such vowels. These duals are therefore specially marked, even though in the passage in question none of the words appear in a context where there would be a difference between the sandhi of duals and non-duals ending in these vowels.

Abstract morphological analysis is also revealed by the device *avagraha*, a type of pause in the recitation, which is used to divide two-part compounds into their component parts. This is seen together with the *itikaraṇa* in the third and fourth words of (1), where it is used to separate preverbs from the verbal bases to which they attach (marked by the hyphens).³⁴

Avagraha is also used to distinguish certain nominal stems occurring before certain suffixes, where the stems show (or could be taken to show) word-external (rather than the – in principle expected – word-internal) sandhi before the suffix. For example, at RV 1.1.2 the words *púrvebhiḥ řṣibhiḥ* ‘by ancient řṣis’ are rendered in the *padapāṭha* as *púrvebhiḥ řṣi-bhiḥ* (with *avagraha* in *řṣi-bhiḥ*). The morphological division is marked only in the second word because only here can the preceding stem be treated as a separate ‘word’ for sandhi purposes. (In this example, the stem need not be treated as a ‘word’, but this

³² The vertical lines represent the equivalent symbol, called the *danḍa*, which is used to mark the pause in writing in the standard Indian scripts.

³³ On the pronunciation of *ṃ*, see Cardona (2013a).

³⁴ On the combined use of *avagraha* and *itikaraṇa* (together called *parigraha*) in the *Ṛgveda*, see Lowe (2023).

is an extension from stems where it must.) Interestingly, the use of avagraha to mark nominal stems in context when they can be treated as full words in sandhi shows strong similarities to Pāṇini's definition of the term *pada* 'word', which likewise includes such stems. Such close similarities make it likely that the same analytic tradition found in the *Aṣṭādhyāyī* was also at work already at the time of the RV *Padapāṭha*.³⁵

The *Padapāṭha* may be dated to the first half of the first millennium BC, perhaps early in that first half ('by the seventh century' for Scharf 2013). Alongside the *Padapāṭha*, a number of roughly contemporary Vedic prose texts make reference to specifically linguistic terms or notions, which provide evidence for the existence of contemporary linguistic analysis. The earliest may be the *Vājasaneyi Saṃhitā* of the *Śukla Yajurveda*, VS 25.1, which gives an anatomical list including 'various features which belong to the structure of articulatory and not of general physiological analysis' (Allen 1953: 6). The later *Aitareya Brāhmaṇa* uses the terms *varṇa* 'sound unit' (AB 5.32.2) and *svara* 'accent' (AB 3.24.9; later this means 'vowel'), beside the earlier (metrical) term *akṣara* 'syllable'. AB 5.32.2 is particularly interesting:³⁶

- (2) *tebhyo ... trayo varṇā ajāyanta=a-kāra u-kāro ma-kāra iti.*
 them.ABL three sounds produced='a' 'u' 'm' QUOT
tān ekadhā samabharat, tad etad om̐ iti.
 these.ACC singly/at_once brought_together that thus 'om̐' QUOT
 'From these ... three sounds were produced: "a", "u" and "m". These
 he combined singly/at once; in this way (he made the sacred syllable)
 "om̐".'

Here the term *varṇa* clearly means 'segment, sound unit', and we see the syllable *om̐* abstractly divided into three segment-sized units, none of which are directly pronounced in the surface form, but which constitute an appropriate underlying phonological analysis of the syllable.³⁷

The *Taittirīya Āraṇyaka* (TĀ 7.2.1) refers explicitly to *śikṣā* 'phonetics' (also mentioned in the *Vājasaneyi Saṃhitā*) and mentions a number of core terms of phonetic science: *varṇa* 'sound segment', *svara* 'accent/vowel', *mātrā* 'length', *bala* 'force of articulation', *sāma* 'homogeneity', and *santāna* 'transition'. The development of phonetic and phonological analysis is also attested in the *Aitareya Āraṇyaka* (AĀ 3.2.1) and *Chāndogya Upaniṣad* (CU 2.22.3–5) (both perhaps seventh–sixth century BC century), where we find the term

³⁵ Further on the linguistic analysis evidenced in the *Padapāṭha*, see Abhyankar (1974) and Jha (1987, 1992).

³⁶ This example is repeated as ex. (10) in Chapter 8, and discussed further there. Partly due to the length of many examples, I do not consistently give linguistic glosses of all Sanskrit passages discussed in this book, but here and elsewhere I do, when the linguistic analysis of the Sanskrit itself is of particular relevance.

³⁷ Given various properties of the Sanskrit sound system, which need not concern us here. On the sacred syllable *om̐*, see Gerety (2015).

akṣarasamāmnāya, referring to the inventory of sound units, and we find the first mentions of the division of the sound inventory into classes: vowels (*svara*), stops (*sparśa*), semi-vowels (*antasthā*), and fricative (*uśman*).

Moreover, at the time of the composition of the *Aitareya Āraṇyaka*, the category of semi-vowels is clearly a new proposal. The earlier three-way categorization of sounds is found at AĀ 2.2.4:

- (3) *tad vā idaṃ bṛhatī-sahasraṃ saṃpannaṃ. tasya yāni vyañjanāni tac charitraṃ. yo ghosaḥ, sa ātmā. ya uśmānaḥ, sa prānaḥ.*
 ‘This (hymn) is produced as a thousand *bṛhatīs*.³⁸ Of it, the consonants [*vyañjana*, here = stops and sonorants?] are the body, the vowels (*ghoṣa*) (are) the self, the sibilants (*uśman*) (are) the breath.’

But AĀ 3.2.1 discusses a new proposal:

- (4) *prāno vaṃśa iti sthaviraḥ śākalyaḥ. tad yathā śālāvaṃśe sarve ’nye vaṃśāḥ samāhitāḥ syur; evam asmin prāne cakṣuḥ śrotraṃ mano vāg indriyāṇi śarīraṃ sarva ātmā samāhitaḥ. tasyaitasyātmanaḥ prāna uśmarūpaṃ, asthīni sparśarūpaṃ, majjānaḥ svararūpaṃ, māṃsaṃ lohitaṃ ity etad anyac caturtham antasthārūpaṃ iti ha smāha hrasvo māṇḍūkeyaḥ. trayaṃ tu eva na etat proktam.*
 ‘Sthavira Śākalya says that breath is a beam, and that as the other beams rest on the main beam of the house, the eye, the ear, the mind, the speech, the senses, the body, the whole self, rests on this breath. Of this self, the breath has the form of the sibilants (*uśman*), the bones the form of the stops (*sparśa*), the marrow the form of the vowels (*svara*); “the flesh and blood as the fourth part have the form of the semi-vowels (*antasthā*)”, so says Hrasva Māṇḍūkeya. But we have learned that they are three.’

The proposal of Hrasva Māṇḍūkeya that alongside stops, vowels, and sibilants there is a fourth category of sounds, the semi-vowels, was clearly influential enough to the author of this part of the *Aitareya Āraṇyaka* to merit mention, but the author himself remains unwilling to abandon the older three-way division that he learned. This brief comment offers a remarkable glimpse into what was clearly an active and developing tradition of phonetic and phonological analysis at this early period.³⁹

Although the majority of the Vedic evidence is for phonetic and phonological analysis, we also find traces of grammatical analysis, with the apparent use of technical terms for grammatical categories; for example, in the *Aitareya*

³⁸ The *bṛhatī* is a type of poetic metre.

³⁹ It is an interesting but ultimately unanswerable question, how the segments *y*, *r*, *l*, and *v* (the ‘semi-vowels’) were categorized under the three-way system; arguments could be advanced for an original subsumption under any of the three original categories.

Brāhmaṇa (AB 6.3.7) we find the terms *yoṣā* ‘female’ and *vṛṣan* ‘male’ referring to grammatical genders, comparable to the later technical terms *pumān* ‘masculine’ and *strī* ‘feminine’. The *Aitareya Brāhmaṇa* also suggests the understanding of a three-way tense distinction (Liebich 1919: 13). But at this early period, although we see evidence for a few of the same conceptual distinctions, we do not find the same technical terms which become standard in the later tradition, suggesting that grammatical analysis was later to develop than phonetic/phonological analysis.⁴⁰

Beyond strictly linguistic analysis, we also find certain principles at work in the Vedic prose texts which may be related to important features of the later linguistic tradition. As we will discuss in Chapter 2, a crucial feature of the composition of Pāṇini’s *Aṣṭādhyāyī* is the concept of *anuvṛtti* ‘inference’: elements of one rule are repeatedly inferred in subsequent rules until blocked by an incompatible statement. Exactly the same principle is found in the description of ritual actions in the Vedic prose texts. For example, at *Taittirīya Saṃhitā* 2.6.9.1 a statement is made that the priest should rub the *paridhi* sticks (the sticks laid around the sacrificial fire) once each. The specification ‘once’ blocks an earlier injunction to wipe each stick three times.⁴¹

1.3.2 Śikṣā and Phonological Analysis

As suggested by the Vedic evidence, it is likely that the earliest specifically linguistic tradition in Ancient India focused on phonetic and (perhaps later) phonological analysis. As mentioned above, both the *Vājasaneyi Saṃhitā* and the *Taittirīya Āraṇyaka* refer explicitly to ‘*śikṣā*’, which literally means simply ‘instruction’, but in the context clearly refers to a tradition of studying the Sanskrit sound system. That such a basic term is used for this suggests its early importance.

The surviving texts in this tradition are split into *Śikṣā* texts sensu stricto and the *Prātiśākhya*s, so named because each one is directed to a particular recension (*śākhā*) of a particular Vedic saṃhitā. The focus of the *Prātiśākhya*s is the sound substitutions/alterations required to move between the word-by-word recitation (*padapāṭha*) and the continuous recitation (*saṃhitapāṭha*) of the relevant Vedic text. Systematic alternations are formulated as general rules, often with sub-rules applying in more specific contexts. For less regular patterns, instances are simply enumerated. At times the texts also move beyond the *pada-saṃhitā* correspondence to account for surface forms in terms of underlying forms which are attested in neither *pada* nor *saṃhitā* text. Many

⁴⁰ The fluidity of linguistic terminology in the early tradition is discussed further by Deshpande (2002a), and some of the early contributions of the Indian tradition to linguistic thought are surveyed by Cardona (2014).

⁴¹ This is recognized in Sāyaṇa’s commentary ad TS 2.6.9.1: *pūrvavadāvṛttim prasaktām vārayati* ‘(With the statement to wipe each stick once) he blocks the repetition [i.e. the threefold wiping], specified by the earlier statement, which would otherwise have occurred’.

of the same fundamental principles found in Pāṇini's *Aṣṭādhyāyī* appear also in the *Prātiśākhya*, showing them to be more general features of the Indian linguistic tradition, rather than innovations specific to grammar or to Pāṇini himself.

The surviving *Śikṣā* texts are later than the surviving *Prātiśākhya*s, but reflect an earlier stage of the science. These texts focus on the articulation and pronunciation of the sounds of the language, and demonstrate a sophisticated understanding of the physiology of speech. The tradition of phonetic and phonological analysis attested in the *Śikṣā* and *Prātiśākhya* texts will be discussed in detail in Chapter 8.

1.3.3 *The Origins of Semantic Analysis*

Just as with phonetics and phonology, the origins of semantic analysis may be traced in the very earliest Vedic prose.⁴² The Vedic *brāhmaṇa* texts had as their aim the explication of Vedic ritual, including the justification for the regular quotation of particular phrases and passages from the Vedic *saṃhitās* throughout every rite. This naturally led to the analysis of the content and wording of the Vedic passages used in the ritual, the aim being to justify the recitation of a particular passage at a particular point in the ritual through some connection of its content with either the ritual itself, a myth associated with the ritual, or a supposed positive effect of the recitation at this point in the ritual.

This leads to word association and to etymology. In origin there is nothing particularly scientific about this; connections are based purely on phonetic resemblance and can be moulded as appropriate for the desired effect. For example, during the preparation of the ground for the sacrificial fire, a series of Vedic mantras, many originally from the *Ṛgveda*, are recited; these are preserved in the Taittirīya tradition in *Taittirīya Saṃhitā* 4.2.1. A sequence of these mantras (in TS 4.2.1.4–5) contains forms of the verb *sad* 'sit'. The *brāhmaṇa* commentary on these mantras (TS 5.2.1.5–6) says:

(5) *sād-vaī bhavati, sat-tvām evānaṃ gamayati.*

'sit'-POSS.FEM be.3SG being-NESS EMPH=him go.cs.3SG

'(The verse) has the word "sit", (therefore) he [the priest] makes him [the patron] attain reality (by reciting this).'

A (synchronically and diachronically unjustified) connection is made between *sad* 'sit' and *sattva* 'reality', derived from the stem *sat-* 'being', in order to provide a positive rationale for the use of these verses.

These early attempts to offer deeper, linguistically based explanations for particular words and phrases used in the Vedic ritual developed into a tradition

⁴² For a broad introduction to the development of semantic thought in India, see Houben (1997b: esp. 61–74).

of etymological analysis, called *nirvacana*.⁴³ The only surviving primary text of this tradition is the *Nirukta* attributed to Yāska, perhaps composed around the middle of the first millennium BC; this is the first work which can be said to have etymology as its primary goal, and therefore to be centrally concerned with semantic issues.⁴⁴ The *Nirukta* is a commentary on an earlier text, the *Nighaṅṭu*, a kind of thesaurus consisting of lists of Vedic words: the first three chapters list synonyms, fourth chapter lists polysemous words, and fifth chapter lists names of deities.⁴⁵ The *Nirukta* assigns words in the *Nighaṅṭu* to verbal roots, and sometimes glosses them. Yāska's method indicates a familiarity with phonetic and grammatical analysis, and shows a clear concern with linguistic categorization. For example, Yāska offers the first categorization of types of words, assuming a four-way division into (what is from our perspective roughly) noun/adjective, verb, preposition, and particle.

As an illustration of Yāska's etymological analysis, in (7) I give the text and translation of the *Nirukta* commenting on *Ṛgveda* 2.11.21, given in (6).

- (6) *nūnām śā te prāti vāraṃ jaritré duhīyād indra dākṣiṇā maghōnī |*
śīkṣā stotṛbhyo māti dhag bhāgo no bṛhad vadema vidāthe suvīrāḥ
 (RV 2.11.21)

'Now should the generous priestly gift yield your boon for the singer as its milk, Indra. Exert yourself for the praise singers. Let fortune not pass us by. – May we speak loftily at the ritual distribution, in possession of good heroes.' (trans. Jamison and Brereton 2014)

- (7) *sā te pratidugdham varam jaritre. varo varayitavyo bhavati. jaritā*
garitā. dakṣiṇā maghonī maghavatī. magham iti dhana-nāmadheyam.
maṃhater dāna-karmaṇaḥ. dakṣiṇā dakṣateḥ samardhayati-karmaṇaḥ.
vyṛddham samardhayatīti. api vā pradakṣiṇāgamanāt. diśam abhi-
pretya. dig ghastaprakṛtir dakṣiṇo hastaḥ. dakṣater utsāhakarmaṇaḥ.
dāśater vā syād dāna-karmaṇaḥ. hasto hanteḥ. prāśur hanane.
dehī stotṛbhyaḥ kāmān. māsmān atidaṃhīḥ. māsmān atihāya dāḥ.
bhago no 'stu. bṛhad vadema sve vedane. bhago bhajateḥ. bṛhad iti
mahato nāmadheyam. parivr̥ḥṣam bhavati. vīravantaḥ kalyāṇa-vīrā
vā. vīro vīrayaty amitṛān. veter vā syād gatikarmaṇaḥ. vīrayater vā.
 (Nirukta 1.7)

⁴³ On the *nirvacana* tradition, see Kahrs (1998), and further Bronkhorst (1981b, 1984) and Visigalli (2017a, b, 2018).

⁴⁴ Kiparsky (1979: 213) considers the *Nirukta* 'definitely pre-Pāṇinian in content and approach', regardless of the question of chronological priority. Staal (1995: 66) dates the *Nirukta* to the fifth century BC, noting that although most scholars treat it as prior to Pāṇini, this is largely due to the priority of the Vedic tradition over vyākaraṇa. Kahrs (1998) does not take a position on the relative chronology of Yāska and Pāṇini.

⁴⁵ The *Nighaṅṭu* is the first work in a long tradition of lexicography in Ancient India, for which see Vogel (1979).

‘May that (gift) of yours milk a boon for the singer. ‘Boon’ (*vara*) is what is to be chosen (*varayitavya*). Singer (*jaritr*) - praiser(?) (*garitr*). Generous priestly gift (*dakṣiṇā maghonī*) - that which has wealth (*magha*). *Magha* is a synonym of riches (*dhana*). From the verb *maṅh* in the sense “give”. Priestly gift (*dakṣiṇā*) is from the verb *dakṣ* in the sense ‘make accomplished’. Because it makes complete what was defective. Or, from rightward (*pradakṣiṇā*) [clockwise, propitious] circumambulation. In reference to direction. The direction which is natural for the hand (*hasta*) is the right (*dakṣiṇā*) hand (*hasta*). [Right (*dakṣiṇā*)] is from the verb *dakṣ* meaning “exert”. Or, it may be from *dāś* meaning “give”. Hand (*hasta*) is from the verb *han* [“strike”]. (Because) it is quick to strike. Give the praisers their desires. Do not pass over us. Do not give leaving us aside. Let there be fortune for us. We would speak greatly at our own assembly. Fortune (*bhaga*) is from the verb *bhaj* [“distribute”]. *Bṛhat* is a synonym of great (*mahant*). It is strengthened around. [*Suvīra*] means having heroes (*vīravant*), or having excellent heroes (*kalyāṇa-vīra*). A hero (*vīra*) scatters (*vi-trayati*) enemies. Or, it [= *vīra*] may be from the verb *vī* meaning “go”. Or, from the verb *vīra* [“be powerful”].’

Yāska’s etymologies are based on phonological similarity, and while some are historically correct, several are not. It is notable that Yāska presents multiple possible etymologies in some cases: this shows an open-minded empiricism which moves closer to science than the Vedic etymologizing discussed above.

1.3.4 Vyākaraṇa ‘Grammar’

The traditions of śikṣā and nirvacana are considered two of the six *Vedāṅgas*: the auxiliary sciences associated with the study of the Vedas. The tradition of *vyākaraṇa* ‘grammar’ is another of the *Vedāṅgas*, and became by far the most important field of science in ancient India.⁴⁶ It is in the tradition of *vyākaraṇa* that linguistic study flourished and became a true science in the post-Vedic period.

Although originating as an ‘auxiliary science’ of the sacred Vedas, the tradition of *vyākaraṇa* evidences a crucial step in the development of linguistics as a truly scientific field: namely, moving beyond the initial purpose of preserving and explaining the Vedas to describing and analysing ordinary language. As Emeneau (1955: 145–146) put it, ‘science detached itself from theology’ and the Indians ‘became grammarians, it would seem, for grammar’s sake’.

⁴⁶ The other three *Vedāṅgas* are *chandas* ‘metre’, *kalpa* ‘ritual instruction’, and *jyotiṣa* ‘astrology/astronomy’. On the original meaning and aims of *vyākaraṇa*, see Bronkhorst (2011).

This step is most clear in the fact that Pāṇini describes his spoken Sanskrit language primarily, and only secondarily the language of the Vedas.

The importance and success of vyākaraṇa depends in no small part on the brilliance of the *Aṣṭādhyāyī*, the grammar of Sanskrit attributed to Pāṇini. Pāṇini's grammar will be the focus of much of the rest of this book, and will be introduced more fully in Chapter 2, but in this section I offer a brief introduction to the *Aṣṭādhyāyī* and to the wider tradition of vyākaraṇa, in order to set the scene for what follows.

The Aṣṭādhyāyī and Associated Texts

The *Aṣṭādhyāyī* is a set of almost 4,000 *sūtras*, or rules, composed in a highly abbreviatory manner, which aims to completely specify the Sanskrit language, including more archaic poetic varieties, by licensing the construction of grammatical sentences.⁴⁷ Kiparsky (1979: 214) calls it 'a theoretical inquiry into the grammar of Sanskrit and into language in general.' At the least, it is not inappropriate to call the *Aṣṭādhyāyī* a 'generative grammar' (as did Chomsky 1965: v): it takes as input a particular meaning to be expressed, and a set of undervivable roots and stems associated with that meaning, and outputs a complete grammatical sentence, in full phonetic detail. The reputed author of the *Aṣṭādhyāyī*, Pāṇini, mentions some of his predecessors by name, but no earlier grammatical work in this tradition survives, as Pāṇini's achievement entirely eclipsed what came before; nevertheless, it is clear that the *Aṣṭādhyāyī* is the culmination of a long and sophisticated tradition of grammatical analysis.

The *Aṣṭādhyāyī* does not stand alone but is accompanied by and to an extent depends on the existence of other texts. The first are the *Śivasūtras*, which specify the inventory of segmental units assumed in the work together with a set of 'code letters' (*anubandhas* or *its*) which permit efficient reference in the grammar to groups of sounds which behave alike in different respects. Also crucial appendages to the *Aṣṭādhyāyī* are the *Dhātupāṭha* and *Gaṇapāṭha*, which together function as a kind of lexicon for the grammar. The *Dhātupāṭha* consists of lists of verbal roots, grouped with respect to certain properties which enable the correct sets of roots to be licensed for the correct operations in the grammar. The *Gaṇapāṭha* is similar but consists of lists of nominal stems.

The importance of the *Aṣṭādhyāyī* caused it to become the basis of a prescriptive tradition which essentially fixed the Sanskrit language in the first centuries AD. However, it is important to realize that this was not (wholly) Pāṇini's aim. Indeed, Pāṇini did not just describe a single version of Sanskrit. Most obviously, Pāṇini distinguished between the contemporary spoken language (*bhāṣā*) and the poetic and archaic language of the Vedic

⁴⁷ There is a comprehensive edition of the *Aṣṭādhyāyī* with translation and discussion of each *sūtra* by Sharma (1987–2003). Briefer editions are by von Böhtlingk (1887), Renou (1966), and Katre (1987).

samhitās (*chandās*), and attempted to define both languages (somewhat less completely in the latter case). But more importantly, there is evidence that Pāṇini sought to describe variation in the spoken language. Kiparsky (1979, 2012) argues forcefully that Pāṇini uses the words *vā* and *vibhāṣā*, both traditionally assumed to mean neutral ‘or’ (alongside supposedly synonymous *anyatarasyām* ‘or’), to mark non-neutral optionality: these two words can mean both ‘frequently’/‘rarely’ (respectively), as terms relevant to the grammar as a descriptive device, and ‘preferably’/‘not preferably’, as relevant to the grammar as a prescriptive device. As Kiparsky (2012) argues, the two aims were not mutually exclusive: the *Aṣṭādhyāyī* was both a faithful record of the language of a particular group of people, and part of a project to fix that usage as correct.

The *Aṣṭādhyāyī* is undoubtedly a remarkable linguistic and scientific achievement, ‘one of the greatest monuments of human intelligence...an indispensable model for the description of languages’ (Bloomfield 1929: 268). Its brilliance, which rendered all preceding work in the tradition of vyākaraṇa obsolete, such that none survives today, has at various times given rise to the impression that it is a ‘perfect’ and ‘complete’ grammar of Sanskrit. In fact, the *Aṣṭādhyāyī* is far from perfect, nor does it specify a completely closed system. On the latter point, Pāṇini specifies certain operations for undetermined uses beyond those specified in the grammar; that is, some freedom of expression beyond that laid down in the grammar is acknowledged/licensed.⁴⁸ More broadly, the lists of nominal bases (*Gaṇapāṭha*) and verbal roots (*Dhātupāṭha*) which accompany the grammar are not closed: verbs, nouns, and adjectives are taken to be open classes.

The question of imperfections in the *Aṣṭādhyāyī* is somewhat more controversial. There are certainly problems of circularity and inconsistency; see, for example, Birwé (1966) (reviewed by Palsule 1970), Cardona (1976: 290–291), Scharf (2007), and Keidan (2011). Some of these can be understood as a result of linguistic change, ongoing during the period of composition of the grammar. For example, Kiparsky (2007a, b) discusses the fact that Pāṇini (at Aṣṭ. 1.3.7) specifies the use of the segments *c*, *j*, and *ṭ* as *anubandhas* ‘code letters’ prefixed to *taddhita* (≈ secondary derivational) suffixes.⁴⁹ Anubandhas are otherwise carefully chosen so that there will be no ambiguity, and the implication of selecting these segments as prefixes to *taddhita* suffixes is that there should be no *taddhita* suffixes which actually begin with *c*, *j*, or *ṭ*. Yet in the *Aṣṭādhyāyī* as we have it, there are such suffixes: *cuñcup*, *caṇaṇ* (Aṣṭ. 5.2.26), *cela*, *cīra* (Aṣṭ. 6.2.126–127), *cara* (Aṣṭ. 5.3.53), *jāhac* (Aṣṭ. 5.2.24), *jāṭiyar* (Aṣṭ. 5.3.69), and *ṭṭiac* (Aṣṭ. 5.2.31). Kiparsky (2007a) argues that these ‘marginal *taddhita* suffixes’, which have clearly developed secondarily from what

⁴⁸ E.g. Aṣṭ. 3.2.101, Aṣṭ. 3.2.178. See also Cardona (2004).

⁴⁹ Anubandhas are further introduced in §2.1.2, and are represented in small capitals throughout this book.

were originally second members of compounds, were identified and ‘retrofitted into the grammar after the system of markers, and specifically the function of *c*, had already been decided upon’ (Kiparsky 2007a), by which time ‘it was too late to revise the grammar’ (Kiparsky 2007b). The indigenous tradition developed various stratagems to explain away such inconsistencies, but they are clearly artificial. While it must be admitted, then, that the *Aṣṭādhyāyī* is by no means perfect and shows evidence for layers of composition which were not necessarily entirely consistent with one another, this does not detract from the fact that the grammar as a whole is a remarkable and unparalleled achievement of human intellect, and of linguistic analysis, in the ancient world.⁵⁰

It has sometimes been questioned whether the *Aṣṭādhyāyī* could have been composed without the aid of writing, given how complex and abstract its composition is. It seems likely, though not certain, that Pāṇini knew of the existence of writing, but there is no evidence that Pāṇini knew how to write, nor that writing was used in the composition or early transmission of the *Aṣṭādhyāyī*. The *Aṣṭādhyāyī* was intended to be memorized completely before it could be studied or used, and this is still the traditional custom among *vaiyākaraṇas* (adherents of *vyākaraṇa*) today.⁵¹

The Pāṇinian Tradition

Pāṇini most likely would never have imagined that his grammar would be taken as flawless or too good to be emended by following generations. Indeed, the earliest surviving commentary on the *Aṣṭādhyāyī*, the c. 4,300 *Vārttikas* (aphoristic comments) of Kātyāyana, which survive as themselves the subject of comment in the *Mahābhāṣya* of Patañjali, does not treat Pāṇini’s grammar as uncorrectable or unaugmentable. The *Vārttikas* seek not only to examine, explain, and justify but also, where necessary, to suggest modifications to the more than 1,000 rules of the *Aṣṭādhyāyī* to which they refer.⁵²

Kātyāyana’s comments on the *Aṣṭādhyāyī*, as well as those of Patañjali in his *Mahābhāṣya*, show that there must have been a break in the grammatical tradition between the final composition of the *Aṣṭādhyāyī* and these authors, with the result that the *Aṣṭādhyāyī* was passed down without the accompanying full understanding of its composition (see, in particular, Kiparsky 1979).

Over time, though, the dogma developed that the *Aṣṭādhyāyī* was necessarily correct, and that any apparent failings were only to be explained by interpreting the given text in such a way that they were not, in fact, failings. The authority of Kātyāyana and particularly Patañjali likewise gradually

⁵⁰ On the evidence for layered composition in the *Aṣṭādhyāyī*, see Joshi and Roodbergen (1983); their arguments are criticized by Cardona (1999: 112–140).

⁵¹ See further Chapter 8 on the history of writing in India in relation to the grammatical tradition.

⁵² See Thieme (1937) on Kātyāyana and his possible identification with the author of the *Vājasaneyi Prātiśākhya*.

increased. The *Mahābhāṣya* of Patañjali (c. 150 BC), which evaluates and discusses Kātyāyana's *Vārttikas*, and many other rules in the *Aṣṭādhyāyī*, now stands as the second most important monument of the ancient Indian grammatical tradition, serving as the standard for the orthodox interpretation of the *Aṣṭādhyāyī*. Yet Patañjali's interpretation of the *Aṣṭādhyāyī* did not become the ultimate authority until at the earliest the time of Bharṭṛhari (around five hundred years after its composition), or even later.⁵³

There are many later commentaries on the *Aṣṭādhyāyī*, on the *Mahābhāṣya*, and commentaries on their commentaries. Most important is the *Kāśikāvṛtti* by Vāmana and Jayāditya (seventh century AD), which provides a clear, orthodox interpretation of the grammar. This tradition of grammatical commentary in Sanskrit, on Sanskrit, continues to the present day. According to Kiparsky (1979: 12), the orthodox 'Pāṇinīya' tradition 'constitutes a well-developed and coherent doctrine on the interpretation of the *Aṣṭādhyāyī*, which naturally forms the backbone of our present understanding of the system. . . Moreover, it is an enormous storehouse of subtle linguistic insights, which still await utilization in the context of current theoretical discussion in the field of linguistics'.⁵⁴ This last point is particularly true of the most important names in the later Pāṇinian tradition, Bhaṭṭoji Dīkṣita, Kauṇḍabhaṭṭa, and Nāgeśabhaṭṭa.

The Later Pāṇinian Tradition

Beside Pāṇini and perhaps Patañjali, by far the most important ancient Indian linguist was Bharṭṛhari, who lived in the fifth century AD. Bharṭṛhari's *Vākyapadīya* (which may in origin be two separate texts) covers a wealth of topics ranging beyond grammar itself to semantics and philosophy of language. Of all texts in the ancient Indian linguistic tradition, the *Vākyapadīya* is easily the most widely studied in the modern period, after the *Aṣṭādhyāyī*, despite its being (or perhaps because it is) often particularly difficult to interpret.⁵⁵ Some aspects of Bharṭṛhari's thought will be discussed below (§1.4) and in Chapter 7.

In the early modern period, the authority and importance of the Pāṇinian tradition was re-established by Bhaṭṭoji Dīkṣita (fl. Vārāṇasī c. 1600), a prolific scholar who wrote at least four works on grammar/linguistics, alongside works on many other topics. Bhaṭṭoji's *Siddhāntakaumudī*, a topical rearrangement of the *Aṣṭādhyāyī*, can be credited with reinvigorating the Pāṇinian tradition and leading to its re-establishment as the primary approach to grammar in the Indian tradition, a position which had earlier been somewhat diminished by the

⁵³ See Bronkhorst (1983) and Vergiani (2005). On the gradual development of religious associations reinforcing the authority of Pāṇini and Patañjali, see Deshpande (2019).

⁵⁴ Compare also Thieme (1956).

⁵⁵ A full translation of the *Vākyapadīya* can be found in Rau (2002). Subramania-Iyer (1969) offers a valuable introduction to Bharṭṛhari and the thought of the *Vākyapadīya*. A thoroughly inadequate and incomplete list of linguistically oriented studies on Bharṭṛhari includes: Bronkhorst (1991, 1996, 1999, 2001), Ferrante (2020), Gillon (1994, 2002, 2009), Houben (1989–1990, 1995, 1996, 1997a, 2007, 2009a), Ogawa (2012a, b, 2013), Timalsina (2014), Vergiani (2013).

rise of simpler, more accessible ‘non-Pāṇinian’ grammars. Bhaṭṭoji’s nephew Kauṇḍabhaṭṭa, and Nāgeśabhaṭṭa, the pupil of Bhaṭṭoji’s grandson Haridikṣita, built on and further developed a sophisticated melding of grammatical and semantic analysis of language established by Bhaṭṭoji, which was also heavily influenced by interactions with the competing philosophical traditions of *Nyāya* ‘logic’ and *Mīmāṃsā* ‘(Vedic) exegesis’. Nāgeśabhaṭṭa is considered to be the last great figure, and final authority, in the Pāṇinian school.⁵⁶

Non-Pāṇinian Grammars

The difference between ‘Pāṇinian’ and ‘non-Pāṇinian’ grammar is in some respects comparable to the difference between what we might call ‘Chomskian’ generative grammar and ‘non-Chomskian’ generative grammar, that is between an ‘orthodox’ Minimalist approach which treats Chomsky as authoritative and, say, a framework like Head-driven Phrase Structure Grammar (HPSG) or Lexical-Functional Grammar (LFG). The comparability lies in the fact that although Pāṇinian and non-Pāṇinian grammars are often contrasted, treated as different methods of grammar, and were in many respects in competition with one another, non-Pāṇinian grammar developed out of the Pāṇinian tradition, and therefore Pāṇinian and non-Pāṇinian grammars share many core assumptions and features despite their superficial differences.

While ‘Pāṇinian’ grammar is based on the *Aṣṭādhyāyī* and attributes absolute authority to it, non-Pāṇinian approaches are based on grammars which in one or another way differ from the *Aṣṭādhyāyī*, usually being simplified and shortened in comparison with Pāṇini’s highly complex system. This simplification can involve rearranging the rules of the grammar to make their order more intuitive, removing aspects of the grammar which deal with accent (since the accent was lost in the post-Pāṇinian period), simplifying the use of anubandhas, and removing other apparent complexities of Pāṇini’s system, even including, in some cases, such important features as the *kāraka* system (for which see Chapter 5). But the fundamental Pāṇinian approach to structure building – the use of an ordered rule system to attach morphemes to stems in order to express particular meanings, and adjusting the forms of those morphemes and stems to produce the final phonetic output – was never changed or challenged.

The earliest known non-Pāṇinian grammatical works include the *Kaumāralāta* by Kumāralāta, dated to c. 325 AD and surviving only in one fragmentary MS, the uncertainly dated but perhaps older *Śabdakalāpa* of Kāsakṛtsna, and the *Kātantra* of Śarvavarman (c. 400 AD), which contains a shorter version of the *Śabdakalāpa* (Scharf 2013: 20–22), and according to Scharfe (1985: 162–163) is probably a recasting of the *Kaumāralāta*.

⁵⁶ Scharfe (2009: 206–239) provides a useful summary of the later linguistic tradition, including the philosophical schools.

Non-Pāṇinian grammatical works are often associated with Buddhist or Jain authors. One consequence of such religious association is that the brahminical elevation of Sanskrit to divine perfection was rejected, licensing a much greater freedom in terms of incorporating Middle Indo-Aryan words and forms into the grammar. From the first centuries AD, there was interest in specifying the relations between Sanskrit and Prakrit (not necessarily understood in terms of diachronic development), and some later Sanskrit grammars incorporate rules to derive Prakrit from Sanskrit, as in the *Siddhahaimacandra* of Hemacandra Sūri, a twelfth-century Jain.

The oldest non-Indo-Aryan linguistic work in India is the *Tolkāppiyam*, a treatise on Tamil written no later than the fifth century AD. This was clearly influenced by the Indo-Aryan linguistic tradition but avoids specifically Pāṇinian techniques.⁵⁷ This was the beginning of a rich tradition of Tamil grammar; in the early- to mid-second millennium AD, other Indian languages received linguistic attention, including Pāli, Telugu, Kannada, and Persian.

In terms of the relation between Indian grammar and the West, while the very first Western encounters with Indian grammar were with non-Pāṇinian grammars such as Vopadeva's *Mugdhabodha*, which was particularly popular in late eighteenth-/early nineteenth-century Bengal, most modern Western engagement with Indian grammar, in particular engagement by linguists, has been with Pāṇini's *Aṣṭādhyāyī* and the orthodox tradition deriving directly from Bhaṭṭoji Dīkṣita, which privileged the authority of Pāṇini, Kātyāyana, and Patañjali (the *munitraya* 'three sages') above all else.⁵⁸

Alongside the tradition of vyākaraṇa 'grammar', two major systems of Indian philosophy undertook parallel and often competing analysis and theorizing about language. The traditions of Nyāya 'logic' and Mīmāṃsā '(Vedic) exegesis', whose foundational texts date to the early centuries AD,⁵⁹ were both heavily concerned with epistemology, including the contribution of *śabda* 'speech' to human knowledge. In seeking to understand the importance and inner workings of language, they both adopted insights from the grammarians, and rejected parts of the grammarians' theories and analyses. Much of the later sophisticated flourishing of the grammatical tradition developed in answer to the challenge posed to grammar, as the claimed authority on the working of language, by these two philosophical traditions.

⁵⁷ On the influence of the Sanskrit tradition on the Tamil tradition, see Ciotti (2017).

⁵⁸ See Houben (2014).

⁵⁹ The foundational text of the tradition of Nyāya is Gautama's *Nyāyasūtras*, c. second century AD, and the commentary on this by Vātsyāyana c. 400 AD. See particularly Staal (1988: part 1). The foundational text for the Mīmāṃsā school is the *Pūrvamīmāṃsā Sūtras* by Jaimini, written around the third century BC. The earliest surviving major commentary is the *Mīmāṃsāsūtrabhāṣya* by Śābara, c. first century BC. On the principles of Mīmāṃsā in comparison with vyākaraṇa, see especially Cardona (2013b).

One consequence of the competition, as it were, between vyākaraṇa and Nyāya and Mīmāṃsā, was the elaboration within vyākaraṇa of a philosophy of language which could stand in opposition to the philosophies of their rival systems. This philosophy of language of the grammarians was the theory of *sphoṭa*, a theory which has parallels with, and perhaps has even had influence on, theories of language in the West. As a first illustration of the connections between Indian and Western linguistics, I briefly treat this topic in the following section.

1.4 The Linguistic Sign and the Notion of *Sphoṭa*

What language is, what is the ontological nature of language and of its constituent units, has been a question of fundamental importance in both the Indian and modern Western traditions. The most enduring and influential answer in the modern Western tradition is, in some form or other, that of Saussure: language is a system of *signs*. In the Indian tradition, a very similar notion had developed much earlier, ultimately (though not originally) associated with the term *sphoṭa* (a term which in this context cannot be meaningfully translated).⁶⁰

1.4.1 The Sign

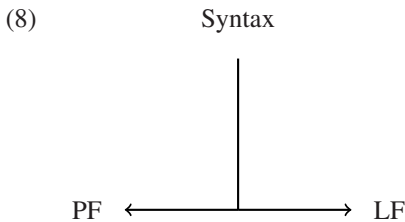
We will begin with the Western tradition. Ferdinand de Saussure took issue with the linguistics of his day, because it ‘never attempted to determine the nature of the object it was studying, and without this elementary operation a science cannot develop an appropriate method’ (1916: 16). Saussure was the first to seriously treat the question ‘what is language?’ as a prior consideration to the study of language itself. His answer was a psychological one: language is a system of *signs* (*signe*), pairings of psychological representations of sound patterns (*signifiant* ‘signifier’) with psychological representations of objects to which those patterns refer (*signifié* ‘signified’). That is, signs are abstract psychological entities, with two sides, one representing form, the other representing an associated meaning.

A crucial property of linguistic signs is that they are arbitrary. That is, there is (at least in principle) no inherent connection between a particular signifier and its signified. For example, the word *dog*, understood as a psychological representation of the sound sequence /d/ - /o/ - /g/, refers to a certain class of animals, but a different sequence of sounds could equally well refer to that class, as of course is the case in other languages. At the same time, the set of signifieds is not fixed but is arbitrary in the sense that any two languages

⁶⁰ Literally it means ‘a bursting, splitting open’, from the root *sphuṭ* ‘burst open’, and is interpreted in its linguistic use as ‘that from which the meaning bursts forth’, or ‘an entity manifested by sounds’ (Joshi 1967: 57).

may draw different boundaries between concepts signified by different words. So, the distinction between *river* and *stream* in English is made on the basis of size, whereas the distinction between *fleuve* and *rivière* in French is based on whether or not the waterway in question runs into the sea (a *fleuve* does, a *rivière* does not). There is no linguistic distinction in English corresponding to the French distinction, and vice versa. Language is fundamentally a social phenomenon, and it is social convention which determines the relations between signifiers and signifieds in any speech community.

The concept of the *sign* seems, on a basic level, fairly obvious to linguists nowadays, but that is because in some sense ‘we are all Saussureans now’ (Spence 1957: 2; see also, Wolf 2000). The focus on the psychological aspect of language, which was somewhat muted during the later Structuralist period under the influence of behaviourism, returned to the fore with Chomsky (1957, 1965) and has remained essentially unquestioned ever since. Saussure’s distinction between *langue* and *parole*, roughly the internalized language system and its external manifestation, has approximate but clear parallels in the Chomskian distinction between competence/L-language and performance/E-language. That language is fundamentally understood in terms of a connection between form and meaning is explicit in most generative models of syntax, for example in the ‘T-model’ (Chomsky 1981), where an underlying linguistic structure is simultaneously mapped to a phonological form (PF – the signifier) and a logical form (LF – the meaning, i.e. the signified).



The relevance of the concept of the *sign* to linguistics today is most obvious in the sphere of syntax. For Saussure, signs were the central object of investigation; indeed, linguistics was conceived as one part of a larger field of inquiry, *semiology*, the study of the use of signs. The position of syntax in Saussure’s conception is somewhat ambiguous but, at least to some extent, appears to fall under his conception of *parole*, rather than under the central object of linguistic enquiry, *langue*. In contrast, consider the generative approach to syntax originating with Chomsky: the fundamental object of inquiry is the system of rules used to combine base linguistic units into larger linguistic units. These base linguistic units, which may be words in a lexicalist model of grammar, or roots and morphemes in a non-lexicalist approach, in some sense correspond to the Saussurean sign: they must be groupings of information which include (perhaps among other things) a definition of both

the signifier (e.g. the sequence of phonemes which defines the unit) and the signified (i.e. some meaning which permits the unit to be used meaningfully). But in most approaches to syntax, the base linguistic units themselves are of relatively little interest; rather, the focus is on the separate system of rules by which these units are combined. Despite the underlying Saussurean influence, this does not seem very Saussurean.

An increasingly influential approach to grammar, however, seeks to collapse the distinction between a system of syntactic rules and a set of base units subject to combination by those rules. Construction Grammar (CxG) is a cover term for a number of related approaches to grammar which seek to treat all aspects of grammar in terms of pairings between an abstract form and a meaning. Beginning from the fact that idioms seem to undermine the clear distinction usually made between base linguistic units and syntactic structures, authors such as Fillmore et al. (1988), Fillmore and Kay (1993), Goldberg (1995), and Croft (2001) have developed models in which grammar consists entirely of ‘constructions’. Constructions are pairings of an abstract grammatical structure with some aspect of meaning. For example, Croft (2005: 273), explicating his term *conventional symbolic unit*, defines ‘constructions’ in the following way: ‘Roughly, a construction is an entrenched routine (“unit”), that is generally used in the speech community (“conventional”), and involves a pairing of form and meaning (“symbolic”...).’ A constructional approach to grammar is in this sense more Saussurean than the standard generative approach, since it re-identifies the object of linguistic study as fundamentally a system of form–meaning pairs, that is, signs.

For Saussure, all signs consisted of a signifier which was primarily a representation of the acoustic image, a phonological representation. Thus all signs necessarily had phonological content, as well as semantic content. Construction Grammar goes further, however, since it is widely recognized that a construction may be entirely abstract on the ‘form’ side. That is, in CxG, it is not necessary for signs to have phonological content. So, what are in standard generative theories treated as ordinary syntactic rules can be treated as constructions, only wholly abstract constructions lacking any phonological content (Fillmore et al. 1988). For example, Goldberg (1995: 116–119) proposes a ‘Transitive construction’, which pairs the abstract structure underlying all transitive phrases with an appropriate meaning.⁶¹

It is a slightly more controversial question whether constructions may pair a form with a null meaning. In traditional generative grammar, syntactic rules differ from base syntactic units in not being associated with conceptual content. CxG explicitly moves away from this, treating constructions as fundamentally about meaning, but some approaches do admit the possibility of constructions which consist solely of abstract structure. But by integrating rules of semantic

⁶¹ See also, e.g., Goldberg and Jackendoff (2004) on resultative constructions in English.

composition with the syntactic structures to which they apply, it is possible to work with a system where an entirely meaningless construction is effectively impossible (Croft 2010: 470).

The concept of the sign, in one form or another, has therefore remained of central importance in linguistic theorizing in the West. The concept underlies practically all of Western linguistic theory since Saussure, while its precise scope and interpretation is central to the distinction between competing theories.

1.4.2 *Sphoṭa*

In the ancient Indian tradition, a similar notion of the abstract linguistic unit containing a pairing of form and meaning developed in the first millennium AD and came to hold a central place in the grammarians' philosophy of language.⁶² In later texts, at least, this notion is associated with the word *sphoṭa*.⁶³ But tracing and understanding the notion is complicated by the fact that the term *sphoṭa* originally had a rather different sense, and because later authors read their own theorizing back into earlier texts where the notions and terminology were not necessarily the same.

There is no evidence that Pāṇini knew the word *sphoṭa* as a linguistic term, nor that he had any theory of language comparable to that of the later grammarians. For Patañjali, as shown by Brough (1951) and Joshi (1967: 13–20), the reference of the term *sphoṭa* is closer to the underlying phonological representation of a word or other linguistic sequence, with a fixed shape and length, as distinct from the variable surface manifestation of a sound sequence. Thus at an early period, *sphoṭa* appears to have been closer to Saussure's *signifier*, the abstract phonological representation.

Most controversial is the status of the term *sphoṭa* in the work of Bhartṛhari. This is partly due to the fact that the later tradition interpreted a number of passages in the *Vākyapadīya* as referring to the concept of *sphoṭa*, even though the term itself is absent from these passages. It is partly also due to the question mark over the authorship of the *Vṛtti*, the primary commentary on the first book of the *Vākyapadīya* (and on part of the second book), which is considered by some to be an autocommentary by Bhartṛhari himself, and which does appear to use the term *sphoṭa* in more like its later sense. But as carefully shown by Joshi (1967: 20–55), Bhartṛhari's use of the term *sphoṭa* in the *Vākyapadīya* itself, and in his commentary on the *Mahābhāṣya*, is almost

⁶² The following is an extremely brief presentation of the main points of a complex and extensive topic in Indian grammar. For further discussion and more details, see, e.g., Joshi (1967), Bronkhorst (1991, 2001, 2005), and Saito (2020).

⁶³ The correspondence between Saussure's *sign* and the Indian *sphoṭa* was first popularized in the West by Brough (1951).

identical to that of Patañjali: *sphoṭa* refers to something like the abstract sound pattern, distinguished from the *dhvani*, the variable phonetic realization.

Nevertheless, Bhartṛhari does have a conception of the abstract linguistic unit, which for him is associated with the term *śabda* ‘word, speech’. For Bhartṛhari, in this sense *śabda* refers to an indivisible meaning-bearing unit; as discussed in Chapter 7, for Bhartṛhari this *śabda* primarily refers to whole sentences, rather than smaller units such as words. On a metaphysical level, Bhartṛhari also defines this *śabda* as identical with the ultimate reality, Brahman. This ‘philosophy’ of *śabda* clearly underlies the later grammarians’ philosophy of *sphoṭa*, but because the *Vākyapadīya* itself is so difficult to interpret, and because later interpretations of Bhartṛhari have been so influenced by the theory of *sphoṭa*, it is impossible to develop a full and entirely clear picture of Bhartṛhari’s own theory.⁶⁴

For the later grammarians, building on Bhartṛhari’s theory of *śabda*, language has two levels: *dhvani* and *sphoṭa*. *Dhvani* refers to the physical, phonetic aspect of language, while *sphoṭa* refers to the abstract, meaning-related aspect of language. The *sphoṭa* effectively mediates between the *dhvani* and the *artha*, the denotation. While the *dhvani*, as a physical notion, is sequential and divisible, the *sphoṭa*, as an abstract entity, is indivisible, and lacks sequence. As an abstract entity which is connected both with the physical realization of speech and with the denotation, this *sphoṭa* is comparable to Saussure’s sign as a relator of signifier with signified. For the later grammarians, *sphoṭa* is necessarily connected with a meaning. So individual phonemes do not have their own *sphoṭa*, for example, but meaningful morphemes, and words and sentences, do.

1.4.3 *Sphoṭa and the Sign: Relations and Connections*

The most detailed comparison of these Indian and Western notions is by Houben (1989–1990), who focuses on Bhartṛhari’s theory of *śabda*.⁶⁵ While for both Bhartṛhari and Saussure the linguistic sign / *śabda* is an indivisible whole consisting of a signifier and signified, both of which are purely mental, Houben focuses on a significant difference between the two theories related to one of the principle properties of Saussure’s sign: the linearity of the signifier (Saussure 1916: 100–103).

The crucial difference between Bhartṛhari’s *śabda* and Saussure’s sign is that for Bhartṛhari the sign is sequenceless. The fact that it must be pronounced in a sequence means that it comes to be as if sequential, grammarians can treat it as sequential, but at the base it is not. There is a connection, but a distinction,

⁶⁴ The best and most complete attempt is by Joshi (1967: 20–55).

⁶⁵ See also D’Ottavi (2011).

between the abstract representation of a word in the brain and its sequential outworking in pronunciation (whether audible or mental).

This is different from Saussure's theory. Although psychological, 'De Saussure's sequential signifier [is] completely identical with the sequential auditory image' (Houben 1989–1990: 127). In contrast, in the Indian tradition following Bharṭṛhari, the *sphoṭa* is sequenceless, that is, it is distinct from, and thus more than, the abstract auditory image. For Houben (1989–1990: 128), then, in comparison with Saussure 'Bharṭṛhari's fundamental sequencelessness is more comprehensive. It can give a better account of all the aspects of the mental signifier and is therefore indeed to be preferred even from a saussurean point of view.'

Thus, it is at least possible to interpret the Indian tradition as having a slightly more sophisticated conception of linguistic signs than Saussure. For Saussure, as stated, signs necessarily contained a signifier which was essentially conceived as the underlying sound pattern, the auditory image. The 'form–meaning' pairing was essentially a pairing of an underlying acoustic form and a meaning. But there is more to linguistic signs than this. For example, a basic lexical entry in most contemporary approaches to grammar would incorporate three types of information: some kind of phonological representation, some kind of semantic representation, and at least some syntactic information, such as grammatical category. The phonological representation does not exhaust the 'form' aspect of the sign. This is fully compatible with the Indian *sphoṭa*, but goes beyond Saussure's sign.

Granted the clear similarities, and subtle differences, between the theory of *sphoṭa* and the Saussurean sign, can any direct or indirect influence be identified between the two concepts? To begin with, it must be acknowledged that a similar notion is found also in Aristotle and the Roman Stoic tradition.⁶⁶ There a distinction is made between *sēmaĩnon* and *sēmainómenon*, roughly corresponding to 'signifier' and 'signified'. A significant difference, however, is that the *sēmaĩnon* is essentially the produced sound: it has no abstract or psychological aspect to it. While the relation between sound and denotation was recognized, there is no concept of an abstract or psychological entity connecting them.

Following from this, there was a long tradition in the West of understanding language as a system of signs (Koerner 1971: 314–315), but it is the focus on the sign itself as a psychological entity, rather than simply on the association between form and meaning, which appears to be Saussure's innovation.⁶⁷ It seems likely that Saussure knew about the theory of *sphoṭa*

⁶⁶ See Joseph (2004: 61–62).

⁶⁷ As shown by Seuren (2016), the notion of the sign was important in the work of certain contemporaries of Saussure, in particular Victor Egger, by whom Saussure was undoubtedly influenced.

(Koerner 1971: 314), so it is certainly possible that influence from the Indian tradition led Saussure to develop the crucial feature of his theory.⁶⁸

As discussed above, the notion of the linguistic sign has gained new importance in the development and increasing popularity of CxG approaches to grammatical theory. But the first major post-Chomskian grammatical theory to give the sign a central role was HPSG (Pollard and Sag 1987, 1994).⁶⁹ HPSG was later further developed, by interaction with Berkeley Construction Grammar, into a fully constructional theory Sign-Based Construction Grammar (SBCG; Sag et al. 2012), and the centrality of the notion of the sign in HPSG rendered that transition particularly natural. Perhaps it is merely a coincidence that the central figure in the development of both HPSG and SBCG, Ivan Sag, studied Sanskrit and Indo-European as an undergraduate at the University of Rochester and published papers on Sanskrit (Sag 1974, 1976) which show a strong knowledge and approbation of the work of the indigenous Indian grammatical tradition, doubtless deriving from his interactions with both George Cardona, during and following Sag's Master's studies at Pennsylvania, and with Paul Kiparsky, during his PhD studies at MIT.⁷⁰

In terms of the relative scopes of the notion of the sign in modern linguistics and the Indian *sphoṭa*, there is an important parallelism. The Saussurean sign was perhaps primarily conceived in terms of word-sized units but was not limited to words (Houben 1989–1990: 123). In CxG models of grammar, signs may potentially involve constructions of any (instantiated or uninstantiated) 'length' on the form side, from morpheme to utterance. Likewise, *sphoṭa* is restricted only to meaningful units, of whatever size, from morphemes ('*varṇa-sphoṭa*') to sentences ('*vākya-sphoṭa*'). This is a rather 'constructional' view of language; we will see in Chapter 7 that many of the same concerns which motivate Construction Grammar were concerns for the ancient Indian tradition.

We see that there are both possible historical links and also connections in points of detail between the modern Western notion of the sign and the ancient Indian notion of *sphoṭa*. This is in fact a rather small and uncertain point of contact between the traditions, where direct influence and precise parallelism are unclear. Yet it is still the case that the development of what we might call a

⁶⁸ At the same time, Saussure was undoubtedly influenced by the Sanskritist and linguist W. D. Whitney, whose influential book *The life and growth of language* (1875) begins by defining language as a system of signs. Whitney was also undoubtedly conversant with the Indian theories of language.

⁶⁹ HPSG developed out of Generalized Phrase Structure Grammar (GPSG; Gazdar et al. 1985), an attempt to formulate a fully context-free model of grammar. The notion of the sign played no significant role in GPSG.

⁷⁰ This connection was first pointed out anecdotally to me by John Coleman. Sag would have also encountered R. N. Sharma while an undergraduate at Rochester, and Rosane Rocher at UPenn.

'sign-based' theory of language in ancient India is an important and relevant – not to mention interesting – part of the story of the evolution of this part of linguistic theory. In subsequent chapters we will investigate other topics in linguistic theory and see even closer relations between the two traditions.

1.5 Conclusion

In this chapter I have offered a brief introduction to the ancient Indian linguistic tradition, and an overview of the historical points of influence between the ancient Indian and modern Western tradition. I also surveyed the connections, perhaps more thematic than historical, between the Indian concept of *spṛoṭa* and the modern notion of the linguistic sign.

In the next chapter, we will turn to a detailed introduction to the structure, contents, and system of the *Aṣṭādhyāyī*, as the text which is the foundation not only of the tradition of *vyākaraṇa*, but also of much of the influence of Indian linguistics on the modern West. The following chapters then focus on a series of fields or topics in modern linguistics, considering points of comparison (and at times influence) between the two traditions. Chapters 3–5 focus on topics central to both Pāṇini's *Aṣṭādhyāyī* and modern linguistics, broadly aligning with the fields of phonology, morphology, and syntax, respectively: rule interaction (Chapter 3), morphological theory (Chapter 4), and argument structure (Chapter 5). Building on these chapters, Chapter 6 discusses the system of the *Aṣṭādhyāyī* in relation to formal language theory and generative power. In the final two chapters, we move beyond the *Aṣṭādhyāyī*, considering what the Indian tradition has to say on semantics and compositionality (Chapter 7), and segmentalism, phoneme theory, and writing systems (Chapter 8).