Introduction

The historical study of astrology straddles the gulf between religion and science that characterizes post-Enlightenment western culture. Sinologist Richard J. Smith, speaking of divination generally, states the problem succinctly:

Like science, divination is concerned with natural phenomena and predictable, ordable processes; but like religion, it relies heavily on faith and presupposes some sort of personal connection with the constantly unfolding but mysterious patterns of cosmic change.¹

This perceived hybrid nature of astrology often offends contemporary sensibilities, although, from a historical perspective, it is the anachronistic projection of a modern divide on to an ancient knowledge system that is to blame. Astrology, classified as a ‘pseudo-science’, has long been regarded as a liability by orthodox scholars of both science and religion; and as a result, academics of either field who choose to devote their time and energies to the study of astrology frequently find themselves in the position of having to defend that choice.² As a professional historian of religion, I too feel the need to state briefly why, publishing on this rather technical subject in a series dedicated to the scientific (rather than the religious) classics of Asia, I still consider myself as remaining within my proper sphere of study.

It is not the mere fact of astrology originating in what the man in the street would call a religious context – the astral divination of ancient Mesopotamia, where the will of the gods was expressed in the ‘heavenly writing’, *šitirti ša-māmī* – that makes me consider astrology an inherently religious phenomenon. Nor is it simply that astrology has interacted with and affected other religious beliefs and practices in every subsequent host culture, from mystical Hermetic teachings to Manichaeism conceptions of destiny to Hindu worship of planetary deities (*navagraha*) and so forth. While all this is true and relevant, it is my contention that astrology belongs in our modern category of ‘religion’ – the boundaries of which are more easily intuited than defined – first and foremost because of its preoccupation with themes long since abandoned by science, and to some extent even by philosophy: life as a meaningful narrative, fate

¹ Smith 1991: 283.

² See, e.g., Pingree 1992, motivated by the author’s ‘wish to provide an apologia for my claim to be a historian of science rather than of quackery’.

and free will, man's place in the cosmos. Astrology may have been a science – μάθημα, *scientia*, *śāstra*, *ilm* – as that concept was understood in the cultures where it took root, but it was a *religious* science. Its history is thus an integral part of the history of religion; and if our preconceived notions of religion are challenged by a religious practice that centres more around calculation than supplication, then I believe we should welcome that challenge, allowing it to inform and refine our understanding of the breadth of human religious activity and experience.

1 Tājika and the History of Indian Astrology

Nowhere in the world has horoscopic astrology enjoyed such a long unbroken tradition as in the Indian subcontinent.³ While European astrologers in the Middle Ages and Renaissance struggled to negotiate and maintain a compromise with the Church, only to see their art crumble in the early modern period with the collapse of the Aristotelian world-view with which it had allied itself, their Indian counterparts appear from the earliest times to have adapted seamlessly to the religious and philosophical outlooks of mainstream society. As a result, the astrology practised in contemporary India is typically perceived by its practitioners as being fully Indian in origin as well as character.

Nonetheless, astrology in the subcontinent can be seen to consist of three distinct historical strata. The earliest of these is the pre-Hellenistic astral divination that dates back at least to the late Vedic period and is based largely on the phases of the moon with the sun, as well as on the moon traversing the 27 or 28 asterisms (*nakṣatra*), one for each day of the sidereal lunar month. These considerations were used for determining the proper times for sacrifices and other rituals, but also eventually for personal divination. While some of them were absorbed into the later practice of horoscopic astrology, all the principal elements of the latter belong to the second stratum: the astrological lore transmitted from the Hellenistic world to India at some point in the early centuries of the Common Era,⁴ as evinced by a large technical vocabulary of Greek ori-

3 I use the term 'horoscopic' throughout in its full technical sense, referring to astrology that makes use of the ὀροσκόπος or ascendant in casting figures for nativities and other events. For a discussion of the varying scholarly usages of the terms 'horoscope' and 'horoscopic', see Greenbaum and Ross 2010.

4 Pingree's deceptively precise dating (repeated liberally throughout his writings; see Pingree 1978 I: 3 f.; 1981: 10, 81; 1997: 34, 39, 79, 83; 2001: 4; etc.) of the *Yavanajātaka*, believed by him

gin.⁵ These principal elements include the twelve-sign zodiac with its various subdivisions; the twelve horoscopic places or houses, beginning with the ascendant; the use of the five visible planets in addition to the sun and moon; and the doctrine of planetary interaction through aspect configuration (where planets are conceived of as ‘seeing’ each other).⁶

The third and last stratum (excluding European influences during and following the colonial period)⁷ derives from a second wave of astrological transmission from the northwest, occurring about a millennium after the first. This transmission from the Perso-Arabic cultural area, occasioned by the increased Muslim presence in India, began in the Saurāṣṭra peninsula in present-day Gujarat at some point between the tenth and the thirteenth century CE, probably closer to the latter. By this time, memories of the Hellenistic origins of Indian astrology had faded and been replaced with a mythologized history that had the discipline originating with a number of semi-divine sages (*ṛṣi*). The new knowledge system was not merged with the established one, but rather formed a separate school alongside it, generally known as Tājika/Tājaka or ‘Persian’ (from the Persian *tāzīg* ‘Arab’, ultimately derived from the Arabic tribal name Ṭayyī), although other designations are occasionally met with – including Yavana (properly ‘Greek’, derived from Ἰά[ε]ονες, but used in this period of any foreign culture from the northwest), Turuṣka (‘Turkish’) and Tārtīyika/Tārtīyaka, possibly meaning ‘Tataric’ in the generalized sense of ‘Muslim’.

Arabic-language astrology and classical or pre-Islamic Indian astrology share a Hellenistic core that includes the principal elements listed above; but the former comprises a number of additional doctrines which had either never reached India before the advent of Tājika or else had not survived there.⁸ It is,

to be the earliest preserved Sanskrit text on horoscopic astrology, has now been convincingly refuted by Mak (2013, 2014).

- 5 See Pingree 1978: II 195–415; 1997: 31–38. The Sanskrit term *horā*, designating the art of horoscopy as well as the ascendant (cf. note 3), is itself one such Greek loanword (ὥρα).
- 6 In what follows, some acquaintance on the part of the reader with these fundamentals will be expected. Useful and accessible introductions to the subject are found in Barton 1994 and Brennan 2017, while Beck 2007 is encumbered by its compulsion to ridicule its subject matter at every turn; the same is true of the now largely outdated Bouché-Leclercq 1899. For erudite and in-depth accounts of many issues, see Heilen 2015.
- 7 While contacts between Indian and European astrology from the nineteenth century to the present have contributed in no small part to the development of both, they differ from earlier interactions in that the Indian participants in these exchanges did not typically belong to the hereditary communities preserving astrology as their intellectual property and made no effort to incorporate the new ideas into the Sanskrit scholarly tradition. See Gansten 2013.
- 8 Pingree’s (1997: 81) claim that Tājika ‘has a basic Indian core to which are added elements

in fact, an amalgam of astrological teachings and procedures borrowed from cultural areas that had preserved and developed the Hellenistic heritage in slightly different forms – notably Persia, but also Byzantium, Syria, and indeed India itself.⁹ For the past six or seven centuries Tājika has been, as it still is today, largely synonymous with a prognostic technique known as *varṣaphala* or ‘results of the year’, often referred to in the European literature as annual revolutions or, more recently, as ‘solar returns’ – a procedure not known in India prior to the formulation of Tājika astrology.

Tājika first took root in India during a period of comparative openness to external influences, from the thirteenth to the sixteenth century. After this period, as Sheldon Pollock has observed, a struggle began between tradition and modernity in Sanskrit culture that resulted in a surge of Hindu neo-traditionalism in seventeenth-century India.¹⁰ We may note that the perceived need for apologetics in Tājika works appears to have increased rather than decreased after the first three centuries of the school’s existence. Such apologetics, as evinced in the present work, make use of one or more of three strategies: appeal to authoritative precedent, to empirical evidence, and to mythology.¹¹ The first kind of argument exploits the ambiguity of the term Yavana, which is treated as a personal name and then cited as a traditional authority to defend the ‘Yavana school’. In the second, Tājika is claimed to be a valid topic of study because its predictions come true – in other words, because it is empirically verifiable – which renders its origin with ‘Brahman-hating Turks’ (to use Gaṇeśa Daivajña’s striking phrase) irrelevant. Finally, in the third, the foreignness of Tājika is relegated to the status of mere incident by reference to a myth that has the Hindu sun god being cursed by Brahmā, Viṣṇu and Śiva to be born as a foreigner

derived from the Arab/Persian texts on which it drew’ is echoed by Minkowski (2004: 330), who states that Tājika is ‘a Persianized version of Indian astrology [...] Sanskritic Jyotiṣ [sic] astrology with some distinctive, imported features, especially to do with prorogation and planetary aspects, conjunctions, and strengths’. In reality, however, distinctly Indian concepts – such as *yogas*, *daśās*, *aṣṭakavarga*, the numerous zodiacal subdivisions (*varga*), the use of indigenous asterisms (*nakṣatra*), etc. – are largely absent from Tājika astrology: at most, innovations loosely based on such concepts play a minor role in it, or traditional Sanskrit terminology is applied to concepts actually borrowed from Arabic-language sources. The central components of Tājika are thus Hellenistic and Perso-Arabic in origin, as will be demonstrated below. Prorogation or direction (ἄφεσις, *tasyīr*) is, however, chiefly neglected by Tājika authors and misunderstood by the few who do mention it; cf. the section on planetary periods below.

9 For overviews of the transmission history of astrology, correct in general if not always in particulars, see Pingree 1997, 2001.

10 See Pollock 2005, 2009.

11 See section 1.2.

(*mleccha*) ‘in the city of Rome’ and originating the Tājika tradition by teaching astrology to its inhabitants.

Little academic research has been done on Indian astrology generally, and even less on Tājika. Due to the false dichotomy that still persists between the astrology of South Asia and so-called western astrology,¹² the comparatively few historians who devote themselves to studying the development of horoscopic astrology are generally familiar with sources in Greek, Latin and/or Arabic, while the vast body of relevant Sanskrit literature remains largely unknown. In the twentieth century, the one major exception to this rule was the late David Pingree (1933–2005): most of what western scholarship today knows of astrology on Indian soil, it knows thanks to Pingree. This includes what little is known about Tājika, which receives three pages in one of his publications and a further twelve pages in another.¹³ Such pioneering efforts are rarely free of errors, and in what follows, I shall have a number of criticisms to make both of Pingree’s conclusions and, occasionally, of his translations. It is therefore all the more important to record here my indebtedness to much of his extremely valuable groundwork, particularly as it relates to dates and routes of transmission.

Prior to Pingree, the single scholarly source I have found for a discussion of Tājika astrology is Albrecht Weber, who in 1853 published a paper in his *Indische Studien* dealing largely with the *Hāyanaratna* – indeed, with the same manuscript that serves as the base text of the present edition (discussed below).¹⁴ While Weber’s work must now, with a few minor exceptions, be considered to have been superseded by that of Pingree, some of his mistaken Arabic etymologies have been handed down to posterity through standard reference works.¹⁵ Like Pingree, Weber appears to have been interested chiefly in the transmission history of astrology rather than its actual doctrinal content, or

12 Indeed, ‘western’ in this context seems by unspoken consensus to mean ‘to the west of India’, as the term is used counter-intuitively to cover not only ancient Mesopotamia and Egypt, but also Persia and the Arabic-speaking world. Thus, otherwise good and useful historical overviews of astrology (e.g., Tester 1987; Holden 1996; von Stuckrad 2003; Campion 2008–2009; Maxwell-Stuart 2010) either blithely pass over India’s role in the global transmission of horoscopic astrology or briefly state their intention of dealing only with ‘western astrology’.

13 Pingree 1981: 97–100; 1997: 79–90. There are also entries for individual Tājika authors (cf. below) in the five published volumes of Pingree’s *Census of the Exact Sciences in Sanskrit* (CESS, 1970–1994).

14 Weber 1853: 236–287.

15 See Böhrtlingk and Roth 1855–1875; Monier-Williams 1899, s.v. *tambīra* and *muṣallaha*; cf. the discussions below.

what he called its 'practical' aspects: dealing with the latter, he says, would be 'neither my office nor my wish, particularly as the reward in itself would hardly be much worth the effort'.¹⁶

2 Arabic Sources and Early Reception

With regard to the language used by the Tājika source texts, Pingree wrote some twenty years ago:

[W]e are uncertain as to whether the texts that were translated into Sanskrit to be the basis of this new form of genethliology were originally written in Arabic or in Persian, or included texts written in both languages. The fact that the numerous technical terms are in Arabic is not decisive in this question since the Persian texts would also have used these Arabic technical terms; in a few instances the Sanskrit transliterations of these technical terms follow Persian pronunciation [*sic*], but that may simply reflect the fact that the Indians learned how to read Arabic texts from speakers of Persian.¹⁷

This question can now be answered with a high degree of certainty, as the major source texts of the Tājika tradition have been identified. All were composed in Arabic in the eighth or ninth century, giving a definite *terminus post quem* for their Sanskrit epitomes. The most important author by far is Sahl ibn Bishr (former half of the ninth century), whose definitions and examples are echoed by Tājika authors down the ages.¹⁸ Others include 'Umar ibn al-Farrukhān aṭ-Ṭabarī (fl. 762 to after 812), Abū Bakr al-Ḥasan ibn al-Khaṣīb (d. first quarter of the ninth century), Abū Ma'shar Ja'far ibn Muḥammad al-Balkhī (787–886), and possibly Ya'qūb ibn Ishāq al-Kindī, the 'philosopher of the Arabs' (d. after 862).¹⁹ At first glance, these findings contradict the statement made by Balabhadra that the original Tājika treatise was written in Persian:

16 Weber 1853: 277: 'Mich auf diesen, den weiteren Verlauf des Werkes einnehmenden, praktischen Theil näher einzulassen, ist nicht meines Amts noch meines Willens, zumal die Ausbeute auch an und für sich wol schwerlich eine der Mühe sehr lohnende sein würde.'

17 Pingree 1997: 79 f.

18 See *Technical terms and concepts* below. Much of Sahl's writings in turn depends on Hellenistic sources, most importantly on Dorotheus of Sidon; see Stegemann 1942; Pingree 1997: 39–50, 63–78. For Dorotheus, see also Pingree 1976, to which Dykes 2017 offers some necessary corrections; for Sahl, see also Dykes 2008 and 2019a.

19 See Gansten 2014, 2019. For the Arabic authors themselves, see Sezgin 1979.

The word Tājika denotes the treatise (*śāstra*) composed by Yavanācārya in the Persian language (*pārasīyā bhāṣayā*), comprising one area of astrology and having for its outcome the prediction of the various kinds of results of annual [horoscopy] and so on. That same treatise was rendered into the Sanskrit language by those born after him, Samarasimha and other Brahmins versed in grammar, and that [work], too, is denoted by the word Tājika. Therefore they too use the same terms, such as *ikkavāla* and so on.²⁰

However, we should remember that it is by no means certain that Persian and Arabic were, to Balabhadra's mind, two distinct languages. As discussed below, Balabhadra lived and worked in the Persian-speaking *milieu* of the Mughal court, but there is nothing to suggest that he studied or even had a working knowledge of Arabic that would enable him to distinguish between words of Persian origin and Arabic loanwords such as *iqbāl* (Sanskritized as *ikkavāla*).

Balabhadra does seem justified in tracing the transmission of these source texts through the Sanskrit authorship of Samarasimha, whose importance for the Indian Tājika tradition can hardly be overstated.²¹ Accepting Pingree's provisional dating of Samarasimha's *floruit* to 1274 CE, the technically earliest known author on Tājika in Sanskrit may in fact have been the Jain Hemaprabhasūri, whose *Trailokyaparakāśa* supposedly dates from 1248;²² but every introduction to Tājika written after Samarasimha contains doctrines which unmistakably (due to a distinctive misreading of the Arabic sources, discussed below) originate with him.²³ Balabhadra repeatedly refers to Samarasimha as

²⁰ See section 1.2.

²¹ For a full discussion of the identity and authorship of Samarasimha, only the most important conclusions of which are given here and in the discussion of Tājika authorities below, see Gansten 2019. While the Tājika author is not identical with his later namesake of the Jain Upakeśagaccha (fl. 1315 CE, d. before 1337; cf. Qvarnström 2018), the recurrence of the name in that *milieu* is suggestive.

²² Pingree 1981: 112 (but see the discussion of Hemaprabhasūri below). Like many of Pingree's datings, this is based on the equation of one year of the Common Era with one year of the Śaka (or, occasionally, Vikrama) era, disregarding the fact that traditional Indian calendar years did not begin on 1 January, but rather on a movable date in the spring (or, in some regions, autumn). I will, however, accept Pingree's approximations without further comment below, except where I know them to be wrong by one year (as will sometimes be the case for dates in January–March).

²³ For Pingree's dating of these authors, see Pingree 1981: 97, 112; 1997: 81. The latter refers to a manuscript of Samarasimha's *Karmaparakāśa* apparently copied in 1293, providing a *terminus ante quem*.

‘anointed to the rank of a sage (*ṛṣi*) among Tājika authors’,²⁴ a phrase that not only indicates great respect but also suggests that, in Balabhadra’s view at least, the later tradition may be regarded as an exegesis of and elaboration on Samarasiṃha’s seminal works, just as the religio-philosophical systems of Mīmāṃsā and Vedānta constitute exegeses of the words of the Vedic *ṛṣis*. In a similar vein, Balabhadra’s senior contemporary Viśvanātha, commenting on the *Tājikanīla-kaṇṭhī* (discussed below), states on several occasions that a point of doctrine is in dispute ‘because Samarasiṃha has said nothing’ about it.

As far as I have been able to determine, only one work composed by Samarasiṃha remains extant. This is the *Karmaprakāśa*, also known as *Manuṣya-jātaka*, *Gaṇakabhūṣaṇa*, or *Tājikatantrasāra*.²⁵ The last is the designation preferred by Pingree, who seems to have been unaware of any other composition of Samarasiṃha’s. From an examination of the fragments quoted by later writers, however, it appears that Samarasiṃha authored at least four works on Tājika, the first three of which were loosely connected and known collectively by generic names such as *Tājikaśāstra*, *Samarasiṃhaśāstra*, or *Samarasimhatājika*. The individual parts dealt with general principles, interrogations, and annual prognostication, respectively;²⁶ the former two were known as *Sanjñātānta* and *Praśnatantra*, the third most likely as **Varṣatantra*.²⁷ This

24 See sections 1.6, 2.1, 4.2.

25 Internal evidence does suggest that some chapters may have been lost even from this surviving work (see Gansten 2019 for the arguments). That its original title was *Karmaprakāśa* is clear from its introductory stanzas.

26 Interrogations (Sanskrit *praśna*, Arabic *masā’il*), also called horary questions or horary astrology, are a branch of the art in which a horoscope is cast for the time and place of asking a question. The outcome or answer to the question is deduced from this horoscopic figure just as a human destiny is deduced from the figure of a nativity. Minkowski (2014: 114f.) mistakenly calls *praśna* ‘the *jyotiṣa* version of catarchic astrology’: the latter discipline (Sanskrit *muhūrta*, Arabic *ikhtiyārāt*) is properly that of electing favourable times for various undertakings – a branch of astrology which Minkowski, again incorrectly, claims ‘was a specialty of *jyotiṣa* astrology, and did not have an exact counterpart in the astral sciences of the *yavanas*, which assumed a less deterministic conception of astrological causation than that of birth charts’ (loc. cit.). Both natal and electional judgements can in fact be traced to the beginnings of horoscopic astrology (with interrogations possibly developing out of elections), and the tension between the relative determinism of the one and the relative indeterminism of the other has been reflected in philosophical debates on astrology through the centuries. See section 1.3 for Balabhadra’s attempt to resolve this apparent conflict.

27 The remains of Samarasiṃha’s *Praśnatantra* in fact make up the bulk of the later compendium known by the same name (or as the *Praśnakaumudī*) and popularly attributed to Nilakaṇṭha, an attribution mistakenly endorsed by Pingree (1970–1994 A3: 180a; 1981: 113); see Gansten 2014.

compilation was still extant in the seventeenth century, as seen from quotations by Balabhadra and others; very likely it is identical with the original Tājika treatise in Sanskrit alluded to by Balabhadra in the passage quoted above.

In the *Karmaprakāśa*, which appears to have been written later as an independent work on Tājika genethliology, Samarasiṃha is explicit about his source, which he says is the *Gurutājikantrādīpa* or *Great Lamp* [*Illuminating*] the Tājika Teaching (in abbreviated form, the *Gurutantra* or *Great Teaching*) of Khindi[ka].²⁸ Despite Balabhadra's assertion that Samarasiṃha had translated his source directly from 'the Persian language', Pingree believed the [*Guru*]tājikantrādīpa to have been a Sanskrit work, now lost, by an Indian astrologer known in Arabic or Persian simply as (al)-Hindī 'the Indian',²⁹ and he even claimed – unfortunately without giving references – that quotations from this work are found in later authors.³⁰ There are, however, strong linguistic reasons to doubt that the Perso-Arabic *hindī* would have been Sanskritized as *khindi*.³¹ The suggestion already made by Weber is far more likely to be correct: namely, that 'Khindi' is identical with the Arabic polymath al-Kindī mentioned above.³² But the most intriguing aspect of this question is the fact that most of the authors on which Samarasiṃha demonstrably relies – Sahl, 'Umar, Abū Bakr, Abū Ma'shar – are never mentioned either by him or by any subsequent Tājika author. This leads me to suspect that the *Great Teaching* was in fact a medieval Arabic compendium of astrological writings by different authors, here given a Sanskrit title, which had either been compiled by al-Kindī or was somehow erroneously attributed to him alone.³³ Several compendia of this sort are known to have existed during the medieval period, both in Arabic and, later, in Latin.³⁴

28 The suffix *-ka*, otherwise used to form diminutives, is often added to names for metrical reasons. Alternative forms of the name met with in Tājika literature are Khindhi and Khinda[ka].

29 Pingree 1970–1994 A2: 80a; 1981: 97; 1997: 80.

30 Pingree 1997: 81 (omitting *Guru-* from the title). Having seen nothing either in the *Hāyana-ratna* or in any other Tājika text to indicate that such a Sanskrit work ever existed, I believe that Pingree was simply mistaken. It is possible that the passages he imagined to have been taken from the [*Guru*]tājikantrādīpa were in fact quotations from Samarasiṃha's *Tājikaśāstra*.

31 For the full argument, see Gansten 2012a.

32 Weber 1853: 249.

33 It is, of course, theoretically possible for such a compendium to have been a translation into Persian, justifying Balabhadra's statement; but no Persian compendia are known to me, and, given the dominant role of Arabic as a learned language in this period, the scenario is perhaps rather unlikely.

34 See Sezgin 1979 *passim*; Burnett 2006.

In addition to 'Khindi' and Samarasiṃha, a number of early authorities are mentioned by later Tājika authors, including Balabhadra. A name that may perhaps at one time have denoted a historical person with distinctive opinions is Romaka or 'the Roman'; but if so, his identity is unknown, and the extant works attributed to him are undoubtedly pseudepigraphic.³⁵ Of Dhiṣaṇa and the unfortunately named Durmukha ('Ugly-faced' or 'Foul-mouthed') we have no information at all, unless the latter should happen to be a severe scribal corruption of Durvīthasa, the Sanskritized name of Dorotheus, mentioned once by Samarasiṃha.³⁶ We can, however, be certain that Hillāja and Khattakhutta – frequently mentioned together – are wholly fictitious: they began life as Sanskritizations of the Perso-Arabic technical terms *hīlāj* and *kadkhudā* (used in determining the length of life) and are employed as such in the *Karmaprakāśa* and some other works.³⁷ Later these terms were misunderstood – perhaps due to the dwindling of Tājika genethliology proper, discussed below – and reinterpreted as personal names, with written works attributed to them.

As seen from the quotation above, Balabhadra claims that Samarasiṃha was a Brahman. Such a claim was necessitated by his insistence on a Brahman monopoly on the study of astrology – including Tājika, counter-intuitive as this may seem given the antecedents of the art. In the closing verses of the *Karmaprakāśa*, however, Samarasiṃha himself states unambiguously that he belongs to the Prāgvāṭa lineage, a mixed Jain and Hindu kinship group known

35 This Romaka is not identical with the author of the third- or fourth-century astronomical *Romakasiddhānta*. The earliest Tājika mention of Romaka is found in *Karmaprakāśa* 1.2, referring to 'Romaka and other ancient Yavanas' (*ādyayavanair* [...] *romakādyaiḥ*) – not, as translated by Pingree (1997: 80), 'the ancient Greeks and Romans'. If this Romaka was a historical person, he may have been either a Hellenistic author whose works were preserved in Arabic, such as Ptolemy, or a Byzantine author such as Theophilus the Philosopher (695–785) from Edessa in present-day Turkey (near Ḥarrān, known for its enduring tradition of Greek science and philosophy, Hermeticism and astral religion). Known in Arabic as Thūfil ibn Thūmā, Theophilus was the first notable astrologer of the Arabic era and played an important part in shaping Arabic-language astrology: see Pingree 2001: 13–20; Dykes and Gramaglia 2017.

36 *Karmaprakāśa* 7.1. Dorotheus is undoubtedly one of the most important authors in the history of astrology; cf. note 18.

37 The Middle Persian form is *hīlāj*, Arabized as *hīlāj* – not, as consistently assumed by Pingree (1976: 235–245; 1981: 83, 97f.; 1997: 83, 90; etc.), *haylāj*: as noted by Kunitzsch (1977: 49), medieval European transcriptions, like the Sanskrit, all reflect a pronunciation with *ī* rather than *ay*: *hylech*, *alhileg*, etc. I am indebted to Ola Wikander for first making the connection between *kadkhudā* and 'Khattakhutta' (subsequently confirmed by my study of the *Karmaprakāśa*; cf. Gansten 2019).

today as Porwad or Porwal and generally considered to form part of the non-Brahman Baniyā or merchant community.³⁸ Some sixty years later, another Prāgvāṭa author on Tājika, Tejaḥṣiṃha, even refers to himself as ‘the son of a Śūdra’, asking that readers not disregard his work on that account.³⁹ It thus appears that the earliest Sanskrit literature on Tājika astrology was the output not of Brahmins, but of Jains (Hemaprabhasūri) and non-Brahman Hindus (Samarasiṃha, Tejaḥṣiṃha).⁴⁰ This prominence of Jains and of the mercantile class is consistent with what we know of the general dissemination of Perso-Arabic culture and knowledge systems in western India in the period.⁴¹ Influential Jain families, dominating the areas of finance and coinage in the region, were the natural allies of the Sultanate in financial and administrative matters; and by extension, Jain intellectuals became intermediaries between Perso-Arabic and Sanskrit traditions of knowledge. Through this mediation of ‘familiar strangers’, new discoveries in the astral sciences were made accessible to the Brahmanic intellectual majority.⁴² These included the astrolabe,

38 As Balabhadra quotes the *Karmaparakāśa* once (in section 3.7, under the title *Manuṣya-jātaka*, explicitly attributing it to Samarasiṃha), it seems reasonable to suppose that he was familiar with Samarasiṃha’s self-identification as a Prāgvāṭa, unless he was working from an incomplete manuscript of the text. Balabhadra may or may not have been acquainted with the socio-religious status of this community (found in western India rather than the northeastern region where Balabhadra lived); if he was, he would have been aware that his own claim was false.

39 For more details on Tejaḥṣiṃha, see the discussion of Tājika authorities below and Gansten 2017, 2019. It has been suggested to me that Tejaḥṣiṃha’s self-designation *śūdra*- should properly read *kṣudra*- ‘lowly’, as the Prāgvāṭa community would be better regarded as Vaiśyas than Śūdras. Even if manuscript evidence should be found to support this conjecture, however, it would still corroborate the non-Brahman status of Tejaḥṣiṃha and of the Prāgvāṭas generally.

40 The religious affiliations of Samarasiṃha and Tejaḥṣiṃha are not explicitly stated, but unlike Hemaprabhasūri, they address the benedictory invocations of their respective preserved works solely to pan-Indic deities (Vāc, Gaṇeśa, the planets), with no mention of Jain *tīrthaṃkaras*.

41 The *Ūkeśagacchacaritra* by Kakkasūri, apparently written in the fourteenth century but extant only in a single modern manuscript discovered by John Cort (see Cort 2008; Qvarnström 2018), relates (vv. 354–385) an incident where the Jain *guru* Jambunāga, founder of a sublineage within the Upakeśagaccha, successfully matches his skills in annual prognostication (*varṣaphala*) against that of Brahman astrologers: while the latter give predictions for each day, Jambunāga predicts events down to the *ghaṭī* (24 minutes of clock time), including the arrival of a hostile Muslim army with 50,000 cavalry. Although Tājika is not explicitly mentioned, the use of the term *varṣaphala* is suggestive. I am indebted to Olle Qvarnström and Sven Ekelin for bringing this passage to my attention.

42 See Plofker (2010), from whom I have borrowed the phrase (originally coined by Stanley Milgram).

a sophisticated astronomical instrument highly useful for casting horoscopes and mentioned already by Hemaprabhasūri, although the first Sanskrit manual on it (the *Yantrarājāgama*) was authored more than a century later by Mahendrasūri, another Jain.⁴³

Tejaḥsiṃha provides us with another important clue to the early transmission history of Tājika. He seems to have lived about two generations after Samarasimha and belonged to the same hereditary community in the same general area; both even claim a family connection with the ruling dynasty in a ministerial capacity. Yet in spite of this temporal, social and geographic proximity, Tejaḥsiṃha states that he learnt Tājika astrology from books and verified it by experience, ‘even without the mediation (*pāramparya*) of a true teacher’. A break thus appears to have occurred in the earliest stages of the Indian transmission of Tājika (late thirteenth to early fourteenth century). This may explain the fact that, despite the survival of the *Karmaparakāśa*, there is no evidence of any real Tājika tradition of genethliology, or birth horoscopy proper, in India.⁴⁴ For whatever reason, only Samarasimha’s earlier works seem to have found a wider circulation and to have been passed on from teacher to student, with the rather curious result that Tājika works after Samarasimha typically contain rules for judging the *revolution* of a nativity (an anniversary horoscope), but not for judging the figure of the nativity itself (the original horoscope). While a very limited number of works focusing on isolated elements of genethliology – typically the conception horoscope and longevity procedures – do exist, Pingree’s statements that Tājika texts ‘traditionally discuss’ these matters, and that Tājika forms ‘one of the most common systems of genethliology in use in the sub-continent’ must therefore be considered somewhat misleading.⁴⁵

The dissemination of Tājika appears to have been slow at first, and chiefly confined to the Gujarat area at least up to the end of the fourteenth century. Following Tejaḥsiṃha’s *Daivajñālaṃkāṛti* (1337), major Tājika works of the early period include Haribhaṭṭa’s *Tājikasāra* (1388) and Keśava’s *Varṣapaddhati*

43 See Sarma 1999, 2019 (the latter including extracts from Mahendrasūri’s work). Hemaprabhasūri (*Trailokyaparakāśa* 1.7) refers to the astrolabe not by the later Sanskrit name *yantrarāja*, but by the Arabic loanword *sturlāba* – possibly a result of misanalysing Ar. *asturlāb* (from *ἀστρολάβος*) as **as-sturlāb*. As can be seen from the 1946 edition, this foreign word has suffered much distortion in the manuscript tradition.

44 The earliest commentary on the *Karmaparakāśa* of which I am aware is the *Daivajñāsaṃtoṣaṇī* or *Karmaparakāśikāvṛtti* composed by Nārāyaṇabhaṭṭa Sāmudrika and dated by Pingree (1970–1994 A3: 166b; 1981: 97) to ca. 1725 CE, some 450 years after the original – suggesting that the work, though preserved, was not much studied.

45 Pingree 1997: 90, 85. It is not clear how many genethliological systems Pingree considered to exist in the Indian subcontinent.

(late 1400s). During the Mughal era, the eastward and southward spread of Tājika gained momentum, and Tājika works proliferated in the sixteenth and seventeenth centuries. Without question the most important of these was the *Tājikanīlakaṇṭhī* (1587) by Nīlakaṇṭha Daivajña of Benares, *jyotiṣarāja* or astrologer royal to the emperor Akbar. This work, consisting of two semi-independent volumes – the *Samjñātāntra* and *Varṣatantra* – seems eventually to have eclipsed Samarasiṃha's *Tājikaśāstra*, and remains the most widely studied and published Tājika textbook today.⁴⁶

3 The *Hāyanaratna* and Its Author

The Nīlakaṇṭha Daivajña who wrote the *Tājikanīlakaṇṭhī* had a younger brother named Rāma, also an astronomer-astrologer connected with the Mughal court, though not as celebrated as Nīlakaṇṭha himself.⁴⁷ This Rāma Daivajña (fl. 1590–1600) was the teacher of Balabhadra, whose chief writings are the present *Hāyanaratna* on Tājika and the *Horāratna* on Indian astrology in the classical or pre-Islamic style.⁴⁸ Both works are voluminous *nibandhas*, a genre that may be understood as a 'meta-commentary' in which different expositions of a given *śāstra* or systematic body of knowledge – often in the form of commentaries and subcommentaries on one or more foundational texts – are revised in dialectic fashion in order to establish a broad consensus.⁴⁹ This is what the *Hāyanaratna* attempts to do with respect to Tājika generally, and to annual horoscopy (*varṣaphala*) in particular.

According to his own information as given in these two works, Balabhadra belonged to the Bhāradvāja *gotra* or clan. His paternal grandfather was a certain Lāla, a resident of Kānyakubja (Kannauj) and described as a *gaṇaka*, which, like the Latin *mathematicus*, may mean mathematician, astrologer, or both. Lāla

46 As noted above, a spurious third volume also exists: the *Praśnatantra* or *Praśnakau-mudī*, which is often published with the *Tājikanīlakaṇṭhī* proper but was not authored by Nīlakaṇṭha; see Pingree 1981: 113, Gansten 2014. For more on Nīlakaṇṭha, see the section on Tājika authorities below.

47 For Rāma's works, see Pingree 1970–1994 A5: 426b ff. Minkowski's (2014: 117) statement that Rāma 'wrote a text of horary astrology (*muhūrta*), completed in Banaras in 1600' should properly read 'catarchic/electional' rather than 'horary' (the latter being another term for *praśna* or interrogations; cf. note 26).

48 Minkowski's (2014: 130) characterization of the *Horāratna* as 'a species of *muhūrta* text' is not correct: while touching on other areas of classical Indian astrology, the work deals primarily with genethliology or birth horoscopes (*jātaka*).

49 See Ganeri 2010.

had five sons, three of whom were involved in the astral sciences; the youngest, Dāmodara, was Balabhadra's father and the author of a commentary (*vr̥tti*) on the astronomical treatise *Brahmatulya* or *Karaṇakutūhala* by Bhāskara II. Balabhadra himself claims to have authored shorter commentaries (*ṭippaṇa*), no longer extant,⁵⁰ on the eponymous planetary table *Makaranda* and on Bhāskara II's mathematical *Bījagaṇita*, before embarking on his *magna opera*. He gives no information on his year of birth, but considering the dates of his own works (discussed below) and those of his teacher Rāma, some time between 1600 and 1615 would be a reasonable conjecture. If, as seems likely, the anonymous annual horoscope for the year 1623–1624 repeatedly discussed in Chapter 7 of the *Hāyanaratna* is that of Balabhadra himself, then he was born around 20 July (New Style) in Kāśī (Varanasi), which indeed is where his teacher Rāma Daivajña lived and worked;⁵¹ but the precise year remains unknown.⁵² While his own name, like those of most family members mentioned, relates to a form of Viṣṇu, the dedication at the end of the work suggests that Balabhadra's religious preference was for Śiva, whom he addresses as Someśa.

In the 1640s and 1650s, and possibly earlier, Balabhadra enjoyed the patronage of the Mughal prince Shāh Shujā' (1616–1661, second son of the emperor Shāh Jahān), to whom he refers respectfully in the closing sections of both *nibandhas*. During this period, Shāh Shujā' was governor of Bengal and Orissa, and Balabhadra describes himself as living near the prince in the regional capital Rājamahala (Rajmahal in the present-day Jharkhand state of India, just on the border of West Bengal). The date of Balabhadra's death is unknown, as are the circumstances of his life after Shāh Shujā' was repeatedly defeated in the fratricidal struggles over the imperial throne that commenced in 1658.

At the close of the *Hāyanaratna*, Balabhadra gives its date of completion in the form of a mathematical riddle:⁵³

50 See Pingree 1970–1994 A4: 234a.

51 Although Pingree (1997: 85) refers to Balabhadra as 'a Kānyakubja Brāhmaṇa', this appellation is justified only in terms of an ancestral connection: Balabhadra gives no explicit information on his own place of birth.

52 Section 7.9 of the *Hāyanaratna* contains another anonymous example, involving a nativity under the lunar asterism Rohiṇī. It is tempting to assume this too to refer to Balabhadra's own horoscope, which would narrow the possible years of birth down to either 1596 or 1615, but the neatness of the figures involved in the calculation suggests that the example may in fact be entirely hypothetical. The example in question focuses on the eighth year of life, which, for a subject born in 1615, would have been 1622–1623, one year too early to match the previous example – unless Balabhadra simply miscalculated, which is perhaps rather unlikely.

53 The following discussion on the date of the *Hāyanaratna* is a slightly reworked version of the information given in Gansten 2017.

The *yoga* is equal to the square of the month; the lunar date is the *yoga* divided by two; the lunar date multiplied by three is the number of the day; the asterism equals half of that; and when all is added to one-five-seven-one, the Śaka date of the book results. Whoever understands that, I consider him to be a sun to make the lotus flowers [that are] the knowers of the two [kinds of] mathematics blossom.⁵⁴

This stanza, imperfectly preserved in the manuscript tradition, describes different elements of the Indian calendar: the synodic month (*māsa*), lunar date or phase (*tithi*, of which there are 30 in a month), day of the week, asterism occupied by the moon (*nakṣatra*, normalized as 27 equal divisions of the ecliptic), and *yoga*, which in this context means the sum of the ecliptical longitudes of the sun and moon counted from 0° sidereal Aries and arranged in a series of 27 divisions from 0° to 360°. Treating all of these numerically, Balabhadra tells us that the *yoga* must be the square of some integer and divide by 2, which, with a maximum of 27, gives the possibilities 4 and 16. The month, which is the square root of the *yoga*, is therefore either 2 or 4; and the lunar date, which is half the *yoga*, is either 2 or 8. The day of the week must be 3 times the lunar date and, of course, no higher than 7; it must also divide by 2. The only possibility is 6, which is 3×2 . Therefore the lunar date is necessarily 2, the *yoga* 4, and the month 2; and the asterism, the number of which should be half that of the day of the week, is 3.

Converting these numbers into the more usual format, the date thus arrived at is the second lunar day or *tithi* (*śukla-dvītīyā*) of the month of Vaiśākha in the Śaka year 1571, in the asterism Kṛttikā and the *yoga* Saubhāgya.⁵⁵ The sixth

54 The two kinds of mathematics are presumably *pāṭigaṇita* and *bijagaṇita*, corresponding broadly to arithmetic and algebra, respectively. The final sentence is a pastiche of Bhāskara II's *Siddhāntaśiromaṇi* 5.8, which itself contains a punning allusion to the author's name in the word *bhāskara* used for 'sun'. The same phrase (*-kamalaprodobodhane bhāskaraḥ*) occurs in the *Hāyanaratna*'s opening section.

55 Lunar dates are most often numbered from 1 to 15 of either the waxing half (*śuklapakṣa*) or the waning half (*kṛṣṇapakṣa*) of the month, and whether the month is considered to begin with the former or the latter (i.e., at new moon or full moon, respectively) is a matter of regional difference. Balabhadra, wishing to express all data in a numerical format, does not mention the *pakṣa* but only gives the date (2) within the month as a whole (from 1 to 30). As the moon has to be almost new in order to occupy the asterism Kṛttikā (in sidereal Aries/Taurus) in the spring month of Vaiśākha, the *pakṣa* is necessarily *śukla*. It is thus evident that Balabhadra followed the *amānta* system, where the new moon begins and ends the month. Although the *amānta* calendar is mainly found in South India, it is also in use in the easternmost regions, including that of Bengal, where Balabhadra composed his two major works.

day counted from Sunday – generally considered the first day of the week – would be Friday; but in the context of reconstructing a date, the day of the week was used as a control device to verify the correctness of other parameters, typically based on a day count (*ahargana*) from the epoch of the current age or Kaliyuga.⁵⁶ This epoch – 23 January, 3102 BCE (New Style) – was a Friday, making Wednesday the sixth day in a weekly cycle. All these variables conform to the afternoon of Wednesday, 14 April, 1649 CE (New Style).

This dating differs by two decades from that given by Pingree, which appears to have been based on the 1905 typeset edition of the *Hāyanaratna* discussed among the text witnesses below.⁵⁷ In that edition, as well as in the other witnesses which preserve the latter half of the crucial stanza, the compound representing the Śaka year in *bhūtasamkhyā* or word numerals reads *bhūvāṇākṣaku-*, giving Śaka 1551 = 1629 CE.⁵⁸ (The earliest available manuscripts unfortunately break off after the former half, and most of the incomplete manuscripts lack the stanza altogether.) The editions and two of the manuscripts even add ‘1551’ in explicatory numerals. However, there are at least four reasons to doubt the correctness of this reading.

First, the calendric specifics do not fit together: it is impossible to get a perfect match for the *tithi*, *nakṣatra* and *yoga* in the year 1629. The discrepancy is not a huge one – an error of 4° to 5° in the longitude of the moon would produce an overlap of a few hours – but such an error would be somewhat surprising in an author of Balabhadra’s standing.⁵⁹

Second, towards the end of the work, Balabhadra casts a revolution figure (annual horoscope) for Shāh Shujā’s thirty-third year of life, commencing in Śaka 1570 = 1648 CE.⁶⁰ There seems to be no reason why he should have chosen for his example a date still nineteen years into the future; it is far more likely

56 See, e.g., Rao 2000: 73.

57 This is the edition cited in Pingree 1997: 86 n. 39. Pingree (1970–1994 A4: 236a) reproduces, apparently from the same edition and without commenting on its corrupt state, a version of the stanza under discussion so garbled that no information beyond the year can be salvaged from it.

58 For the *bhūtasamkhyā* system of expressing numbers, see Sarma 2003 and the discussion on translation principles below. The dating of the *Hāyanaratna* to 1629 recurs in Pingree 1981: 99 and 1997: 85 and has previously been reproduced by myself (Gansten 2012a: 308, 2014: 106) and others (e.g., Minkowski 2014: 130). A wholly erroneous dating is given by Karttunen (2015: 139, 401), who appears unaware of both Pingree’s and Weber’s datings (cf. note 61) and mistakes the 1777 date of the *manuscript* described by Weber (1853: 245), discussed below as text witness B, for the date of the work itself.

59 The overlap produced by allowing for such an error would occur in the early hours following sunrise on 25 April, 1629 (New Style).

60 See section 8.3.

for the revolution in question to refer to the prince's latest birthday at the time of writing.⁶¹ Moreover, a date of 1629 would make Shāh Shujā' no more than twelve years old at the time of the completion of the *Hāyanaratna*. This tender age seems unlikely in view of the admiration expressed by Balabhadra for the prince's royal eminence and military prowess, even taking into account the typically hyperbolic nature of such statements ('the vanquisher of the sphere of the earth whose lotus feet are radiant with the crown jewels of all its kings').⁶²

Third, in the penultimate verse of the work, Balabhadra explicitly states that it was composed in Rājamahala (Rajmahal) in the presence of, or in proximity to (-*antike*), Shāh Shujā'.⁶³ Rajmahal, which had been established as the capital of the Mughal *subah* or province of Bengal in 1595, became the residence of Shāh Shujā' following his appointment as governor (*subahdār*) in 1639.⁶⁴

Fourth, Balabhadra's later opus, the *Horāratna*, is securely dated to January, 1654.⁶⁵ It appears more likely that some five years should have passed between the composition dates of these two *nibandhas* than a quarter of a century – particularly as the *Horāratna*, in listing Balabhadra's previous writings, mentions the *Hāyanaratna* last. It may also be noted that Balabhadra repeatedly

61 In his pioneering study on the *Hāyanaratna*, Weber, too, concluded that the year of this revolution figure could be used to date the work, although he was confused by the reading '1577' (corresponding to 1655 CE), which, as he notes, does not match Shāh Shujā's stated age at the time (Weber 1853: 245f.). This reading appears to be an error confined to the single manuscript used by Weber.

62 See section 1.6. Pingree, who claimed, for no apparent reason, that the *Hāyanaratna* was a work of commission undertaken at the request of Shāh Shujā', had to wonder 'what or who induced the young prince to undertake this activity' (Pingree 1997: 85).

63 It seems likely that Pingree did not fully appreciate the contents of this stanza, as the version he reproduces without comment or correction (cf. note 57) is too corrupt to make sense syntactically. The same stanza is quoted from Pingree without emendation in Minkowski 2014, n. 107.

64 Prakash 1985: 39. Prakash also states that Shāh Shujā' was temporarily replaced as *subahdār* by Nawāb Fidaī Khān but returned to office in 1648, which circumstance provides some context for Balabhadra, writing in early 1649, making a point of the prince's presence. Pingree (1997: 85), while noting that Shāh Shujā' was serving as governor of Bengal when Balabhadra completed his later work *Horāratna*, misunderstands *rājamahala* as referring to 'the royal palace, presumably in Agra' – an assumption repeated, though apparently with some doubt, in Pingree 2004: 230. It does, however, seem a coincidence too many that Balabhadra should, in 1629, have employed the Arabic loanword *mahala* (not commonly used in Sanskrit) as a generic term for 'palace' (for which there are several indigenous Sanskrit words), despite the existence of a regional capital of the Mughal Empire specifically named Rājamahala/Rajmahal, and that, a decade later, his patron should have assumed office in that same city.

65 See Pingree 1970–1994 A4: 236a, 237a.

quotes Divākara's *Paddhatibhūṣaṇa* (discussed below), dated by Pingree first to ca. 1630 but subsequently to ca. 1640.⁶⁶

In view of the above considerations, I have emended the reading *bhūvārākṣaku-* '1551' to *bhūvārākṣaku-* '1571', an emendation made the more plausible by the resemblance of the characters *rā* and *ṇā* in the so-called Calcutta or northern style of Devanāgarī predominantly used in the text witnesses examined. It is also my (admittedly subjective) impression that, in practice, *vāṇa* '5' is more frequently encountered as a word numeral than *vāra* '7'. If this observation is correct, it would further increase the likelihood of the latter being mistaken for the former.

The *Hāyanaratna* is divided into two parts of five and three chapters (*adhyāya* or *adhikāra*), respectively. Following a general introduction, including a defence of Tājika and a discussion of the relationship of astrology to fate and free will, the first chapter deals with astrological fundamentals and the procedure for calculating the annual revolution, that is, the exact moment of the return of the sun to the ecliptical longitude that it held in the sidereal zodiac at the time of the nativity. The general sections of this chapter (1.2–3) closely follow the *Pīyūṣadhārā* commentary authored in 1603 by Govinda Daivajña – son of Nīlakaṇṭha, and thus nephew of Balabhadra's teacher Rāma Daivajña – on Rāma's *Muhūrtacintāmaṇi* (1.2). Large portions of text are actually copied verbatim from the *Pīyūṣadhārā*, including identical quotations from previous writers given in the same order, with only some abridgements and such alterations as required by the differing contexts (Tājika and Indian catarchic astrology, respectively). The *Pīyūṣadhārā* section in its turn appears to be strongly influenced by the *Vivāhadīpikā* commentary on Keśavārka's *Vivāhavyṇḍāvana* (1.2–3) authored by Gaṇeśa of Nandigrāma in 1554, unless both commentaries were modelled on a still earlier source. Five years after completing the *Hāyanaratna*, Balabhadra again copied the same portions from the *Pīyūṣadhārā* in his other chief work, the *Horāratna*.

The second to fourth chapters deal in turn with topics that set Tājika apart from classical Indian astrology (see the section on technical terms and concepts below): the aspect doctrine and schemes of planetary dignities, the sixteen planetary configurations (*yoga*), and the so-called lots (*sahama*). While these doctrines apply to all uses of Tājika and thus correspond roughly to the *Samjñātāntara* or volume on definitions of Samarasimha's and Nīlakaṇṭha's respective works, the remaining chapters focus exclusively on the judgement of annual revolutions, corresponding to their *Varṣatantras*. The fifth chapter

66 Pingree 1984: 98; 2004: 231.

addresses the so-called profection of the ascendant (*munthahā*, *inthihā*) and the planet ruling the year, along with particular configurations producing or cancelling misfortune (*ariṣṭa* or, sometimes, *riṣṭa*) and rise to power (*rājayoga*), respectively.⁶⁷ The sixth chapter outlines the results of each of the planets occupying each of the twelve houses or places from the ascendant in the annual horoscope, while the last two chapters deal in detail with the division of the year into periods ruled by each of the planets and with even more detailed levels of prediction by the casting of monthly and daily horoscopes.

In keeping with its nature as a *nibandha*, the *Hāyanaratna* includes numerous quotations from some forty earlier Tājika works (discussed below), as well as occasional references to other Sanskrit astrological and non-astrological sources. Roughly two thirds of the text as a whole consist of quotations, nearly all of them in verse; metres vary depending on the source, with *śloka*, *upajāti* and varieties of *āryā* predominating. By contrast, Balabhadra's original material is written predominantly in prose, with verse form reserved for the opening and concluding sections of the work and sporadic formulations of mathematical procedure or astrological examples (and, once, the sententious condemnation of an opponent).

From the historian's point of view, the value of the *Hāyanaratna* lies above all in the overview it gives of the development of the Tājika tradition by means of these quotations from sources spanning five centuries. While Balabhadra's own perspective is predominantly synchronic, it is not entirely ahistorical, as he acknowledges a distinction between 'ancient' (*jīrṇa*) and 'modern' (*nav-īna*) Tājikas.⁶⁸ In the latter group he includes Nilakaṇṭha Daivajña, the elder brother of his own *guru*, whose authority in all matters he accepts and stoutly defends, and whose name he never mentions without prefixing it with the honorific *śrīmat*. It therefore appears that Balabhadra too was, in his own eyes, a 'modern', but within the confines imposed by an overarching Brahmanic traditionalism. In refuting the charge, laid (justifiably) at the door of Nilakaṇṭha and others, that some of their astrological methods were newfangled and artificial, Balabhadra thus appeals not to the value of innovative discovery, but to the authority of 'the most ancient teacher Maṇittha' (pseudo-Manetho), to whom a Sanskrit work on Tājika is attributed.⁶⁹ This incident further serves to

67 The denotations of the last two terms are somewhat slippery, making their translation challenging. Cf. the discussion under *Principles of translation* below.

68 See sections 4.2; 4.6; 7.2.

69 See section 2.8. For the pseudepigraphic work of 'Maṇittha', see under *Tājika works and authorities cited* below; for the actual ancient work on astrology attributed to Manetho, see Lopilato 1998.

illustrate a recurring pattern: on matters of contention between Tājika authorities, Balabhadra tends – perhaps as a result of the ‘modern’ school being the furthest removed from its Perso-Arabic origins – to choose what is, from a historical point of view, the least correct position. Indeed, his statements often call to mind the criticism, expressed by his fellow Brahman Yādavasūri and cited by Balabhadra himself, that some Brahman authors ‘have not understood the Yavana [i.e., Muslim] tradition’.⁷⁰

4 Technical Terms and Concepts

The foreign doctrines on which such controversies could arise, and for which a Sanskritized Arabic nomenclature was partly adopted, relate both to concepts that were known but differently conceived in pre-Islamic Indian astrology and to concepts entirely new to a Sanskrit audience. The former include the system of aspects and the dignities and debilities of the planets; the latter comprise the sixteen configurations, the *sahamas* or lots, the *munthahā* or profection of the ascendant, the ruler of the year, the periods of the planets within a year, and the monthly and daily revolutions.

4.1 *Aspects*⁷¹

Known in Sanskrit as *dṛṣṭi*, or by any verbal noun denoting seeing, an aspect is an angle of longitudinal separation prevailing between two signs of the zodiac or between planets occupying them, which are conceived of as beholding, and thereby affecting, each other. Unlike the aspects of classical Indian astrology, the historical development of which remains to be fully investigated, the aspects employed in Tājika – identical with those of the Hellenistic, Perso-Arabic, and medieval European astrological traditions – are based on the division of the circle of twelve zodiacal signs by whole numbers. The ‘bodily conjunction’ in the same sign and degree is often distinguished from the ‘aspectual conjunction’ or aspect proper. Any given planet will distribute its influence through the zodiac by means of seven such aspects or ‘glances’: one opposition and two each of the sextile, square and trine. With regard to angular separation, it should be noted that astrological authors typically count signs inclusively, so that the square may be called a fourth-sign aspect; the trine, a fifth-sign aspect; etc.

⁷⁰ See section 7.2.

⁷¹ The following overview is a summary of the discussion of aspects in Gansten 2018; see the latter for the full arguments involved.

The Sanskritized forms of the Arabic aspect names are all feminine, presumably to agree with *dṛṣṭi*. In this connection it is worth noting that Pingree's conjecture that 'both Indian and Arab/Persian planetary aspects are employed [...] the aspects with new definitions are given Sanskrit names and those that remained the same are given Arabic names',⁷² though ingenious, rests on a corrupt reading. The relevant passage in the *Hāyanaratna* reads:

It is *mukāriṇā* in one sign, *mukāvilā* on the seventh, and the aspect on the tenth and fourth is *taravī*: [these] three are said to bring danger. The aspect on the third and eleventh, called *tasdī*, is most excellent; the aspect on the ninth and fifth, called *taślī*, is greatly auspicious.⁷³

In some of the later text witnesses of the *Hāyanaratna*, including the 1905 edition already mentioned, the names *taślī* and *tasdī* have been corrupted into *valī* and *tadā*, respectively, leading Pingree to mistake the Sanskrit adjectives describing them ('most excellent', 'greatly auspicious') for proper names.⁷⁴

Divisor	Separation (signs)	Separation (degrees)	English name	Arabic name	Sanskritized name
1	12/0	360°/0°	conjunction	<i>muqārīna</i>	<i>mukāriṇā</i>
2	6	180°	opposition	<i>muqābila</i>	<i>mukāvilā</i>
3	4	120°	trine	<i>tathlīth</i>	<i>taślī</i>
4	3	90°	square	<i>tarbī</i>	<i>taravī</i>
6	2	60°	sextile	<i>tasdīs</i>	<i>tasdī</i>

Tājika aspect doctrine demonstrably relies in large part on Sahl ibn Bishr's popular introductory work on astrology, known under several Arabic titles; I shall refer to it below simply as the *Introduction*. Its Graeco-Arabic typology of aspects is faithfully preserved by Tājika tradition, as are Sahl's two versions of

⁷² Pingree 1997: 87.

⁷³ See section 2.1. The passage, in the form of two stanzas, appears to be a quotation, but Balabhadra, unusually, gives no source for it. The first stanza and a half are also quoted, again without attribution (possibly from the *Hāyanaratna* itself), in the *Daivajñasaṃtoṣaṇī* commentary on Samarasiṃha's *Karmaprakāśa* 2.10–11.

⁷⁴ Pingree (1997: 87) also divides the phrase *taravī dikaturthe* 'taravī on the tenth and fourth' incorrectly, leading him to believe that the Sanskritized name for the square aspect was *tarabīdika*.

the margins of ecliptical longitude within which aspects are considered to be effective; but his geometric definitions of the aspect angles – such as ‘one sixth of the circle’ for the sextile – were misinterpreted as fractional values of ‘aspect strength’ (*ḍṛg-* or *ḍṛṣṭibala*), a form of arithmetically computed planetary dignity recognized by pre-Tājika Indian astrology. These fractions, first listed by Samarasiṃha, were adjusted by later authors so as to match the classical Indian system more closely. Another creative misunderstanding concerns the distinction between dexter and sinister aspects – cast backward and forward in the zodiac, respectively – which were reinterpreted in Tājika as referring to the parts of the zodiac below and above the horizon.

4.2 *Dignity and Debility*⁷⁵

Aspect strength forms one of the ‘six strengths’ (*ṣaḍbala*) of classical Indian astrology, a taxonomy which Balabhadra attempts with mixed success to impose on Tājika doctrine. The most complex of these is strength by zodiacal placement, of which Tājika tradition recognizes two varieties: the five dignities (*pañcavargī*) of the earliest sources and the additional twelve dignities (*dvādaśavargī*) of later authors. The latter system consists entirely of subdivisions of each zodiacal sign – strongly influenced by, but only partly identical with, the subdivisions found in pre-Islamic Indian astrology – while the former is based on the five Graeco-Arabic categories of domicile, exaltation, terms, triplicities and decans. The last two of these have given rise to much confusion and contention among Tājika authors.

With regard to triplicities (*trirāśi*, *trairāśika*), two different schemes of rulership are given by Samarasiṃha. One of these is more or less identical with the Graeco-Arabic system, although it is misunderstood to some extent by Balabhadra. The other, presumably introduced as an innovation by Samarasiṃha himself, has gained greater influence among later Tājika authors, but is applied by them chiefly to the procedure of selecting a single planet as ruler of the year (discussed below). For other purposes, Tājika authors as early as Tejaḥsiṃha and Haribhaṭṭa differ from Samarasiṃha by conflating triplicities with decans, to which planetary rulers are assigned by the Graeco-Arabic rather than the classical Indian method. This conflation leaves room for the Indian *navāṃśa* or ninth-part, often referred to as *musallaha* (misapplied, from Ar. *muthallatha* ‘triplicity’), as the last of the five dignities. Tājika authors differ on whether

75 The following overview is a summary of the discussion of planetary dignities in Gansten 2018, which offers a number of necessary corrections to the outline given by Pingree (1997: 88). See the former for the full arguments.

planetary rulers should be assigned to these ninth-parts according to the classical Indian ‘micro-zodiac’ model (based on domicile rulerships) or follow the order of triplicity rulerships.

In their expositions of non-zodiacal dignities, Tājika authors beginning with Samarasiṃha reproduce two mistakes found in Sahl’s account, confusing the genders assigned to the planets with, on the one hand, their status as superior or inferior (based on the cycles they form with the sun), and on the other, their classification as diurnal or nocturnal (that is, sect). The latter is a distinction fundamental not only to determining triplicity rulerships, but also to the calculation of the so-called lots or *sahamas* (see below) to which many Tājika works, including the *Hāyanaratna*, devote a separate chapter. Despite this, a systematic account of the sect doctrine is lacking from the Tājika canon, as is a technical term for the concept itself. Tājika authors also introduce misunderstandings or reinterpretations of their own, redefining the division of the horoscope into masculine and feminine sectors from quadrants to halves and resisting the Graeco-Arabic interpretation of swift motion as a dignity. Some authors likewise question the concept of a partile conjunction with the sun (known as being ‘in its heart’, Ar. *ṣamīmī*) as a dignity, while others uphold it – though once more apparently with no attempt at systematic exposition of the doctrine.

4.3 *The Sixteen Configurations*

Resting on the twin foundations of aspects and dignities, the sixteen planetary configurations (*ṣoḍaśa-yoga*) are perhaps the most distinctive and ubiquitous of all Tājika doctrines. The first two *yogas* relate to the positions of the planets in the angular, succedent or cadent houses of the figure, while the last two refer to zodiacal positions and other astronomical considerations considered to strengthen or weaken a planet’s influence for good in the horoscope.⁷⁶ The twelve remaining configurations are all variations on the theme of planets approaching an exact aspectual angle (application, *itthaśāla*), calculated to the degree, or departing from one (separation, *īsarāpha*). The differences in the planets’ apparent velocity and direction of travel, along with considerations

⁷⁶ In Tājika as in astrological tradition generally, the relation of the notion of strength or dignity to that of beneficence is not always clear. A naturally benefic planet such as Jupiter or Venus is universally regarded as even more benefic when strong, but opinions differ with regard to the naturally malefic planets Mars and Saturn. The majority position appears to be as stated here – that a strong or dignified planet is always more disposed to do good – but some authors do suggest that it is better for the malefic planets to be weak. Instances of this view can be found in Chapter 6.

such as the zodiacal signs involved, combine to create a variety of possible scenarios, each with its own symbolic meaning.

Both modern practitioners and academic scholars have remarked on the surprising use of the word *yoga* in this context.⁷⁷ In pre-Islamic Indian astrology, *yoga* signifies any predefined combination of astrological factors present in a horoscopic figure, ranging from the simple and generic – such as a planet occupying an angular house while simultaneously in its sign of exaltation or domicile – to stipulations so complex as to appear more or less unique to a single nativity. Indian texts contain hundreds of *yogas*, some named after their supposed outcomes but many with fanciful names, such as the ‘elephant-and-lion configuration’ (*gajakesari-yoga*) involving the moon and Jupiter being placed in mutually angular signs, the expected outcome of which is in no way related to wildlife. Although Tājika offers a more generalized taxonomy of planetary interrelations, the fact that these, like many of the Indian configurations, are based on aspects and/or dignities may perhaps explain why the early Tājikas considered *yoga* the most congenial Sanskrit designation for them.⁷⁸

While Pingree looks to Abū Ma’shar al-Balkhī’s (787–886) list of twenty-five conditions for definitions, the Tājika list of sixteen *yogas* actually derives from Sahl ibn Bishr’s *Introduction*, as demonstrated elsewhere.⁷⁹ Although the close correspondence between the Tājika list and that of ‘Zahel bem biç Ismaelita’ (properly Sahl ibn Bishr al-Isrā’īlī) was noted already by Weber, the latter did not appreciate the full extent of Sahl’s influence and mistakenly assumed that the two discrepancies between the lists were due to an element having been accidentally left out of Sahl’s list and a substitute added at the end to make up the numbers.⁸⁰ As seen from the comparison below, the reverse is actually the case: Sahl’s list is the original version, from which the Tājikas have eliminated the last item.

77 See Raman 1982: 45; Pingree 1997: 88.

78 No universally accepted technical term seems to exist in Arabic. Abū Ma’shar employs the word *ḥāl*, translated by Burnett et al. (1994) as ‘condition’, and Pingree (1997: 71 f.) adopts this usage in his discussion of the Byzantine reception of Arabic astrology, which draws partly on Sahl; but Sahl himself speaks more vaguely of ‘ways’ or ‘approaches’ (Ar. *wajh*, rendered by the Byzantine and medieval Latin translators of Sahl as *διάθεσις* and *modus*, respectively). See Stegemann 1942: 36; Dykes 2019a: 52–75.

79 See Pingree 1997: 88 f. (referring to Burnett et al. 1994); Gansten and Wikander 2011. While the latter offers certain necessary corrections to the former, some of its own assumptions concerning planetary dignities in the Tājika tradition (based partly on Pingree 1997) must now be revised; see above and Gansten 2018.

80 Weber 1853: 265–273. Towards the end of this section, Sahl’s name is even further distorted to ‘Hazel’.

Arabic name	English meaning	Sanskritized name
1. <i>iqbāl</i>	1. advance	1. <i>ikkavāla</i>
2. <i>idbār</i>	2. retreat	2. <i>induvāra</i>
3. <i>ittiṣāl</i>	3. application	3. <i>itthaśāla</i>
4. <i>inṣirāf</i>	4. separation	4. <i>īsarāpha</i>
5. <i>naql</i>	5. translation	5. <i>nakta</i>
6. <i>jāmi'a</i>	6. collection	6. <i>yamayā</i>
7. <i>man'a</i>	7. prohibition	7. <i>maṇaū</i>
8. <i>qabūl</i>	8. reception	8. <i>kambūla</i>
9. <i>ghayr al-qabūl</i>	9. non-reception	9. <i>gairikambūla</i>
10. <i>khalā' as-sayr</i>	10. being void of course	10. <i>khallāsara</i>
11. <i>radd</i>	11. return	11. <i>radda</i>
12. <i>duf'a l-quwwa</i>	12. committing strength	12. <i>duḥphālikuttha</i>
13. <i>duf'a t-tadbīr ...</i> <i>... wa-ṭ-ṭabī'a</i>	13. committing disposition and nature	13. <i>dutthothhadabīra</i>
14. <i>quwwa</i>	14. strength	14. <i>tambīra</i>
15. <i>ḍuf</i>	15. weakness	15. <i>kuttha</i>
16. <i>aḥwāl al-qamar</i>	16. conditions of the moon	16. <i>duruḥpha</i>
		– –

The original Sanskrit translator – presumably Samarasimha, whose *Karmapra-kāśa* is the earliest preserved work in which this list appears⁸¹ – has mistakenly split Sahl's thirteenth configuration in two, thus creating a new fourteenth configuration and causing the remaining items to be displaced, so that the Indian list of sixteen comes to an end with *duruḥpha*.⁸² This was an easy mistake to make for two reasons. First, items in Sahl's list are separated by the word *wa* ('and'), so that it was natural to assume that the *wa* included in the name of the thirteenth configuration marked a new item. Second, the last configuration discussed by Sahl, the '[harmful] conditions of the moon', may easily be perceived as a subset of 'weakness' and included under that heading. This is exactly what

81 While the evidence suggests that the entire list of sixteen configurations was transmitted primarily through Samarasimha's *Tājikaśāstra* rather than his *Karmapra-kāśa*, only a few verses relating to the configurations have survived from the former work, none of them dealing with the crucial *tambīra*; see Gansten 2019.

82 Pingree (1997: 89) mistakenly claims that *tambīra* (which he calls *tanvīr*) corresponds to the Arabic word *tadbīr* – significantly, the only term he does *not* find in Abū Ma'shar's list. As seen from the table, *tambīra* actually corresponds to the Arabic *ṭabī'a*.

has happened in Samarasimha's version, which was subsequently reproduced in every Tājika work discussing the sixteen configurations.

Even the configurations that were transmitted intact from Sahl were sometimes misunderstood to a smaller or greater extent in Tājika tradition, sometimes giving rise to radical reinterpretations, as in the cases of *qabūl* and *ghayr al-qabūl* (reception and non-reception).⁸³

4.4 *Lots (sahama)*

The Arabic *sahm* 'lot', translating κλῆρος, is Sanskritized as *sahama*; a not infrequent synonym, no doubt partly on account of phonetic similarity, is the proper Sanskrit noun *sadman* 'seat, abode'. Though scorned (with one exception) by Ptolemy and therefore largely absent from European tradition since the Renaissance, when Ptolemy reached his apotheosis, the lots belong to the earliest strata of horoscopic astrology.⁸⁴ They are points on the ecliptic derived mathematically from the position of three elements by measuring the longitudinal distance from point A to point B (typically two planets) – always in the order of the signs, that is, forward along the ecliptic – and projecting the same distance, in the same direction, from point C (typically the ascendant). Thus, measuring the distance from the luminary of the sect – the sun in a diurnal nativity, the moon in a nocturnal one – to the other luminary and projecting the same distance from the ascendant degree will give the first and most important of the lots, the lot of fortune, known in Tājika as *punya-sahama*.⁸⁵

The definitions of most lots similarly involve the concept of sect, the diurnal/nocturnal distinction mentioned above in connection with planetary dignities. A few lots use the cusp of a horoscopic house (*bhāva*), or even another, previously calculated lot, in place of a planet, or a planet in place of the ascendant, but the principle of calculation remains the same. In some texts, however, this principle is expressed differently: rather than *measuring the distance* from planet A to planet B (with planet A taking the ablative or 'direction from' case), later authors – including Balabhadra and Nilakaṇṭha – speak of *subtracting the longitude* of planet A from planet B (with planet B taking the ablative). The

83 For an English version of Sahl's original exposition, see Dykes 2019a: 60–62.

84 When used in European astrology, the lots are often referred to as 'Arabic parts' (*pars* 'part' being a common Latin translation of *sahm*) on the mistaken assumption that, being absent from Ptolemy's work, they must have been introduced by the Arabs.

85 This, incidentally, is the only lot acknowledged by Ptolemy, who applies the diurnal definition universally (see Ptol. *Tetr.* III 11). For the Sanskrit designation, cf. the discussion on translation principles below.

results of the two operations, when correctly performed, are identical; but the difference in perspective seems to have confused some Tājika writers.⁸⁶

Another source of confusion appears to be the tortuous and convoluted instructions for calculation given by Samarasiṃha. After measuring the longitudinal distance between points A and B in signs and fractions and converting the whole to degrees, either of two procedures is applied: (1) the ecliptical degrees already risen in the ascendant sign are added to the distance, which is then reconverted to signs and fractions and projected from 0° of the ascendant sign; (2) the degrees yet to rise in the ascendant sign are subtracted from the distance, which is reconverted and projected from 0° of the sign *following* the ascendant. The result in both cases is exactly the same, so that there is really no need for two separate procedures. Balabhadra, however, follows Nīlakaṇṭha in reading Samarasiṃha's text slightly differently, leading him to conclude that, under certain circumstances, one zodiacal sign (30° of longitude) should be added to the result, and he criticizes astrologers who uphold the former reading.⁸⁷

The significations assigned to individual lots are often quite specific, which presumably adds to their appeal for practising astrologers pressed by their clients for detailed predictions: among many others, the *Hāyanaratna* includes lots relating to particulars such as other people's wives, travel by water, elephants, camels, etc. While a core set of Tājika lots are of Hellenistic origin, there is no doubt that many others were devised by astrologers writing in Arabic.⁸⁸ Indeed, the Persian scholar al-Bīrūnī had wryly remarked in his 1029 introduction to astrology that '[i]t is impossible to enumerate the lots which have

86 Not least Haribhaṭṭa (see below), who is censured by Balabhadra for 'not having even the slightest understanding of the calculation of *sahamas*' (see section 4.2). Sumatihaṣa Gaṇi, in his commentary on the *Tājikasāra* (233), dated by Pingree (1981: 98) to 1620, phrases his objection more gently: 'Here, the teacher [Haribhaṭṭa] describes some *suhamas* in accordance with Tājika [tradition] and some in a manner opposite to the *Samjñātānta*, Vāmana and other Tājikas.'

87 See section 4.2. The authors identified by name as erring in their views are Haribhaṭṭa, Keśava Daivajña and Gaṇeśa Daivajña; but Balabhadra's particular comments about astrologers inappropriately inventing spurious readings of Samarasiṃha may have been directed at Viśvanātha Daivajña, whose *Prakāśikā* commentary on Nīlakaṇṭha's *Samjñātānta* and *Varṣātānta* was completed in 1629 (Pingree 1970–1994 A5: 681; 1981: 99). In it, Viśvanātha states (ad *Samjñātānta* 3.24) that 'none of the authorities (*ācārya*) advocates adding one [sign] to the *sahamas*', citing both 'Samarasiṃha' (the disputed passage from the *Tājikaśāstra*) and the *Manuṣyaṇṭaka* (that is, *Karmaprakāśa*), as well as 'the school of the Yavanas' (contemporary Muslim practice?), as evidence.

88 For a discussion of the possible antecedents of the Tājika lots given in Samarasiṃha's *Karmaprakāśa*, see Gansten 2019.

been invented [...] they increase in number every day'.⁸⁹ As noted by Pingree, the number of *sahamas* listed in Tājika works likewise increased over time, probably suggesting a continued influx from Arabic-language sources.⁹⁰ While Samarasiṃha's *Karmaparakāśa* gives 32 *sahamas*, Nīlakaṇṭha, writing three centuries later, lists 50; to the latter, Balabhadra adds a further 25 from several other sources.⁹¹

4.5 *The Projection and the Ruler of the Year*

In predicting the results of any given year of life, particular attention is given by both Arabic and Tājika authors to the planet identified as 'ruler of the year'.⁹² In available Arabic sources and their medieval Latin translations, this identification is based on a simple procedure, known in English as the annual projection of the ascendant: for each year of life elapsed from birth, the ascendant is symbolically moved one full sign (30°) forward in the zodiac, thus returning to its original position at age 12, 24, 36, etc. The domicile ruler of the current sign is the ruler of the year.⁹³

As convincingly argued by Giuseppe Bezza, the Latin term *projectio* adopted into European vernaculars, while apparently derived from the verb *proficio* 'to advance', is actually an early modern misreading of scribal abbreviations for *perfectio* in the sense of the *completion* of a motion (p being mistaken for p).⁹⁴ The latter term corresponds semantically to the Arabic *burj al-muntahā* or *al-intihā*, which in turn closely matches Ptolemy's συντελειουμένου ζῳδίου 'sign reached in completion'.⁹⁵ In Tājika sources, the same Arabic designations are Sanskritized as *munthahā* or *munthā* and *inthihā* or *inthā*, respectively (with variants).⁹⁶

89 Translated in Wright 1934: 282.

90 Pingree 1997: 89. As noted elsewhere, however, some *sahamas* not included in the *Karmaparakāśa* were nevertheless known to Samarasiṃha, as shown by preserved quotations from his *Tājikaśāstra* (see Gansten 2019). As only fragments of this work remain, we do not know how many lots it included.

91 See sections 4.1 and 4.3.

92 The technical term *sākhudā*, borrowed from Persian, is often used in Arabic but not in Tājika sources, which consistently employ Sanskrit translations such as *varṣeśvara*.

93 See Dykes 2009: 185 ff. and 2019b: 185 ff. for translations from Māshā'allāh and Abū Ma'shar, respectively; cf. also Burnett and al-Hamdi 1991/1992.

94 Bezza 1996.

95 Ptol. *Tetr.* IV 10,20. Ptolemy refers to the rulers of the signs so reached as χρονοκράτορας [...] ἐνιαυσιαίους 'annual time-rulers' – in other words, rulers of the years.

96 Samsó and Berrani (1999: 300) give a third Arabic synonym, not adopted by Tājika sources: *burj al-dawr* 'sign of the revolution'.

In Graeco-Arabic and subsequent European tradition, profections (to use the conventional terminology) form a major predictive technique in their own right, detailed in textbooks from the Hellenistic period up to the Renaissance.⁹⁷ Pingree's rather surprising statement that the *munthahā* constitutes 'one of those components of continuous horoscopy that appear to have been invented in Sasanian Iran and adopted in Arabic astrology in the early 'Abbāsid period' is thus incorrect.⁹⁸

This wider use of profections is, however, largely unknown to Tājika authors: while Balabhadra does refer in passing to the equation of one degree of ecliptical longitude with twelve days 'according to the method of Yādava',⁹⁹ he does not connect this method with the *munthahā*, which he treats only as a point of symbolic significance in the annual horoscope, discussed in a different part of his work.¹⁰⁰ By contrast, the Tājika method for ascertaining the ruler of the year is considerably more complex than that met with in extant Arabic sources, involving as it does the identification of up to five possible candidates – the ruler of the *munthahā* being one – and the selection of the most suitable one according to criteria based on aspects and dignities. Although the sources for this procedure are currently unknown, they are likely to be of Perso-Arabic origin, as prominent use is made of elements foreign to classical Indian astrology, such as the *munthahā*, triplicity rulers and sect.

4.6 Planetary Periods¹⁰¹

All forms of astrology are concerned with the twin questions of *what* and *when*, or diagnosis and prognosis. Being conceptually linked, these two areas of concern may safely be assumed to have coexisted from the earliest period of horoscopic astrology: it is almost inconceivable that astrological clients of any era would have been satisfied with wholly undated predictions such as 'You will

97 For some early sources, see Ptol. *Tetr.* IV 10; Vett. Val. IV–VI; *Carm. astr.* IV; Paul. Al. 31.

98 Pingree 1997: 83. The mistake is surprising not least in view of the fact that Pingree had, about a decade earlier, produced a critical edition of Vettius Valens' *Anthologiae*, the richest ancient source for the technique (typically known in that work as *παράδοσις* 'handing over, transmission'). Almost equally remarkable is Pingree's apparent unfamiliarity with the contents of Ptolemy's brief closing chapter, which forms the basis of most European writings on astrological prognostication from the sixteenth to the nineteenth century.

99 See section 3.3. Assuming a continuous rather than a discrete motion, 30° per year is approximately equivalent to 12.175 days per degree. A continuous profection was explicitly taught by 'Umar at-Ṭabarī in the eighth century; see Dykes 2010: 32 ff.

100 Pingree's statement (1997: 90) that Tājika texts 'discuss annual events not only on the basis of the anniversary horoscope, but as well on that of the *munthahā*' suggests two distinct prognostic techniques, a conclusion not supported by the textual evidence.

101 I hope shortly to publish a more detailed study on this topic.

marry' or 'You will fall ill', to say nothing of 'You will die'.¹⁰² For this reason, the concept of 'continuous' astrology (a phrase coined by Pingree and subsequently employed by many other scholars) as distinct from 'the basic natal reading' must be regarded as somewhat artificial, the assumption that it represents a historically later development as highly implausible, and the quip that it was 'designed to guarantee the astrologer constant patronage' as ill-considered.¹⁰³

In pre-Islamic Indian astrology, the timing of predicted events relies largely on systems dividing a life into blocks of time ruled by the planets in succession, most commonly known as *daśā* 'period, condition' and divided fractally into subperiods (*antardaśā*), subsubperiods (*pratyantardaśā*), etc. While the *daśā* systems found in the earliest Sanskrit texts are probably derived from Hellenistic sources, indigenous methods based on the position of the moon with respect to the 27 asterisms (*nakṣatra*) became popular in the medieval period and are still prevalent today. Common to all *daśā* systems is a lack of the sense of motion (whether astronomically based or purely symbolic) inherent in many Hellenistic astrological procedures: no point is 'sent out' to move around the horoscope; rather, the *daśās* are fixed periods assigned to the planets in turn.

Although *daśās* may theoretically be subdivided any number of times and thus reach levels of minute duration, Tājika authors beginning with Samarasiṃha have argued that the casting of annual revolutions allows for subtler and more detailed predictions.¹⁰⁴ To justify this claim, the annual prognostication must itself be broken down into smaller segments, a process conceptualized by the Tājikas as taking the form of *daśās* applied to the figure of the

¹⁰² Indeed, Ptol. *Tetr.* III 11 famously cites 'the ancient' (probably Petosiris) as stating that the determination of the time of death is the first task of an astrologer in judging a nativity. For an overview of this topic in classical antiquity, see Heilen 2015: 984–1021 (for the figure of Petosiris cf. also pp. 539–562).

¹⁰³ See Pingree 1973: 120 f., where 'continuous astrology' is primarily equated with annual revolutions. The concept recurs many times in Pingree's writings, however, employed as a blanket designation for the direction of the ἀφῆτης or prorogator through the terms and for the profection or *intihā* (Pingree 2001); for the real-time transits of the planets (Pingree 1981: 83); for various period systems (Pingree 1989); etc.

¹⁰⁴ See section 1.2. Pingree's (1997: 87) statement that 'both the traditional Indian system of dividing the native's life into planetary periods (*daśās*) and sub-periods (*antardaśās*) and the corresponding Arab/Persian (originally Greek) methods [...] were incorporated into *tājika*' is, to the best of my knowledge, incorrect. Samarasiṃha's *Karmaprakāśa* gives a jumbled account of directions (cf. note 106) through the terms (Ar. *qisma*) and the Perso-Arabic period system known as *fardār* or *firdār*, treating them as a single method and calling the resulting periods both *kisimā* and *daśā* (see Gansten 2019); but no Tājika work known to me discusses traditional Indian *daśās*.

revolution, complete with subdivisions of their own. The penultimate chapter of the *Hāyanaratna* describes a number of such systems, some based on more or less imperfectly understood Perso-Arabic concepts, others being miniature versions of classical Indian *daśās* covering a single year rather than an entire lifetime. The predominant system is that generally known as *pātyāyinī daśā*, which likely began as a garbled version of ‘Umar’s system of continuous profections or ‘greater condition’.¹⁰⁵ The same is probably true of at least one of the systems included under the heading of *tāsīra* (from Ar. *tasyīr*, typically designating so-called directions, but sometimes also used of profections), and likewise of the system utilizing the *haddās* or terms.¹⁰⁶ Another *tāsīra* system, specifically related to the houses, similarly appears to be based on ‘Umar’s ‘lesser condition’ of profecting (or possibly directing) the ascendant of the revolution figure,¹⁰⁷ whereas the system based on the hours (*kālahorā*) ruled by the planets may be derived from Abū Ma’shar’s method of dividing the year into seven parts.¹⁰⁸ The ‘natural periods’ and those based on the 27 asterisms are Indian *daśās* adapted for use within the framework of annual prediction. For unclear reasons, the last-mentioned system is also referred to by the Arabic word *mudda* ‘period’.

4.7 Monthly and Daily Revolutions

Another way of subdividing the annual prognostication is to cast separate horoscopes for the exact moment of the sun’s entering the same degree, minute and second of arc as in the nativity, but in each of the twelve zodiacal signs (the monthly revolution), or the same minute and second of arc in each of the 360

105 For ‘Umar’s and Abū Ma’shar’s treatments of this technique, see Dykes 2010: 32 ff., 2019b: 634 ff. Concerning the latter, note that Dykes mistakenly emends the figure 12;10,30 days (where the fraction is, just as the text says, $\frac{1}{6}$ of a day plus half $\frac{1}{6}$ of $\frac{1}{10}$ of a day – in decimal notation, 0.175 days), which is exactly 365.25 days divided by 30°.

106 Directions (ἄφασις), often known since the seventeenth century as ‘primary’ directions, are based on the apparent daily motion of the celestial sphere and calculated in oblique, right, or mixed ascensions. Fragmentary and poorly understood examples of this technique are scattered throughout Tājika literature, beginning with the *Karmaparakāśa* (cf. note 104). For the classical technique, see Gansten 2012b.

107 For ‘Umar’s and Abū Ma’shar’s treatments of this technique, see Dykes 2010: 32 ff., 2019b: 636 f. Concerning the latter, note that Dykes misunderstands the ‘approximation’ mentioned in the text, which refers simply to the minor discrepancy between the true and mean daily apparent motion of the sun over the course of a year – not, as Dykes assumes, the considerably greater differences between arcs measured in ecliptical longitude and ascensional degrees, respectively.

108 See Dykes 2019b: 632 f.

degrees of the ecliptic (the daily revolution).¹⁰⁹ Such monthly and daily figures are judged, *mutatis mutandis*, along the same principles as the annual revolution, with a separate ruling planet identified for each, and even separate planetary periods and subperiods to produce still more minute divisions of time.¹¹⁰

While fine-grained astrological procedures such as monthly and daily profections have existed since Hellenistic times, and revolutions for these periods are discussed by some Arabic-language authors,¹¹¹ the techniques discussed in the last chapter of the *Hāyanaratna* appear to be largely indigenous, with much importance being given to the ninth-parts (*navāṃśa*) of the zodiacal signs. They may in fact derive from Hemaprabhasūri, the early Jain author on *Tājika* mentioned above, who claims the judgement of daily transits on the basis of the ninth-parts as his intellectual property and threatens that plagiarists will incur as much sin as they would by killing a cow – a warning that seems to have gone utterly unheeded.¹¹²

A peculiar feature of day-to-day predictions is the threefold prognostication of hunting, meals and dreams, recurring in a number of *Tājika* works (discussed in greater detail below), always near the end. Balabhadra quotes Vāmana and Nilakaṇṭha on these topics, with additional considerations from non-*Tājika* authors. The extant text of the *Praśnatānta* again covers all three, with at least some of the verses on meals in all probability going back to Samarasimha's original text.¹¹³ Haribhaṭṭa's *Tājikasāra* discusses hunting, meals and dreams in that

109 These procedures appear to be based on the opinion of Abū Ma'shar; see Dykes 2019b: 563, 644.

110 Pingree's statement (1997: 87 f.) that 'the horoscopes of the months and the days of the native's life [...] replace the Indian *aṣṭakavarga* system' appears to be based on no other similarity than the fact that monthly and daily revolutions on the one hand, and the *aṣṭakavarga* method of evaluating planetary transits on the other, are both relatively detailed techniques intended for short-term prognostication.

111 The most important source is undoubtedly the ninth book of Abū Ma'shar's work on annual revolutions (transl. Dykes 2019b). In his tenth-century introduction to astrology, Kūshyār ibn Labbān prefaces his explanation of such procedures with this caveat (III 20, transl. Yano 1997: 251): 'Many astrologers go into details concerning the operation in the revolution so that they revolve it month by month, week by week, and day by day. Even if this is part of the art (of astrology), it is one of the branches which are far from the bases, and generalization of the teaching in it concerning its judgment is impossible but they are dependent on coincidences, even though papers are filled with them.'

112 *Trailokyaparakāśa* 885:

madyasyāśya śāstrasya yo nāma corayīṣyati |

gohatyādikṛtaṃ pāpaṃ tasya sarvaṃ bhaviṣyati ||

113 The origin with Samarasimha is suggested partly by the metre employed in the relevant verses (*āryā*), but more importantly by their close similarities with the writings of Sahl ibn Bishr, one of Samarasimha's main sources. See below and Gansten 2014, 2019.

order, as does Yādasvāsi's *Tājikayogasudhānidhi*; Nārāyaṇadāsa Siddha's *Praśnavaiṣṇava* covers meals and hunting; and Gaṇeśa's *Tājikabhūṣaṇa*, only meals. The *Praśnatantra* and *Praśnavaiṣṇava* present their material in the context of interrogations or horary astrology; the others, as part of daily predictions. In either case, there can be little doubt that at least the sections on hunting and meals represent a legacy from Sahl, the last two chapters of whose work on interrogations address these same topics. Until the complete works of Samarasimha are retrieved or restored, however, the precise transmission history of this lore is likely to remain unknown.¹¹⁴

Overall, it seems fair to observe that Perso-Arabic astrological doctrines have been misunderstood to a considerably greater degree in India than in the medieval European reception. This is almost certainly due at least in part to the existence of a well-established pre-Islamic tradition of horoscopic astrology in India, acting as a distorting lens through which the foreign knowledge system was viewed.

5 Non-Tājika Works and Authorities Cited

The quotations that make up the greater part of the *Hāyanaratna* are chiefly, but not solely, taken from Tājika authors. Quotations from non-Tājika works, most numerous in the first chapter, may be classified as astronomical, astrological, and miscellaneous. The last category includes general statements on philosophical topics such as fate (*daiva*) and free will (*puruṣakāra*, literally 'human effort') or on socio-religious codes of action (*dharma*), attributed to ancient sages without specifying any textual sources, to the even less specific *smṛti* '[religious] tradition', or occasionally not attributed at all. Most but not all of these quotations have been traced, although some may be designated as *Wanderstrophe*, so that the sources actually employed by Balabhadra remain somewhat conjectural. In fact, as mentioned above, substantial parts appear to have been lifted directly from Govinda Daivajña's *Pīyūṣadhārā*, so that the real question becomes that of Govinda's source texts (with which Balabhadra himself may or may not have been acquainted). Even where a title is given, the work in question may sometimes, as in the case of the *Viṣṇuyāmala*, be too amorphous for a quotation to be located within it.

114 As discussed elsewhere (Gansten 2019), Samarasimha's genethliological work *Karmaprakāśa* states at the beginning that it will explain astounding things, including the flavours of food; but no discussion of food is found in the extant text of that work.

In the field of mathematical astronomy, Balabhadra's foremost authority is his own teacher Rāma Daivajña, panegyricized with extravagant epithets: 'the royal swan roaming the lake encompassing all [astronomical] schools, the lion among those who have mastered the subtleties of the science of mathematics'. Rāma is quoted on a number of topics, often without mention of the name of the work in question, although some passages are attributed to the *Paddhati-cintāmaṇi* or the *Siddhāntacintāmaṇi* – titles which may or may not refer to a single work and which are not mentioned by Pingree.¹¹⁵ A single reference simply to the *Cintāmaṇi* (not explicitly connected with Rāma) may likewise be a shorthand version of one or both these titles. The *Rāmaṇinoda* is mentioned in passing but never quoted.

Balabhadra's allegiance seems not to lie with any single school or *pakṣa* of astronomical calculation, and he quotes his father Dāmodara on the subject:

But as there are [many astronomical] schools such as the Brāhma, Saura and Ārya, according to which school should [the places of] the planets be established? Thus it is said in the *Dāmodarapaddhati*: 'The true [places of the] planets should be established by [the method of] that school according to which they coincide with calculation by observation at that time.'¹¹⁶

As already mentioned, Balabhadra states that he and Dāmodara had written commentaries on the *Bījagaṇita* and the *Brahmatulya* (or *Karaṇakutūhala*), respectively, both works authored by Bhāskara II and belonging to the Brāhma-pakṣa. These works are quoted once and twice, respectively, in the *Hāyanaratna*, and the *Siddhāntaśiromaṇi* by the same author, eight times; there is also a single, unverified quotation attributed to a *Brahmasiddhānta*. But Balabhadra likewise quotes the *Sūryasiddhānta* three times and Jñānarāja's *Siddhāntasundara* of the Saurapakṣa once and claims to have written a commentary on the *Makaranda* of the same school, and to rely on its values for his elaborate example calculation of Shāh Shujā's revolution figure (section 8.3). He also includes a single reference to a *Vasiṣṭhasiddhānta*, and some of his mathematical procedures in chapter 8 appear to be influenced by the *Grahalāghava* authored by Gaṇeśa Daivajña of Nandigrāma.

References to non-Tājika astrological works are relatively sparse. Varāhamihira (fl. sixth century), arguably the greatest authority of classical Indian astro-

¹¹⁵ Cf. note 47.

¹¹⁶ See section 1.8.

logy, is quoted about ten times, mostly referring to his *Brhājñātaka* but once to the *Laghujñātaka* and once to the *Brhatsaṃhitā*. One of the three statements attributed to the sage Garga may also have been taken from the *Brhatsaṃhitā*; the other two remain unidentified, as do the single references to Satya, Māṇḍavya and Bādarāyaṇa. The *Vasiṣṭhasaṃhitā* is quoted three times and the *Nāradasaṃhitā* twice, one of the verses from the latter also occurring in the *Nāradaपुराणा* as well as in the *Kaśyapaśaṃhitā*, which is quoted separately once. While the mythical or semi-mythical sages after which they are named were cited as authorities by Varāhamihira and other early writers, the dates of these *saṃhitās* in their current forms are uncertain.¹¹⁷ Vasantarāja's eleventh-century *Śakunārṇava*, which deals primarily with omens rather than astrology proper, is likewise quoted once,¹¹⁸ and Keśavārka's *Vivāhavarṇāvana* (circa thirteenth century) twice.¹¹⁹ The last chapter of the *Hāyanaratna* quotes twice from the section on 'daily transits' (*dinacaryā*) in the *Samvitprakāśa* authored by Govinda Kavīśvara, although the author's name is not given by Balabhadra.¹²⁰ As Govinda does not state the date of his work, the earliest known manuscript of which (1696 CE) postdates the *Hāyanaratna*, all we can say for certain is that it was composed before 1649.¹²¹ The same chapter quotes once from the *Bhūpālavallabha*, which may be the original work of that name or perhaps the abridged version authored by Paraśu- or Parśurāma in 1356 CE, the *Paraśurāmopadeśa*.¹²²

117 Pingree (1981: 103) dates the *Nāradasaṃhitā* to 'sometime before about 1365' and the *Vasiṣṭhasaṃhitā* to the fifteenth century or earlier, giving no *terminus post quem* for either.

118 Pingree (1981: 76; 1970–1994 A5: 598b) dates the *Śakunārṇava* to the 1090s.

119 According to Pingree (1970–1994 A2: 75a), Keśavārka's *floruit* falls in the thirteenth or fourteenth century, though in a later publication (1981: 135) he gives 'XII/XIII'.

120 This *Samvitprakāśa* should not be confused with the Vaiṣṇava idealist treatise of the same name, authored by Vāmanadatta in Kashmir in the eleventh century or earlier.

121 See Pingree 1970–1994 A2: 136b; A3: 34b; A4: 84b; A5 96b f.

122 See Pingree 1970–1994 A4: 194a–b; A5 212b f. Pingree apparently considered the *Bhūpālavallabha* to be identical with the *Paraśurāmopadeśa*: although listing an incongruously voluminous manuscript with the former title (608 ff., attributed to Varāhamihira), he does not comment on the statement that he himself quotes from Par[a]śurāma to the effect that the latter work is a mere abridgement of a much longer text (whether by the same or a different author is not explicitly stated):

bhūpālavallabho granthaḥ kṛtaḥ pūrvaṃ savistaraḥ |
tataḥ paraśurāmopadeśaḥ svalpo viracyate ||
śrīkrṣṇadevaputrena parśurāmopadeśakaḥ |
grantho 'yaṃ cātivistīrṇaḥ (read -vistīrṇā?) kṛyate bhūpavallabhāt ||

Possibly Pingree's view was influenced by that of Katre (1942), from whose manuscript of the text these two stanzas appear to have been missing, and who rejected the suggestion (received prior to publication) that the two works are different. However, the

A few unidentified sources have no obvious Tājika content and may be works on classical Indian astrology. Chapter 6 contains two passages of ten stanzas each quoted from a *Cūḍāmaṇi*, the former of which reads like a work on interrogations;¹²³ the same chapter depends for its list of significations of the twelve horoscopic houses on one Caṇḍeśvara, who may have been a Tājika author but on balance probably was not.¹²⁴ The quoted work, never named, may have been a treatise on interrogations;¹²⁵ one such, the *Praśnavidyā* or *Praśnacāṇḍeśvara*, is attributed by Pingree to either of two authors named Caṇḍeśvara (fl. 1185 and 1314, respectively).¹²⁶ Caṇḍeśvara is further quoted once in chapter 1 and twice in chapter 8, the very last quotation apparently referring to 'King Caṇḍeśvara' (*caṇḍeśvaranṛpoditam*).

6 Tājika Works and Authorities Cited

Although Balabhadra's exposition of Tājika makes use of more than three dozen earlier works on the subject, these are by no means treated equally. Two authors stand out by being regarded as absolute authorities, never to be disagreed with: these are Samarasimha, 'anointed to the rank of a sage among Tājika authors', and Nīlakaṇṭha, brother of Balabhadra's *guru*. No difference of opinion is admitted to exist between these two authors; in other words, Balabhadra is careful always to interpret Samarasimha so as to agree with Nīlakaṇṭha. Of the remaining authors, some are quoted frequently and with general approval; others seem to be brought up chiefly to be argued with.

Balabhadra's acquaintance with the extant literature on Tājika appears to have been extensive: of the original (non-commentarial) works on the subject listed by Pingree as authored before 1649, only three are *not* quoted in

section colophons cited by Atle (1943), also referenced by Pingree, confirm that the *Paraśurāmopadeśa* is an abridgement (*iti śrībhūpālavalabhe sāroddhāre parśurāmopadeśe*), although a shortened version of the formula is sometimes used (*iti śrībhūpālavalabhe parśurāmopadeśe*, with variants).

123 A commentary of that name on the Tājika work of Padmanābha (see below) exists, but is written in prose.

124 The quotation in section 6.1 mentions 'Yavana' or 'the Yavanas' (which may as well refer to Greeks as to Persians, etc.), and that in 6.5 assigns the father to the fourth house (which is, admittedly, unusual in non-Tājika works); but there is no explicit Tājika terminology in the quotations, while they do contain frequent references to Indian cultural phenomena.

125 See the quotation in section 6.1: '[...] one should judge queries and so on.'

126 Pingree 1970–1994 A3: 41a; the former attribution is repeated in A5: 105b. I have not seen this text, which is different from and apparently more extensive than the work by the same title attributed to a certain Rāmakṛṣṇa (see Pingree 1970–1994 A5: 453a).

the *Hāyanaratna*, or at least not under the same names. These are Mahīdhara's *Tājikamaṇi* (1585), Śaṃkara's *Tājikacandrikā* (before 1607), and 'Abd ar-Raḥīm's macaronic *Kheṭakautuka* (late 1500s, in mixed Sanskrit and Persian verse), only the last of which has come within my purview.¹²⁷ Although Balabhadra makes a case for the permissibility of Brahmans studying Yavana works on the astral sciences, he draws the line at Yavana poetry,¹²⁸ and the *Kheṭakautuka* may have seemed to him a grey zone. More to the point, it is doubtful whether this short composition should be classified as a Tājika work at all: for all its Perso-Arabic vocabulary, it contains no procedures or technical terms specific to Tājika, and would perhaps be better described as a poetic exercise on the subject of Indian genethliology.¹²⁹

Govardhana's *Tājikapadmaśa*, quoted regularly by Balabhadra, includes little or no material on theoretical topics, focusing instead on the prediction of concrete outcomes related to various horoscopic factors. Two other works stand out by containing doctrines not found in the larger Tājika corpus: Hemaprabhasūri's early *Trailokyaprakāśa* and the later *Praśnavaiṣṇava* by Nārāyaṇa-dāsa Siddha. All these are discussed in the following overview, which presents the Tājika works and authors cited in the *Hāyanaratna*, beginning with authors known by name (given as nearly as possible in chronological order), followed by pseudographic and anonymous or unidentified works. For information on dates and manuscripts I have relied to a great extent, though not exclusively, on Pingree's *Census of the Exact Sciences in Sanskrit* (CESS, 'Series A', 1970–1994), to which I have occasionally been able to offer a few corrections. Regrettably, the CESS never reached the completion of the series with the planned volume A6,

127 See Pingree 1981: 98 f.; 1997: 84; 1970–1994 A4: 390b ff., A2: 79b f.

128 See section 1.2. Karttunen (2015: 401) mistakenly states that the *prima facie* authority cited by Balabhadra as prohibiting the use of Yavana language is *Vasiṣṭhadharmasūtra* 6.41 (*na mlecchabhāṣāṃ śikṣet[a]*). The actual reference (*na vaded yāvanīm bhāṣāṃ prāṇaiḥ kaṇṭhagatair api*) is only to *smṛti* or 'Tradition', with no specific authority mentioned. This half-stanza is found in *Bhaviṣyapurāṇa* 3.28.53, the second half of which warns against entering a Jain temple 'even when being trampled by elephants' (*gajair āpiḍyamāno 'pi na gacchej jainamandiram*). The juxtaposition of Jains and Yavanas (Muslims) is probably not coincidental. Considering Balabhadra's explicit position on the permissible uses of Yavana language and learning, not to mention the fact of his *Hāyanaratna* being perhaps the most ambitious and comprehensive introduction to Tājika ever written, Karttunen's conclusion (loc. cit.) that 'the great popularity of Tājika or Islamic astrology' amounted to '[d]efying Balabhadra' is surprising to say the least.

129 The main topic of the *Kheṭakautuka* is the results of the seven planets and Rāhu in the twelve horoscopic houses (not, as stated by Minkowski [2004: 332], 'the influences of the houses in the signs of the zodiac'). For the complex figure of 'Abd ar-Raḥīm (Khān-i-Khānān), one of the 'nine gems' at the court of Akbar, see Orthmann 1996.

so that authors beginning with the letters Ś, S or H are not included. The available information on these authors is thus somewhat less extensive.

6.1 *Hemaprabhasūri* (fl. 1248?)

Hemaprabhasūri's *Trailokyaparakāśa* – also known under several alternative titles, including the intriguing *Navyatājika* ('Modern Tājika') – has already been mentioned as possibly being the earliest preserved Sanskrit Tājika work. As the text is not dated, the 1248 CE date given by Pingree presumably rests on the authority of H.D. Velankar, who did not discuss his sources.¹³⁰ Of the author himself nothing definite is known except that his *guru*, named several times in the text, was one Devendrasūri; but it is fairly safe to assume that he lived in or near the present state of Gujarat in western India, where Jains were numerous and interactions with Muslims frequent. The suffix *sūri* in this context probably indicates leadership of a lineage (*gaccha*) within the Śvetāmbara sect. The benedictory invocation of the *Trailokyaparakāśa* being addressed to the Jina Pārśvanātha could possibly suggest this to be the now defunct Upakeśagaccha, referred to above in connection with *varṣaphala* or annual predictions, as that lineage was unique in tracing its origin to Pārśvanātha.¹³¹

The work is a large one, comprising between 1100 and 1300 stanzas, with considerable variation across text witnesses. It contains a significant amount of material not derived from Perso-Arabic sources or incorporated into later Tājika tradition, including prognostications based on elements of the Indian calendar. Balabhadra quotes five passages of varying length from the *Trailokyaparakāśa* in a non-committal way, without mentioning either the name or the non-Brahman status of its author, but I have been able to identify only two of these in the witnesses available to me: two manuscripts (one incomplete and undated, the other dating to 1712 CE) and two printed editions. My verse numbering follows the 1946 edition.

6.2 *Samarasiṃha* (fl. 1274?)¹³²

As discussed above, Samarasiṃha seems to have lived in the coastal area of Gujarat; unlike the majority of later Tājika authors, he was not a Brahman

¹³⁰ Pingree (1981: 112) says that Hemaprabhasūri 'is generally alleged to have written the *Trailokyaparakāśa* in 1248'. Velankar (1944: 165) merely states that the work was 'composed in Sam. 1305' (≈ 1248 CE), while R.S. Sharma in his edition of the text (1946: xvi) vaguely suggests that Velankar's dating was based 'perhaps on the authority of some manuscript'.

¹³¹ Dundas 2002: 284 n. 46. Cf. note 41. The name Samarasiṃha also recurs in the history of the Upakeśagaccha; cf. note 21.

¹³² For a more detailed study of Samarasiṃha and his works, see Gansten 2019.

but belonged to the mercantile Prāgvāṭa community. He states that his great-great-grandfather was counsellor to a Caulukya king, which, if taken literally, would indicate a date somewhere in the span 940–1245 CE for that ancestor – an estimate that agrees with Pingree’s reported (but unspecified) evidence of a date of 1274 for the composition of the *Karmaparakāśa*.¹³³ Prior to this, Samarasiṃha had apparently authored three books known collectively as the *Tājikaśāstra* (with variants), which became the foundational work of the Tājika school but is, as far as can be ascertained, no longer extant. Balabhadra, in his approximately eighty references to it, never mentions a title but only Samarasiṃha’s name. By contrast, his single quotation from the *Karmaparakāśa* (by its alternative designation *Manuṣyajāṭaka*) conscientiously includes both title and author, suggesting that he expected his readers to be less familiar with it. This latter text is available to me in ten manuscripts (four incomplete) and two printed editions; my identification of Balabhadra’s quotation conforms to the numbering of the 1886 edition.

On two occasions, Balabhadra follows a quotation from ‘Samarasiṃha’ with the word *vyākhyā* ‘explanation, commentary’, on the latter occasion repeating parts of the information from the *vyākhyā* immediately afterwards. I therefore take this word to signal a verbatim quotation from an earlier, unspecified commentary on the *Tājikaśāstra*. Possible authors of this commentary include Tejaḥsiṃha, Tuka and ‘Jirṇa’, all discussed below.

6.3 *Tejaḥsiṃha* (fl. 1337)¹³⁴

Like Samarasiṃha, Tejaḥsiṃha belonged to the Prāgvāṭa kinship group. While describing himself unassumingly as being of low birth, he also states that his father Vijayasīṃha was counsellor or minister (*mantrin*) to a Prāgvāṭa official named Vikrama. This Vikrama in his turn enjoyed the favour of King Śāraṅga-deva, who is mentioned in connection with the ‘Cālukya’ (properly Caulukya) dynasty in a way that just falls short of an actual claim that he belonged to it (Śāraṅga-deva was actually a Vāghelā, ruling Gujarat ca. 1274–1296).¹³⁵

133 Pingree 1997: 81 (using the alternative title *Tājikantranśāra*); but cf. Tejaḥsiṃha’s use of the term Cālukya (for Caulukya, though properly speaking these are two unrelated Indian dynasties) as discussed below. Although Pingree (1981: 97) first somewhat rashly put a name to the Caulukya ruler alluded to by Samarasiṃha, his later treatment of the matter was more cautious.

134 For further details on Tejaḥsiṃha, see Gansten 2017, 2019.

135 Pingree’s summaries (1970–1994 A3: 89a; 1981: 130; 1997: 82) of Tejaḥsiṃha’s biographical sketch are incorrect; once more I suspect that he had not fully grasped the meaning of the passages in question.

Tejaḥsiṃha's *Daivajñālaṃkṛti*, completed in early 1337, is a medium-length work of around 300 stanzas, comprising fundamental Tājika doctrines and annual revolutions (not nativities or interrogations). It seems to be based wholly or partly on Samarasiṃha's *Tājikaśāstra*, on which, according to Balabhadra, Tejaḥsiṃha had also written a gloss (*ṭīkā*).¹³⁶ Despite this, it appears that Tejaḥsiṃha had no contact either with Samarasiṃha or with any students of his, since – as discussed above – he claims to have mastered the subject from books, without a teacher. A notable difference between the two authors is that Tejaḥsiṃha does not treat the sixteen Tājika configurations in detail, but confines himself to *itthaśāla*, *īsarāpha* and *kambūla*. Balabhadra quotes from the *Daivajñālaṃkṛti* nearly fifty times and on many different matters, almost never disagreeing with it. The text is available to me in four manuscripts (two incomplete), and I have identified quotations with reference to the earliest of these (DA1). However, some text passages attributed by Balabhadra to the *Daivajñālaṃkṛti* are absent from the independent text witnesses.

6.4 *Haribhaṭṭa* (fl. 1388)

Of Haribhaṭṭa (sometimes referred to simply as Hari or as Hariharabhaṭṭa, though not by Balabhadra) we know very little, but Pingree's hypothesis that he, too, lived in the Saurāṣṭra area of Gujarat appears plausible. Depending on which era he is presumed to have used, the year 1444 mentioned in his *Tājikasāra* may be equated either with 1388 CE or with 1523 CE, but manuscript evidence appears to support the earlier date.¹³⁷ Balabhadra, too, is of the opinion that 'Haribhaṭṭa [...] is much earlier than Keśava Daivajña and Gaṇeśa Daivajña'.¹³⁸ Like the *Daivajñālaṃkṛti*, the *Tājikasāra* focuses on Tājika fundamentals and annual revolutions, and it includes only the same three planetary configurations, but the work is longer (some 400 stanzas), with a greater emphasis on calculation and a few topics that may derive from Samarasiṃha's *Praśnatantra* (and thus ultimately from Sahl ibn Bishr's work on interrogations). Balabhadra quotes from the *Tājikasāra* about sixty times, mostly with approval, but is not afraid to criticize its author in an outspoken manner, as seen above. It is primarily on these occasions that he mentions Haribhaṭṭa by name. The text is available to me in twelve manuscripts (seven incomplete) and one printed edition. The numbering of the edition has been used in identifying quotations.

136 See section 5.1.

137 See Pingree 1981: 98, corrected in 1997: 82.

138 See section 4.2.

6.5 *Vaidyanātha* (fl. before 1500?)

A single quotation on the planet ruling the year is attributed by Balabhadra to a Vaidyanātha, of whom nothing further is known. Although Pingree does not explicitly discuss any Tājika author by that name, the teacher of Keśava Daivajña (see below) was in fact named Vaidyanātha, and may have written a work on Tājika, perhaps no longer extant. Another possible candidate is the Vaidyanātha who was the father of Kṛṣṇa (also discussed below), and whose likely *floruit* falls a few decades later.

6.6 *Keśava* (fl. ca. 1500)

The *Varṣa*[*phala*]*paddhati* in just 26 stanzas, also known as the *Keśavapaddhati* or *Tājikakeśavī*, was authored by Keśava Daivajña of Nandigrāma (identified by Pingree as present-day Nandod in Gujarat), probably in the early sixteenth century. This work, still studied today as an authoritative work on Tājika despite – or perhaps because of – its brevity, is available to me in seven manuscripts (three incomplete).¹³⁹ Balabhadra, however, mentions Keśava only a handful of times (with a single brief quotation), chiefly to contradict him.

6.7 *Rāma* (fl. 1510)

Balabhadra quotes a work called *Grahañābharana* with approval five times without mentioning the author's name. This is probably the work of that title listed by Pingree as written by Rāma, son of Balirāja, in 1510, although Pingree does not label it a Tājika work or discuss its contents at all.¹⁴⁰ From the fact that it is quoted each time on a different topic (all peculiar to Tājika), it seems to be fairly comprehensive in scope, which agrees with the most extensive manuscript listed by Pingree comprising 47 folios.

6.8 *Vāmana* (fl. before 1517)

Another authority quoted by Balabhadra about as frequently as Haribhaṭṭa, and often at greater length – mostly with approval, but once or twice to disagree with him – is Vāmana. According to Pingree, the work in question, referred to by Balabhadra simply as the *Vāmanatājika*, is also known as *Tājikasāroddhāra* and *Varṣatantra*. While the precise date and scope of the text are unknown, the earliest identified manuscript was copied in 1517, and the most extensive

139 For Keśava and his works, see Pingree 1970–1994 A2: 65a–74a; A4: 64a–66a; A5 56a–59b; 1981: 126 *et passim*; 1997: 83.

140 Pingree 1970–1994 A5: 426b.

manuscript comprises 29 folios.¹⁴¹ Although no information on Vāmana's place of origin or residence is available, the fact that some passages quoted by Balabhadra from the *Vāmanatājika* contain borrowings from Hemaprabhasūri's *Trailokyaparakāśa* may suggest an origin in the western parts of India.

Balabhadra wants to make Vāmana an early authority, claiming that he predates Haribhaṭṭa, but also quotes (with disapproval) a statement by Tuka Jyotirvid – discussed below – which contrasts Vāmana with the Tājika 'teachers of old', thus implicitly depicting him as a modern.¹⁴² Tuka associates Vāmana with the twelve-dignity system (*dvādaśavargī*) mentioned above and seems to imply that he invented it. If this should be true, Vāmana must have written before 'Maṇittha' in the latter half of the fifteenth century (discussed among pseudepigraphic works below) and would thus at least be earlier than Keśava, if not Haribhaṭṭa. Given the syncretic tendency of the *Vāmanatājika*, however, this appears somewhat unlikely.¹⁴³

6.9 *Nārāyaṇadāsa Siddha* (fl. ca. 1525?)

The *Praśnavaiṣṇava* or *Praśnārṇavaplava* is an unconventional, explicitly syncretic text on interrogations, based on 'the schools of Varāha[mihira], Tājika and Mukunda'.¹⁴⁴ Although text witnesses differ greatly in scope, all versions of the work comprise several hundred stanzas. Pingree with some hesitation puts the *floruit* of its author Nārāyaṇadāsa Siddha at ca. 1525.¹⁴⁵ Balabhadra, who never mentions Nārāyaṇadāsa by name, cites his work on four occasions. The text is available to me in four incomplete manuscripts and two editions. I have identified quotations with reference to the fuller 1997 edition.

¹⁴¹ Pingree 1970–1994 A5: 616a, correcting his previous (1981: 98), later dating. Only six manuscripts are listed, and no editions. It is not known whether any of the manuscripts is complete.

¹⁴² See section 2.8.

¹⁴³ See section 4.2. Syntheses of Tājika and classical Indian astrology are found in some late works such as the *Praśnavaiṣṇava* (see below) and the *Praśnatantra* spuriously attributed to Nilakaṇṭha (see Gansten 2014).

¹⁴⁴ *Praśnavaiṣṇava* 1.2. Another possible meaning is 'the schools of Varāha[mihira] and the Tājika Mukunda'. In either case, the identity of this Mukunda is currently unknown.

¹⁴⁵ Pingree 1970–1994 A3: 168b ff. Nārāyaṇadāsa refers to himself as a ruler of the *gusāmyis* (re-Sanskritized from an eastern vernacular form of *gosvāmin*), most likely to be taken here as a caste designation: Pingree's assumption that Nārāyaṇadāsa was 'probably a follower of Caitanya' appears theologically unlikely in light of his benedictory invocation addressed to Nārāyaṇa, somewhat abstractly described, rather than to Rādhā-Kṛṣṇa or to Caitanya himself.

6.10 *Sūryasūri/Sūryadāsa (fl. ca. 1540)*¹⁴⁶

References to the *Tājikālaṃkāra*, whose author is called Sūryasūri by Balabhadra (who mentions him by name only once) and Sūryadāsa or simply Sūrya by Pingree, occur about a dozen times in the *Hāyanaratna*. Sūrya belonged to a family of productive authors on the astral sciences in Pārthapura (identified by Pingree with Pathri in present-day Maharashtra).¹⁴⁷ Pingree dates two of his astronomical works to 1538 and 1541, respectively, and the *Tājikālaṃkāra*, on unclear grounds, to ‘about 1550’.¹⁴⁸ Balabhadra generally but not always agrees with this source, which I have not had the opportunity of examining myself; it is quoted in several different chapters of the *Hāyanaratna*, suggesting a fairly wide scope of Tājika doctrines.

6.11 *Kṛṣṇa (fl. before 1544)*

Also quoted about a dozen times is the *Tājikatilaka*, which is presumably the work by that title attributed by Pingree to a Kṛṣṇa, son of Vaijanātha (Vaidyanātha), though Balabhadra himself never mentions the author by name. The earliest known manuscript was copied in 1544, and the most extensive manuscript comprises 25 folios.¹⁴⁹ Although I have not seen the *Tājikatilaka*, the fact that quotations from it are interspersed throughout the chapters of the *Hāyanaratna* suggests that it covers a broad range of Tājika doctrines.

6.12 *Govardhana (fl. before 1544?)*

The *Tājikapadmakośa* is a non-theoretical work containing predictions for the placements of the planets in the twelve horoscopic houses. Its author, not named by Balabhadra, is the Brahman Govardhana, dated by Pingree with some hesitation to 1544 on the basis of an early manuscript.¹⁵⁰ Versions of

146 For more information on Sūryasūri/Sūryadāsa (chiefly pertaining to his non-astrological works), see Minkowski 2004.

147 Pingree 1970–1994 A2: 107a.

148 Pingree 1981 *passim*; 1997: 83f.

149 Pingree 1970–1994 A2: 51a; A5: 46. Only three manuscripts are listed, and no editions. It is not known whether any of the manuscripts is complete.

150 Pingree 1970–1994 A2: 134b f. Govardhana’s Brahman status is mentioned in a stanza often omitted but reproduced by Pingree from an early manuscript (*dvijo dhārmiko rāmo [...] tatputro [...] govardhano*). Pingree, while equating the apparent date of this manuscript with the author’s *floruit*, does not elaborate on his reasons for doing so, but does follow the latter with a question mark. The translation of the Śaka date (*ṅgāṅgendre*) as 1466 is sound in itself; however, the colophon in which it is found appears to be a corrupt *śloka*, of which *pādas* b and c remain intact but not, unfortunately, *pāda* d containing the date. The original version may have read *ṅgāṅgendravatsare* or similar, making no change in the date, but we cannot be sure.

the text appear to vary a great deal, but the format of one stanza per house and planet (sometimes including Ketu and/or the *munthahā*) gives a scope of approximately 100–120 stanzas. The entire text – excluding the stanzas on Ketu and the *munthahā*, presumably not present in the version available to Balabhadra – is quoted in Chapter 6, though differently organized: while Govardhana's text is ordered according to the planets, Balabhadra's structure is based on the sequence of houses. The title, meaning *The Pericarp of the Lotus of Tājika*, may allude to Samarasimha's *Karmaprakāśa*, which ends with this word (*tājika-padmaśāt*). The text is available to me in six manuscripts and a single edition. I have identified quotations with reference to the latter.

6.13 *Tuka* (fl. 1549/1550)¹⁵¹

Although quoted more than fifty times in the *Hāyanaratna* and referred to by name half a dozen times, as well as being mentioned by Weber, Tuka Jyotirvid is not discussed in any of Pingree's works.¹⁵² His work, the *Tājikamuktāvali*, was completed in the Śaka year 1471, corresponding to 1549 or early 1550 CE. Its opening and closing sections state that Tuka was the son of one Śiva, who had authored a number of astronomical and astrological works (though not, judging from their titles, on Tājika), and the student of his own elder brother Mahādeva. He gives his place of residence as Pippalagrāma, which he connects with the ruling Nikumbha clan; this clan name, along with Tuka's personal name, suggests a connection with Maharashtra, where there are still several locations called Pipal- or Pimpalgaon. The *Tājikamuktāvali* as available to me consists of 102 stanzas in varying metres, dealing with the fundamentals of Tājika and, in particular, annual revolutions. There is also a metrical *Tājikamuktāvaliṭippaṇī* of uncertain authorship, possibly an autocommentary, described in the colophon as a 'book of corrections (*śodhakapustaka*) to the *Tājakamuktāvali* composed by Tuka Jyotirvid, son of the illustrious Śiva Daivavid'.

Balabhadra does not distinguish between the original text and the commentary but quotes from both under the single title [*Tājika*]*muktāvali*, nearly always with approval (but cf. the comments on Vāmana above); he describes

¹⁵¹ The following overview is a summary of the information on Tuka Jyotirvid found in Gansten 2017.

¹⁵² See Weber 1853: 251. There is, however, a mention in Pingree 1970–1994 A1: 47b of an Ātuka/Āṭuka (clearly a mistake for Tuka) as the author of the *Tājikamuktāvali*, citing a single manuscript – a fact overlooked in Gansten 2017. Pingree's entry also gives the name of Tuka's father wrongly as Sadāśiva.

it as ‘embodying the understanding of the Tājika science’,¹⁵³ and also references Tuka’s commentary on Samarasimha’s *Tājikaśāstra*, quoting it verbatim once.¹⁵⁴ Each text is available to me in two undated manuscripts, and I have identified quotations with reference to the more legible ones (TM₁, TM₁).

6.14 *Gaṇeśa* (fl. ca. 1550/1600)

The first cousin once removed of the Sūryasūri/Sūryadāsa mentioned above was Gaṇeśa Daivajña of Pārthapura, whose popular *Tājikabhūṣaṇa* in more than 400 stanzas is dated by Pingree to the latter half of the sixteenth century.¹⁵⁵ Balabhadra appears to have appreciated Gaṇeśa’s work more than Sūryasūri’s, as he quotes it twice as often – once more with general but not universal approval. The text is available to me in eight manuscripts (three incomplete) and a single edition, of which the last has been used for identifying quotations. (For a possible reference to another of Gaṇeśa’s works, the *Ratnāvalīpaddhati*, see the discussion of anonymous and unidentified works below.)

6.15 *Padmasundara* (fl. ca. 1575)

The author of the *Hāyanasundara*, not named by Balabhadra, was the Jain Padmasundara, identified by Pingree as ‘a pupil of Padmameru of the Nāgapurī Tapāgaccha’; he was active at the court of Akbar, and Pingree puts his *floruit* at 1575.¹⁵⁶ The work, available to me in a single manuscript, comprises some 300 verses, nearly half of which are quoted by Balabhadra, primarily in connection with the results of the ruler of the year (section 5.11). The remainder of the work appears to be heavily influenced by ‘Mañittha’, discussed below, with many stanzas found in both works (some even occurring twice in the *Hāyanasundara*).

153 See section 4.2.

154 See sections 2.9, 4.5.

155 Pingree’s dating of the *Tājikabhūṣaṇa* seems to have veered considerably. After first (1970–1994 A2: 107a–110a, published in 1971) giving Gaṇeśa’s date as ‘fl. ca. 1600’, he states in A3: 28b (1976): ‘Originally dated ca. 1600, Gaṇeśa’s floruit must be extended backwards by about 50 years in light of the date of his cousin Jñānarāja (fl. 1503).’ This then becomes ‘1550/1600’ in A4: 75b f. (1981) and A5: 74b f. (1994). In Pingree 1981: 99 it is ‘[t]owards the end of the sixteenth century’; in 1984: 93 he strikes a mean with ‘ca. 1575’; but in 1997: 84 it is again ‘about fifty years later’ than 1550, and in 2004: 230, ‘ca. 1600’. No arguments are given for these changes.

156 Pingree 1970–1994 A4: 179a; A5: 208b. For more on Padmasundara’s interactions with Akbar, see Truschke 2016: 69ff.

6.16 *Nṛsiṃha* (b. 1548)

Although quoted only a few times, and never under the name of its author, the *Hillājadīpikā* by Nṛsiṃha – grandson of the Keśava mentioned above, also of Nandigrāma¹⁵⁷ – may be said to be of significance in the *Hāyanaratna* precisely because Balabhadra associates it not with Nṛsiṃha but with the mythical authority Hillāja (cf. the discussion of pseudepigraphic works below). If Balabhadra was ignorant of its actual authorship, his version of the text must have lacked the metrical colophons recurring at the end of each chapter in some witnesses. Two manuscripts are available to me, one incomplete, the other damaged but sufficiently legible to identify the three quotations from it. The work itself is fairly short, comprising about 135 stanzas.

6.17 *Nilakaṇṭha* (fl. 1587)¹⁵⁸

The unique position of authority accorded Nilakaṇṭha Daivajña by Balabhadra, who calls him ‘the crown jewel in the circle of astrologers’,¹⁵⁹ has already been mentioned. The same attitude is reflected in the enormous influence exerted by Nilakaṇṭha’s *magnum opus*, the *Tājikanīlakaṇṭhī*, on the subsequent development of the Tājika tradition. Pingree calls the work ‘wildly popular’, with some 800 extant manuscripts and dozens of printed editions;¹⁶⁰ and a visit to any Indian bookselling establishment specializing in Sanskrit or astrological literature will demonstrate the extent to which Tājika astrology is, even today, synonymous with the *Tājikanīlakaṇṭhī*. This unrivalled influence probably had less to do with the intrinsic didactic or literary value of the work than with Nīlakaṇṭha’s standing at Akbar’s court.¹⁶¹

157 Pingree 1970–1994 A3: 202b f.

158 For more details on Nilakaṇṭha’s works, see Pingree 1970–1994 A3: 177b–189a, A4: 142b–144; 1981: 97 ff., 116, 127; 1997: 84 f.

159 See section 1.6.

160 Pingree 1997: 84 f.

161 For discussions of Nilakaṇṭha’s court position and the *jyotiṣarāja* institution, see Pingree 1997: 92 f.; Sarma 2000. Minkowski (2004: 330 f.), citing no sources, states that the *Tājikanīlakaṇṭhī* was actually commissioned by Akbar, which seems doubtful; the text itself makes no reference to the Mughal emperor. On the basis of a conjecture in Ali 1992: 43, Minkowski further claims that Nilakaṇṭha’s work was later translated into Persian at Akbar’s request, but Ali is probably mistaken: Abū al-Faḍl’s *Ā’in-i-Akbarī*, to which he refers, only states vaguely that ‘Mukammal Khān of Gujrāt translated into Persian the Tājaka, a well-known work on Astronomy’ (transl. Blochmann 1927 [1873]: 112). That Ali should tentatively identify this as the *Tājikanīlakaṇṭhī* is yet a tribute to the continued popularity of the latter work; but only three to four years had passed between its completion in Varanasi in 1587 and the writing of the *Ā’in-i-Akbarī*, providing a rather

The work itself consists of two volumes: the *Samjñātāntra*, an introduction to the subject dealing with its fundamental principles and terminology in some 220 stanzas, and the *Varṣātāntra*, a compendium of techniques for annual prognostication comprising about 320 stanzas; the latter was completed in Kāśī (Varanasi) in 1587. From a certain amount of overlapping, including passages repeated verbatim, they appear to have been composed as semi-independent works. The *Tājikanīlakaṇṭhī* is the work most frequently quoted in the *Hāyanaratna*, with several hundred stanzas in all, from both *tantras*; there is also a single quotation from Nīlakaṇṭha's astrological section of the Sanskrit encyclopedia *Ṭoḍarānanda*.¹⁶² Given the wide availability of the *Tājikanīlakaṇṭhī*, I have not consulted any manuscripts. References follow the numbering of the Jośī 2008 edition.

6.18 *Padmanābha* (fl. before 1608?)

Balabhadra attributes a single quotation on the calculation of planetary strength to a Padmanābha, who may be identical with the author of the very short *Hillājāyurdāya* on longevity procedures (in 27 stanzas). The quotation is, however, not from that text and may conceivably derive from a work no longer extant. No other Tājika author by the name Padmanābha is known. Pingree gives no date for the *Hillājāyurdāya* or its author, but does date Rāmeśvara Kṣīrasāgara's *Cūḍāmaṇi* commentary on that work to 1608.¹⁶³

6.19 *Viśvanātha* (b. 1579?)

A single quotation on the topic of lots or *sahamas* is attributed by Balabhadra to a *Viśvanāthatājika*, almost certainly named after its author. This is very likely his own senior contemporary and fellow resident of Kāśī, who composed the *Prakāśikā* commentary on the *Tājikanīlakaṇṭhī*. Pingree does not mention the *Viśvanāthatājika*, and his list of Viśvanātha's astrological writings includes no independent works, perhaps indicating that the text is no longer extant.¹⁶⁴

narrow window for it first to have become sufficiently well-known and appreciated to merit translation, then actually translated and brought to the notice of Abū al-Faẓl. The Persian translator's connection to Gujarat rather suggests a text originating in western India – possibly Samarasiṃha's foundational and, at that time, still extant *Tājikaśāstra*.

162 For the *Ṭoḍarānanda*, commissioned by Rājā Ṭoḍaramalla, see Rocher 2016: 1–13.

163 Pingree 1970–1994 A4: 166b, 169a; A5: 502.

164 See Pingree 1970–1994 A5: 669a ff.

6.20 *Yādavasūri* (fl. 1616?)¹⁶⁵

After Samarasimha and Nilakaṇṭha, the author on whom Balabhadra most relies is Yādavasūri, the author of a fairly large work (some 550 stanzas) entitled *Tājikayogasudhānidhi*. Balabhadra quotes from this nearly a hundred times, often at length, and with general approval – the major exception being the calculation of planetary periods. Pingree states that its date is ‘apparently’ 1616, and that Yādavasūri wrote an autocommentary (*vivarāṇa*) on it; perhaps this date is stated or implied in the commentary, as I have not been able to find it in the original text.¹⁶⁶

Pingree further claims that Yādavasūri ‘belonged to a family dwelling at Prakāśa in Gujarat’ and was a resident of ‘Vāi on the Kṛṣṇā River’.¹⁶⁷ Both these claims are spurious, the first being based on the misidentification of Yādavasūri with one Yādavabhaṭṭa, father of the Tājika author Bālakṛṣṇa (for whom see below). Pingree’s second claim is based on a metrically and syntactically corrupt reading of a stanza from the *Tājikayogasudhānidhi* which, read correctly, provides information not on the author’s place of residence but rather on his parents. Yādavasūri gives his father’s name as Śrīvatsa (while Bālakṛṣṇa’s grandfather’s name was Rāmakṛṣṇa) and his mother’s as Śrī Bhāyi (or Bhāi). The latter is of particular interest, as the metrical colophon at the end of each of the sixteen chapters of the *Tājikayogasudhānidhi* states that Yādavasūri ‘received his knowledge by the grace of the lotus feet of Śrī Bhāyi’, suggesting that he considered his mother to have been his first *guru* in the field of Tājika. Unfortunately we have no further information on this possible woman astrologer. The text is available to me in four manuscripts (two incomplete, one complete but undated). I have identified quotations with reference to the most legible of these (TYS1).

6.21 *Divākara* (b. 1606)

The *Paddhatibhūṣaṇa* is a short work of some 70 verses, nine of which are quoted by Balabhadra – all with approval, and all but one dealing with calculation procedures. Only once does Balabhadra mention the name of the author, who was the son of a Nṛsiṃha (though not the one discussed above) and great-nephew of the Viśvanātha just mentioned, and when he does so it is with harsh censure, charging him with ‘mental aberration’ (as criticism of a statement

165 The following overview is a summary of the information on Yādavasūri found in Gansten 2017.

166 Pingree 1981: 99; 1970–1994 A5: 335. The earliest manuscript of the *Tājikayogasudhānidhi* cited by Pingree was copied in 1667, after the composition of the *Hāyanaratna*.

167 Pingree 1997: 84.

found not in the *Paddhatibhūṣaṇa* itself but in Divākara's autocommentary on it). In that context Balabhadra uses the alternative title *Varṣapaddhati*; the work is also known as *Varṣagaṇitapaddhati* or *Varṣagaṇitabhūṣaṇa*. As noted above, Pingree put its date first at ca. 1630, later revised to ca. 1640.¹⁶⁸ The text is available to me in a single manuscript.

6.22 *Bālakṛṣṇa (fl. before 1649)*

A single quotation on the ruler of the year is attributed by Balabhadra to the *Tājikakaustubha*, which is almost certainly the work of that name authored by Bālakṛṣṇa[bhaṭṭa].¹⁶⁹ As already noted, Pingree mistakenly identifies Bālakṛṣṇa's father Yādavabhaṭṭa (son of Rāmakṛṣṇa) with the Tājika author Yādavasūri (son of Śrīvatsa). He puts Bālakṛṣṇa's *floruit* at ca. 1625/1650 without giving any sources; the earlier date may possibly be due to Pingree's belief that the *Hāyanaratna* was written in 1629, making this a *terminus ante quem*. Having revised this dating by two decades, we can only say with certainty that the *Tājikakaustubha* was authored before 1649. It is apparently a large work: the most extensive manuscript listed by Pingree runs to 75 folios. Pingree believes it may have been written at Jambūśaras (Jambusar in present-day Gujarat), seemingly on the basis of the earliest identified manuscript; Prakāśā, the ancestral home mentioned by Bālakṛṣṇa in his closing stanzas, is said to be somewhat further south, on the northern bank of the river Tapi.

6.23 *Pseudepigraphic Works*

In addition to the authors just named, Balabhadra draws on several works by authors whose real names are unknown for his discussions of Tājika doctrine. The most straightforward instances are the twenty-odd references to 'Maṇittha', the Sanskritized form of Manetho (Μανέθων), recognized in the earliest Indian astrological literature as an ancient authority.¹⁷⁰ A single Tājika work, the brief *Varṣaphala* or *Varṣacaryā* in just over 70 stanzas, is typically attributed to this semi-mythical writer; Pingree dates the earliest preserved manuscript of it to 1475 CE.¹⁷¹ Balabhadra quotes approximately half this text, most of the

168 Pingree 1984: 98; 2004: 231.

169 I have not been able to verify the quotation, however, as I have access only to a single, incomplete manuscript of the *Tājikakaustubha*. For Bālakṛṣṇa, see Pingree 1981: 99; 1970–1994 A4: 243a f.

170 For Manetho, cf. note 69.

171 For more information on 'Maṇittha', see Pingree 1970–1994 A4: 344a; 1981: 98; 1997: 83. However, Pingree's speculation that the pseudonym Maṇittha was chosen due to its superficial similarity with the Arabic technical term *muntahā* seems rather fanciful and is not, to my

references occurring towards the end of Chapter 5. In Chapter 6 he quotes nearly a hundred additional stanzas from 'Maṇittha'; as these are found neither in independent witnesses of the *Varṣaphala* nor in Padmasundara's *Hāyana-sundara* (which, as noted above, reproduces much material from the former work), Balabhadra presumably had access either to a substantially expanded version of the *Varṣaphala* or to a second work attributed to the same author. The *Varṣaphala* is available to me in four manuscripts, two of them undated; verse numbers given refer to the most legible of these (VPh1).

Considerably more complex is the designation *jīrṇa* 'the ancient[s]'. This epithet is used twice in an obviously generic sense, contrasted with *navīna* 'modern' as related above;¹⁷² but some twenty times we encounter the phrase *jīrṇatājike* in the locative, which is how titles of works are typically referenced, followed by a quotation. It thus appears that Balabhadra had access to an actual text known as the *Jīrṇatājika* (never mentioned by Pingree), meaning *The Ancient Tājika* [Teaching] or *The Tājika* [Teaching] of the Ancient[s] or even *The Tājika* [Teaching] of *Jīrṇa*, interpreting the latter (somewhat implausibly) as a personal name.

The same word appears four times in the homosemous compounds *jīrṇa-tājikavacanāt* and *jīrṇatājikokteḥ*, which may be understood as 'according to the statement of [the work] *Jīrṇatājika*' or '... of the ancient Tājika[s]' or '... of the Tājika [named] *Jīrṇa*'. Unfortunately, it seems that more than one of these meanings may be intended. In one section, Balabhadra quotes a particular sentence three times (twice partially and once in full), first with the phrase *jīrṇatājikokteḥ* and then twice attributing it explicitly to Samarasiṃha. Between the first two occurrences, however, another quotation, almost certainly *not* from Samarasiṃha, is introduced using the identical phrase (*jīrṇatājikokteḥ*).¹⁷³ This latter quotation may possibly derive from a work called *Jīrṇatājika*.

knowledge, substantiated by any connection made between the two in the *Varṣaphala*, nor indeed in any other Tājika work.

172 See sections 4.6 and 7.2. *Jīrṇa* in the plural is also used once (in section 1.3) in referring to non-Tājika astrological authorities; the sentence in question (*jñānaviśeṣeṇa jyotirvidah pūjātārataṃyaṃ jīrṇair abhyadhāyī*) is copied from Govinda Daivajña's *Pṛyūṣadhārā* 1.2 as discussed above, the only difference being that the edition of the latter work reads *pūjyatā-* for *pūjā-*. Perhaps significantly, the phrase is used there to introduce a quotation from an unidentified text/author.

173 See section 1.6. As discussed in Gansten 2019, Samarasiṃha's *Tājikaśāstra* appears from the extant quotations (in the *Hāyanaratna*, the *Praśnatantra*, and Viśvanātha's *Prakāśikā*) to have been composed entirely in varieties of the moraic *āryā* metre. While the former of the two quotations discussed here is likewise in *āryā*, the latter is in the syllabic *karṇinī* metre.

In a few instances, the attribution to 'Jirṇa' occurs in the plural; these may be read either as generic references to 'the ancients' or as indicating a specific author, using the plural of respect. Although I find it unlikely that Jirṇa was the actual name of the author of the *Jirṇatājika*, I have treated the word as a personal designation on the one occasion where, from the context, I believe this to have been the intention of Balabhadra. In other cases, I have translated it as 'ancient'. Finally, Chapter 3 on the sixteen configurations has four occurrences of the phrase *iti jirṇatīkākṛt*, which may be understood as 'thus [says] the ancient commentator' or '... the commentator on [the work of] Jirṇa' or '... the commentator [named] Jirṇa'. A possible clue here is the single occurrence in the same chapter (not found elsewhere in the *Hāyanaratna*) of the similar phrase *iti samarasimhaṭīkākṛt* 'thus [says] the commentator on [the work of] Samarasimha'. I have thus interpreted the former phrase as referring to an early commentator (presumably on Samarasimha's *Tājikaśāstra*), not necessarily identical with the author of the *Jirṇatājika*.

Two pseudonyms closely connected in the sources are 'Hillāja' (a misunderstanding of the technical term *hīlāj*, as discussed above) and 'Romaka'.¹⁷⁴ Balabhadra quotes statements by Romaka that refer to the teachings of Hillāja and vice versa,¹⁷⁵ as well as stanzas that refer to them along with other ancient and mostly non-Indian authorities: Khindi and Romaka;¹⁷⁶ Khattakhutta, Khindi and Romaka;¹⁷⁷ Samarasimha, Hillāja, Khattakhutta, Khindi and Romaka;¹⁷⁸ and Khattakhutta, Romaka, Hillāja, Dhiṣaṇa and Durmukha.¹⁷⁹ A few authors appeal to the teachings of Romaka alone.¹⁸⁰ Although there is little doubt that these names are invoked more for added authority than to enlighten the reader about the provenance of particular doctrines, it still seems to me possible – even probable – that a meaningful historical connection does exist between some of them. An investigation into the precise nature of that connection, which may perhaps centre on longevity prognostication, must, however, be deferred for the present.

Balabhadra quotes Romaka by name six times without giving the title of a text, and refers explicitly to the *Romakatājika* twice; five of these quotations

174 See also Gansten 2012a.

175 See sections 1.2 (quoted from Nṛsiṃha's *Hillājadīpikā*) and 2.4 (quoted from a *Romaka-tājika*).

176 See section 2.5 (quoted from Kṛṣṇa's *Tājikatilaka*).

177 See section 7.2 (quoted from Tuka's *Tājikamuktāvalī*).

178 See section 1.2 (Balabhadra's own composition).

179 See section 1.2 (quoted from Nilakaṇṭha in the *Ṭoḍarānanda*).

180 See sections 4.4 (quoted from the *Jirṇatājika*), 4.6 (unattributed, but possibly the same), 5.4 and 8.7 (quoted from Yādava's *Tājikayogasudhānidhi*).

occur in Chapter 4 on the *sahamas*. This text has so far proved elusive, though Pingree refers to a single manuscript of a *Tājaka* attributed to Romaka,¹⁸¹ as well as to an incomplete manuscript of a *Jātakasāra[dīpa]* by one Nṛsiṃha, labelled *romakācāryamatatājika* ‘Tājika according to the school of the teacher Romaka’.¹⁸²

Hillāja is quoted by name nearly twenty times throughout the *Hāyanaratna*, with no title given for the work(s) referenced; more than half of the instances occur in Chapter 6 on the planets occupying the horoscopic houses. Only one of these references can be traced to the *Hillājādīpikā* of Nṛsiṃha,¹⁸³ discussed above, which is quoted twice more by title alone. The others presumably derive from a *Hillājatājika* known to Balabhadra and likewise explicitly referred to twice; this text is not identical with the anonymous work of that title reported by Pingree.¹⁸⁴ An identically named work, which I have not seen, is attributed to a Gopāla Sāgara; but given the late date of the single known manuscript (1866), its author is perhaps more likely to postdate Balabhadra.¹⁸⁵

6.24 *Anonymous or Unidentified Works and Authors*

Nearly a dozen titles of works both unknown and unattributed are referenced in the *Hāyanaratna*. In Sanskrit alphabetical order, they are as follows:

Uttaratantra: quoted three times at length, on house results, using Tājika terminology. The title may be understood as ‘the latter treatise’, suggesting a two-volume work, but it is not Nīlakaṇṭha’s *Varṣatantra*.

Tājikapradīpa: quoted once, on planetary strength. Possibly identical with the *Phalapradīpa* and/or *Varṣaphalapradīpa* (below).

Tājikatratnamālā: quoted three times, on aspects, *musallahas*, and planetary periods. *Ratnamālā* ‘string of jewels’ is more or less homosemous with *Ratnāvali* (below). A *Tājikatratna* by Gaṅgādhara exists but appears to be dated to 1653–1654, some four years later than the *Hāyanaratna*.

181 Pingree 1970–1994 A5: 517b.

182 Pingree 1970–1994 A3: 198a. The date of this Nṛsiṃha is not given, but the earliest manuscript of the work in question is dated to 1637.

183 See section 1.2.

184 See Pingree 2004: 238. A number of verses in this *Hillājatājika* seem to derive, with minor variations, from standard works such as the *Tājikasāra* and *Tājikanīlakaṇṭhī*, suggesting it to be a late compilation; a majority of its 250 stanzas are in *upajāti* metre. By contrast, the *Hillāja[tājika]* quotations given by Balabhadra comprise some 90 stanzas of which just over two thirds are in *śloka*, 24 in *āryā*, and only 5 in other metres, including a single *upajāti* stanza.

185 See Pingree 1970–1994 A2: 131a.

Tājikasarvasvasāra: quoted once, on *rājayogas* or configurations for rise to power.

Tājikasindhu: quoted once, on house results. Possibly identical with the *Hāyanasindhu* (below).

Dīpikā: quoted once, on general results of the year based on calendric rather than specifically Tājika elements. *Dīpikā* 'little lamp' is unlikely to be the full title; the word is very common as the final member of a compound, especially in the names of commentaries. The quotation does not appear to derive from Nṛsiṃha's *Hillājadīpikā*. I am familiar with one work entitled *Tājikadīpikā*, but that is attributed to the late author Ghāsīrāma (fl. 1860).

Phalapradīpa: quoted once, on the *munthahā* in a figure cast for a query. Possibly identical with the *Varṣaphalapradīpa* (below).

Muddagrantha: may or may not be a proper title, but obviously a work on a type of planetary periods, quoted at length (nearly 60 stanzas) in Chapter 7.¹⁸⁶

Yantrādhikāra: quoted once, on general results of the year based on horoscopic but not specifically Tājika elements. *Adhikāra* may be used in the sense of 'chapter', in which case this is part of some larger work.

Ratnāvalī: quoted once on planetary strength, using Tājika terminology. Like *Dīpikā*, *Ratnāvalī* (with synonyms) very commonly appears as part of titles. It may quite possibly refer here to the *Ratnāvalīpaddhati* or *Paddhatiratnāvalī* by Gaṇeśa Daivajña, which I have not seen.¹⁸⁷

Varṣaphalapradīpa: quoted once, on planetary periods.

Hāyanasindhu: quoted once on the so-called *tambīra* configuration and three times on the positions of the planets in the houses, apparently with approval.

Hāyanottama: quoted once, on planetary periods.

Additionally, an unknown Miśra – apparently a Tājika author – is quoted three times on topics of calculation (of aspects, planetary hours and periods). There are also a few instances of quotations wholly unattributed, or attributed only to 'another book' or 'various works'. Although two or more titles may in some cases conceivably refer to the same work, the above list, taken together with the texts attributed above to Samarasīṃha, Vaidyanātha, Padmanābha and Viśvanātha but not reported by Pingree, serves as a reminder that our knowledge of Tājika sources is still very far from complete.

186 Pingree 1970–1994 A5: 326b mentions a single manuscript, dated 1855, of a work entitled *Muddādaśāphala* and attributed to 'Yavana'. I have not seen this text.

187 See Pingree 1970–1994 A2: 109a.

7 Textual Sources and General Editorial Principles

According to Pingree's estimate of two decades ago, the *Hāyanaratna* is preserved in approximately 100 manuscripts, nearly all copied in North India; many – perhaps most – are incomplete.¹⁸⁸ Less than ten are known to date from the eighteenth century, and only two from its former half; the remaining dated manuscripts were all copied in the nineteenth or early twentieth century. The present edition and translation, being the work of a single individual undertaken over a rather limited period of time, is necessarily based on only a small sample of these manuscripts and other text witnesses. Added to these constraints, access to manuscripts located in Indian libraries is often restricted, particularly for non-Indian scholars. I am thus acutely aware of the provisional nature of the results presented in this volume, and would be gratified to see more work done on the *Hāyanaratna*, as well as on its many tributaries, in order to fill the lacunae in our current knowledge of the Tājika tradition.

For this edition, I have examined fourteen witnesses of the *Hāyanaratna* and collated the six that are more or less complete. This group includes the earliest and seemingly most reliable manuscripts; the excluded, incomplete manuscripts, while mostly undated, do not appear to be very early or, from the samples taken, to offer valuable additional variants. The individual text witnesses are briefly described below. The accepted readings are those of the base text except where these are clearly inferior with regard to grammar, metre or sense. Variant readings given in the (negative) critical apparatus exclude purely orthographic variants and errors; see the discussion on transliteration principles below. Corrections present in the text witnesses themselves have been noted only when potentially affecting the meaning, when the presence of a correction appears particularly relevant (e.g., for establishing the similarity of two or more witnesses), or when the uncorrected form has been accepted as the better reading. Differences in phrasing have, however, been noted throughout, even when not appreciably affecting the meaning of a passage. Where physical characteristics affect the sense or intelligibility of the text, they have been noted; such characteristics do not normally include changes of hand

¹⁸⁸ Pingree 1997: 85; 1970–1994 A4: 234f. (listing 63 of these manuscripts in addition to three printed editions), A5: 230b (listing a further 20 manuscripts). It should be noted that some manuscripts not stated by Pingree to be incomplete still are: among those which I have had the opportunity to examine, this is true of Asiatic Society of Bengal G 2928 (comprising only the latter half of the work) and of Chandra Shum Shere d. 809 (only the former half). Presumably there are many other such instances; the recorded number of folios would often be an indication.

in manuscripts copied by more than one scribe. Illegible characters in a text witness are represented by asterisks, uncertain characters by question marks immediately following. (Dots below characters, sometimes employed for the latter purpose, are not compatible with transliterated Sanskrit text, where the underdot is a common diacritic.) Textual remarks have been assigned to a separate commentary. Also included is a source apparatus for quotations, discussed shortly below.

In the case of text passages attested by only a few witnesses or even a single one, I have preferred to err on the side of inclusion, as long as the passages in question do not conflict with the context in which they appear. This policy seems particularly desirable in the case of quotations from texts which are not otherwise readily available – most importantly, from Samarasiṃha's seminal but apparently no longer extant *Tājikaśāstra*. The same principle applies to tables and diagrams, including horoscopic figures, given throughout in the style most common in North India. Diagrams have been tacitly standardized to agree with the text, with abbreviations replaced with full words wherever possible; for numerals, see the discussion on transliteration below. On the very few occasions where entire sentences have been excluded from the accepted text, or where witnesses give the same or similar passages in different order, this has been noted in the commentary; the same applies to longer additions and mistaken repetitions of text passages.

In a few places, metre as well as content suggest loss of certain text in all witnesses, including witnesses not otherwise collated, presumably due to physical lacunae (no longer indicated) in a common archetype. Where possible, such omissions have been emended by recourse to independent text witnesses of works quoted (noted in the commentary); where no basis for an emendation is available, scansion symbols have been employed to mark the likely number and quantity of missing syllables as well as the probable distribution of the preserved text across an original stanza:

---○○---○○○○---/---○○---
nandasthe 'ṣṭadinam ravau gurudaśā diksthe tamo viṃśatiḥ |
śeṣe 'rke tu ---○○○○---/---○---*ṣaḍḍinam*
 -- *syāt tu sitasya* ---○○---/---○○○○---||

As discussed above, quotations from earlier works make up roughly two thirds of the *Hāyanaratna*. Regrettably, it has not been possible at this point to identify all passages quoted, and in some instances not even the works. A fair number of the relevant texts are, however, available to me in manuscript and/or printed editions, making it possible to identify many quotations with reference

to independent witnesses, and these have been noted in the source apparatus. Such independent witnesses are listed in the bibliography, with brief descriptions in the case of manuscripts, although some manuscripts were made available to me only at a later stage of the work and have been used less frequently. For the convenience of the reader, I have followed the verse numbering of printed (though rarely critical) editions where available. Unfortunately, such numbering is sometimes erratic, starting over from 1 as the topic changes even within a single chapter as demarcated in the edition or standard manuscript followed. For the sake of unambiguity, I have treated each new cycle of verse numbers in an edition as a separate chapter.¹⁸⁹ Any irregularities have been noted in the commentary.

The identification of text passages quoted does not necessarily imply that the readings used by Balabhadra are wholly or even nearly identical to those found in independent witnesses of the texts concerned. They frequently differ with regard both to individual stanzas and to the order in which they occur, and the references in the source apparatus are thus intended primarily as an aid for readers who wish to compare passages for themselves. When readings found in the *Hāyanaratna* are consistent across the collated witnesses, my general policy has been to accept them, even when seemingly inferior to those of independent sources for the works quoted, in an endeavour to approximate as closely as possible the readings actually used by Balabhadra. Where the *Hāyanaratna* readings are clearly corrupt, however, I have based emendations on independent testimonies whenever available. All such instances are noted in the commentary. By contrast, when witnesses of the *Hāyanaratna* differ among themselves with regard to a quotation, evidence from independent text witnesses has not generally been invoked in support of the accepted reading. Stanzas attributed by the *Hāyanaratna* to a given work but not corresponding even partly to any passage found in independent witnesses of that work have been left unreferenced in the source apparatus. Such cases may indicate misattribution by Balabhadra or a subsequent copyist. Where additional clarification is called for, this has been provided in the commentary.

Some quoted sources appear to be written in less elegant, occasionally ungrammatical Sanskrit, the most common error being the confusion of masculine and neuter gender in nouns. I have accepted such errors as probably reflecting the original readings and emended only what I believe to be actual corruptions in transmission.

189 The major exception concerns Tejaḥsiṃha's *Daivajñālaṃkṛti*; see the bibliography for details. Occasional introductory stanzas have been assigned the chapter number 0.

By the nature of Sanskrit syntax, many of the lemmas found in the apparatus form part of compounds. For considerations of readability, hyphens have not been employed where a lemma constitutes an easily discernible lexeme (or a series of lexemes), but only where it forms *part* of a lexeme (e.g., *-bhavā* in *saṃ-nipātodbhavā*), or of a compound or text sequence involving vowels coalescing by sandhi (e.g., *kāryo-* in *kāryopakramalābhau*).

8 Text Witnesses of the *Hāyanaratna* (collated)

The text witnesses used for this edition comprise three manuscripts proper, two lithographs likewise based on handwritten originals,¹⁹⁰ and a single typeset edition, all in Devanāgarī script and more or less complete:

8.1 *B: Chambers 182, Staatsbibliothek zu Berlin (base text)*¹⁹¹

Dated *saṃvat 1834 śake 1699 jyeṣṭhaśuddha 1 bhṛgau*, corresponding to Friday, 6 June, 1777 CE, this is the manuscript on which Weber based his 1853 paper on the *Hāyanaratna*, and which he described as ‘very beautiful, but often faulty’. The title folio itself – obviously later than the rest and written on factory-made, watermarked paper – would seem to merit the latter comment, as the name of the work is given in Devanāgarī as *jyotiṣa śāstrīya hayaratnam* (transcribed on the same page as *Jotish Shastrya Heyarutten*), suggesting an astro-equine treatise. The rest of this well-preserved paper manuscript comprises 226 folios of text in a single hand (easy to read if not precisely beautiful), now bound in codex format, but not so tightly as to impair reading. A vestige of a division into a former and a latter part is found at the beginning of the sixth chapter (f. 114) in the form of a repetition of the opening phrase *śrīgaṇeśāya namaḥ*. A high-

190 Lithographic printing of books from a handwritten master copy, while never popular in Europe, was widespread in Persia and India from the 1820s up to the turn of the century. As noted by Orsini (2009: 10ff., 2013: xviii), its success was due to low initial investment and running costs, flexible use of multiple scripts, and the familiar appearance of the finished product, sometimes even emulating the physical form of traditional manuscripts. The comments of Marzolph (2009) on the Persian situation may be equally applied to India: ‘Lithography [...] constituted a direct continuation of manuscript production, bringing forth similar results, albeit in greater numbers, and involving basically the same set of specialists.’ Shaw (1993) similarly refers to lithographs as ‘mass-produced manuscript[s]’. For further details on lithographic printing in India, see Shaw 1998; Stark 2007: 29–106; and, specifically on Sanskrit lithographs, Formigatti 2016: 96–102.

191 Listed in Pingree 1970–1994 A4: 234b as Berlin 881.

quality, full-colour digital scan of the manuscript serves as the base text of the present edition, though with substantial corrections in the light of other text witnesses as discussed above.

8.2 *N: Nepalese-German Manuscript Cataloguing Project B 345-02*

The earliest text witness, dated *saṃvat* 12828 (wrongly written for 1828) *śake* 1693 *vaiśākhaśuklatṛtīyāyām gurau*, corresponding to Thursday, 18 April, 1771 CE. Available as a digital scan of a microfilm (made on 26 September, 1972, necessarily greyscale) of a paper manuscript comprising 242 folios in what appears to be a single hand, though with occasional corrections in a second one. This manuscript is not listed by Pingree. The original microfilm is currently in storage at the Staatsbibliothek zu Berlin; the descriptive label from the National Archives of Nepal gives the title wrongly as *Hāyaratna*. Although the writing is occasionally obscured by the poor quality of the microfilm, the manuscript as such appears to have been in good condition at the time of filming. There is no division into a former and a latter part. In view of its early date, this manuscript might have served as the base text for the edition had it not been for its profusion of errors, grave and frequent enough to suggest actual dyslexia.

8.3 *G: Koba Gyan Tīrth 19–187*

A well-preserved paper manuscript comprising 219 folios in at least three, possibly four hands, one of them obviously untrained but all legible, made available in a high-quality, full-colour digital scan by Acharya Shri Kailasasagarsuri Gyanmandir in Koba, Gujarat. The manuscript is not listed by Pingree. There is no division into a former and a latter part. The date is given as *saṃvat* 1890, corresponding to 1833–1834 CE.

8.4 *K: Kashi Sanskrit Press, Varanasi, 1867–1868*

The text of this lithograph, written in a single hand, is described in the Sanskrit colophon as having been mechanically printed at the Kashi Sanskrit Press at the residence of Babu Fateh Narain Singhji in the vicinity of the Tripura-bhairavī temple in Varanasi. Dated *saṃvat* 1924, corresponding to 1867–1868 CE, it is identical with the 'Kāśī 1867' edition listed by Pingree.¹⁹² The text is divided

¹⁹² Pingree 1970–1994 A4: 234 f.; 1981: 99. The copy identified by Pingree as belonging to the British Museum is now housed in the British Library; the same is true in the case of the slightly later lithographed edition listed alongside it as published in Meraṭha (Meerut) in the Vikrama year 1932 or 1933 (1875–1877 CE; the publisher, not given by Pingree, is Jwala Prakash Press). A reference to an edition of the *Hāyanaratna* published in Benares, s.n., 1924 [1867] (the former year indicating the Vikrama era), is likewise found in the online

into two parts, the first five chapters comprising 81 numbered folios and the last three, 70 folios. I have primarily used the black-and-white digital scan made publicly available by the Digital Library of India; the original copy is stated to belong to the Asiatic Society of Bengal, Kolkata. Many folios are somewhat damaged, particularly around the edges; some appear to have been mended so inexpertly as to obscure the repaired text almost entirely. Where the readings of this scan are in doubt, they have been verified by additional full-colour images of pages from the copy held in the British Library (shelf mark 14053.e.3).

8.5 *T: Ganesh Prabhakar Printing Press, Varanasi, 1886*

Another lithograph, written, according to the Hindi colophon, by Dwarka Tiwari and printed at the Ganesh Prabhakar Printing Press of Babu Kishun Dayal at the residence of Babu Kauleshwar Singh in the Viśvanātha temple area (*purī*) of Varanasi. The date of the Sanskrit text is given as *saṃvat 1942 māghakṛṣṇa 1 guruvāsare*, corresponding to Thursday, 21 January, 1886 CE; that of the Hindi colophon, as *saṃvat 1942 phāguna śukla 7*, corresponding to 12 March the same year. The edition is not listed by Pingree. I have used the black-and-white digital scan made available by the Digital Library of India; the original copy is stated to belong to the Sri Venkateswara Oriental Research Institute at Tirupati. The text, apparently in good condition, is complete and divided into two parts – the first five chapters comprising 71 numbered folios and the last three, 67 folios – despite being listed as *Hayanaratnam Purvardha* ('former half', obviously based on the first title folio).

A second digitized copy of the same lithograph, but of inferior quality and lacking occasional text around the margins, is listed separately by the Digital Library of India as belonging to the Bharatiya Vidya Bhavan Library in Mumbai (with the title given as *Ath Hayana Ratna*, mistaking the Sanskrit inceptive particle *atha* for part of the name of the work).

8.6 *M: Khemraj Shrikrishnadas, Mumbai 1894*

Of the three editions of the *Hāyanaratna* listed by Pingree, the typeset 'Mumbai/Bombay 1904'¹⁹³ was actually published in the first quarter of 1905 (*māgha saṃvat 1961, śake 1826*) by Khemraj Shrikrishnadas and printed at Shri Venkateshwar Steam Press, Mumbai, on 88 numbered folios (thus containing 176

SUDOC and WorldCat catalogues, almost certainly referring to the Kashi Sanskrit Press lithograph but misidentifying the author as Balabhadra Tiwari, b. 1935 (!).

193 Pingree 1970–1994 A4: 235b; 1981: 99.

pages of text). However, this edition, made available in digitized form (black-and-white scan) by the Digital Library of India, is little more than a reprint of another typeset edition, not mentioned by Pingree but published eleven years earlier, on Sunday, 18 March, 1894 (*saṃvat 1950* [...] *śakābdāḥ 1815 phālgunaśukla 12 yutabhānuvāsare*), also by Khemraj Shrikrishnadas, but printed at Ganpat Krishnaji Press on 110 numbered folios. This earlier edition is currently available in digitized form (full colour and clearly legible, if of somewhat low resolution) at the Indian Manuscripts website, a private initiative.¹⁹⁴ While the 1905 edition was freshly typeset and minor changes of a cosmetic nature made, it appears to retain most of the errors present in the 1894 edition and add some of its own. I have thus chosen to collate only the 1894 edition, restricting my use of the 1905 one to a single instance of lacunae, caused by physical damage to the original, in the scan of the earlier edition.¹⁹⁵ While not explicitly divided into a former and a latter part, the printed text does retain a vestige of this division at the junction of the fifth and sixth chapters (ff. 56–57) in the form of the brief closing and opening phrases *samāptoyam* / *śrīgaṇeśāya namaḥ*.

The collated text witnesses thus span 123 years, with the earliest witness being dated 122 years after the autograph. The strictly limited number of witnesses means that any attempt at stemmatics is necessarily highly provisional. Nevertheless, the witnesses do fall into two clearly distinguishable groups – B N G and K T M – though with some unique similarities between G and T, sometimes as a result of corrections made to the text in the former, suggesting contamination.¹⁹⁶ This division holds true for horoscope diagrams as well: while B G employ the style common in North India throughout (N has only blank spaces, clearly intended for diagrams but never filled in), K T M also include three diagrams in the East Indian style, identically placed in all three witnesses. Within either group, the similarities are greatest between, on the one hand, B and N, and on the other, K and M. Being a lithograph and thus widely circulated outside its place of origin, K might be regarded as a likely source for the later M; but a handful of readings unique to M, or shared only with T, do appear to be more than mere corrections to those of K. Taken together, these observations suggest to me the tentative stemma below (with several possibly omitted links).

194 <http://indianmanuscripts.com>, last accessed 26 February, 2019.

195 Folio 49, forming part of the fifth chapter.

196 A very limited number of variants shared by B on the one hand and K, T and/or M on the other, too specific to be discounted as coincidental, also suggest some cross-group contamination in B, primarily in chapters 5 and 7.

9 Text Witnesses of the *Hāyanaratna* (not collated)

The text witnesses examined but not collated are all incomplete paper manuscripts in Devanāgarī script:

9.1 *G 2928, Asiatic Society of Bengal, Kolkata*

Despite being labelled as complete, this manuscript comprises only the latter half of the *Hāyanaratna* (the last three chapters). Of its 68 folios, the first 34, chiefly comprising the sixth chapter, have been made available to me in a digital scan, fully legible but somewhat distorted in colour. While the descriptive label accompanying the scan gives only the name of a single scribe (Viṣṇumitra), the available folios are clearly the work of two different hands, changing near the beginning of the seventh chapter (f. 26). According to Pingree, the manuscript is dated Thursday, 12 *kṛṣṇapakṣa* of Āśvina in *saṃ[vat]* 1879, śaka 1744, in Dilipapura, corresponding to 1822 CE.¹⁹⁷

¹⁹⁷ Pingree 1970–1994 A4: 234b, likewise mentioning only the single scribe. Presumably in order to make the day of the week fit, Pingree wants to emend the date to 2 *kṛṣṇapakṣa*, corresponding to Thursday, 31 October, which would be correct from around midday on that date assuming the *amānta* calendar. However, there seems to be little reason for such an assumption: the two places named Dilipapura/Dilippur that I have been able to locate (in present-day Uttar Pradesh and Chhattisgarh, respectively) both belong to a region where the *pūrṇimānta* calendar predominates. In that calendar, 12 *kṛṣṇapakṣa* would correspond to Thursday, 12 September, with no need for emending the colophon. (The unusually great difference is due to an intercalary month.)

9.2 *Chandra Shum Shere d. 777, Bodleian Library, Oxford*

This and the following two manuscripts belong to a single collection originating with a hitherto unidentified *paṇḍita* in Varanasi.¹⁹⁸ The manuscripts have been bound rather too tightly in codex format but are still possible to read, if with occasional difficulty. While all are composite, and only the last is dated (with some doubt as to whether that date in fact refers to the main body of the manuscript or only to a folio added later), they do not appear very old, and there is nothing to suggest that they antedate the nineteenth century. The Chandra Shum Shere manuscripts were all examined on location and documented by high-resolution photography.¹⁹⁹

The present manuscript is fragmented and partly damaged, lacking the entire sixth chapter and the former half of the seventh. It comprises 93 folios in at least three different hands; horoscope diagrams are in the style most prevalent in East India. Despite the presence of the last chapter, including the colophon, the manuscript is not dated. A corrupt version of Balabhadra's riddle verse dating the text itself is, however, preserved, and has been compared with the variants in the edition. The first half-stanza contains three of the four distinctive mistakes found in witnesses B N, suggesting that the manuscript could, at least partly, be derived from hyparchetype δ. Unlike B N, however, it also contains the second half-stanza, perhaps due to contamination, with no mistakes save for the critical account of the year (*bhūvāṇākṣakubhiḥ 15 51*).²⁰⁰

9.3 *Chandra Shum Shere d. 801, Bodleian Library, Oxford*

A partly damaged and greatly disorganized manuscript comprising 96 folios in at least four different hands. Most of the sixth chapter as well as the last two appear to be lacking. Some of the horoscope diagrams are in the East Indian style, others in the more widespread North Indian format. There is no date.

9.4 *Chandra Shum Shere d. 809, Bodleian Library, Oxford*

A rather damaged manuscript comprising the former half of the text (the first five chapters) in 149 folios, all but two written in two alternating hands. Horoscope diagrams are in the North Indian style. The first and last folios, apparently lost, have been replaced by versions in a third hand, on different paper; the last gives the date as *śrīsaṃva[t] 1895*, corresponding to 1838–1839 CE.²⁰¹

198 Camillo Formigatti, Bodleian Library, personal communication.

199 Cf. also Pingree 1984: 97 f.

200 The distinctive blank space in *15 51* exactly mirrors K T, lending strength to the suspicion of contamination from the γ witness family.

201 Pingree (1984: 97) mistakenly states that only the first folio has been replaced (designating

9.5 *Indic 7282, Wellcome Library, London*

This and the next manuscript, belonging to the Wellcome Library, London, were both examined on location and documented by high-resolution photography.²⁰² The present manuscript is fairly well-preserved, in a single hand, with 74 folios comprising nearly all of the former half of the text (breaking off shortly before the end of the fifth chapter). The text seems to contain an inordinate number of mistakes. Horoscope diagrams are in the North Indian style. There is no date.

9.6 *Indic 7566, Wellcome Library, London*

A very fragmented manuscript although physically in fair condition, with 34 folios containing parts of all chapters except the first and last. The single hand is decorative if sometimes a little hard to make out, and the text contains many mistakes. Horoscope diagrams are predominantly in the North Indian style, with some in the East Indian, occasionally side by side. There is no date.

9.7 *Lalchand Research Library Chandigarh 2673*

A fairly well-preserved manuscript in four or five different hands, all reasonably legible, with 158 folios comprising most of the text (breaking off only in the seventh chapter). Horoscope diagrams are in the North Indian style. There is no date. This and the following manuscript were made available to me only towards the end of my work on the text.

9.8 *Lalchand Research Library Chandigarh 806*

A well-preserved, very legible manuscript in a single hand but with only 14 folios, comprising part of the last chapter including the concluding section, but lacking a date. The stanza dating the work itself again reads *bhūvāṇākṣaku*, followed by an explicatory 155| (for 1551).

10 Principles of Transliteration and Presentation

While Sanskrit manuscripts are found in many regional systems of writing, modern editions of Sanskrit texts are typically set either in Devanāgarī script or in Roman transliteration. Considerations of aesthetics and felt authenticity aside, the chief advantage of the former option is to make the text more

the replacement as α), and that folio 149, containing the date, belongs to the main part of the manuscript (β).

202 Cf. also Pingree 2004: 230 f.

accessible to Indian readers who, while fluent in English and the use of the Latin alphabet, still find it cumbersome to read an Indian language in a non-Indian script. Sanskritists outside India may be equally comfortable with either option; but a Devanāgarī edition would exclude any western readers not specialized in Sanskrit from consulting the original text and apparatus. As I hope with this work to increase awareness of the Tājika tradition among historians of astrology generally, such an exclusion would, I feel, be a serious drawback. I have thus opted for a Romanized text, using the standard International Alphabet of Sanskrit Transliteration (IAST). Indian readers may perhaps find some consolation in the fact that a Romanized text by its nature performs, at least partly, that function of separating words (*padaccheda*) which is one task of a traditional Sanskrit commentary.

In the accepted text, orthography has been tacitly normalized, and purely orthographic differences between text witnesses have been ignored so as not to swell the apparatus unnecessarily.²⁰³ Minor scribal errors, such as omitted or superfluous *anusvāra*, *visarga*, vowel modifier, or consonant gemination, have been noted only where alternative meanings could ensue.²⁰⁴ The text witnesses typically do not distinguish between *b* and *v*, and sometimes confuse *s* with *ś*; the transliteration of these characters in the accepted text follows standard usage. Manuscript N (cf. my comments above) also regularly confuses *b/v* with *c*, *th* with *ch*, and character-final *m* with character-initial *r*, and does not distinguish between *da* and *dr*. These variations occur too frequently to be noted separately, except where alternative meanings are possible.

The *anusvāra* (*m̐*) has been used in transliteration to represent what is etymologically an *m* followed by a non-labial consonant; other instances of *anusvāra* in the text witnesses are transliterated using homorganic nasals. Similarly, the *visarga* (*ḥ*) is employed before sibilants, so that there are no geminated sibilants. Consonants following *r* are not geminated. A single apostrophe (*avagraha*) marks the loss of short *a* following *e* or *o*, but not coalescence into *ā*; there are no double apostrophes. Although apostrophes are often (but not consistently) omitted in the text witnesses, restored apostrophes have been noted in the apparatus only when they have a bearing on the meaning.

Sandhi (phonological change) has been standardized within words and in metrical text, but lack of sandhi marking natural pauses in prose passages has been preserved. Non-compounded words have been separated except in cases of vowel coalescence. The word *iti*, when used to mark the end of a quotation,

203 A commonly occurring instance of such differences is the variant *tājaka* for *tājika*.

204 A frequent error peculiar to the mathematical portions of the last chapter is the spelling *traikya* for *tryaikya*, which has likewise been tacitly corrected.

has been separated from the quotation, and sandhi – including vowel sandhi – adjusted accordingly. Quotations themselves, whether explicitly identified as such in the text or not, have been set in *italics* for ease of reference.

Text witnesses frequently differ in their use of *danḍas* (the sole Devanāgarī punctuation mark in the form of a vertical line), which are often obviously misplaced. I have divided prose paragraphs logically and inserted a single *danḍa* at the end of a clause or sentence, double *danḍas* at the end of a paragraph, whether supported by any witness or not. When necessary, this division, too, has been allowed to override sandhi as found in the witnesses. In metrical text, a single *danḍa* marks the end of a half-stanza (including any additional half-stanzas); double *danḍas*, the end of a stanza.

In sections relating to mathematical procedures, particularly where numbers are described in verse form using the *bhūtasamkhyā* or word-numeral system,²⁰⁵ text witnesses typically include explicatory numerals, sometimes occurring in the middle of a compound. The inclusion or exclusion of such numerals in any given passage often varies between witnesses. In the edition, explicatory numerals deemed inessential (including those relating to *bhūtasamkhyā* terminology, which has been made clear by the translation) have been removed from the text. Numerals so removed have been noted in the apparatus only when witnesses differ in their interpretation of a particular numeric value, or when the translation differs from the interpretation of all witnesses. Likewise, the occasional numbering of verses quoted from other works, bearing no relation to the numbering of the original, has been omitted. Numerals forming necessary and integral parts of a sentence have naturally been retained. Numeric tables often present a particular challenge, being considerably more corrupt than the surrounding text, and recalculation has – given the dearth of early text witnesses – not infrequently proved the only way of restoring meaningful readings. (For the practical reason of Sanskrit manuscripts having a ‘landscape’ format and modern book pages a ‘portrait’ one, tables have also sometimes been modified by converting rows into columns and vice versa.) In a very few places, figures are too corrupt or procedures too obscure to permit of emendation.

All western-style dates both in this introduction and in the notes to the translation are in the New Style, that is, the (proleptic) Gregorian calendar beginning on 1 January, so as to be continuous with current calendric notation.

²⁰⁵ For an example, cf. the discussion on the dating of the *Hāyanaratna* above.

11 Principles of Translation

In the *Hāyanaratna*, Balabhadra addresses an intended audience of Sanskrit-literate Brahman males ‘desirous of understanding the results of the year’.²⁰⁶ While he appears to expect from his readers a certain understanding of pre-Tājika astrological vocabulary, he offers explanations for all technical terms of Perso-Arabic origin. In translating Balabhadra’s work, I have attempted to retain this sense of the foreignness of Sanskritized Persian and Arabic terms by leaving them untranslated, rather than rendering them into English using the Latinate translation conventions that have been in place in Europe since the twelfth century. There are several additional arguments in favour of such a policy.

In some instances, seemingly simple translations may create an exaggerated impression of similarity between concepts found in the European and Tājika traditions, respectively. A case in point would be the Arabic *munthahā*, typically translated into European languages as ‘profection’. As discussed above, the Tājika understanding of the Sanskritized term *munthahā* is rather more circumscribed than the Perso-Arabic or European concept of profections, being applied exclusively to the ascendant and playing a far less prominent role in determining the ‘ruler of the year’. Simply rendering *munthahā* as ‘profection’ would thus make for false connotations.²⁰⁷ In other cases, the use of established translation conventions would be wholly misleading, as if *kambūla*, like the Arabic *qabūl* from which it derives, were to be translated as ‘reception’. The intricate Perso-Arabic doctrine of reception, based on relations of zodiacal dignity, bears little resemblance to the Tājika concept of *kambūla*, which by a creative misunderstanding has come to signify a configuration involving the moon and two other planets. Finally, the meanings of certain Perso-Arabic terms are debated even within the Tājika tradition, with factions forming among authors. Such is the case with *musallaha* (from the Arabic *muthallatha*, also discussed above), interpreted by most Tājika authors as a special name for the *navāṃśas* or ninth-parts of a zodiacal sign, but with differences of opinion regarding the planetary rulers assigned to them, and by some even as the *dvādaśāṃśa* or twelfth-part (δωδεκατημέριον). Here, employing the conventional translation (‘triplicity’) would naturally be impossible, and even ‘ninth-part’ would obscure the existence of multiple interpretations.

²⁰⁶ See section 1.2.

²⁰⁷ Presuming a reader already familiar with the doctrine of profection. To a reader not so familiar, the terms ‘profection’ and ‘*munthahā*’ would, of course, be in equal need of elucidation.

Variations in technical vocabulary have likewise been preserved, so that *inthihā* (from the Arabic *intihā*²⁰⁸) is found alongside *munthahā*; *mutthašila* and *mūsariḥpha* (from *muttaṣil*, *muṣṣarīf*) alongside *itthaśāla* and *īsarāpha*, respectively; and *makabūla* (from *maqbul*) alongside *kambūla*.²⁰⁸ For the sake of clarity, however, the orthography of Perso-Arabic loanwords, which may vary quite considerably within the Tājika corpus (and sometimes, *metri causa*, within a single work), has been standardized in the translation, using the variants that are most commonly met with, etymologically most transparent, or both. (The single proper Persian name found in the text, that of Shāh Shujā', has been rendered in this standard form rather than the Sanskritized version Sāhisujā.)

In contrast to what has just been said, Sanskrit astrological terms *not* derived from Persian or Arabic typically have clear and well-understood meanings. Where corresponding concepts exist in European tradition, such Sanskrit terms have been translated following established English usage. It may be noted here that English astrological vocabulary has remained largely unchanged since publications on the subject began to appear in the vernacular during the seventeenth century, and I find it useful to retain these conventions, as they facilitate comparison between traditions.²⁰⁹ As a result, this translation contains some English usages no longer commonly found outside astrological contexts, such as *benefic* and *malefic* used substantively ('well-doer' and 'evil-doer', respectively, applied to different groups of planets),²¹⁰ or *native* in the sense of 'person born, subject of a nativity' (in modern times more often called

²⁰⁸ Such variations appear to reflect Arabic usage, as medieval Latin translations similarly employ Arabic verbal nouns and participles interchangeably; cf. Salio 1493 and note 96 above. Dykes 2019a: 51 likewise notes Sahl's 'almost indistinguishable' use of *muqābala* and *istiqbāl*. Cf. also Elwell-Sutton 1977: 60–98 for several similar examples in a Persian context, albeit from a later period.

²⁰⁹ The most influential of the early English-language works on astrology is William Lilly's *Christian Astrology* (1647). By upholding the traditional vocabulary, my translations occasionally differ from those of Pingree and other scholars. In some cases, untraditional choices of phrasing may indicate a translator's unfamiliarity with and/or indifference to anglophone astrological tradition over the past several centuries; but in recent decades even some translators intimately acquainted with that tradition have chosen instead to create a new vocabulary which they feel better expresses the sense of the Greek or Arabic originals. However, I remain unconvinced that such neologizing will improve the reader's understanding of the concepts involved to a degree that would compensate for the diminishing intelligibility of earlier works as their technical language is lost.

²¹⁰ The word *planet* has itself been used throughout in the older sense, still prevalent in astrological contexts, of any heavenly body apparently moving against the background of the fixed stars, thus including the sun and moon.

a birth chart). A glossary of technical terms both English and Sanskrit (including Sanskritized Perso-Arabic terms, with the most common orthographic variations listed) has been added at the end of the book.

In a few instances, Sanskrit terminology not derived from Arabic is still used to designate specifically Tājika concepts. The instance of the ‘ruler of the year’ – known in Arabic as *ṣāhib as-sana* or by the Persian loanword *sālkhudā*, but in Sanskrit by any of several dozen compounds such as *varṣeśvara*, all straightforward calques – has already been mentioned. In other cases, I have employed somewhat freer translations so as better to convey the technical meaning of the terms. The most important case is that of Sanskrit *praveśa*, also *veśa* or *āveśa*, all literally translatable as ‘entry’ but used in the astrological sense of ‘revolution’ (of a year, a month or a day) and translated accordingly. Other instances are *sadman* ‘seat’ (also mentioned above), used as a synonym of *sahama* and translated as ‘lot’, and *punya* ‘[religious] merit’ as the name of the first and most important lot, which I have translated as ‘Fortune’ to agree both with its astrological meaning and with the Arabic (and, ultimately, Greek) phrase on which it is based (*sahm as-sa’āda*, κληρος τῆς τύχης).

A few technical terms not peculiar to Tājika still deserve particular mention. Sanskrit *lagna* (or *vilagna*), literally ‘adhering, intersecting’, is used primarily of the ascendant point (which is the intersection of the ecliptic with the horizon), but also in several extended senses. First among these are the entire zodiacal sign rising and the first horoscopic place or house, for which different definitions exist. These senses are covered by the English word *ascendant* and have been translated accordingly. Another, much rarer sense is that of ‘cusp [of a house]’, typically found in compounds, and most commonly in those designating the tenth house cusp or midheaven (*daśamalagna*, *madhyalagna*), which is the intersection of the ecliptic with the meridian. Finally, *lagna* is occasionally used to refer to an entire chart or figure of the heavens. In such cases it has been translated as *horoscope*, which has long had the same extended sense in English.²¹¹

Two other multivalent and complementary terms are *[a]riṣṭa* and *rājayoga*. The former may refer broadly to any kind of misfortune, or to the astrological configuration indicating it; but it often connotes danger to a subject’s life

211 See Blundeville 1594: 232 (IV xxxvi): ‘This word Horoscop doth not onely signifie the degree of the Ecliptique, otherwise called the ascendent which riseth about the Horizon in the beginning of any thing that is to be sought or knowne, but also sometimes the whole figure of heauen containing the 12. houses [...]’ Although only this and similarly extended senses of *horoscope* are now in common use, the word was used by astrologers in the more restricted sense of ‘ascendant’ well into the nineteenth century.

or actual fatality, and my translation of it varies according to my understanding of the context. The latter term literally means a 'royal configuration' but in practice is used in a much wider sense to denote any sort of increase in power and/or status. Where *rāja*- or the related noun *rājya* (denoting either the office or the physical realm of a ruler) does seem from the context to refer unambiguously to kingship or a kingdom, I have translated it as such; but in most cases I have opted for the vaguer term 'dominion' (which covers both the abstract and the concrete sense). Similarly, when the context seems to require a broader sense (e.g., where the plural is used), 'prince' has been used to render words that are otherwise typically translated as 'king'.

Finally, two semantically related terms only indirectly connected with astrology but still contextually important are *dharma* and *puṇya*. Both, but especially the former, may denote a class of action on the one hand, and on the other, the resulting 'substance', intangible but manifesting in time as concrete good fortune (cf. what was said above regarding *puṇya-sahama* as the 'lot of fortune'). When the context seems to indicate this substantive sense, as something that may be increased or diminished, I have rendered both words as 'merit'; when a type of action, I have used 'piety', which covers religious devotion and observances as well as dutiful conduct in family and social relations. *Dharmaśāstra* I have translated as 'sacred law'.

As discussed above, while Balabhadra's original contributions are written chiefly in prose, the majority of the text consists of verse quotations in metres of varying complexity. Verse form is the norm in Sanskrit treatises on a wide range of subjects, including astrology; but like most modern translators of works not primarily classified as poetry, I have settled for a prose rendering. If this decision detracts from the literary quality of the work, it hopefully compensates for the loss by increased clarity. Similarly, and related to this, the intricate patterns of Sanskrit metres call for a wealth of synonyms with varying scansion to signify the planets, the zodiacal signs, the twelve places or houses, and so forth. Thus, the planet Jupiter may be called Bṛhaspati (the deity with which it is identified), 'the teacher', 'the teacher of the gods' (or 'of the king of the gods'), 'the revered one', 'the one revered by the gods', 'the priest of the gods', etc. The same is true, *mutatis mutandis*, of every planet, and to a lesser degree of the signs and houses. In the translation, this plethora of epithets has been replaced with unambiguous names, again sacrificing poetry to clarity. A special case is that of the two lunar nodes, treated in Indian astrology (including some, though not all, Tājika works) as 'planets' in their own right. European works on astrology, when mentioning the nodes at all, generally call them 'the head/tail of the dragon' (*caput/cauda draconis*), but do not include them among the planets. I have chosen to retain their most common Sanskrit designations, Rāhu and

Ketu, to signal this difference. These names, like those of the other planets, are used in the translation to convey a range of Sanskrit epithets: 'the darkness', 'the serpent', 'the son of Siṃhikā', etc.

More often than not, the twelve houses of the horoscope are referred to by names representing the topics to which they relate. Thus, the ascendant or first house may be called 'body', the second house 'wealth', and so forth. These designations have been consistently translated as 'first house', 'second house', etc. Thus, a clause literally reading *kalatre surejye* 'the one revered by the gods being in the wife' has been rendered rather more prosaically, but also more intelligibly, as 'if Jupiter is [placed] in the seventh house'.

The primary function of the word-numeral (*bhūtasamkhyā*) system already referred to several times above is likewise metrical, and no attempt has been made in the translation to distinguish between ordinary numerals and word-numerals. Thus, *sapta* 'seven' and *aśva* 'horse' (when used as a numeral) have both been translated as 'seven'. Indeed, renderings such as 'the one revered by the gods being in the wife with horse-degrees' would probably be beyond the endurance of even the staunchest translation literalist.

Numbers expressed in the text by figures rather than words often contain sexagesimal fractions separated by *daṇḍas*. In rendering these, I have followed the modern convention of separating the whole number from the fractions by a semicolon, and subsequent fractions from each other by commas. Thus, 365;15,31,30 days means 365 whole days plus $\frac{15}{60}$ of a day plus $\frac{31}{60 \times 60}$ of a day plus $\frac{30}{60 \times 60 \times 60}$ of a day (which is to say 365 days 15 *ghaṭis* 31 *palas* 30 *vipalas* – in decimal notation, 365.25875 days). A special case is the use of numerals to denote zodiacal signs: when the position of a planet is given in the text as 3|9|36|59, this means 3 signs 9 degrees 36 minutes 59 seconds of arc, or 9°36'59" in Cancer (the first three signs of the zodiac having been completed). As a degree is not $\frac{1}{60}$ of a zodiacal sign but only $\frac{1}{30}$, the notation *3;9,36,59 would be incorrect by modern standards. I have chosen instead to separate the figure of the sign from that of the degree by a comma followed by a blank space: 3, 9;36,59.

Three different types of brackets have been employed in the translation. Round brackets or parentheses () are used only for numerals present in the text but not otherwise syntactically integrated. Square brackets [] are used frequently to indicate phrases without precise correspondences in the Sanskrit but implied or otherwise deemed necessary for comprehension. Finally, curly brackets { } are used very rarely to indicate text suspected of having originated as a gloss or commentary by other authors than Balabhadra.

While the division into chapters is that of the text witnesses, the chapter titles as well as the division of the chapters into sections and subsections with

their separate headings have been added by me for ease of reference. The division of each section into paragraphs is likewise mine, and is generally dictated by the internal logic of the text. However, when several verses from another work are quoted as if forming a consecutive unit of text, but comparison with independent witnesses of the quoted work suggests a different order or missing lines, paragraph breaks have been employed to indicate the beginning and end of consecutive passages.

12 Abbreviations and Expressions Used in the Apparatus

Latin expressions conventionally used in critical editions have been limited to the most commonly occurring textual variants, where a word or phrase is added, omitted or corrected by a copyist, or where the accepted text includes an emendation of my own:

- a.c. (*ante correctionem*) before correction by the copyist(s)
- add. (*addidit/addiderunt*) add(s) after the lemma
- om. (*omittit/omittunt*) omit(s) the lemma
- p.c. (*post correctionem*) after correction by the copyist(s)
- scripsi ('I have written') my emendation

Less frequent occurrences such as erasures, lacunae or marginalia have been described in the commentary. References to particular dictionary entries use the standard abbreviation s.v. for *sub voce*.

Collated witnesses of the *Hāyanaratna* are referred to by capital letters as indicated above. Other works, identified quotations from which are listed in the source apparatus or which are referenced in the commentary, have been abbreviated as follows (authors' names in parentheses where known):

- AK *Amarakośa* (Amarasiṃha)
- BG *Bījagaṇita* (Bhāskara II)
- BhP *Bhaviṣyapurāṇa*
- BJ *Brhājñātaka* (Varāhamihira)
- BPH *Brhatpārāśarahorā*
- BS *Brhatsaṃhitā* (Varāhamihira)
- DA *Daivajñālaṃkārti* (Tejaḥsiṃha)
- GPS *Garuḍapurāṇasāroddhāra* (Navanidhirāma)
- HD *Hillājadīpikā* (Nṛsiṃha)
- HR *Hāyanaratna* (Balabhadra)

HS	<i>Hāyanasundara</i> (Padmasundara)
JC	<i>Jaḡaccandrikā</i> (Bhaṭṭotpala)
JKP	<i>Jātakakarmapaddhati</i> (Śrīpati)
KK	<i>Karaṇakutūhala</i> (Bhāskara II)
KP	<i>Karmaparakāśa</i> (Samarasiṃha)
KS	<i>Kaśyapasaṃhitā</i>
LJ	<i>Laghujātaka</i> (Varāhamihira)
NP	<i>Nāradapurāṇa</i>
NS	<i>Nāradasaṃhitā</i>
PBh	<i>Paddhatibhūṣaṇa</i> (Divākara)
PD	<i>Pañcadaśī</i> (Vidyāranya)
PDh	<i>Pīyūṣadhārā</i> (Govinda)
PK	<i>Prakāśikā</i> (Viśvanātha)
PS	<i>Parāśarasmṛti</i>
PT	<i>Prasānatantra</i> (Samarasiṃha/‘Nīlakaṇṭha’ [attr.])
PV	<i>Prasnavaiṣṇava</i> (Nārāyaṇadāsa Siddha)
RV	<i>Rāmavinoda</i> (<i>sāriṇī</i>) (Rāma)
ŚA	<i>Śakunārṇava</i> (Vasantarāja)
SiS	<i>Siddhāntasundara</i> (Jñānarāja)
SP	<i>Samvitprakāśa</i> (Govinda Kavīśvara)
SŚ	<i>Siddhāntaśiromaṇi</i> (Bhāskara II)
ST	<i>Samjñātatantra</i> (Nīlakaṇṭha)
SūS	<i>Sūryasiddhānta</i>
ŚV	<i>Ślokavārttika</i> (Kumārila)
ŚVK	<i>Ślokavārttikakāśikā</i> (Sucarita Miśra)
TBh	<i>Tājikabhūṣaṇa</i> (Gaṇeśa)
TLP	<i>Trailokyaparakāśa</i> (Hemaprabhasūri)
TM	<i>Tājikamuktāvali</i> (Tuka)
TMT	<i>Tājikamuktāvaliṭippaṇī</i> (Tuka?)
TPK	<i>Tājikapadmakośa</i> (Govardhana)
TS	<i>Tājikasāra</i> (Haribhaṭṭa)
TYS	<i>Tājikayogasudhānidhi</i> (Yādavasūri)
VāP	<i>Vācaspatya</i> (Tārānātha Tarkavācaspati)
VP	<i>Varṣapaddhati</i> (Keśava)
VPh	<i>Varṣaphala</i> (Maṇittha)
VS	<i>Vasiṣṭhasaṃhitā</i>
VT	<i>Varṣatantra</i> (Nīlakaṇṭha)
VV	<i>Vivāhavyṇḍāvana</i> (Keśavārka)
YS	<i>Yājñavalkyasmṛti</i>

Individual manuscript witnesses of a text, signified by its abbreviation followed by a number, are identified in the bibliography.

13 Planets, Zodiacal Signs and Asterisms

The following are the standardized names of the nine astrological planets in the Indian order, the twelve signs of the zodiac, and the twenty-seven Indian asterisms (*nakṣatra*), along with the abbreviations occasionally used for them in tables and figures.

Planet	Abbreviation
Sun	Su
Moon	Mo
Mars	Ma
Mercury	Me
Jupiter	Ju
Venus	Ve
Saturn	Sa
Rāhu	Rā
Ketu	Ke

Zodiacal sign	Abbreviation
Aries	Ar
Taurus	Ta
Gemini	Ge
Cancer	Cn
Leo	Le
Virgo	Vi
Libra	Li
Scorpio	Sc
Sagittarius	Sg
Capricorn	Cp
Aquarius	Aq
Pisces	Pi

Asterism	Abbreviation
Aśvinī	Aś
Bharaṇī	Bh
Kṛttikā	Kṛ
Rohiṇī	Ro
Mṛgaśīrṣa	Mṛ
Ārdrā	Ār
Punarvasu	Pn
Puṣya	Pṣ
Āśleṣā	Āś
Maghā	Ma
Pūrvaphalgunī	PPh
Uttaraphalgunī	UPh
Hasta	Ha
Citrā	Ci
Svāti	Sv
Viśākhā	Vi
Anurādhā	An
Jyeṣṭhā	Jy
Mūlā	Mū
Pūrvāṣāḍhā	PA
Uttarāṣāḍhā	UA
Śravaṇa	Śr
Dhaniṣṭhā	Dh
Śatabhiṣaj	Śa
Pūrvabhadrapadā	PBh
Uttarabhadrapadā	UBh
Revatī	Re