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Hindi Cardinal Numerals in a Historical and Comparative Perspective

Abstract

This paper focuses on the sound changes governing the formation of cardinals in Modern Standard Hindi. Sound changes belong to the different MIA languages and their stages of development are distinguished from developments that took place in the NIA stage where many special sound changes appear. These changes display many irregularities that affect only numerals. A close inspection of sound development will reveal that not only sound laws participate in the formation of Hindi numerals, but that different types of irregularities appear in many cases. Irregularities include consonant doubling, loss of nasalisation and analogical contamination that appear only in numerals. Of these irregularities, analogical contamination played a crucial role. The unpredictability of such analogical changes eliminates the possibility to predict the form of the Hindi cardinals by relying on OIA and MIA material. Only one thing appears to be quite certain regarding analogical contamination: it appeared in the NIA period, after the Apabhraṃśa stage, probably at some early date of the NIA period.

Introduction

Memorising numerals from one to one hundred is one typical task students of Hindi are faced with. Cardinal numerals in languages students more commonly encounter (i.e. classical and modern Indo-European, together with the reconstructed Proto Indo-European, Hungarian, Finnish, or Basque) have forms from 1 to 10 etymologically based on unrelated stems. The structure of numerals from 11 to 19 in most languages is recognisable to some extent, but they are often quite irregular. However, in most languages, cardinals from 20 to 99 are analytical formations with some regular, recognisable pattern;

one must only learn the tens and master the rule of compound construction in order to form them.

The situation is, however, completely different in New Indo-Aryan (=NIA) languages. As in most other languages, cardinals from one to ten in the NIA are based on unrelated stems; in the case of numerals from 11 to 19, the system is recognizable to some extent. However, Hindi (and all the other NIA except Romani[1]) numerals from 20 to 100 are synthetic formations, developed through sound changes from the Old Indo-Aryan (=OIA) through the Middle Indo-Aryan (=MIA) languages and the older NIA dialects in different successive stages. Therefore, sound changes have completely obscured the previous OIA analytical formations.

I once heard a colleague claim that it would be easier for students to learn sound laws and to derive Hindi numerals from the OIA forms than to learn all of them by heart. This claim was, of course, made more as a figure of speech referring to both the complicated course of sound changes in the Indo-Aryan languages on the one hand, and to the great phonetic, phonological, and morphological variety in Hindi numerals on the other. It is important to emphasise that the same problem occurs in all NIA languages, while a large number of doublets and dialectal variations further complicate the situation.

This paper will focus on the sound changes governing the formation of cardinals in the Modern Standard Hindi (=MSH). The term MSH refers to the standard (or normative) variety of Hindi language of the press, administration, school instruction, and modern literature. The cardinal numerals considered in this paper are those presented by authoritative grammars (Kellogg, Shapiro, McGregor, Pořízka), Turner's (1966) etymological dictionary, and Berger's (1992) and Norman's (1992) articles. The term Hindi as used here shall refer to the broader network of dialects and literary languages (including the MSH) that fall under the Hindi umbrella.

Sound laws that belong to the different MIA languages and stages of development will be distinguished from developments that took place in the NIA stage. A close inspection of sound development will reveal that not only sound laws participate in the formation of Hindi numerals, but that different types of irregularities appear in many cases. Of these irregularities, analogical

1 Romani numerals were destined to develop in a different fashion than other NIA numerals; cardinals from 'one' to 'six', 'ten' and 'hundred' were derived from OIA, while the rest of the numerals are formed through new analytical formations or borrowings.

contamination played a crucial role. The unpredictability of such analogical change will, of course, immediately eliminate the possibility of being able to predict the exact form of the Hindi cardinals by relying on the OIA and MIA material.

The MIA and MSH cardinals: general remarks

The MIA numeral system represents a phonological development of the OIA numeral system. However, some forms that developed from the OIA forms are not attested in the extant OIA material. An example of this is the is MSH *terah* 'thirteen' that developed from the MIA (Pāli, AMg., JMāh.) *terasa*, which does not come from the OIA *trayodaśa*. The origin of the MIA forms may be either *tredaśa (<*trayadaśa) (Berger 1992:251) or *trayēdaśa, according to Turner (1966:342).

As the MIA sound system's development is essential to an understanding of the evolution of the New Indo-Aryan, a detailed outline of sound laws governing the MIA forms that are still visible in the MSH forms will be outlined in the following passages.

The OIA vowels and their reflection in the MIA and MSH

The initial *e-* in all numerals beginning with the OIA *eka*(*-ā*)- 'one' is retained, or it becomes *i-* in the MSH. The development of *e* > *i* reflects the MIA shortening of the long OIA vowel *e-* (>*ĕ-*) in front of a geminate cluster. This *ĕ* sometimes weakens to *i*[2] (Pischel 1900:73–74 §84; Bloch 1965:42–42): ***e****kādaśa* 'eleven' > AMg. ***ĕ****ggarasa*/***i****ggarasa* (MSH ***i****gārah*, *gyārah*); OIA ***e****kaviṃśati* 'twenty-one' > AMg./JMāh. ***ĕ****kkavīsaṃ,* ***e****gavīsā* (MSH ***i****kkāis*). In the MSH variants ***e****kaīs*, ***e****kīs* (Avadhī ***e****kais*), *e-* is retained, possibly because it developed from some non-geminated MIA form.

After the loss of *anusvāra* (*-ṃ-*) in the twenties, thirties, and forties, the preceding *-i-* is compensatorily lengthened: OIA *tri****ṃ****śat* 'thirty' > (Pāli *ti****ṃ****sa*, *ti****ṃ****sati*) AMg. *tī****s****aṃ*, *tī****s****ā* (MSH *tī****s***).[3]

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2 OIA *ml**e**ccha* > AMg., JMāh., Śaur. *m**ĕ**ccha* > AMg. *m**i**ccha*; OIA *kṣ**e**tra* > Māh. *ch**ĕ**tta*, AMg. *ch**i**tta* etc.

3 Misra (1967:158–159) notes that this change is quite rare in early MIA.

The sequence *-aya-* is contracted to *-e-* in numerals that contain *traya-* (Pischel 1900:115–116, §153; Misra 1967:118–119): OIA *tr**aya**striṃśat* 'thirty-three' > Pāli *t**e**ttiṃsa*/*t**e**ttiṃsati*; AMg., JMāh *t**e**ttīsaṃ*; Ap. *t**e**ttīsa* (MSH *t**e**tīs*).

Consonants in free positions in the OIA and their reflection in the MIA and MSH

Initial consonants in the MIA and NIA numerals remain unchanged. The only exception to this might be the initial MIA and NIA *ch-* in numerals developed from the OIA *ṣaṭ-* 'six'. There are, however, two explanations of this *ch-*. According to Pischel (1900:152–153, §211), the initial OIA sibilant is sometimes aspirated in the MIA into *śha-*, *sha-*, and *ṣha-*, all of which become *cha-*. The second explanation, advocated by more recent scholars, maintains that the initial *ch-* could not have developed from *ṣ-*, but rather from some underlying, presumably the dialectal OIA form not attested in the extant OIA material. This dialectal form is thus adopted in many MIA and NIA languages, including the MSH. According to Turner (1962–1966: 743), the OIA *kṣat-/*kṣvat- must be assumed. This form corresponds to the Avestan *xšvaš* and the Iranian Sakian *kṣai*. (Cf. Berger 1992:248; Norman 1992:204). Bubenik (1996: 64–65) begins from the PIE *kswes, which yields OIA *kṣaṣ (through RUKI, *e>a and cluster simplification). Further in the MIA, *k-* would be palatalised to *c-*, and *ṣ* would weaken into *h*, resulting in the Ap. *chah*. In this case, this is a change of a consonant cluster, not of a single consonant.

The final *-t* in the thirties, forties, and fifties is dropped in MIA (Pischel 1900:231, § 339): OIA *pañcaśa**t*** 'fifty' > Pāli *paññāsa*, AMg. *paṇṇāsa*, Ap. *pañcāsa* (MSH *pacās*)[4]; OIA *triṃśa**t*** > Pāli *tiṃsa*, JMāh. *tīsaṃ*, Ap. *tīsa* (MSH *tīs*).[5]

Consonants in the intervocalic position

Intervocalic unaspirated stops mostly disappear (Cf. Pischel 1900:137, §186; Tagare 1948:60; 78). OIA *ca**t**urdaśa* 'fourteen' > Pāli *cuddasa* (with the

4 Ap. -ñc- (MSH -c-) might have been restored by the influence of OIA pañca-.

5 OIA tāvat > MIA (JMāh, AMg., Śaur.) tāva; OIA abhūt > Amg. abhū; OIA paścat > MIA (JMāh, AMg., Śaur.) pacchā.

contraction of *-au-* > *-u-* after *-t-* was lost), AMg. *coddasa*, *cauddasa*; Ap. *cauddaha* (MSH *caudah*).[6] The intervocalic *-t-* disappears in all numerals ending with OIA *-ati* and *-īti*. In the eighties and nineties in the MSH, the final vowels are further contracted to *-ī* and *-e*: OIA *aśīti* 'eighty' > AMg. *asīi* (MSH *assī*); OIA *navati* 'ninety' > AMg. *naui*[7], Ap. *ṇavai* (MSH *nabbe*)[8].

In sound changes that affected numerals in the MIA, an intervocalic voiceless stop (whether resulting from the assimilation or simplification of the geminate cluster) could become *-y-*.[9] The sound *-y-* inserted in place of the intervocalic *-c-* is apparent in the MSH *bayālīs* 'forty-two', which developed from the OIA *dvācatvāriṃśat*. The initial *c-* is retained in the MSH *cālīs* 'forty', but OIA *-tv-* (Pāli *-tt- cattarīsa*) is already lost in JMāh, which preserves both *cāyālīsaṃ* and the contracted *cālīsa* (*āyā* > *ā*). In the JMāh *cāyālīsaṃ*/*cālīsa*, the development of *-tv-* > *-tt-* > *t* (?) > *y* > Ø seems obvious.[10] Otherwise, only traces of this MIA *-y-* remain in the MSH cardinals: OIA *śata* 'hundert' > AMg., JMāh. and Ap. *saya*; Māh. *saa* (MSH *sau*),[11] as opposed to the Pāli *sata*.

According to Pischel (1900:171–171 §245), *-t-* could become *-r-* through intermediate *-ḍ-*. Pischel lists only numerals to illustrate this change: OIA *saptati* 'seventy' > AMg. JMāh. *sattariṃ* (JMāh has *sayari*). This *-t-* > *-r-* is still visible in MSH (*sattar* and all seventies compounds with *-hattar*).

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6 Loss of *-t-* is attested already in the Aśokan inscriptions, in the Gāndhārī and Niya Prakrits. Norman (1992:207) considers that the loss of intervocalic *-t-* is earlier in numerals than elsewhere.

7 With weakening of the glide *-v-* and loss of intervocalic *-t-*.

8 In other numeral compounds *-n*(*a*)*ve*, *-n*(*a*)*be*.

9 Geiger (1916:55 §36) refers to this inserted *-y-* (and *-v-* in non-numerals) as *hiatistilger*. For the discussion of these sounds see Pischel (1900:137, §187); Chatterji (1926:338–339, §170) and Tagare (1948:60).

10 *Catvariṃśat* > *cattarīsa* > *cāyālīsaṃ* > *cālīsa*.

11 Some NIA languages have an *u-* diphthong (Sindhī *saü*, Lahndā *sô*) that comes from the MIA neuter ending *-aṃ* (MIA *saaṃ*). For the change *aṃ* > *u* see Pischel (1900:238–239, §351). Other NIA languages have an *i-* diphthong (Kashmiri, Nepālī, Bihārī *sai*. According to Berger (1992:274) *i-* forms developed from MIA pl. *saīiṃ* (AMg. *do sayāiṃ* 'two hundreds'), while *u-* form developed from the singular MIA form because Avadhī (Lakhīmpurī) and Old Gujarati have singular with *u-*, and pl. with *i-* diphthong,

OIA *-d-* from OIA *daśa* ‘ten’ is preserved in the initial position (MSH *das*), but intervocalically in compounds it becomes *-r-*[12]: OIA *dvā**d**aśan* ‘twelve’ > AMg./Ap. *bā**r**asa* (MSH *bā**r**ah*).

The voicing of the intervocalic voiceless stop is evident in OIA *e**k**ādaśa* > AMg./JMāh. *e**g**ārasa* (MSH *i**g**ārah*/*g**y**ārah*).

The intervocalic *-ḍ-* in OIA *ṣo**ḍ**aśa* ‘sixteen’ becomes *-ḷ-* (Pāli, AMg. *so**ḷ**asa*) as a general rule in the MIA (Pischel 1900:168 §240).[13] In JMāh, *-ḷ-* can become *-l-* (*so**l**asa*), which appears in the MSH *so**l**ah*.

The intervocalic *-v-* is retained in most MIA but is lost in Ap. and the MSH numerals: OIA *eka**v**iṃśati* > AMg. *ega**v**īsā*, Ap. *eāīsa*; Avadhī *ekais*. MSH *ikkāis*, *ikkīs*, *ekīs*. It is interesting to note that in the MIA no reflexes of the OIA *ūnaviṃśati* ‘nineteen’ are recorded in the MIA, instead all MIA forms trace their origin in the OIA *navati*. However, the NIA numerals mostly go back to OIA *ūnaviṃśati*.[14] In the MSH *unīs* ‘nineteen’, the intervocalic *-v-* is lost, *-a-* and *-i-* are contracted, and *-i-* is compensatorily lengthened after the loss of nasalisation.[15]

The MIA intervocalic *-p-* > *-v-* change (Pischel 1900:143–144, §199) is also visible in the MSH forms: OIA *sapta**p**añcaśat* ‘fifty-seven’ > AMg. *sattā**v**aṇṇa*, JMāh. *satta**v**annaṃ* (MSH *satta**v**an*).[16]

The MIA *-s-* into which all three OIA sibilants are merged is visible in the MSH: OIA *da**ś**a-* ‘ten’ > Pāli, Amg., JMāh. *da**s**a* (MSH *da**s***); OIA *dvya**ś**īti* ‘eighy-two’ > Pāli *dvā**s**īti*, AMg. *bā**s**īiṃ* (MSH *bayā**s**ī*).

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12 Besides numerals, the *-d-* > *-r-* change appears in the MIA adjectival and pronominal compounds formed with *-dṛś*, *-dṛśa*, *-dṛkṣ* (Pischel 1900:171–172, §245). In the MSH *cau**d**ah* ‘fourteen’, *-d-* is preserved because it comes from the geminate *-dd-*, which comes from the OIA cluster *-rd-*. According to Bloch (1970:228–229 §221), an early dissimilation of the intervocalic *-d-* against the initial *d-* of ***d**vādaśa* and *t-* of ***t**rayodaśa* should be assumed.

13 OIA *garu**ḍ**a* > AMg., JMāh. *garu**ḷ**a*; OIA *gu**ḍ**a* ‘ball, globe’ > AMg., JMāh. *gu**ḷ**a*; OIA *āmreḍ**i**ta* ‘reiterated, repeated’ > AMg. *āmeḷ**i**ya* etc.

14 A number of NIA languages like Assamese (*ekunavīsati*), Marāṭhī, Sinhalese, and others trace their forms from the MIA *ekūnavīsati* (cf. Berger 1992:253).

15 MSH *cau**b**īs* ‘twenty-four’ retained its intervocalic *-v-* because it is derived from the cluster *-rv-* (OIA *catu**rv**iṃśati*), which became *-vv-* in the MIA (JMāh. *cau**vv**īsa*). MSH *cha**bb**īs* ‘twenty-six’ also retained it because the geminate *-bb-* is derived from the OIA cluster *-ḍv-* (OIA *ṣaḍviṃśati*).

16 OIA *ko**p**a* ‘anger’ > MIA *ko**v**a*; OIA *nṛ**p**a* ‘king’ > MIA *ṇi**v**a*; OIA *dī**p**a* ‘light’ > MIA *dī**v**a* etc.

The MSH *-h* reflects the further weakening of the sibilant into a glottal fricative *ṣ* > *s* > *h* (Pischel 1900:182, §263, 1900:183–184, §265, Tagare 1948:77), which is present as of the MIA: OIA *aṣṭā**s**aptati* 'seventy-eight' > Pāli *aṭṭha**s**attati*, AMg. *aṭṭha**h**attariṃ* (MSH *aṭha**h**attar*) etc. Often, because final vowels are dropped, *-h* remains in the final position in the MSH teens (*gyāra**h*** 'eleven' *bāra**h*** 'twelve' etc.).

The typical Māgadhian rotacism *r* > *l* (Pischel 1900:178, § 256) is still visible in the MSH. OIA *catvā**r**iṃśat* < AMg./JMāh. *cattā**l**īsaṃ*, Ap. *cā**l**īsa* (MSH *cā**l**īs*) as opposed to Pāli *cattā**r**īsa*.

Initial clusters

The simplification of the initial cluster is evident in words beginning with *tr-* and *dv-*.[17] The initial cluster *dv-* undergoes regressive assimilation through a *db-* stage (*dv* > *b*) as attested in the numeral ***db**ādasa* (< OIA ***dv**ādaśan*) found on the fourth rock edict of Aśoka at Girnār.[18] Thus, *dv-* in the OIA compounds with *dvā-* as the first member (***dv**ādaśan* 'twelve'; ***dv**āviṃśati* 'twenty two'; ***dv**ātriṃśat* 'thirty two' etc.) is reduced to *bā-* in some MIA languages; this is retained in the NIA (MSH ***b**ārah*, ***b**ārā* 'twelve', Bengali, Assamese, and Nepālī ***b**āra*, Gujaratī ***b**ār* etc.). Older Pāli forms retain *dv-* in ***dv**ādasa*, which changed into ***b**ārasa* in later texts and in grammarians. AMg. and JMāh. have ***b**ārasa*[19]. The same assimilation of *dv* > *db* > *b* is evident e.g. in the OIA ***dv**āra* 'door' > MSH ***b**ār*.

The cluster *tr-* that appears in the numeral ***tr**i-* 'three' and compounds with *-**tr**iṃśat* 'thirty' and ***tr**ayas-* (***tr**ayodaśan* 'thirteen', ***tr**ayas-**tr**iṃśat* 'thirty-three' etc.) is reduced to *t-*: OIA ***tr**īṇi* > Pāli ***t**īṇi*, AMg., JMāh., Mā, Ṣaur. ***t**iṇṇi* (MSH ***t**īn*); OIA *ṣa**ṭṭr**iṃśat* > Pāli *cha**tt**iṃsa*[ti]; Amg. *cha**tt**īsa*.[20]

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17 Cf. Bubenik 1991: 9–10; 45. In numerals, the simplification of the initial cluster *dv-* appears in compounds where the first member appears as *dvā-*. The OIA cardinal numeral *dva-* 'two' does not underlie the MIA *do* (or the MSH *do*), but *duvau attested as an Ṛgvedic metrical variant of *dvau.* Thus *d-* in the MSH *do* 'two' is not the result of the simplification of the initial consonant cluster *dv-*.

18 Hultzsch 1925: 7–8. This development appears only in western inscriptional Prakrits. Cf. Bubenik 1991:9–10; Hultzsch 1925: lxi.

19 In addition to *duvālasa*.

20 Cf. Misra 1967: 134–135. OIA ***pr**iya* 'dear' > Śaur. ***p**iya*, ***p**ia* (MSH ***p**i*, ***p**īa*); OIA ***pr**aṇa* 'vow, promise' > Śaur. ***p**aṇa* (MSH ***p**ən*).

Medial clusters

One of the most common MIA sound changes occurs in a cluster containing two stops, where the last stop is assimilated into the first one (regressive assimilation), resulting in a geminate cluster. Such a cluster appears in the MSH *cha**pp**an* 'fifty-six', where MIA the geminate cluster *-pp-* (<*ṭp*) appears: OIA *ṣa**ṭp**añcāśat* > Pāli *cha**pp**añcāsa*; Ap. *cha**pp**aṇa*. OIA *ṣa**ṭs**aptati* 'seventy-six' yields the MIA *cha**ss**ayariṃ* with the regular assimilation of *ṭs* > *ss*; *-ss-* is most probably simplified to *s[21] and then weakened to *-h-* in Ap. *chā**h**attari*.

The labial stop in the cluster *-pt-*, which appears in all numerals with the underlying OIA *sa**pt**a-* 'seven', is also regressively assimilated, resulting in the geminate *-tt-* in MIA (*Pāli sa**tt**a*). In Ap., the geminate *-tt-* is sometimes simplified to *-t-* (Ap. *sa**t**atīsa* 'thirty-seven'). However, the MIA geminate *-tt-* is preserved in the MSH *sa**tt**rah* 'seventeen' (Ap. *sa**tt**āraha*) and *sa**tt**āvan* 'fifty-seven' (Ap. *sa**tt**āvaṇī*). In MSH, *saĩtīs* 'thirty-seven' and *saĩtālīs* 'forty-seven'[22] *-t-* disappeared due to analogical contamination after the exemplar of *paĩtālīs* 'fifty seven' (Berger 1992: 261).

The cluster *str-* (*catu**str**iṃśat* 'thirty-four') yields the geminate *-tt-* in MIA (Pāli *catu**tt**iṃsa*, AMg *cau**tt**īsaṃ*) with the weakening of the fricative and the progressive assimilation of *-r-*. Furthermore, the geminate *-tt-* visible in the Pāli *catu**tt**iṃsa* is further reduced in the MIA to *-t-* in AMg. (*cau**t**īsaṃ* besides *cau**tt**īsaṃ*) and in Ap. (*cau**t**īsa*). The MSH *caũ**t**īs* contains an analogical nasalisation that will be discussed later in this paper.

In the cluster *-tv-* (*ca**tv**āriṃśat* 'forty' and compounds), the glide *-v-* is assimilated into the dental stop, yielding the geminate *-tt-* in MIA (Pāli *ca**tt**ārīsa*). JMāh. and Ap. have *cālīsa*, which is the closest MIA form to the MSH *cālīs*. This form might have developed as a contraction of the AMg. *cā**y**ālīsaṃ* (*y* < *t* < *tt*). In the other MSH forties, the cluster *-tv-* regularly developed through MIA forms into *-t-* or *-y-*, except in *cauālīs* 'forty-four', which obviously contains *-tt-* > *-t-* > *-y-* > ∅. This change had already occurred in the Ap. stage. Pāli *ca**t**ucattārīsa*, AMg. *cauyālīsaṃ*, Ap. *cauālīsa*.[23]

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21 The geminate sibilant cluster *-ss-* is reduced to *-s-* in Old Hindi. OIA *śī**rś**a* > Śaur. *si**ss**a* > Old Hindi *sī**s**a* > MSH *si**s***; OIA *ra**śm**i-* 'reins' > Śaur. *ra**ss**i-* > MSH *ra**s***.

22 *sī-* in JMāh. *sīālā*, the AMg. *sīyālīsaṃ* developed from *se* < *saya* < *sata* < *satta* (Norman 1992:217).

23 MSH *uncās* 'forty-nine', as did all MIA and NIA forms, developed from *ūnapañcāśat*, and not from *navacatvāriṃśat*.

The liquid *-r-* that precedes nasals, dentals, and glides is also assimilated. In the OIA *catu**rn**avati* 'ninety-four', *-r-* is assimilated in the Pāli (*catunavuta*), while in AMg. The nasal is further cerebralized in *cauṇaui*[*ṃ*]. In the MSH *cau**r**ānave*, *-r-* developed due to analogy. The assimilation of *-r-* preceding a voiced stop creating a geminate cluster appears in the AMg. *cau**dd**asa* 'fourteen' (cf. MSH *caudah*) < OIA *catu**rd**aśan*.[24] When preceded by a glide *-v-*, *-r-* is also assimilated: OIA *catu**rv**iṃśati* 'twenty-four' > Pāli *catu**v**īsati*; AMg *cau**v**īsaṃ*; Ap. *cau**v**īsa* (cf. MSH *cau**b**īs*).

On the other hand, OIA *anusvāra* (*ṃ*) is lost when followed by a sibilant with a compensatory lengthening of the preceding vowel in MIA, which is still visible in MSH. The OIA *vi**ṃ**śati* 'twenty' > Pāli *vī**s**ati*; AMg., JMāh. *vī**s**aī* (MSH *bī**s**); OIA *tri**ṃ**śat* 'thirty' > Pāli *ti**ṃ**sa*; AMg. *tī**s**ā* (MSH *tī**s**).

The nasal in the cluster *-ñc-* (OIA *pa**ñc**a-* 'five') is retained in Pāli (*pa**ñc**a*) and AMg. (*pa**ṃc**a*); in the Old Hindi and the MSH, a trace of this nasal is visible in the medial vowel, which undergoes nasalisation and compensatory lengthening (*p**ã̃c**). In the OIA compounds with *-pañca* as their second member, the palatal stop in the cluster *-ñc-* is assimilated, resulting in the geminate *-ññ-* in Pāli (*dvāpa**ñc**āśat* 'fifty-two' > Pāli *dvāpa**ññ**āsa* +), and *-ṇṇ-* in AMg. and Ap. (*bāva**ṇṇ**a*). The nasal is still visible in the MSH (*bāva**n*** 'fifty-two', *tirpa**n*** 'fifty-three', *cauva**n*** 'fifty-four' etc.).[25]

The reflection of the OIA *ṣṭ* in the NIA stage appears as irregular as opposite MIA where the change is regular. In Pāli, *-ṣṭ-* always yields *-ṭṭh-* in accordance with the rule that the sibilant is assimilated yielding a geminate stop which, if unaspirated, becomes aspirated (Misra 1967:142; Pischel 1900:140–142, §193–196; 207–208 §303). The MSH retained –[*ṭ*]*ṭh-*, which developed in MIA in the numerals *a**ṭṭh**āīs* 'twenty-eight', *a**ṭṭh**āvan* 'fifty-eight' and *a**ṭṭh**ānave* 'ninety-eight', although doublets with the non-geminate *-ṭh-* simplified at the NIA stage appear frequently in grammars and dictionaries.[26]

The regressive assimilation of medial consonant clusters also appears in a number of the OIA numerals. The clusters *-ḥs-*, *-ṭs-* are reduced to *-s-*, which further changes into *-h-*. This change also appears as of the MIA. OIA *catu**ḥs**aptati* 'seventy-four' > Pāli *catu**s**attati*, JMāh. *cau**h**attari* MSH

24 Cf. Pischel 1900:198–199, §288.

25 MSH, like most NIA languages, reintroduced the palatal in *pacās* (after the exemplar of OIA) in forms developed from *pañcāśat* 'fifty' (Pāli *paññāsa*, AMg. *paṇṇāsa*).

26 Kellogg (1893:142–146) lists only *aṭhāīs*, *aṭhāvan*, *aṭhānave*. Turner (1966:42) lists Avadhī (Lakhīmpurī) *aṭṭhāis*; for the MSH, he lists both *aṭhāvīs* (*˚āīs*) and *aṭṭhāvīs*.

*cau**h**attar*.[27] The MIA *-p-* developed from the cluster *-ḥp-* (OIA *catu**ḥp**añcāśat* 'fifty-four' > JMāh. *cau**p**annaṃ*). The intervocalic MIA *-c-* (< OIA *-śc-*) in *catu**śc**atvāriṃśat* 'forty-four' > Pāli *catu**c**attārīsa*) is then lost in MIA (AMg. *cauyālīsaṃ* and Ap. *cauālīsa*; MSH *cauṃtālīs*).[28] The cluster *-ḍv-* in the OIA *ṣa**ḍv**iṃśati* 'twenty-six' was assimilated into *-vv-* (AMg. and JMāh. *cha**vv**īsaṃ*) and into *-bb-* in Pāli *cha**bb**īsati*.[29] Ap. has both *-bb-* and *-vv-* in *cha**vv**īsa*, *cha**bb**īsa*; *-bb-* is retained in MSH *cha**bb**īs*[30]

The Middle Indo-Aryan to Modern Standard Hindi

Sound changes that affected the MIA forms are crucial for the shaping of the MSH numerals; in late Ap., future Hindi numerals can already be clearly recognised. However, in the NIA stage, another set of developments took place that would finally shape the MSH numeral system. It is noteworthy that a higher rate of irregularities appears in sound changes that govern the change from the MIA to the NIA.

Vowels

The loss of the final vowel *-a*, which is not reflected in writing, is one of the most remarkable features of the MSH forms evident in many ordinals. The final vowels that mark the MIA forms are generally retained in the Old Hindi[31], but are lost in the transition to the MSH (Misra 1967:216): Ap. *pañc**a***, *paṃc**a*** 'five' > Old Hindi *pā̃c**a*** > MSH *pā̃c*.; Ap. *vīs**ai*** 'twenty' > *bīs* etc.

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27 In the MSH *caũsaṭh*, *-s-* is retained. Cf. Ap. *causaṭhi*; Avadhī (Lakhīmpurī) *caũsaṭh*^{i}; Sindhī *cohaṭhi*. (< OIA *catuḥṣaṣṭi* 'sixty-four').

28 The Pāli *tetālisa* 'forty-three' developed from the OIA *tricatvāriṃśat*, and not from the OIA *trayaścatvāriṃśat* 'forty-three.' The AMg. and JMāh. *teyālīsaṃ* also developed from *tricatvāriṃśat*. The MSH *tẽtālīs* also follows the same line of development (with analogical nasalisation).

29 More often, *-v-* is assimilated into the preceding stop: OIA *kva* > MIA *kka*; OIA *kaṇva* > *kaṇṇa*; OIA *prajvalati* > *pajjalaï*; *jvalati* > *jalaï* etc. Pischel (1900: 205 §300) notes that *va* behind *da* shifts to *ba* (*dva* > *bba*); dialectically *tva* becomes *ppa*, *dva* becomes *bba*.

30 Bengalī has *chābbiś*, but Gujaratī *chavvis*.

31 The term "Old Hindi" here refers to literary material in Braj, Bundelī, and the earliest Khaṛī Bolī, as used by Misra (1967).

The medial short *-a-* in the OIA *ṣ**a**ṭcatvāriṃśat* becomes *-i-* (MSH *ch**i**yālīs*) between two palatals which developed in MIA (initial *ṣ* > MIA *ch-*, while *-ṭc-* > *-c-*, but then *-c-* > *-y-* in AMg. *chāyālīsaṃ*, AP. *chāyālīsa*).

The same vowels in sequence, long or short, result in a long vowel (Misra 1967: 204; Učida 1977:77): AMg. *aṭṭhās**ĭĭ**ṃ*, *aṭṭhās**ĭĭ*** > MSH *aṭhās**ī***.

The old Hindi forms where the first syllable consists of two, and second of three moras are sporadically contracted in a way that the second syllable is shortened. OH *battīs* 'thirty-two' > MSH *batt**i**s*; *bāīs* 'twenty-two' > MSH *bā**i**s*.[32] Shortening also appears in numerals with structure (C)V̄CV̄ and VCCVC followed by a shift of accent (*paccīs* > *pácc**i**s*).[33]

The MIA vowel sequences *-āi-*, *-āī-* remain unchanged (Misra 1967:207): AMg. *sattavīs**ai*** > Ap. *satt**āī**sa* 'twenty-seven' > MSH *satt**āī**s*; Ap. *aṭṭh**ā**vīsa*; *aṭṭh**āī**sa* > MSH *aṭṭh**āī**s*.

MIA *ă̆ŭ* regularly becomes *au* in NIA: MIA *ca**aü**daha* 'fourteen' > NIA *c**au**dah*.

In the final position, the MIA *-ai* is contracted to *-e*, except in monosyllabic words. This change affects all numerals from 90 to 99. MIA *ṇav**aī*** 'ninety' > MSH *nabb**e*** (Učida 1977:26)

Consonants

The first change that will be mentioned here is the simplification of the MIA geminates into a single consonant with the compensatory lengthening of the vowel: Ap. *s**att**a* 'seven' > MSH *s**āt***; Ap. ***aṭṭh**a* > MSH ***āṭh***, Ap. *s**aṭṭh**i* 'sixty' > MSH *s**āṭh***. This change took place in the Old Hindi (Misra 1967:195–196).[34] When preceding a cluster with a nasal, nasalisation accompanies the compensatory lengthening of the vowel: Ap. *p**añ**ca*, *p**aṃ**ca* 'five' > MSH *p**ā̃c***.[35]

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32 Cf. Učida 1977: 18.

33 Učida (1977: 36) cautiously remarks that regularity of this change is doubtful because it takes place only in numerals where extensive dialectical mixture occurred.

34 Cf. Śaur. *diṭṭhi* 'seeing, sight' > Old Hindi *dīṭhi* > MSH *dīṭh*; Śaur. *koṭṭhaa* 'storeroom' > the Old Hindi *koṭha* > MSH *koṭh*.

35 In the OIA *vi**ṃ**śati* 'twenty', the compensatory lengthening had already occured in the MIA (Pāli *vīsati*, AMg. *vīsaṃ*/*vīsaī*, Ap. *vīsai*), so MSH *bīs* is not nasalised. In the MSH *cha**bb**īs* 'twenty-six', gemination took place, attested already in the MIA: AMg. *cha**vv**īsaṃ*; Ap. *cha**bb**īsa*.

The MSH retroflex flap -*ṛ*- occurs instead of the expected -*ṭh*- (< MIA -*ṭṭh*-) in *aṛatīs* ‘thirty-eight’, *aṛtālīs* ‘fourty-eight’, *aṛasaṭh* ‘sixty-eight’. Normally, the unaspirated retroflex flap -*ṛ*- in MSH (and other NIA) is a reflex of the MIA -*ḍ*-.[36] Berger (1992:266–267; cf. pp. 257–258, p. 261) explains that this -*ṛ*- originally arose in *aṛasaṭh* ‘sixty-eight’ from -*ṭh*- by dissimilation from the -*ṭṭh*- of MIA -*saṭṭhi* (JMāh. *aṭṭhasaṭṭhi*). This supposedly spread analogically from *aṛasaṭh* to *aṛatīs* and *aṛtālīs*. However, Turner (1966:41) lists the Prakrit forms *aṭṭhayāla*, *aṛayāla* ‘fourty-eight’, indicating that the change *ṭṭh* > *ṛ* had already occurred in MIA. Norman (1992:217) lists forms with -*ḍh*- (AMg. *aḍhayālīsaṃ*), with the note that the unaspirated -*ḍ*- often occurs in texts instead of -*ḍh*-. Thus, it is possible that the flapped -*ṛ*- in *aṛtālīs* developed from the MIA -*ḍ*- (*aḍayālīsaṃ)*.[37] To support this, we can cite Norman’s (1992:218) note that even AMg. *aḍhasaṭṭhiṃ* ‘sixty-eight’ is written *aḍasaṭṭhiṃ* in some texts, which can also develop in MSH *aṛasaṭh*. If this is correct, -*ṛ*- developed through regular sound change, and not by analogical contamination.

The MIA cluster -*ṭṭh*- might also be retained in MSH instead of being reduced into -*ṭh*-. Thus, OIA *aṣṭāśīti* ‘eighty-eight’ > AMg., JMāh. *aṭṭhāsīi* > MSH *aṭhāsī*, but OIA *aṣṭānavati* ‘ninety-eight’ > Ap. *aṭṭhāṇavai* > MSH *aṭṭhānave*/*aṭhānave*.

The glide *v*, which is not dropped in MIA, becomes *b* in the intervocalic position: Ap. *cauvīsa* ‘twenty-four’ > MSH *chaubīs*[38]. In compounds with the OIA -*navati*, the intervocalic -*v*- can be retained: MSH Ap. *baṇavai* > MSH *bānave*/*banabe*; cf. also Ap. *navai* > MSH *navve*/*nabbe* with irregular doubling.

Common irregularities

Besides smaller irregularities and doublets mentioned in previous passages, the doubling of consonants is a feature of NIA sound changes typical for

36 Turner (1926:38–39) ascribes this change to influences from the Muṇḍa and Dravidian substrata. Chatterji (1923[I]:249) suggests that the Greek transcriptions of -*ḍ*- and -*ḍh*- as -*r*- show that the flapped pronunciation *ṛ*/*ṛh* in the intervocalic position had already evolved in the early MIA period, or even earlier. OIA *kaṭukaphala* ‘bitter fruit’ > MIA *kaḍuaphala*: Gr. καρυόφυλλον.

37 Normally, -*ḍh*- would become the retroflex flap -*ṛh*- in MSH.

38 In the Ap. *cauvīsa* (AMg. *cauvīsaṃ*, *cauvīsā*), -*v*- is not dropped because it developed from the OIA cluster -*rv*- (*caturviṃśati*).

numerals. MSH ***ek*** 'one' < MIA ***ekk****a*[39]; ***pacc****īs* 'twenty-five' (besides *pa**c**īs*) < Ap. *pa**c**īsa*; ***ass****ī* 'eighty' < Ap. *a**s**ii*, *a**s**ī*; *na**vv**e*/*na**bb**e* 'ninety'. A number of regular doublings in the MIA is unexpectedly preserved in numerals as opposed to other the MSH vocabulary: *-tt-* in MSH seventies, *-pp-* in *cha**pp**an* 'fifty-six', and *-bb-* in *cha**bb**īs* 'twenty-six'. MSH *sa**tt**ar* 'seventy' < MIA *sa**tt**ari* (Pāli, AMg., JMāh., Ap.; Ap. *cha**pp**aṇṇa* > MSH *cha**pp**an*; Ap. *cha**bb**īsa* > MSH *cha**bb**īs*) etc. as opposed to other words where the clusters *-tt-*/*-pp-*/*-bb-* would be reduced to *-t-*/*-p-*/-b-: MIA *ci**tt**ala* 'spotted' > H. *c**ī**tal*; > MIA *pa**tt**a* 'leaf' > Old Hindi *pā**t**a*, MSH *pa**t***; Śaur. *ra**tt**i* 'night' > Old Hindi *rā**t***, MSH *ra**t*** (cf. Učida 1971/1972:257; Misra 1967:196; Masica 1991: 187, 192). However, some geminate consonants do exist in the MSH words apart from numerals (cf. Učida 1971/1972:266).[40] After extensive consideration of such words, Učida (1971/1972: 271–273) concludes that these might have come from Hariyāṇavī and Kauravī (colloquial Hindustanī) dialects of Western Hindi that preserve geminates, as opposed to other Hindi dialects.[41] Regarding the numerals with geminate clusters, it is hard to reach a verdict as to whether they were taken from Delhi dialects (or from some Pañjābī dialect), or if they represent some kind of irregular development that tends to occur in numerals. Mewāṛī (and Rājāsthānī) does not have the *-tt-* cluster (*ago**t**ar*/*eko**t**ar* 'seventy-one' [MSH *ikha**tt**ar*], but has *-pp-* (*cha**pp**an*) as opposed to e.g. Maithili *cha**p**an* 'fifty-six'). On the other hand, Avadhī regularly retains geminates (*sa**tt**ari*, *ekha**tt**ari*, *cha**pp**ana* etc.). The MSH geminate *-cc-* in *pa**cc**īs* (also *pa**c**īs*) 'twenty-five' is, according to Oberlies (2005: 27), brought about by analogy from *cha**bb**īs* 'twenty-six', which retained its *-bb-*(*-vv-*) from the MIA.

An irregular feature of the MSH *pacās* 'fifty' is the vowel that is not lengthened and nasalised. In this numeral, cluster *-ñc-* was reintroduced, most probably on the model of the OIA form, somewhere in late MIA (Ap.

39 Berger (1992:245) ascribes this gemination to the empathic pronunciation to which numeral 'one' is subject (Cf. Berger 1958).

40 MIA *ku**tt**a* 'dog' > MSH *ku**tt**ā*/*ku**tt**ī*; MIA *kha**tt**a-* 'hole, ditch' > MSH *kha**tt**ā*.

41 Učida (1971/1972:2773) actually refers here to previous claims (e.g. Turner [1966]) that the MSH words with geminate consonants are Pañjābī loanwords. Učida claims that (a) "High Pañjābī" developed later than the geminates appear in Hindi dialects (by Tulsidās), therefore this is not "Panjabismus" but rather the influence of the Pañjābī dialects; (b) words with geminates also appear in different Hindī dialects located around Delhi (Kauravī and Hariyāṇavī) that might have supplied such words to the MSH.

*pa**ñc**āsa* as opposed to the older MIA forms – Pāli *pa**ññ**āsa*, AMg. *pa**ṇṇ**āsa* with expected assimilation of the occlusive -*c*-).[42]

Concluding notes on the sound laws governing the formation of the MSH ordinals

Now, if one would like to predict the MSH forms relying on the MIA while applying sound laws, one would be successful in a number of forms. For example, if we take the OIA *aṣṭāśīti* 'eighty-eight', on the MIA level, -*ṣṭ*- would yield -*ṭṭh*-, -*ś*- would change to -*s*-, and the intervocalic -*t*- would be lost; thus, *aṭṭhāsīi* would result, the form attested in AMg. Further, in the NIA stage, -*ṭṭh*- would be simplified into -*ṭh*-, and -*īi*- would be contracted into -*ī*-; *aṭhāsī* would result, which is indeed the MSH form. However, if we take the example of the OIA *catuṣtriṃśat* 'thirty-four' and apply the sound laws governing the MIA forms (loss of the intervocalic -*t*-, -*ṣtr*- > -*t*-, loss of the final consonant, loss of nasalisation with compensatory vowel lengthening) we would predict *cautīsa*, which is indeed confirmed in Apabhraṃśa. By removing the last short vowel, we would predict the MSH **cautīs*; however, an unexpected nasalised diphthong appears in the MSH *caũtīs*. This nasalisation is brought about by an analogy that affected many the MSH (and other NIA) ordinals. Therefore, the next chapter will briefly survey the analogical formations in MSH ordinals.

Analogy

One appropriate definition of analogy in historical linguistics is that of Hock & Joseph (1996:154), who define analogy as a "change in phonetic structure conditioned by non-phonemic factors… Analogical change, as defined now, tends to introduce greater phonetic similarity between semantically, formally, or functionally similar linguistic forms". Furthermore, a few different, but partly overlapping types of analogical change are distinguished and categorised into two groups (Hock & Joseph 1996:153–176). The first, "relatively systematic" group contains four-part (or proportional)[43] analogy

42 Cf. Bloch 1970: 230; 1967:43; Oberlies 2005:27.

43 An example from English illustrates this well–stone (sg.) : stones (pl.) influenced cow (sg.) : *cows* (pl.), which replaced the older pl. *kine*.

and levelling.[44] "Non-systematic" types of analogy include blending and contamination. Contamination is the process that concerns us here because it affects words that are often uttered in close succession.[45] The numerals are learned and used in everyday communication, administration, and even literature, often in a close, regular succession. It is no surprise that analogical contamination, which depends heavily on the mental association of forms with each other, affects numerals so strongly.

Analogical contamination affected a large proportion of Hindi cardinal numerals from 1 to 100. However, it is difficult to provide a precise percentage because of three factors. Some changes, such as the lengthening of the short vowel, did not alter the form significantly, e.g. the long *-ā-* in the MSH *b**ā**īs* 'twenty-two' (<OIA *dv**ā**viṃśati*, AMg. *b**ā**vīsā*) influenced the lengthening of *-a-* in MSH *ikk**ā**īs* 'twenty-one' (OIA *ek**a**viṃśati* > AMg. *ekk**a**vīsaṃ*, *ig**a**vīsaṃ*).[46] This leads us directly to the second issue that many forms affected with analogical contamination preserved doublets where analogical change did not occur (MSH *ikkīs*, *ekīs*). For instance, the regular MSH *bānave* 'ninety-two' has an analogically altered doublet *bayānave*, which developed after the exemplar of *bayāsī* 'eighty-two'. The same is with regular *pacīs* 'twenty-five' and analogical gemination *-cc-* in *paccīs*. The third factor are different interpretations of the history of some forms. Berger (1992:266–267; cf. pp. 257–258, p. 261), for instance, explains that *-ṛ-*, which originally arose in the MSH *aṛasaṭh* by dissimilation, spread to the MSH *aṛatīs* and *aṛtālīs*. However, *-ṛ-* could have also developed from the MIA *-ḍ-* by a regular sound change. Another example is *pan**d**rah* 'fifteen', which developed from the Ap. *pannarasa*/*paṇṇarasa*, where *-d-* does not appear. Berger (1992:252) suggested that *-d-* is inserted in the same fashion as OIA *vānara* > MSH

44 Levelling is the elimination of morphophonemic alternation produced by a regular sound change that takes place in the paradigm. E.g. alternations of *s* : *r* in Germanic languages created by Verner's Law are eliminated in English. In Old English *curon* (past plur.), *-r-* becomes *-s-* in *chose*, or past participle (*ge*)*coren* becomes *chosen* modelled on the pairs *cēosan* (present) > *choose*, *cēas* > *choose* (Hoch and Joseph 1996:155).

45 According to Hock & Joseph (1996:167), contamination most often affects antonyms and numerals.

46 Regular forms like *aṭhānve* 'ninety-eight' (< OIA *aṣṭānavati*), *satāsī* 'eighty-seven' (< OIA *saptāśīti*) etc. influenced analogical lengthening in: *unānve* 'eighty-nine' (< OIA *ūnanavati*), *caurānve* 'ninety-four' (< OIA *caturnavati*). It is noteworthy that the Bengalī *unanai* 'eighty-nine' *-a-* did not undergo lengthening.

*bān**d**ar*. However, Norman (1992:211) lists the MIA *paṃ**d**arasa* with the suggestion that an early *-ndr-* cluster appeared in MIA; the MSH form may have originated from such a form.

Nevertheless, it can be tentatively said that around one fourth of the cardinal numerals from 1 to 100, or slightly more, underwent analogical contamination. The following passages will describe noteworthy changes.

Analogical nasalisation

Nasalisation that arose from analogical contamination affected these MSH cardinals: *taĩtīs* 'thirty-three'; *caũtīs* 'thirty-four'; *paĩtīs* 'thirty-five'; *saĩtīs* 'thirty-seven'; *taĩtālīs* 'forty-three'; *saĩtālīs* 'forty-seven'; *caũsaṭh* 'sixty-four' and *paĩsaṭh* 'sixty-five'. In the Ap. stage, none of these numerals were yet nasalised.[47] The model for this change is the cardinal *paĩtālīs* 'forty-five' (< OIA *pañcacatvariṃśat*). Nasalisation in *paĩtālīs* developed through irregular dialectical development in MIA (OIA *pañca* > *paññaya-*, *paṃya-* > *paiṃ-*),[48] which is reflected in many NIA forms.[49] The expansion of this nasalisation is curious, as it spread both "horizontally" (e.g. from 'thirty-five' → 'thirty-four') and "vertically" (e.g. from 'forty-five' → 'thirty-five'). Nasalisation jumped 'vertically' from *paĩtālīs* 'forty-five' to *paĩtīs* 'thirty-five', from whence it 'horizontally' affected *caũtīs* 'thirty-four' and *taĩtīs* 'thirty-three', where the further spread halted. It should be noted that *taĩtīs* has a regular doublet *tetīs*.[50] It is curious that *paĩtālīs* affected *taĩtālīs* 'forty-three' while *chauālis* 'forty-four' was bypassed. On the other hand, *paĩtālīs* 'forty-five' 'horizontally' influenced *saĩtālīs* 'forty-seven', bypassing *chiyālīs* 'forty-six'. *Paĩtālīs* 'forty-five' further 'vertically' influenced *paĩsaṭh* 'sixty-five', which influenced *caũsaṭh* 'sixty-four'. This nasalisation spread star-like in all directions. The impression of the complete randomness of its spread is attested in two of its features: (a) some numerals are bypassed in an unpredictable way, (b) it is impossible to predict the reach of the range of influence.

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47 *Caũtīs* :: Ap. *cautīsa*; *paĩtīs* :: AMg., JMāh. *paṇatīsaṃ*; *saĩtīs* :: Ap. *satatīsa*; *taĩtālīs* :: AMg. *tettālīsaṃ*; *saĩtālīs* :: AMg. *sīyālīsaṃ*; *caũsaṭh* :: Ap. *causaṭṭhi*; *paĩsaṭh* :: AMg. *paṇṇasaṭṭhiṃ*.

48 Berger 1992:260.

49 Bengalī *paṃyatāllis*, Bhojpurī *paeṃtālis*, Pañjābī *paiṃtālī*.

50 Avadhī already has *tẽtīs*, Ap. only non-nasalised form *tetīsa*.

Analogical spread of -(i)r- and -ǎy- and -i(y)-

These three analogical contaminations spread only 'vertically', affecting compounds with 'two', 'three', and 'six'. Thus, the *-r-* from *caurāsī* 'eighty-four' first spread horizontally to *tirāsī* 'eighty-three' (probably replacing some form developed from the MIA *tiyāsīti), from whence it took *-i-* and spread as *-ir-* vertically to ***tir****ānave* 'ninety-three'.[51] It also spread to ***tir****asaṭh* (sixty-three' and ***tir****pan* 'fifty-three', surprisingly bypassing *tihattar* 'seventy-three'. In these numerals, the analogical formation *tir-* replaced the regular *te-*/*ti-*. In the MIA stage, *te-* is thoroughly preserved (JMāh. *teṇauī*; AMg. *tesaṭṭhiṃ*; JMāh. *tevaṇṇaṃ*), so this change occurred early on in the NIA stage as it affected many NIA forms including the Avadhī *tirsaṭh*^{i}.[52]

From some numerals with a numeral word for 'two', an analogical *-y-* spread vertically to other compounds with 'two'. The sound *-y-* arose in *bayālīs* 'forty-two' (OIA < *dvācatvariṃśat*), where it developed regularly, replacing the intervocalic *-t-* in MIA (AMg. *bayālīsaṃ*). However, it first bypassed the regular *bāvan* 'fifty-two', but affected the dial. *bāyasaṭh* 'sixty-two', which preserved the regular doublet *bāsaṭh*. The change then did not affect the regular *bahattar* 'seventy-two', but it did affect *bayāsī* 'eighty-two' and *bayānve* 'ninety-two', which also preserved the regular doublet *bānave*. Again, this analogical appearance of *-y-* occurred in the NIA stage without any trace of this development in MIA.

In a number of MSH numerals, *-a-* has been analogically replaced with *-i*(*y*)-. The MSH numerals *chiyāsaṭh* 'sixty-six', *chihattar* 'seventy-six', *chiyāsī* 'eighty-six', and *chiyānave* 'ninety-six' do not correspond to their respective MIA forms *chāvaṭṭhi*, *chāhattari*, *chalasīi*, and *chānavai*. The origin of this contamination (*ch*)*iy-* is *chiyālīs* 'forty-six', where *-i-* developed from *-a-* between palatals (MIA *siyālīsa*). Again, there is no trace of this change in MIA.

Concluding remarks

The MSH cardinal numerals developed through a complex network of interconnected linguistic phenomena. Three of such phenomena can be possibly distinguished on the basis of material presented in the previous

51 MIA *teṇauī*, *teṇauiṃ*.

52 Cf. Pañjābī *tarāṇve*, Nepālī *tirānabe* etc.

passages. The first are regular sound changes mostly governing the formation of the MIA forms from the OIA forms; a new set of rules govern the change from late MIA forms to the NIA numerals, culminating in the MSH. However, only roughly half of the number words from 1 to 100 may be regarded as having developed regularly through sound laws. Even there, many special sound phenomena appear, especially in the NIA stage, which displays many irregularities and changes that affect only numerals. The second are irregular developments like the doubling of consonants and loss of nasalisation, which also appear only in numerals. The third is analogical contamination, which deeply affected the system and made its final form unpredictable. These analogical formations appear unpredictable and arbitrary. Only one thing appears to be quite certain regarding analogical contamination: it appeared in the NIA period, after the Apabhraṃśa stage, probably at some early date of the NIA period as it affected different languages in a fashion that was at least comparable, if not quite similar. This loose uniformity might suggest that some of the most remarkable analogical changes spread before further differentiation in languages appeared. This late appearance of analogical change is significant. If we take into consideration the claim of the 19th century neogrammarians that analogy ("false analogy", as it was sometimes called) is a sign of decay and lateness, it might be suggested that some numeral forms were so mutilated at the end of the Ap. stage that they lost their distinctiveness; analogical contamination therefore appears to help in distinguishing amongst the forms because of their eminent importance in everyday dealings. For instance, it may be claimed that the Ap. *beāsī* 'eight-two' may have been too similar to the NIA *bīs*(*a*) 'twenty', and analogical contamination makes *bayāsī* more distinctive. But if this is true, why did analogy not affect *paccīs* 'twenty-five' and *pacās* 'fifty', which serve as a possible source of everyday confusion? Currently, I see no clear indication in the material to support the explanation that analogy helps distinguish between forms, although the late appearance of analogy still calls for an appropriate explanation.

Abbrevations

MSH Modern Standard Hindi
OIA Old Indo-Aryan
MIA Middle Indo-Aryan
JMāh. Jain Māhārāṣṭrī
AMg. Ardha-Māgadhī
Ap. Apabhraṃśa
Śaur. Śaurasenī

Bibliography

Berger, Hermann 1992. Modern Indo-Aryan. In: Gvozdanović, Jadranka (ed.) *Indo-European Numerals*: 243–287. Berlin, New York: Mouton de Gruyter. (Die Zahlwörter in den neuindoarischen Sprachen, *Münchener Studien zur Sprachwissenschaft* 47:23–70, 1986)

Bloch, Jules 1965. *Indo-Aryan. From the Vedas to Modern Times*, English edition revised by the Author and translated by Alfred Master. (*Le Indo-Aryen*, Paris: Librairie d'Ame, 1934).

——— 1970. *Formation of the Marāṭhī Language*, Delhi: Motilal Banarsidass. (*La Formation de la langue marathe*, Paris 1914).

Bubenik, Vit 1995. *The Structure and Development of Middle Indo-Aryan Dialects*. Delhi: Motilal Banarsidass.

Chatterji, Suniti Kumar 1923. *The Origin and Development of the Bengali Language* (Vols. I & II). London: George Allen & Unwin Ltd.

Geiger, Wilhelm 1916. *Pāli Literatur und Sprache* (*Grundriss der indo-arischen Philologie und Altertumskunde, I. Band I, 7. Heft*). Strassburg: Verlag von Karl J. Trübner.

Hock, Hans H. & Brian D. Joseph. 1996. *Language History, Language Change, and Language Relationship: An introduction to Historical and Comparative Linguistics*. Berlin, New York: Mouton de Gruyter.

Hultzsch, Eugen J. 1925. *Corpus Inscriptionum Indicarum Vol. 1: Inscriptions of Asoka*. Oxford: Claredon Press.

Kellogg, Samuel H. 1893. *A Grammar of the Hindī Language* (2nd edition, revised and enlarged). London: Kegan Paul, Trench, Trübner, and Co.

Misra, B.G. 1967. *Historical Phonology of Modern Standard Hindi: Proto-Indo-European to The Present*. An unpublished Thesis Presented to the Faculty of the Graduate School of Cornell University for the Degree of Ph.D.

Norman, Kenneth R. 1992. Middle Indo-Aryan. In: Gvozdanović, Jadranka (ed.) *Indo-European Numerals*: 199–241. Berlin, New York: Mouton de Gruyter.

Pischel, Richard 1900. *Grammatik der Prakrit Sprachen*, (*Grundriss der indo-arischen Philologie und Altertumskunde, I. Band I, 8. Heft*). Strassburg: Verlag von Karl J. Trübner.

Tagare, G.V. 1948. *Historical grammar of Apabhraṃśa*. Deccan College Dissertation Series 5. Poona: Deccan College Post-Graduate and Research Institute.

Turner, Ralph L. 1966. *A Comparative Dictionary of Indo-Aryan languages*. London, New York, Toronto: Oxford University Press.

Oberlies, Thomas 2005. *A Historical Grammar of Hindi*. Grazer vergleichende Arbeiten, Band 29. Graz: Leykam Buchverlag.

Učida, Norihoko 1971/1972. Geminierte Konsonante im Hochhindi. *Indo-Iranian Journal* 13: 255–273.

——— 1977. *Hindi Phonology: Treatment of Middle Indo-Aryan Vowel Sequences in Modern Hindi*. Delhi: Simant Publications.

Conference organizers:
Department of Indology and Far Eastern Studies, Faculty of Humanities and Social Sciences, University of Zagreb
in collaboration with Embassy of India
and
Indian Council for Cultural Relations

PUBLISHED BY
Faculty of Humanities and Social Sciences,
University of Zagreb, Croatia
FF press

FOR THE PUBLISHER
Domagoj Tončinić

EDITORS
Ivan Andrijanić
Monika Browarczyk

COVER AND LAYOUT DESIGN
Banain ITC

COMPUTER LAYOUT
Krešimir Krnic

PRINT RUN
200

PRINTED BY
Tiskara Rotim i Market, Lukavec, Donja Lomnica

ISBN
978-953-379-008-4

A catalogue record for this book is available from the National and University Library in Zagreb under CIP code 001221025.

The book is financially supported by
the Ministry of Science and Education of the Republic of Croatia.

Between Language and Literature
Hindi in Classroom and Beyond

Proceedings of the conference
Between Language and Literature:
Hindi in Classroom and Beyond,
Zagreb, March 2020

Edited by

Ivan Andrijanić

Monika Browarczyk

FF press

2024