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Onset-Coda and Positional Asymmetry in Marathi and Varhadi: An Optimality Theoretic Account

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Abstract

The present study endeavours to address few phonological issues better known as positional asymmetry and onset-coda asymmetry attested in Marathi an Indo Aryan language spoken in Maharashtra and its variety, Varhadi, spoken in the Vidarbha region. In the patterning of segmental speech sound, segments in privilege or prominent position such as syllable onset, roots, and root initial syllables resist and trigger alternation whereas segments in non-privilege or non-prominent positions, such as codas, are neutralized and targeted for alternation (Beckman, 1998). This, onset-coda licensing and positional asymmetry is best evident in the phonological process of deletion and assimilation in Varhadi and Marathi. Thus, three types of deletions, (i.e. word-final singleton consonant deletion, stem-final vowel deletion and syllable initial second consonant deletion) and the assimilatory processes (palatalization, voicing assimilation as regressive and retroflexion as progressive assimilation) are taken into consideration for the analysis. These phonological processes have been interpreted, discussed and analyzed in Optimality theoretical framework. The study finds that, though the phenomenon of positional privilege or positional faithfulness is observed cross-linguistically, there is a natural class of segments, i.e. Retroflex in Marathi which do not prone to alternation, rather they resist and trigger alternation despite occurring in the coda, a non-privileged position. This is evident in the instances of retroflexion, progressive assimilation which goes against the well-established view of positional faithfulness and positional privilege and adds the crucial characteristics to the debate on onset-coda and positional asymmetries.

Keywords: Onset-coda asymmetry, positional asymmetry, Licensing, Directional of Assimilation, deletion, Vowel hiatus. Marathi Phonology, Varhadi Phonology.

1. Introduction

In the patterning of the speech sounds, there are some phonological positions in which segments are more prone to alteration whereas there also exist some phonological positions which resist any kind of such alteration. The differences of this kind are referred to as positional asymmetry. Beckman (1998) enlists certain positions known as privilege/prominent positions such as syllable onset, roots, and root initial syllables which resist as well as trigger alternation and non-privilege/non-prominent positions such as codas which are neutralized and targeted for alteration. As onset and coda exhibit different phonological behavior, the study with regard to this is known as onset coda asymmetry. The present study attempts to address a set of questions concerning onset coda and positional asymmetries in the light of some phonological processes in Varhadi spoken in Vidarbha region of Maharashtra, and Marathi, a standard variety spoken in the same state. The phonological processes of assimilation and deletion are explored, discussed, examined, and analyzed mainly in Optimality Theory framework in order to address the phenomenon distinctly. The paper will try to examine the unexplored peculiarities of positional asymmetries and onset coda licensing attested in both of the varieties.

2. Statement of Research Problems

The research problems are divided in two parts 1) regarding deletion and 2) regarding assimilation. Research problems involved in the phonological process of deletion are: a) what are the positions of the segments which are more prone to deletion and what are the positions of segments which resist this alteration? b) Why do only the consonant in the coda position gets deleted and not the consonant in the onset position? c) Why it is the case that some particular segments in particular position are affected by phonological processes? d) Why the second segment in the syllable/word is prone to deletion and not the first one? e) Why do Varhadi prefer to delete stem final vowel instead of stem initial vowel?

Research problems involved in the process of assimilation are a) what are the positions of the segments which are more prone to assimilation or alteration and what are the positions of segments which resist and trigger the feature change like assimilation? b) Why the segment occurring in the coda position tends to agree in terms of feature with the following segment in the onset position? and c) In spite of being in a privilege position why in some cases onset tends to agree with the preceding segment in the coda position?

3. Methodology

The data, for the present research, has been collected from both primary as well as secondary sources. The primary data has been collected from native speakers of both of the varieties, Varhadi and Marathi; however, the secondary data has been confined to standard publications on Marathi (Kelkar, 1958, Pandharipande 1997). Since it is widely acknowledged

that Optimality Theory can give a fairly strong and stable representation of the phonological regularities and patterning in world languages, the same framework will be used to address the research questions and analyze the data.

4. Literature Review

Beckman's (2004) says that since the work of Steriade (1982) and Itô (1986, 1989), onset/coda feature licensing asymmetries have witnessed more works in the generative phonological literature. As stated earlier, Beckman (1998) has carried out a research with regard to psycholinguistic and perceptually prominent positions which license different phonological processes such as assimilation, dissimilation and vowel harmony etc. in languages. These prominent positions include root, root-initial syllables, stressed-syllables and syllable onsets. Segmental and featural contrasts are maintained in those positions although sometimes they are subject to neutralisation in non-prominent positions.

In addition to the positional asymmetry, the notion of positional strength asymmetry is found in Gordon (2004) who argues that prosodic positions like word-initial syllables and the root are endowed with inherent strength. For instance, the attraction of stress (see, e.g., Hyman 1977 on initial stress, Alderete 2001 on root stress), segmental fortition processes (Zoll 1998, de Lacy 2001, Smith 2000, 2002), the ability to license a richer array of phonological contrasts, and resistance to deletion or lenition eliminate contrasts (see, e.g., Steriade 1995, Casali 1997, Beckman 1999, Lombardi 2001) can be cited to exemplify the works and issues of positional strength (p. 692).

Furthermore, Steele (2005) has also carried out research in which he argues that Prosodic strong positions such as onsets and stressed syllables licence a wider range of segmental contrast regarding voicing and place etc. than the relatively weaker positions which include codas and unstressed syllables. For example, contrastive obstruent voicing is attested only with onsets, not codas (Itô, 1986). Thus, the Onset-coda licensing asymmetries are observed most frequently. However, there seems to be a wide research gap as there are almost no research carried out in this on Indian languages form this phonological aspect. Thus, I would try to put forth my arguments with the help of data on Marathi and Varhadi spoken in Maharashtra.

5. Analysis and Discussion

To find out onset-coda licensing and positional asymmetry, the phonological process of deletion and assimilation in Varhadi and Marathi has been considered for analysis. It includes three types of deletions, (i.e. word-final singleton consonant deletion, stem-final vowel deletion and syllable initial second consonant deletion) and the assimilatory processes such as palatalization, voicing assimilation as regressive assimilation and retroflexion as progressive assimilation.

5.1 Positional Asymmetry in Deletion

Deletion is a phonological process by which a sound present in its underlying phonemic form is removed from the phonetic form in certain environments. There are some marked phonological positions where segments are subject to deletion whereas there exist some positions which show resistant to this process. There is a long tradition of interpreting such differences widely known as positional asymmetry. Harris (2011) opines that, whole-segment deletion is a pervasive phenomenon in the world's languages and there are certain phonological contexts where consonants are prone to deletion, usually in clusters or word finally**.**

The present section attempts to show onset coda and other positional asymmetries attested in a phonological process of deletion in Varhadi. They are as follows:

1. Word final singleton consonant deletion
2. Stem final vowel deletion and
3. Syllable initial Second consonant deletion.

5.1.1 Word Final Singleton Segment/ Consonant Deletion

In Varhadi spoken in Vidarbha region of Maharashtra, the coda, a word-final singleton consonant in the third person, plural, present tense construction, gets deleted in word-final position. Here, the process of coda deletion is employed as a repair strategy to repair the marked structures, i.e. syllables with coda to produce less marked or relatively well-formed structures, i.e. coda-less syllable.

	Marathi	Varhadi	Gloss
a)	/sanɖəʊʈa**ʈ**/	[san.ɖəʊ.ʈa:]	'split-3-pl-prs'
b)	/maŋgʈa**ʈ**/	[maŋg.ʈa:]	'demand-3-pl-prs'
c)	/mʰənʈa**ʈ**/	[mʰən.ʈa:]	'say-3-pl-prs'
d)	/kərʈa**ʈ**/	[kər.ʈa:]	'do-3-pl-prs'.
e)	/ʤaḷʈa**ʈ**/	[ʤaʊ.ʈa:]	'burn-3-pl-prs'
f)	/pɪʈaʈ/	[p***e.***ʈa:]	'drink-3-pl-prs'
g)	/***ə***ɪkʈaʈ/	[***a***ɪk.ʈa:]	'listen-3-pl-prs'
h)	/***ʋ***ɪkʈaʈ/	[***ɪ***kʈa:]	'sell-3-pl-prs'

The above data from Varhadi distinctly shows asymmetry, that onsets are licensed and preserved to produce less marked structure whereas codas are not licensed and deleted to produce the less marked structure.

Marked Structure	Unmarked/ Less marked structure
CVC ⟶	CV

The following tableau shows how onset coda licensing asymmetry is attested to in the deletion of final singleton consonant. Here the coda, /ʈ/ is not licensed and thus deleted in word final position whereas onset is licensed and thus, it does not undergo alteration. Deletion results from faithfulness constraints, MAX-IO being outranked by Markedness constraint, NO-CODA in **Varhadi** to make the structure less marked.

Table 1. No-Coda>> Max-IO

Input: /sandɖəʊʈaʈ/	NO-CODA	MAX-IO
a. san.dɖəʊ.ʈaʈ	***!	
☞b. san. dɖəʊ.ʈa:	**	*

Though the candidate, 1b) incurs the violation of lower ranked MAX-IO, it incurs only two violation of the NO-CODA constraint which is high ranked in Varhadi and thus chosen as a winning candidate over 1a) as this candidate incurs three violations of the higher ranked NO-CODA constraint.

From the above instances, the question arises, as to why codas in the word final position are deleted while the onsets resist alteration? This positional asymmetry can be addressed through above-mentioned markedness constraints in Optimality theory which requires that syllables must not end in consonant or coda.

5.1.2 Stem-final Vowel Deletion

The phenomenon, positional asymmetry is not confined to consonants only. Providing instances from French and Karok, Harris (1998), claims that vowel sequences lacking an intervening consonant are cross-linguistically dis-preferred. Whenever morpheme concatenation threatens to create a hiatus configuration of this sort, languages can take various measures to resolve it. One of the most favoured measures of these is to delete one of the vowels – either the first, as in French or the second, as in Karok.

Now, the case of stem final deletion vowel in Varhadi is to be taken for study. It is observed that the stem-final [e] is deleted before/instead stem initial [ɪ]. The following input from Marathi has CV.VC syllable structure, which shows cross-linguistically dis-preferred or marked vowel sequencing. Thus, the process of stem final [e] deletion is driven by the pressure to simplify the syllable structure and to make it less marked, i.e. CVC. It can also be noted that stem-initial vowels lengthen to compensate for the loss of the deleted vowel.

CV.VC →	CVC	
Marathi	Vathadi	Gloss
a) /ɖ**e**-in/	[ɖi:n]	‘give-fut-1prs’ (I will give)
b) /gʰ**e**-in/	[ghi:n]	‘take-fut-1prs’ (I will take)
c) /p**e**-in/	[pi:n]	‘drink-fut-1prs’(I will drink)
d) /n**e**-in/	[ni:n]	‘take away-fut-1prs’ (I will take away)

5.1.2.1 Why Stem final [e]? And Why not Stem Initial [ɪ]?

The issue of vowel deletion in hiatus has been addressed by Casali (1997). Casali accounts for the restrictions on elision target within a constraint-based theory which claims that languages preferentially pre-serve phonological elements in certain prominent positions. He has produced evidences of preferential preservation of word-initial vowels over word-final vowels in hiatus context in a variety of languages.

Here, the deletion stem final [e] clearly shows the positional asymmetry attested to in the process of vowel deletion in Varhadi. Note that [e] deletion applies where two vowels are adjacent in the input, stem final [e] and stem initial [ɪ] but the deletion targets only the vowel in final position [e] and not [ɪ]. It is mainly because of its position in the syllable. Beckman (1998) argues segments in prominent position are resistant to alteration. The functional motivation for this resistance is clear; phonological contrast is preferentially maintained in the prominent positions as they take priority in perception.

Word-initial segments are often realised with more contrasts than segments at the end of the word. It is because in the prosodic domain initial segments in a wide variety of languages undergo a process of strengthening relative to their non-initial counterparts (Chao and Jun 2000). In the same manner vowel-initial words express contrast which is neutralised elsewhere, often resisting the reduction process.

The constraint account for this is ONSET which requires that *syllables must not begin with vowels*; it is satisfied only by syllables that have an initial consonant. Thus, the stem-final vowel [e] has been deleted *to avoid the onset-less syllable*. Here, therefore the constraint ONSET is ranked high to have onsets and to outrank MAX-IO and DEP-IO.

Thus, the constraint ranking is as follows. ONSET, *Vowel Hiatus, Suffix VFaith >> Max-IO.

Table 2

Input: /ɖe-ɪn/	ONSET	*Vowel Hiatus	SuffixVFaith	MAX-IO
a. ɖe.ɪn	*!	*		
☞b. ɖɪn				*
c. ɖen			*!	*

Though the candidate, b) incurs the violation of lower ranked MAX-IO, it satisfies the ONSET constraint which is ranked high in Varhadi and thus chosen as a winning candidate over a) and c). While candidate a) violates the higher ranked ONSET and *Vowel Hiatus, candidate c) fatally violates SuffixVFaith followed by one more violation of the MAX-IO constraint.

5.1.3 Word/Syllable Initial Second Consonant Deletion

Languages differ along the dimension of complexity of syllable margins. Universally, languages allow simple onsets but put restrictions on the occurrence of the complex onsets. Thus, complex onsets are said to be universally marked as compared to simple onsets. According to the standard syllabification model summarised in Harris (2011), deleting a consonant in clusters and word-final positions bring syllable structure in a less marked state. Removing a consonant from a cluster can open a previously closed syllable, simplify an onset, or reduce the size of a complex coda.

Many languages actively avoid complex onsets by using repairs such as vowel epenthesis and consonant deletion. Varhadi employs deletion as a repair to avoid complex onsets. In this variety second segment of a consonant cluster is deleted in word/syllable initial position. In syllabic terms, the deletion simplifies onset clusters.

Marathi	Varhadi	Gloss
a) /bʰ**r**əʃ.ʈa.tʃar/	[bʰəʃ.ʈa.tʃar]	‘Corruption’
b) /ʊ**r**ən/	[ʊən]	‘Rashes’
c) /ra:.ɖ**r**ə/	[r:aʈ]	‘Night’
d) /b**r**ah.mənɻ/	[ba.mən]	‘Brahmin’

In the above examples, (a), (b) and (d), show second consonant from the first syllable it deleted. (c) Shows a case where deletion is taking place in the second syllable as well.

The following tableau will show, how the initial cluster reduction results from *Cr and MAX-C being outranked by of a *COMPLEX ^{ONS}. Within the Optimality Theory framework, onset cluster reduction is attributed to the ranking of the markedness constraint *COMPLEX ^{ONS}, which does not allow complex onset, above another markedness constraint. *Cr prohibits [r] to occur as the second segment in a consonant cluster. The faithfulness constraint MAX-C prohibits deletion. *SG prohibits aspiration.

Table 3. *COMPLEX ^{ONS} ,*Cr >> MAX-C,*SG

Input: / bʰrəʃʈatʃar /	*COMPLEX ^{ONS}	*Cr	MAX-C	*SG
a. **bʰr**əʃ.ʈa.tʃar	*!	*		*
☞b. bʰəʃ.ʈa.tʃar			*	*
c. b**r**əʃ.ʈa.tʃar	*!	*		

In the above tableau a candidate a) fatally violates the higher ranked constraints *COMPLEX^{ONS} followed by *Cr and *SG thus, it cannot be a winning candidate. Candidate b) incurs two violations; one of MAX-C, and another of *SG a lower constraint. The deleted consonant, [r] is an input segment which does not have a correspondent in the output, therefore, the faithfulness constraints, MAX-C is violated when a cluster is reduced, but still, it is a winning candidate as it satisfies the higher ranked markedness constraint *COMPLEX ^{ONS}. Candidate c) violates all the constraints. It fatally violates *COMPLEX^{ONS}, followed by one more violation of *Cr.

The above examples such as **(/bʰr**əʃ.ʈa.tʃar/→ [**bʰ**əʃ.ʈa.tʃar] but not **/bʰr**əʃ.ʈa.tʃar/→ *[**r**əʃ.ʈa.tʃar] imply that it is not only onsets and codas but segments in other positions as well that show positional asymmetry. In the above examples of deletion, the second segment, C^2, [r] in the word/syllable initial onset consonant cluster, is subjected to deletion whereas the first segments C^1 [bʰ, ʊ, ʈ and b] in the word/syllable initial onset consonant cluster resist alteration. Above instances also distinctly unveil the fact that first segments in the word/syllable initial consonant cluster strongly resist alteration whereas segments in other positions are prone to alteration. Thus, it is evident that the alteration in segments is due to their position in the syllable. The /r/ deletion can be explained by sonority dispersion principle which is abbreviated as SDP (Clements 1990 as cited in Kenstowicz 1994: 283). The following scale shows what is the cross linguistic preference for the CV in terms of dispersion of sonority.

CV: **OV**>NV>LV>GV. [O=obstruent, N=Nasal, L= Liquid, G=Glide]

Thus, in order to obtain OV form OLV the L i.e. liquid /r/ is deleted. Hence, OLV→OV i.e. /bʰrə/ →[bʰə] by deleting the intervening liquid /r/ from the /bʰrə/.

Beckman (1998) mentions that phonological asymmetries do not constitute a random collection of positional oddities, but rather a closely related constellation of facts which cluster around a single generalisation: *segments in prominent position are resistant to alteration*. Here in C_1C_2 sequence, since the C_2 is in the non-prominent position, it is vulnerable to alteration, whereas C_1 is in the prominent position and thus strongly resists alteration. The functional motivation for this resistance is clear; phonological contrasts are preferentially maintained in prominent position as these positions are precisely those which take priority in perception.

According to Dogil (2007) sounds with higher degree of [1]stricture are stronger than the ones with a lower degree of the stricture. It is evident in their resistance as well as in their behaviour in general sound laws. The degree of stricture is illustrated as follows.

The degree of stricture:

Stops
Fricatives
Approximants
Vowels

It is also noted that the more complete stricture also implies higher segmental strength. It is hypothesised by the model that laterals allow less co-articulatory efforts than rhotics. The phonotactic asymmetry of the lateral cluster (lr- initial clusters and -rl final clusters cross-linguistically) also appears to support that rhotics are weaker than laterals.

Completeness of stricture:

Stops
Laterals
Rhotics

This view supports that the stops [b, bʰ, t̪] in prominent position i.e. first member of word initial onset clusters and approximant [ʋ] are stronger than the rhotics [r] i.e. second member of the word initial onset cluster, in all of the instances given above in the section, Word/Syllable Initial Second Consonant Deletion. Therefore, the stops resist alteration and do not undergo change like weaker rhotics.

[1] Stricture= narrowing

5.2 Assimilation and Positional Asymmetry

The present section aims to show positional licensing and asymmetry through the direction of the process of assimilation attested in Marathi. The cross-linguistic observation, that, the direction of assimilation is usually regressive bears the testimony for the hypothesis that, onsets are licensed and stronger, thus resists alteration comparing to segments in other positions. However, it is not true in progressive assimilation, as segments in the coda position do not prone to alteration; instead they resist and trigger alteration.

5.2.1 Defining Assimilation and its Types

Assimilation refers to a process in which one segment takes on the features of the neighboring segment. Assimilation is said to occur when a speech sound undergoes a change in articulation in connected speech, becoming more like another adjacent sound. The assimilation process is of three types: Progressive Assimilation, Regressive Assimilation and Reciprocal Assimilation. Assimilation in which the following sound affects the preceding sound is said to be regressive in nature and, therefore, it is called *Regressive Assimilation.* An assimilation in which the preceding sound affects the following sound, as in small, is said to be progressive in nature and is therefore is called *Progressive Assimilation.* The next section examines the issue of direction of assimilation and positional asymmetry in a comprehensive manner employing optimality theoretical framework.

5.2.3 Assimilatory Processes in Varhadi and Marathi

The assimilatory processes taken into consideration to show this positional licensing and asymmetry are palatalisation, voicing assimilation as regressive and retroflexion as progressive assimilation process. In regressive assimilation, codas prone to alteration owing to their positional weakness and markedness whereas segments in onset position resist and trigger alteration because they possess more positional privilege and strength than segments in coda position. In progressive assimilation, segment in onset position undergoes alteration despite having positional strength privilege, because the segment in coda position has more segmental strength than onset's positional strength.

5.2.4 Regressive Assimilation: Evidence for Positional Licensing Asymmetry and Salience

Regressive assimilation is defined as, as a phonological process in which, segment occurring in the *coda position tends to agree in terms of features with the following obstruent in the onset position*. There are three types of regressive assimilation observed in Marathi, i.e. palatalisation, voicing assimilation and devoicing.

5.2.4.1 Palatalization: Evidences from Marathi

Palatalisation is a major regressive assimilation process in both the varieties**.** The data given below strengthens the point that onsets are stronger, resist alteration and trigger assimilation, owing to their privileged position in the syllable whereas, codas are prone to alteration and agree in terms of place to the following onset due to their occurrence in the non-privileged and weaker position.

The dental stop /t̪/ in coda position takes on the features of palatal fricatives /c/ and /ɟ/ which are in onset position and becomes palatalized before it.

a) /hɑt̪/ ‘ hand’ + /**c**ɑ/ ‘POSS’ → [hɑ**cc**ɑ] ‘of hand’
b) /gɑt̪/ ‘ sing’ + /**ɟ**ɑ/ ‘SUFX’ → [gɑ**ɟɟ**ɑ] ‘keep singing’
c) /ɑt̪/ ‘ inside’ + **c**ɑ ‘POSS’ → [ɑ**cc**ɑ] ‘of inside’

5.2.4.1.1 Palatalisation: Evidence from Varhadi

The instances of Palatalization are also found in Varhadi. The voiceless dental stop /t̪/ and dental aspirated stop /t̪h/, aspirated retroflex stop /ʈh/ occurring in the coda position, takes on the feature of palatals when followed by a palatal in the onset position.

A. The aspirated dental stop /t̪ʰ/ and aspirated retroflex stop /ʈʰ/ becomes /c/ before /c / in Varhadi.

a) /ʈɪt̪ʰe/ ‘there’ + /cɑ/ ‘POSS’ → /ʈɪt̪ʰ/ + /**c**ɑ/ →]ʈɪ**cc**ɑ] ‘of there’.
b) /kuʈʰe/ ‘where’ + /cɑ/ ‘POSS’ → /kuʈʰ/ +/**c**ɑ/ → [ku**cc**ɑ] ‘of where’.
c) /ɪt̪ʰe/ ‘here’ + /cɑ/ ‘POSS’ → /ɪt̪ʰ/ +/**c**ɑ/ → [ɪ**cc**ɑ] ‘of here’.

B. The dental /t̪/, aspirated retroflex stop /ʈʰ/ and aspirated dental stop /t̪ʰ/ in coda position are palatalized when they are followed by a palatal /**ɟ**/, /c/ and /c/ respectively in the onset position in Varhadi.

a) /kʰɑt̪/ ‘eat’ + /**ɟ**aj/ ‘Sufx’ → /kʰɑt̪/ + /**ɟ**ay/ → [kʰɑ**ɟɟ**ɑj] ‘keep eating’
b) /kuʈʰe/ ‘where’ + /cɑ/ ‘POSS’ → /kuʈʰ/ + /**c**ɑ/ → [ku**cc**ɑ] ‘of where’.
c) /ʈɪt̪ʰe/ ‘there’ + /cɑ/ ‘POSS’→ /ʈɪt̪ʰ/ + /**c**ɑ/ → [ʈɪ**cc**ɑ] ‘of there’.

The ranking of faithfulness and markedness constraint which account for the process of palatalisation in Marathi demands a deeper engagement. Here the ranking is IDOns, Agree >> IDPlace. It implies that high-ranking onset faithfulness constraints permit a broad range of phonological contrasts in onset position, and they render onsets resistant to many phonological processes. Codas, lacking release, are accorded no special faithfulness properties; consequently,

codas often display a reduced segmental inventory, relative to onsets, and often undergo assimilation.

Table no.4 Palatalization IDOns, Agree Place >> IDPlace

Input: / haʈ+ca /	IDOns	AgreePlace	IDPlace
a. ha**ʈc**a		*!	
☞b. ha**cc**a			*
c. ha**ʈʈ**a	*!		*

In the above tableau, the candidate a) violates AgreePlace which requires consonants to be agreed in the place feature. The candidate c) gravely violates the higher ranked IDons which requires onset to be faithful to underlying specification. As the candidate b) satisfies the higher ranked IDons and Agree place, at the cost of violating ranked IDPlace, is a winning candidate.

5.2.4.2 Voicing Assimilation: Evidence for Onset Coda Asymmetry

The following examples of voicing assimilation also show regressive assimilation in Marathi: Voiceless plosives in the *coda position takes on the voicing feature from voiced plosive when it is followed by voiced plosive in onset position and vice versa.* It also supports the onset coda debate and serves as the clear instance of onset coda licensing and positional asymmetry in the distribution of the segments. In the following examples / ʈ/, /k/ and /c/ are showing assimilation with their following adjacent sound.

Voicing and Positional Asymmetry

a) /bʰɑ**ʈ**/ ‘rice’ + /**b**ʰɑdʒi/ ‘curry’ → [ba**ɖb**hdʒi] ‘rice n curry’
b) /mə**ʈ**/ ‘vote’ + /**ɖ**ɑtɑ/ ‘doner’ → [mə**ɖɖ**ɑʈɑ] ‘voter’
c) /hə**k**/ ‘right’ + /**ɖ**ɑr/ ‘SUFX’ → [hə**gd**ɑr] ‘rightful’
d) /e**k**/ ‘one’ + /**ɖ**ɑ/ ‘times’ → [e**gɖ**a] ‘once’
e) /pɑ**c**/ ‘five’ + /**ɖ**a/ ‘times’ → [pa**jɖ**a(r)] ‘five times’
f) /ʋa**c**/ ‘read’ + /**j**ərɑ/ ‘a bit’ → [wɑ**jj**ərɑ] ‘read a bit‘

Table no. 5. Direction of voicing Assimilation in Marathi (IDons, Agree voice >> IDVoice)

Input: / hək+ɖar /	IDOns	AgreeVoice	IDVoice
a. hək.ɖar		*!	
☞ b. həg.ɖar			*
c. hək.ʈar	*!		*

In the above tableaue, candidate (a) violates AgreeVoice because it has an obstruent cluster that is not uniform in voicing. The cluster in a candidate (c) is uniformly voiceless, and so satisfies AgreeVoice; but it has done this at the cost of being unfaithful to the onset's laryngeal specification, violating IDOns and IDVoice. Thus, both the candidates (a) and (c) will lose to (b), where the coda has assimilated to the onset, satisfying both AgreeVoice and IDOns and violating only IDVoice.

Lombardi (1999) observes that the constraint AGREE requires obstruent clusters to agree in voicing. This constraint will, of course, be in conflict with the Faithfulness constraints, which prefer underlying specifications to remain the same. But not all faithfulness constraints are equal. The subset relationship between IDOns and IDVoice has the result that it is more significant to be faithful to onset laryngeal specification than to the coda (or elsewhere) specification. Thus, where the members of an input cluster disagree in voicing, the only way to satisfy the AGREE constraint will be for the coda to get assimilated to the voicing of the onset.

5.2.4.3 Devoicing and Positional Asymmetry

Devoicing, one of the process of retroflexion in Marathi, also bears the testimony for the fact that codas are weaker than onsets and thus tend to agree with underlying specification of onset. In the following instances from Marathi, voiced segments in the coda position taking on the features of Voiceless segments. It also adds support to positional privilege view.

a) /ɑ**ɟ**/ 'today' + /**c**ɑ/ 'POSS' → [ɑ**cc**ɑ] 'of today'
b) /ku**ɟ**/ ''rot + /**k**ɑ/ 'SUFX' → [ku**ck**ɑ] 'rotten'
c) /nɑ**gp**ur/'name of a city' → [nɑ**kp**ur] 'name of a city'
d) /pɑ**ɳ**/ 'water' +/**c**əṭ/ 'SUFX' → [pɑ**nc**əṭ] 'tasteless'

Table no.6 Assimilation to Voiceless-ness in Marathi (AgreeVoice, IDOns >> IDVoice)

Input: / ku**ɟ**.ka/	AgreeVoice	IDOns	IDLar
a. ku**ɟ**.ka	*!		
☞ b. kuc.ka			*
c. ku**ɟ**.ga		*!	*

Candidate (a) violates AgreeVoice, since the cluster does not agree in voicing. Candidate (c), with progressive assimilation, obeys AgreeVoice, but has done so at the expense of violating both IDOns and IDLar, as it has voiced an underlying voiceless onset. Therefore, the optimal candidate will be (b). By devoicing the coda, this candidate has achieved the satisfaction of

AgreeVoice. The whole cluster is voiceless, and it has gained this by violating only IDLAR (the coda has changed from voiced to voiceless) but not IDOns (the onset has not changed). This proves the point that segments appearing in the onset position are stronger and triggers assimilation and the features associated with coda position are neutralised because of their weak position in the syllable.

The reason behind why the segments in coda position are prone to alteration whereas segments in onset position resist alteration is rooted in the concept of strength. It is generally acknowledged among phonologists that different positions within the word often behave differently depending on the relative strength of that context. For example, contexts such as the initial position of a syllable, foot, and word have been found cross-linguistically to favour the preservation of phonological contrasts and resist neutralisation processes (e.g., Beckman 1998; Lombardi 1999; de Lacy 2002; Smith 2002). Those contexts are judged to be strong, perceptually salient, or prominent. While other contexts can also support phonological contrasts, they are considered to be weaker because they are more vulnerable to neutralisation processes that merge underlying distinctions. Some of those weaker contexts include syllable-final, word-final, and foot-medial positions. Nooteboom's (1981) also supports the view that, word onsets should be more resistant to phonological change than word endings.

5.2.5 Progressive Assimilation: Evidence for Positional Asymmetry

Progressive assimilation refers to a phonological process in which segment in the onset position takes on the feature of the segment in the coda position. Generally, the process of assimilation is regressive, i.e. the segment in the coda position takes on the features of the segment in the onset position; as onsets are in the privileged position. This positional privilege plays the crucial role in the direction of assimilation. However, it is interesting to note that, there exist a class of segments in the consonant inventory of Marathi which goes against the well-established view of positional privilege and positional faithfulness. The class of segment which shows this phenomenon is retroflex. In the process of retroflexion, the retroflex, in spite of occurring in the coda position resist alteration, do not take on the feature of the following onset rather it triggers the alteration.

5.2.5.1 Retroflexion as Progressive Assimilation: Evidence from Marathi

The following examples of retroflexion which show progressive assimilation are observed in Marathi**.** Here, the retroflex segments occurring in the coda position resist alteration, and do not agree with the following onset in terms of place or voice rather it triggers assimilation.

The onset, alveolar /l/ in the onset position takes on the feature of the coda retroflex/ɭ/

a) /t̪əɭ/ ‘fry’+ /le/ ‘PERF-NSG’ → [t̪əɭɭe]’fried’
b) /məɭ/ ‘dirt + /le/ ‘PERF-NSG’ → [məɭɭe] ‘became dirty’
c) /pəɭ/ ‘fall’ +/le/ ‘PERF-NSG’ → [pəɭɭe] ‘fell down’

The onset, Dental stop /t̪/ takes on features of the coda, retroflex /ʈ/

a) /kaʈ/ ‘cut’ + /t̪ana/ ‘PERF-NON-FIN’ → [kaʈʈana]’while cutting’
b) /waʈ/ ‘think’+ /t̪ə/ ‘IMPF-3-NSG’] → [waʈʈə] ‘I think’
c) /daʈ/ ‘scold’+ /t̪ana/ ‘PERF-NON-FIN’] → [daʈʈana] ‘while scolding’

Table 7 (AgreePlace, IDOns >> IDPlace)

Input: / kaʈ. t̪ana/	AgreePlace	IDOns	IDPlace
a. kaʈ. t̪ana	*!		
☞ b. kaʈ.ʈana		*	*
c. kat̪.ʈana	*!	*	*

Candidate (a) violates AgreePlace, since the cluster does not agree in place. Candidate (c), violates all the three constraints, AgreePlace, IDOns and IDPlace. Candidate (b) is optimal as it violates two lower rank constraints. It clearly shows in the process of retroflexion, the retroflex, in spite of occurring in the coda position resist alteration, do not take on the feature of the following onset rather it triggers the alteration.

Thus, these directions of Assimilation clearly exhibit Onset coda Licensing and Positional Asymmetry. In brief, the cross-linguistic observation that the direction of assimilation is normally regressive (Jun 1995, Beckman 1998, Lombardi 1999,) bears the testimony for the fact that, onsets are licensed and stronger and thus resist alteration comparing to the coda. In regressive assimilation, at the interface of segments in coda position and segments in onset position, codas undergo alteration owing to their positional weakness and markedness whereas segments in onset position resist and trigger alteration because they possess more positional privilege and strength than segments in coda position. However, in progressive assimilation, a segment in onset position undergoes alteration despite having positional strength privilege, because the retroflex segment in coda position seems to have more perceptual salience than segments in the onset position.

6. Conclusion

The above discussion on positional asymmetry and onset coda licensing associated with all the instances of deletion and Assimilation is concluded as follows.

6.1 Onset Coda and Positional Asymmetry in Deletion

Positional asymmetry and onset coda licensing are observed in the processes of deletion as in 1) Coda deletion 2) Vowel deletion and 3) C_2 deletion in onset cluster. It suggests that while the codas undergo a change that Onsets are retained. Certain positions and segment types such as onsets, initial syllables which are considered perceptually prominent are more resistant to phonological changes, compared to their less prominent counterparts such as codas and non-initial syllables. Onsets are licensed and preserved to produce less marked structure whereas codas are not licensed and deleted to produce the less marked structure. Onset-less syllables are not licensed and preferred, but coda-less syllables are licensed and preferred. Syllables must not begin with a vowel, e.g. *[d̪e.ɪn]; but vowels in syllable final position are allowed in Varhadi e.g. ([san.ɖə.ʊ.ʈ**a:**] etc.). It shows clear positional asymmetry for vowels. The present positional licensing and asymmetry also shows that there is conflict/interaction between two grammars/constraints: markedness and faithfulness. For example, marked structures such as 1. Syllables with codas, 2. Vowel sequencing and 3. Syllables with complex onsets are violated by markedness for being marked and when languages employ repair strategies to make them less marked as 1. open or coda-less syllable, 2. no vowel sequencing and 3. No complex onsets, the faithfulness constraints are violated. In Varhadi the Markedness constraints (*COMPLEX ^{ONS}, NO-CODA and ONSET) are higher ranked to faithfulness constraints (MAX-IO, MAX-C) whereas, in Marathi, faithfulness constraints are higher ranked to markedness. This reverse ranking results in blocking of deletion process in Marathi.

6.2 Onset Coda and Positional Asymmetry in Assimilation

In regressive assimilation (palatalization and voicing assimilation), the segment which occurs in the coda position tends to agree regarding feature [voice] with the following segment in the onset position proves the point that positional asymmetry is instrumental in the functioning of the segmental distribution. It also proves that onsets are stronger than codas because the onsets trigger and resist assimilation whereas the codas are prone to assimilation. Though the phenomenon is observed cross-linguistically, the instances of retroflexion, progressive assimilation in Marathi goes against the well-established view of positional faithfulness and positional privilege and add new dimension to the debate on onset coda and positional asymmetries.

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