Chapter: Four

A Phonological account of Assimilation in Optimality theoretic perspective and strength asymmetries

4.0 Introduction

The phonological process of assimilation can be related to strength asymmetries. Strength can either be treated as a form of perceptual salience or intrinsic property embedded in a particular segment. Thus, it becomes uncertain whether it is best characterized as a phonetic or a phonological property. As, for instance, Steriades’ (1997) ‘Licensing by cue’ claims that features are licensed preferentially in positions in which phonetic conditions make them maximally robust perceptually, and are likewise eschewed in positions where they would be less perceptually robust, and hence easily overlooked. In the same fashion ‘Integrated models of phonetics and phonology’ (Flemming and Kirchner 1998) holds the view that phonological patterns of neutralization are derived directly from phonetic factors, whether acoustic or articulatory in nature. In opposition to these views of phonetic correlates to phonological patterning Beckman (1997) puts forward his positional faithfulness theory. According to this theory the intrinsic strength of segments are instrumental in determining the way they pattern with other segments, both dynamically and distributionally and segmental alternations involve no phonetic motivations. Instead it views strength differences as a reflection of the asymmetrical relations holding between units in a representation.

In this chapter I am trying to analyze the phonological processes of assimilation in Assamese, an Indo Aryan language and thereby trying to show that there lies a phonological pattern in the sequencing and organization of segments in a phonological string. Assamese is an Indo Aryan language spoken in the north eastern part of India. It is the official language of the state of Assam and one of the 22 languages recognized by the constitution of India. Assamese is surrounded by languages of Tibeto Berman and Austro Asiatic families. Goswami (1965) claims that Assamese is an Indo Aryan language derived from Magadhi Prakrit and its Apabhramsa dialects which had been the immediate parents of all the main Indo Aryan languages such as Bengali, Oriya, languages spoken in Bihar region etc.

The process of assimilation in this chapter is interpreted from various perspectives such as positional faithfulness theory, perceptual account and P-map theory and OT framework. Here
the main focus lies on the regressive voicing assimilation in Assamese and its analysis in the light of assimilatory asymmetry in terms of segment sequencing. On the basis of assimilatory asymmetry, this chapter aims at examining whether strong or weak licensing capacity is an inherent abstract property assigned by UG irrespective of languages or conditioned by phonetic factors.

4.1 Assimilation from the perspective of positional faithfulness theory, perceptual account and P-map theory: Evidence from Assamese

Assimilation, a linguistic process, in which a particular segment takes on the feature from its neighbouring segment, can be analyzed from various perspectives ranging from positional faithfulness theory to P-map theory in order to build a hypotheses concerning the representation and patterning of speech sounds. Nevertheless, the phenomenon of assimilation can throw ample light upon the physical motivation of phonological substitutions and thereby establishing the point that although phonological substitution is considered as mental operation and not a mere reflection of peripheral motor constraint, yet it is clearly motivated by the physical character of speech along with its neuro-physiological, morphological, mechanical, temporal and acoustic properties (Stampe, David. 1979). There lies a physically definable connection between a phonological substitute and its context. In the process of assimilation, the substitute takes on a feature of the context unlike dissimilation in which the substitute loses a feature of the context.

This study also takes in to consideration the role played by position in a syllabic domain and the perception in triggering the process of assimilation. An attempt has been made in this study to investigate the process of assimilation from two perspectives that are, Beckman’s positional view and Donca Steriade’s perceptual account of P-map theory.

The positional faithfulness view of Beckman (1998) emphasizes upon the positions which play a crucial role in the patterning and the distribution of sounds. This model perceives strong or weak licensing capacity as an inherent abstract property of a given position supplied by UG, irrespective of language specific phonetic details. In contrast, Steriade’s (1997) ‘Licensing by cue’ focuses more upon the perceptual cues rather than the positional privilege and moreover these perceptual cues are assigned a phonetic justification. This method is closely related with ‘Integrated models of Phonetics and Phonology’ (Flemming and
Kirchner 1998) which holds the view that phonological patterns of neutralization are derived directly from phonetic factors, whether acoustic or articulatory in nature. As, for instance, Flemming derives pattern of vowel reduction from the decreased duration of unstressed syllables resulting in an unacceptable amount of effort necessary to reach articulatory targets for the production of non-high vowels. These two approaches can be of utmost significance in the analysis of assimilation process in Assamese, an Indo Aryan language, spoken in the north eastern part of India. However, before going into the discussion of the Assamese data in detail, I am going to discuss in a nutshell the two major approaches advocated by Beckman and Steriade below:

4.1.1 Beckman, Positional faithfulness view and the process of assimilation:

Beckman (1998) has talked about positional privilege in phonology. There are some linguistic positions such as root initial syllables, stressed syllables, syllable onsets, roots, long vowels etc which enjoy special perceptual advantage in the processing system of the languages via psycholinguistic or phonetic prominence over the complement of non-privileged positions which include non-initial syllables, unstressed syllables, syllable codas, affixes, clitics, function words and short vowels etc. The privileged positions can be divided into broader categories: psycholinguistic prominence and phonetic prominence. Whereas the former refers to those positions bearing the heaviest burden of lexical storage, lexical storage and retrieval, and processing: root initial syllables, roots and final syllables to a degree (Steriade, 1993) phonetic prominence take in to consideration different physical cues that include increased duration or amplitude, pitch extreme, release bursts, etc (Kingston 1985, 1990; Steriade 1993c, 1995 and Kirchner 1996). The linguistic positions such as stressed syllables, syllable onsets etc are characterized by phonetic prominence.

Positional privilege is not only determined by perceptual grounds, rather phonological asymmetries can be assigned to the cause of positional privilege which includes positional maintenance of contrasts that are neutralized elsewhere, positional triggering of phonological processes and positional resistance to processes which apply elsewhere. Pure prominence approach (Beckman 1998; Zoll 1998) is not primarily concerned with the phonetic motivations for the alternations they model. This leaves phonology with the task of encoding the physical properties within some formal theory of representation, derivation or constraint ranking. It does not directly refer to any physical aspects of speech in the explanation of strength relations. Instead it views strength differences as a reflection of the asymmetrical
relations holding between units in a representation. As, for instance, in cases of positional neutralization some contrast or contrasts are maintained only in a prominent position and outside that position the inventory is less marked and the contrast in question is neutralised in favour of an unmarked value. The reverse pattern in which the full inventory appears in non prominent position and an unmarked subset is restricted to prominent position, is rarely attested crosslinguistically. As, for instance, it is the perceptually the non prominent position which undergoes reduction, while the prominent positions maintain a full range of contrasts. While taking in to account the positional privilege in respect to the triggering of phonological processes it has been observed that segments appearing in privileged positions frequently function as the trigger of phonological processes such as vowel harmony, place assimilation, laryngeal feature assimilation and dissimilation of various sorts. Positional triggering is crosslinguistically found in consonant clusters comprising of a coda and a following onset, which generally includes the instances of place assimilation (Steriade 1982, 1993c, 1995; Ito 1986, 1989; Padgett 1991, 1995a, 1996a,c) and laryngeal assimilation (Kingston 1985, 1990; Cho 1990; Lombardi 1991, 1995a, 1996a,c).

As far as the process of assimilation is concerned it can be correlated with the positional domains in a syllable or in a word. Beckman (1998) claims that the phonological asymmetries, especially manifested in onset coda asymmetries constitute a random collection of positional oddities, but revolve around single generalization: segments in prominent positions resist alternation. The functional motivation for this resistance is vivid as phonological contrasts are preferentially maintained in prominent positions because these positions are exactly those which take priority in perception and processing. If we would like to support the parlance of prosodic licensing theories of featural distribution (Kingston 1985, Ito 1986, Goldsmith 1989, Lombardi 1981, Wiltshire 1992) onsets are found to be strong licensors whereas coda consonants display a pervasive pattern of unfaithfulness to underlying structure often undergoing assimilation to a following onset.

4.1.2 Steriade, Licensing by Cue, P-map theory and the process of assimilation:

In opposition to the Pure prominence model (1998) which tries to look at the strong or weak licensing capacity as an inherent abstract property of a given position supplied by UG, irrespective of language specific phonetic details, Steriade holds her argument that perceptual factors are responsible for assigning a particular position strong or weak. In other words, features are licensed in those positions in which phonetic conditions make them maximally
robust and perceptually prominent. Steriade (2000) claims that the perception of phonological similarity is influenced by auditory factors such as the availability of cues to the relevant contrast: the terms of poorly cued contrasts being more similar than those of a better cued contrast. By comparing the major place and apical contrast Steriade draws the resolution that both contrasts are distinct on the ground that their perceptual correlates have a different contextual distribution. Steriade (2000) holds the view that assimilation for any feature F targets positions in which the F contrast, if realized, would be less salient. According to her, perceptual factors are responsible for determining not only the direction of assimilation but also the likelihood that it will occur, relying on her findings that different CC clusters give rise to considerably diverse rates of place assimilation, which again depend on the salience of place contrast in each one of the cluster’s components. Assimilation is rare in those cases in which each C carries cues that allow reliable identification of its place category and in contrast, assimilation will occur if one C lacks its primary place correlates. The observation that regressive assimilatory direction in regard to place features can be assigned to perceptual factors can be traced back to the studies conducted by Fujimura, Macchi and Streeter (1978) Ohala (1990) and Jun (1995). Fujimura’s experiments drive home the point that CV transitions cannot be assigned to asymmetry in coarticulation. This finding helps in justifying the hypothesis that major place articulation targets C1 in VC1 C2 cluster simply because C1’s place cues are less well attended to and hence a place modified C1 is a lesser departure from the input than an altered C2.

If we take in to our consideration only the major place assimilation, three interpretations concerning the directionality are possible, as outlined by Fujiama et al. (1978). The first interpretation claims that CV transitions are dominant in the perception of major place contrasts, but not necessarily for other contrasts. Another view is the standard syllable based theory (Beckman 1998, Jun 1995) which tries to argue that the direction of assimilation is regressive because the target C1 is a coda and the target C2 is an onset. According to this view syllabic positions control the perceptibility as the listeners pay more attention to onsets than to codas. The third interpretation is that the information encoded in C2 is dominant simply because C2 is more recent. Nevertheless what can be observed is that the direction of place assimilation is contrast specific. Apical assimilation targets C2 while major place assimilation targets C1. In both cases the consonant undergoing F- assimilation for any F- possesses fewer or weaker F cues. of dissimilarity (cf. Casali 1997, Beckman 1998 and Steriade 1994, 1995). Even features are responsible for the impression of dissimilarity (Walten and Montgomery
1975). As, for instance, stricture differences ([+/- sonorant], [+/-continuant], [+/- consonantal]) play a crucial role in generating dissimilarity judgements. Assimilation in VCiCjV is regressive for the features like voicing and for major place contrast, whose primary cues reside in the post release interval as CV transitions render such contrasts more distinctive in the prevocalic Cj. In pre V position voicing carries its primary cues and it is the position where voicing differences will be judged more dissimilar. However the analysis of regressive assimilation appears similar to the syllable based positional faithfulness solution presented in Lombardi (1999).

The process of assimilation can also be analysed from the P-map approach advocated by Steriade. The rationale for P-map proposal is that attested phonological systems display less diversity than predicted versions of Optimality Theory (OT) in which correspondence and phonotactic constraints interact freely. The main function of P-map lies in guiding the speaker in search of the minimal input deformation that solves a phonotactic problem. In other words P-map projects and arranges ranking among the correspondence constraints. P-map approach is influenced by the view that some positions are instrumental in the perception of dissimilarity (cf. Casali 1997, Beckman 1998 and Steriade 1994, 1995). Even features are responsible for the impression of dissimilarity (Walten and Montgomery 1975). As, for instance, stricture differences ([+/- sonorant], [+/-continuant], [+/- consonantal]) play a crucial role in generating dissimilarity judgements. The P-map hypothesis tries to articulate the view that it is the knowledge of similarity which is instrumental in controlling grammatical structure, by means of projecting correspondence constraints and determining their rankings and in this regard it makes a deviation from Ohala’s ‘listener as source of sound change’ hypothesis (cf. Ohala 1981, 1990, 1993; cf. also Blevins and Gerrett 1998, 1999 for recent work). Whereas Ohala is of the view that more confusable contrasts are more likely to be affected by sound change than confusables ones, but the P-map theory propounds the assumption that speakers are actively concerned with avoiding perceptible deviations from established lexical norms. This theory exhibits certain affinities with the notion of phonological change put forward by Lindblom et al. 1995 (cf. also Hura, Lindblom and Diehl 1992 and Kohler 1990). The convergence between similarity and confusability judgments can serve as a factor in drawing the resolution that the speakers of a particular language preserve their experiences with confusion in the form of broader and more abstract knowledge, which can be recovered as similarity judgments. In the backdrop of this assumption Steriade (2001)
predicts correlation between perceived similarity and the choice of phonological modification in several positions in regard to voicing and place assimilation, voice neutralization etc. The resolution of underlying phonotactic violation or the preference for a particular solution can be assigned to the notion that the least distinctive contrast is the one which is sacrificed by ranking the correspondence constraints via P-map. In the words of Steriade (2001) P-map is a mental representation that captures the degree of distinctiveness of different contrasts in various positions. The two principles underlying the P-map, that are, absolute confusability and relative confusability adhere to the fact that distinctiveness is affected by the syntagmatic context, and secondly distinctiveness is a property pertaining to contrasts. As, for instance, voicing contrast is asymmetrically perceived in all positions, which has major implications on the phonology of voicing.

However the P-map theory advocated by Steriade(2001) holds the claim that the lacuna of positional faithfulness theory lies in the inability to identify the relevant factor distinguishing the salient from non salient positions: the availability of contrast specific perceptual correlates. As far as the hypotheses of P-map is concerned regarding the occurrence of assimilation, assimilation for any feature F will spare the positions in which F contrasts are more distinctive. It further claims that triggers of assimilation are segments bearing a better cued F value than that borne by the targets of assimilation.

4.2 The process of Assimilation in Assamese

In this section I am going to describe various assimilatory processes evident in Assamese and trying to represent these processes through the methods employed in generative phonology as well as autosegmental phonology and OT model.

Assimilation in SPE (Chomsky and Halle, 1968) is considered literally, that is, one segment is altered in its feature values so as to become more similar to a nearby segment. However in the realm of autosegmental phonology (Goldsmith, 1976, 1979) the notion of assimilation has attained another dimension as well as perspective of observation. In autosegmental phonology assimilation is expressed by spreading rules, the main motivation of which lies in expanding the temporal domains of autosegments by adding association lines, often deleting displaced autosegments in the process. It is the normal case for languages to have homogeneous voice clusters, which are created by spreading both values of the [+/-voice] feature over the entire
cluster, usually in a regressive fashion. Assamese exhibits the instances of regressive voicing assimilation, in which it is seen that the segment occurring in the coda position tends to agree in terms of feature [voice] with the following voiced obstruent in the onset position. But what is interesting to note here is that this regressive voicing assimilation is blocked by nasals and liquids.

4.2.1 Voicing assimilation in Assamese:

(4/1)

\[
t \rightarrow d /-d, b, g, d^h, g^h, z
\]

xat din - xaddin (seven days)

hat dig^h^ol- haddig^h^ol (powerful)

xat bai- xadbai (seven days)

hat bilak - hadbilak (hands)

xat gun - xadgun (seven times)

p^h^ut g^h^uli - p^h^udg^h^uli (bright evening)

pab^h^ut g^h^ula - pab^h^udg^h^ula (baseless)

xat g^b^ui- xad g^b^ui (seven households)

xat zon - xadzon (the pious man)

jab^h^ut zib^n - jab^h^udzib^n (life long)

hat b^h^uci - had b^h^uci (hands and feet)

hat d^h^owa - had d^h^owa (to wash hands)

But, what is interesting to note here is that /t/ does not assimilate in terms of feature [voice] whenever it is followed by a word beginning with nasals and liquids as exemplified from the following examples in (4/2)
(4/2)

\[ t \rightarrow t / n, m, l, r \]

\[ \text{xat mah} - \text{katmah} *\text{xadmah} \quad \text{(seven months)} \]
\[ \text{xat ndi} - \text{kat ndi} *\text{xad ndi} \quad \text{(seven rivers)} \]
\[ \text{xat jati} - \text{kat jati} *\text{xad jati} \quad \text{(seven nights)} \]
\[ \text{xat ndom} - \text{kat ndom} *\text{xad ndom} \quad \text{(seven varieties)} \]
\[ \text{hat lau} - \text{kat lla} *\text{had lla} \quad \text{(nature of a thief)} \]

(4/3)

\[ p \rightarrow b / d, b^h, d^h, z, g \]

\[ \text{gap dija} - \text{gab dija} \quad \text{(to hide something)} \]
\[ \text{zap dile} - \text{zab dile} \quad \text{(jumped)} \]
\[ \text{b^h ap bu} - \text{b^h ab bu} \quad \text{(feelings)} \]
\[ \text{kap bu} - \text{kab bu} \quad \text{(cups)} \]
\[ d^h up d^h una - d^h ub d^h una \quad \text{(incandescent lamps)} \]
\[ up zasi - ubzasi \quad \text{(at one's own will)} \]
\[ d^h up gu - d^h ub gu \quad \text{(remaining of incandescent lights)} \]
\[ \text{kap b^h una} - \text{kab b^h una} \quad \text{(filled with cups)} \]

But /p/ does not become /b/ when it is followed by liquids and nasals, as shown below:

(4/4)

\[ \text{kap ndua manuh} - \text{kap ndua manuh} *\text{kap ndua manuh} \quad \text{(snake charmer)} \]
\[ \text{bap ma} - \text{bap ma} *\text{bab ma} \quad \text{(father died)} \]
\[ \text{kap laa} - \text{kap laa} *\text{kap laa} \quad \text{(shaking of the cups)} \]
\[ \text{sap la} - \text{sap la} *\text{sap la} \quad \text{(leaving the mark)} \]
**(4/5)**

\[
\begin{align*}
\text{k} & \rightarrow \text{g/- d, b, dh, z, g, gh} \\
\text{bak debi – bag debi} & \quad \text{(goddess saraswati)} \\
\text{xak bu – xag bu} & \quad \text{(leafy vegetables)} \\
\text{xak d\text{\textsuperscript{h}uwa} – xag d\text{\textsuperscript{h}uwa}} & \quad \text{(to wash the leafy vegetables)} \\
\text{dak g\text{\textsuperscript{h}u} – dagg\text{\textsuperscript{h}u}i} & \quad \text{(post office)} \\
\text{pak g\text{\textsuperscript{h}u} – pagg\text{\textsuperscript{h}u}i} & \quad \text{(kitchen)} \\
\text{mad\text{\textsuperscript{ok}} m\text{\textsuperscript{d}mbj\text{\textsuperscript{o}}} – madm\text{\textsuperscript{g}} m\text{\textsuperscript{d}mbj\text{\textsuperscript{o}}} \quad \text{(intoxicated things)} } \\
\text{hak dija – hag dija} & \quad \text{(to prevent)} \\
\text{xak b\text{\textsuperscript{h}au} – xag b\text{\textsuperscript{h}au}} & \quad \text{(weight of leafy vegetables)} \\
\text{ah\text{\textsuperscript{ok}} ge – ah\text{\textsuperscript{pgge}}} & \quad \text{(come)} \\
\text{b\text{\textsuperscript{h}uk} \text{\textsuperscript{z}au} – \text{b\text{\textsuperscript{h}g} \text{\textsuperscript{z}au}}} & \quad \text{(fever caused by hunger)}
\end{align*}
\]

But the sound /k/ never assimilates in terms of feature [voice] when it is followed by any nasal or liquid sound in Assamese, as shown below:

**(4/6)**

\[
\begin{align*}
\text{kak lu\text{\textsuperscript{a}} – kak lu\text{\textsuperscript{a}} \ *kag lu\text{\textsuperscript{a}}} & \quad \text{(whom do you take?)} \\
\text{b\text{\textsuperscript{h}uk} \text{\textsuperscript{t}oi} \text{\textsuperscript{g}ol} – b\text{\textsuperscript{h}uk} \text{\textsuperscript{t}oi} \text{\textsuperscript{g}ol} \ *b\text{\textsuperscript{h}ug} \text{\textsuperscript{t}oi} \text{\textsuperscript{g}ol}} & \quad \text{(still feeling hungry)} \\
\text{kak nok\text{\textsuperscript{om}} – kak nok\text{\textsuperscript{om}} \ *kag nok\text{\textsuperscript{om}}} & \quad \text{(whom should not be told?)} \\
\text{b\text{\textsuperscript{h}uk} m\text{\textsuperscript{t}u\text{\textsuperscript{a}}} – b\text{\textsuperscript{h}uk} m\text{\textsuperscript{t}u\text{\textsuperscript{a}}} \ *b\text{\textsuperscript{h}ug} m\text{\textsuperscript{t}u\text{\textsuperscript{a}}}} & \quad \text{(my hunger)}
\end{align*}
\]

**(4/7)**

\[
\begin{align*}
\text{s} & \rightarrow \text{z / - g, b, gh, h, d, h,z} \\
\text{bis gun – biz gun} & \quad \text{(twenty times)}
\end{align*}
\]
bis ba'U - biz ba'U  (twenty times)

bis dugun - biz dugun  (twenty in to two)

bis g'ra - biz g'ra  (twenty households)

mas d'nu - maz d'nu  (to catch fish)

bis b'hU - biz b'hU  (twenty weight)

bis zon - biz zon  (twenty persons)

/l/ resists assimilation in terms of feature [voice] when it is followed by any liquid or nasal sound in Assamese, as shown below:

(4/8)

bas nai - bas nai *baz nai  (no restriction)

bis mane - bis mane *biz mane  (twenty means)

mas luwa - mas luwa *mas luwa  (to take fish)

bis mokom - bis mokom *biz mokom  (twenty varieties)

(4/9)

f \rightarrow b\textsuperscript{h} / b, b\textsuperscript{h}, g, g\textsuperscript{h}, d, d\textsuperscript{h}, z

bunf bu'U - bunf b'U  (ices)

bunf b'hU - bunf b'hU  (weight of ice)

kuf bilak - kub\textsuperscript{h} bilak  (phlegm)

suf guti - suf guti  (spices)

bunf g'ula - bunf b'ula  (mixed with ice)

bunf d'oka - bunf d'oka  (to cover ice)

bunf d'obja - bunf d'obja  (substance of ice)
It is here to be noted that the sound /f/ never changes its feature [voice] when it is followed by any nasals or liquids, as shown in the data from Assamese:

(4/10)

\[
\begin{align*}
\text{kof nai - kof nai} & \quad *\text{kov nai} \\
\text{(no phlegm)} & \\
\text{bnaf favar - bnaf favar} & \quad *\text{fnaf favar} \\
\text{(remaining of ice)} & \\
\text{bnaf lua - bnaf lua} & \quad *\text{bnaf lua} \\
\text{(to take ice)} & \\
\text{bnaf mane - bnaf mane} & \quad *\text{bnaf mane} \\
\text{(meaning of ice)} &
\end{align*}
\]

But /x/ never assimilates in terms of feature [voice] when followed by any voiced segment

(4/11)

\[
\begin{align*}
*\text{x} & \rightarrow \text{x} \\
\text{bax gol - bax gol} & \quad (to obey) \\
\text{bax gihgn - bax gihgn} & \quad (home) \\
\text{bix bwa - bix bwa} & \quad (pains) \\
\text{ax dija - ax dija} & \quad (to give chance) \\
\text{bax b"ummi - bax b"ummi} & \quad (living place) \\
\text{sax g"oomwa - sax g"oomwa} & \quad (to get back one's own breathe) \\
\text{sax rodd"a - sax rodd"a} & \quad (suffocating) \\
\text{bax l"ole - bax l"ole} & \quad (to obey) \\
\text{rnx nai - rnx nai} & \quad (no interest)
\end{align*}
\]

What is observed in the above data is that the obstruent appearing in the onset position retains its feature [voice] but the coda obstruent assimilates to the following onset thereby losing its feature. Here the process of assimilation proceeds from the onsets to the preceding codas.
The data set presented above brings home the point that segment appearing in the onset position triggers the process of assimilation and the features associated with the non onset consonants are lost. This process is applicable to the principle of obstruent obstruent clusters which display voice assimilation (Lombardi 1991, 1995a, 1996a,c) and place assimilation or gemination. Processes exclusively driven by elements present in non prominent position, such as voice or place assimilation by coda, without functional motivation, are rarely attested in the phonological systems of the world languages. The third phonological diagnostic of positional privilege is that of resistance to phonological processes, which is closely associated with the positional triggering of processes. Segments appearing in onset or stresses syllables often resist phonological processes such as assimilation or dissimilation. If the segment in onset position is the trigger of assimilation, it can not be the undergoer simultaneously. It has been observed crosslinguistically that segments in prominent position rarely undergo phonological processes even in cases in which they don’t serve as triggers. The fact that segments appearing in prominent position are resistant to alternation can be assigned to the fact that phonological contrasts are preserved in prominent positions as they take propriety in perception and processing. However, positional privilege enjoyed by onsets can be justified on phonetic grounds too. From phonetic perspective, consonants appearing in syllable onset position, preceding a sonorant are perceptually privileged by virtue of their release (a point, originally made for laryngeal features, in Kingston 1985, 1990). The contrastive consonantal features such as laryngeal state and place of articulation is carried in the segmental release burst, but in the coda position reliable cues to phonological contrasts are reduced, although some languages allow release possibilities, permitting either word final consonants or all consonants to be released, including those in coda position (Selkirk 1982). In the phonetic literature it has been reported that the perceptual prominence of syllable onset is characterized by enhanced phonological faithfulness, in forms of three positional privileges: licensing contrasts, triggering of phonological processes and resistance to phonological processes. Syllable onsets can be dissociated from codas on the ground that the former permit a wider range of phonological features and contrasts to surface. As seen in the data of Assamese regressive assimilation the feature [voice] is maintained in the onset position, not in the coda position which assimilate to the feature of the following onset. The asymmetry of affectedness as displayed by onset and coda are best demonstrated by voice and place of assimilation. Secondly, the assimilation in the heterosyllabic cluster as displayed in the data is regressive. By using OT analysis a justification can be provided in favour of regressive assimilation. Assimilation is regressive in heterosyllabic cluster in order to preserve the onset
features, by virtue of high ranking IDENT-ONSET (F) constraints (This point is discussed in Lombardi 1995a, 1996 a,c, Padgett 1995b.)

What is observed in the process of assimilation is that it mainly affects the coda consonants, leaving the position of the onset intact in a syllable. The contrast between voiced and voiceless obstruent is neutralised in coda position, not in onset position. In cases of assimilation it is the consonant in onset position which triggers spreading of laryngeal features as for instance, voice. And most importantly crosslinguistically it is the coda consonant, not the onset, which undergo assimilation.

4.2.2 Voicing assimilation in Assamese in the framework of SPE and Autosegmental framework:

If we want to represent the regressive voicing assimilation pattern in Assamese by using the notation of SPE it can be summarised by the following generalization rule:

\[(4/12) \quad [-\text{sonorant}] \rightarrow [+\text{voice}] / [-\text{sonorant}, +\text{voice}]\]

Most non linear analysis makes use of the spreading mechanism to account for voice assimilation. Thus, this generalized rule schemata can be represented with an autosegmental model in the following model:

\[
\begin{array}{c}
\text{C} \\
\text{C} \\
\text{[-voice]} \\
\text{[+voice]}
\end{array}
\]

Figure No 4/A: Voicing assimilation in autosegmental framework
Here in this representation, the broken line represents delinking and the association line indicates linking. The Consonant segment which is shown by delinking represents the coda consonant in Assamese which loses its feature [voice] in order to assimilate to the following voiced consonant and this is shown by the association convention in autosegmental model.

However, from the analysis of the above data some more hypotheses can be formulated in addition to regressive voicing assimilation, as follows:

Whenever a voiceless obstruent is followed by a nasal or a liquid consonant in Assamese, the former does not change its feature [voice] in order to agree with the following onset consonant. Hence, an argument can be posited that less sonorous sounds resist assimilation with the more sonorous sounds such as nasals and liquids.

The fact that obstruents do not agree in terms of feature [voice] when they are followed by nasals and liquids can be represented in the following fashion by using SPE notation:

$$(4/13)$$

$$\text{-son\text{-}rant} \rightarrow [\text{+voice}] /- [\text{+sonorant}]$$

In autosegmental framework it can be argued that spreading is blocked when a voiceless obstruent in the coda position is followed by nasal and liquids in the following onset position. Perhaps sonorants are not specified for voicing (Steriaide 1987).

Consider the following example in Assamese where a voiceless coronal plosive is followed by liquid /$\ddot{u}$/.

$$(4/14)$$

$$/x\ddot{a}t\text{ }\dddot{r}\ddot{a}t\ddot{i}/ \Rightarrow /x\ddot{a}d\text{ }\dddot{r}\ddot{a}t\ddot{i}/$$

So it can be argued that assimilation process in Assamese has some bearings upon the notion of phonological strength existing among the segments. The phenomenon of regressive
voicing assimilation is applicable only among the voiceless obstruent in the coda position and the following voiced obstruent, but it is not applicable in the case of voiceless obstruent coda being followed by voiced nasals and liquids. Although in phonetic literature of coda onset asymmetries it has been argued that coda is susceptible to change either subject to neutralization or assimilation to following onset but it can be argued that such kind of behaviour may not be found when a segment in the coda is followed by nasals and liquids. So it is the intrinsic strength of the segment, that is the componential make up or the sonority value a segment bears is a topic of exploration.

Next, the data presented in 1.9 brings home the point that in Assamese spirantization that occurs in the word final position is blocked when it is followed by obstruents in the following onset position. But the process of spirantization is unaffected when a bilabial fricative is followed by fricatives, nasals and liquids. This observation can also be perceived from the perspective of strength asymmetries in phonology. If we consider the sonority hierarchy scale it is evident that stops have the least sonority being followed by fricatives, nasals and liquids respectively. An argument can be posited that less sonorous a segment more it exhibits articulatory effort thereby blocking the process of spirantization at the word final position in Assamese. In Assamese the phoneme /pʰ/ has two phonetic variants:

\[(4/15)\]

\[
\begin{array}{c}
[p^b] & \text{(in word initial position; when followed by stops)} \\
p^b & \\
[f] & \text{(in word final position; when followed by fricatives, nasals and liquids)}
\end{array}
\]
This rule is represented below using the SPE notation:

\[
\begin{array}{c}
\text{p}^h \\
\text{-sonorant} \\
\text{-continuant} \\
\text{+Asp} \\
\text{-cor}
\end{array}
\quad \rightarrow \quad
\begin{array}{c}
\text{-sonorant} \\
\text{-cor} \\
\text{+continuant} \\
\text{+Asp}
\end{array}
\]

Figure No 4/B: Representation of changing of feature p\(h\) to f in SPE notation

In autosegmental framework, the change from f---p\(h\) in the context of following fricatives, nasals and liquids can be represented in the following fashion:

\[
\text{C} \quad \text{C}
\]

\[
\begin{array}{c}
\text{[+cont]} \\
\text{[-cont]}
\end{array}
\]

Figure No 4/C: Representation of changing of feature p\(h\) to f in autosegmental module

In this diagrammatic representation the consonant segment which is shown by delinking line indicates the coda consonant in Assamese which loses its feature [cont] to assimilate to the feature [-cont] of the following segment in the onset position.

From the data represented in (4/11) it is observed that in Assamese the velar fricative in the coda position never assimilate in feature [voice] to the following consonant in the onset position unlike other obstruents analysed in this language. The reason for the non occurrence of voiced velar fricative in the attested pattern in Assamese can be assigned to the absence of this segment in the phoneme inventory of this language.
4.3 Assamese nasal assimilation:

In this section I am going to discuss the instance of nasal assimilation in Assamese where coda nasal consonants undergo assimilation in place to a following obstruent. In this language nasal assimilate in terms of feature [place] at word internal level but across word boundaries nasals resist assimilation. It can be represented in the following schemata:

```
[N] /m/ /n/ /ŋ/ 
```

Figure No 4/D: Representation of different realizations of underlying nasal segment

4.3.1 Word internal nasal assimilation:

(4/16)

\[ \eta \rightarrow /k, g, g^b, x \]

\[ \eta \rightarrow \text{sum} \]

\[ \eta \rightarrow \text{organ} \]

\[ \eta \rightarrow \text{part} \]

\[ \eta \rightarrow \text{mud} \]

\[ \eta \rightarrow \text{insects} \]

\[ \eta \rightarrow \text{music} \]

\[ \eta \rightarrow \text{narrow minded} \]

\[ \eta \rightarrow \text{club} \]

\[ \eta \rightarrow \text{the name of Lord Siva} \]

\[ \eta \rightarrow \text{computer} \]
4.3.2 Blocking of nasal assimilation across word boundary

But across word boundaries nasals resist assimilation, as shown in the following data:

(4/17)

-  bonne giti - bonne giti  *bonëgit  (folk songs)
-  gbon kola - gbon kola  *gbonkola  (dark black)
-  gham xoma - gham xoma  *ghamxoma  (to shed sweat)
-  xam kota - xam kota  *xamkota  (to finish something)
-  bonne koma - bonne koma  *bonëkoma  (to work as a maid)
-  gan gua - gan gua  *gangua  (to sing)

This issue of nasal assimilation in Assamese can be represented within the framework of Stratal Optimality theory, which flourished as one of the several responses to the puzzle of opacity in optimality theoretic phonology. Bermudez Otero (1999) claims that in Stratal OT, phonology is envisaged as a recursive function, applying cyclically over a hierarchy of domains associated with morphological and syntactic structure; domains of different types can belong to different levels, each characterized by a particular ranking of constraints. In this module, the inherently parallel and global character of OT (McCarthy 2002 a) is tempered with a judicious admixture of serialism and locality introduced by the cycle. The fact that in Assamese nasal assimilation is confined to word internal level, not across word boundaries can be explained within the framework of Stratal Optimality model. In Assamese nasal assimilation takes place at the lexical level, but it is bocked at the post lexical level.

From the data it is also possible to draw a conclusion that post nasal voicing is optional in Assamese.
4.4 Assimilation and strength relations in Assamese phonotactics

Next, is it possible to explain the phenomenon of assimilation in the light of strength relations? Given sequence of sounds some sounds assimilate easily to other sounds, but some sounds display resistance to such process. It has been found crosslinguistically that nasal stops frequently undergo place assimilation, particularly to contiguous stop consonants, although less frequently to fricatives and glides (Padgett 1991, Mohanan 1993, Jun 1995). Mohanan (1993:72) claims that other classes of consonants undergo place assimilation, but none equal the crosslinguistically to the robust assimilatory behaviour in place feature that the nasals exhibit in the phonological systems of the languages in the world. The same is true of the Assamese data. In the above data it has been seen that nasals assimilate to the following stop in terms of its place feature, which is not applicable in the case of stops as exemplified in the following data:

Now consider the following data from Assamese where assimilation is blocked.

(4/18)

\[
\begin{align*}
\text{snpnə} & \quad \text{‘dream’} \\
\text{agnjogiri} & \quad \text{‘volcano’} \\
\text{agni} & \quad \text{‘fire’} \\
\text{mgnə} & \quad \text{‘sick’} \\
\text{bogni} & \quad \text{‘sister’}
\end{align*}
\]

Hence is it justified to claim that the less sonorous sounds, especially stops resist assimilation with the more sonorous sounds? Secondly from the above data to what extent will it be authentic to claim that the stops act as the trigger of assimilation and nasals undergo assimilation? In the data stated above nasals are the segments which undergo assimilation and stops act as trigger of assimilation. This question is addressed in the following section in the backdrop of perceptual account as reported in literature.
4.4.1 Nasals as undergoer of assimilation: a perceptual explanation:

The fact that nasals more often undergo assimilation as compared to other classes of sounds can be argued from the perspective of perceptibility account as advocated mainly by Steriade (1995), Kohler (1990) and Jun (1995). Kohler (1990) notes that nasals are more likely to assimilate than to stops and stops in turn are more likely than fricatives, observation authenticated by Jun’s (1995) survey. Even the studies conducted by Hura, Lindblom (1992) aiming at establishing a correlation between place assimilability and rates of place confusion draws the resolution that nasals are the most confusable class. The study was conducted by providing the listeners with word sequences of the form XVC1#C2VY where C1 varied between a stop, a nasal, a fricative and C2 was a heterorganic stop. The resulting misperception rates display the hierarchy nasals>stops>fricatives>, with nasals being the most confusable class. From this it becomes quite evident as why it is the nasal segment which undergo assimilation in most of the cases crosslinguistically. In the above data nasals assimilate to regressively to stops and the cause can be assigned to the reduced perceptibility of place distinctions in nasals.

Even this issue of higher rate of assimilation exhibited by nasals can be analysed in the light of the innocent misapprehension theory of assimilation. This theory holds the view that the speakers who initiate assimilation as a sound change select a specific modification of a lexical norm on the basis of two factors: perceived similarity to the original form and optimized articulation. Any modification must be tolerably similar to the original and must involve an improvement in articulation, perception or paradigm structure over the original. This innocent misapprehension theory of assimilation is influenced by Lindblom’s et al. (1995), Kohler’s (1990) and Hura et al.’s (1992) view of assimilation as “tolerated articulatory simplification.” In regard to place assimilation this simplification implies eliminating one of the two original constrictions. However, Ohala (1990:266) provides an alternative view to the assimilatory sound change in the following way:

“A non teleological view of sound change [...] : neither the speaker nor the hearer chooses- consciously or not- to change pronunciation[...] Rather variation occurs due to innocent mis apprehensions about the interpretation of the speech signal[...] [Sound change] does not optimize speech in any way: it does not make it easier to pronounce, easier to detect, or easier to learn.”

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However the patterns of perceptual confusion observed in the laboratory do not exactly match attested sound change. In the selection of assimilation targets the place confusability hierarchy nasals>stops>fricatives> established by Hurat et al.(1992) matches. But most of the patterns observed by Hurat et al. were non assimilatory, with a bias in favour of the alveolar stops and and nasals regardless of the context. Hence the greater inclination of nasals to assimilate relative to stops can not be attributed to higher rates of grammaticalized misperception for nasals vs. stops. It further throws ample light on the fact that bare misperception is not the only cause of nasal assimilation. Steriade (2001) claims that asymmetries in assimilation can be assigned to the knowledge of perceptibility on the part of speakers used as a phonological tool. Speakers are aware of the relative rates of confusion created by manner class and by position: they target nasals more as compared to stridents in place assimilation because they know it is safer – perceptually more tolerable- to modify nasal’s place features than to modify the strident’s.

Although the high rate of assimilation exhibited by nasals are supported by perceptual account as put forth mainly by Steriade (2001) it is not possible to negate the alternative view of positional privilege view propounded by Beckman (1998). In the analysis of the Assamese data under consideration it is seen that mostly the nasal segments which have undergone assimilation occur in the coda position in a syllabic domain, thereby enhancing the claim of onset coda asymmetry in phonological string. Nasals occurring in the onset position hardly are subject to any change. Hence it can be said that it is not only perceptual account which can be put forwarded in favour of high rate of nasal assimilation but also the position of a segment in a syllabic domain which plays a crucial role. However it is to be noted that nasals in onsets are also better cued by CV transitions. So, perceptibility is not only intrinsic to segments but also to contexts. Hence NV > VNC ; here arrow implies increasing of the perceptibility.

4.4.2 Assamese voicing assimilation and Optimality Theoretic constraint

Assamese displays the pattern of regressive voicing assimilation. Assamese exhibits the instances of regressive voicing assimilation, in which it is seen that the segment occurring in
the coda position tends to agree in terms of feature [voice] with the following segment in the onset position.

The reason for the onset/coda asymmetry can be assigned to positional requirement of faithfulness: the primacy of faithfulness to onset distinctions. These three patterns of positional privilege exhibit the high ranking positional faithfulness constraint, IDENT-ONSET (voice) as shown below:

(4/19)

IDENT ONSET (voice)

For all segments x,y where x input, y output and y is syllabified in onset position, if x ← y,

Then y is [voice] iff x is [voice].

"Onset segments and their input correspondents must agree in voicing."

When the onset segment differs from its input correspondent in voicing it will violate the above constraint; when high ranking, IDENT ONSET (voice) places a premium on faithfulness in onset position.

These constraints can explain the word internal voicing assimilation. The constraint AGREE implies that obstruent clusters must agree in voicing. But this constraint encounters conflict with the Faithfulness constraint according to which the underlying specifications must remain the same. However the relation existing between IDOnsLar and IDLAR exhibit that it is more important to onset laryngeal specification than to coda or elsewhere specification. This implies when the members of an input cluster disagree in voicing the only way to satisfy the AGREE will be for the coda to assimilate to the voicing of the onset not vice versa. This can be highlighted with the help of the following examples in 4/a.
Direction of voicing assimilation in Assamese:

<table>
<thead>
<tr>
<th>/bakdebi/</th>
<th>Agree</th>
<th>IDOns</th>
<th>IDLar</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. bak.debi</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. bag. Debi</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. bak. Tebi</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No 4/a: Direction of voicing assimilation in Assamese in OT framework

From this tableau the ranking of the constraints in Assamese can be arranged in the following fashion:

(4/20)

Agree>> IDOns>> ID Lar

This ranking drives home the point that clusters that are homogeneous for [voice] will be preferred over clusters that do not agree in voicing. In other words, AGREE prefers homogeneous clusters. In Assamese, obstruent sequences are homogeneous for voice in such a manner that the right most obstruent determines the voice value of the entire cluster. In Assamese one can account for regressive [+voice] spreading where AGREE selects the feature [+voice].

4.4.3 Assimilation as blocked by nasals and liquids: an investigation:

But what is interesting to note here is that this regressive voicing assimilation is blocked by nasals and liquids. Consider the following examples:

(4/21)

xat mah – xatmah *xadmah (seven months)
xat n̄di – xat n̄di *xad n̄di (seven rivers)
xat jati – xat jati *xad jati (seven nights)
In order to represent this phenomenon in OT model we need to rerank the constraints in a different fashion:

Consider the example: (4/22)

\[ \text{xat } \text{mkm} - \text{xat } \text{mkm} \times \text{xad } \text{mkm} \quad \text{(seven varieties)} \]

\[ \text{hat } \text{l} \text{a} - \text{hat } \text{l} \text{a} \times \text{had } \text{l} \text{a} \quad \text{(nature of a thief)} \]

\[ \text{xap } \text{nsua } \text{manuh} - \text{xap } \text{nsua } \text{manuh} \times \text{xab } \text{nsua } \text{manuh} \quad \text{(snake charmer)} \]

\[ \text{bap } \text{mril} - \text{bap } \text{mril} \times \text{bab } \text{mril} \quad \text{(father died)} \]

\[ \text{kap } \text{l} \text{u} \text{a} - \text{kap } \text{l} \text{u} \text{a} \times \text{kab } \text{l} \text{u} \text{a} \quad \text{(shaking of the cups)} \]

\[ \text{sap } \text{rol} - \text{sap } \text{rol} \times \text{sab } \text{rol} \quad \text{(leaving the mark)} \]

\[ \text{kak } \text{l} \text{u} \text{a} - \text{kak } \text{l} \text{u} \text{a} \times \text{kag } \text{l} \text{u} \text{a} \quad \text{(whom do you take?)} \]

\[ \text{b} \text{hu} \text{k } \text{ri } \text{gol} - \text{b} \text{hu} \text{k } \text{ri } \text{gol} \times \text{bhug } \text{ri } \text{gol} \quad \text{(still feeling hungry)} \]

\[ \text{kak } \text{n} \text{k} \text{kom} - \text{kak } \text{n} \text{k} \text{kom} \times \text{kag } \text{n} \text{k} \text{kom} \quad \text{(whom should not be told?)} \]

\[ \text{b} \text{hu} \text{k } \text{mu} - \text{b} \text{hu} \text{k } \text{mu} \times \text{bhug } \text{mu} \quad \text{(my hunger)} \]

\[ \text{bas } \text{nai} - \text{bas } \text{nai} \times \text{baz } \text{nai} \quad \text{(no restriction)} \]

\[ \text{bis } \text{ma} \text{ne} - \text{bis } \text{ma} \text{ne} \times \text{biz } \text{ma} \text{ne} \quad \text{(twenty means)} \]

\[ \text{mas } \text{l} \text{u} \text{wa} - \text{mas } \text{l} \text{u} \text{wa} \times \text{mas } \text{l} \text{u} \text{wa} \quad \text{(to take fish)} \]

\[ \text{bis } \text{m} \text{k} \text{kom} - \text{bis } \text{m} \text{k} \text{kom} \times \text{biz } \text{m} \text{k} \text{kom} \quad \text{(twenty varieties)} \]

\[ \text{k} \text{af } \text{nai} - \text{k} \text{af } \text{nai} \times \text{k} \text{af } \text{nai} \quad \text{(no phlegm)} \]

\[ \text{b} \text{n} \text{rof } \text{ma} \text{ne} - \text{b} \text{n} \text{rof } \text{ma} \text{ne} \times \text{b} \text{n} \text{rof } \text{ma} \text{ne} \quad \text{(meaning of ice)} \]
This blocking of assimilation can be explained in the light of the sonority values assigned to a particular segment. In literature it has been found that the syllable is a complex constituent, which is constrained both in linear and hierarchical terms with sonority playing a pivotal role in its internal organization, especially in the sequencing and patterning of the segments. Sonority can be defined as a concept through the medium of which we can define the characterization of segment sequencing within syllables including characterization of both peaks and margins. It is observed crosslinguistically that languages typically impose quite severe restrictions on the ability of the speech sounds to follow one another in phonological settings. This patterned phonotactic patterning can be attributed to sequencing restrictions imposed by sonority. The sonority value assigned to a segment can be better represented on a scale ranging from vowels to voiceless obstruents in a descending manner.

In the analysis of the Assamese data on regressive voicing assimilation it is realized that the assimilation occurs between the segments which share the same sonority value. In the data under consideration, the phenomenon of assimilation in terms of feature [voice] is confined to the class of obstruents. So within OT framework AGREE constraint is ranked higher only in the case of obstruent clusters. When the members of an input cluster disagree in voicing the only way to satisfy the AGREE will be for the coda to assimilate to the voicing of the onset not vice versa. But this constraint is not satisfied in the case of clusters comprising of obstruents and liquids, obstruents and nasals etc. When AGREE is not relevant in obstruent + Sonorant cluster as cited above, the obstruents must devoice in languages where such clusters are heterosyllabic. This asymmetry in assimilation behaviour in terms of feature [voice] can be justified by taking in to consideration the sonority value of the segments. Since obstruent clusters agree in terms of sonority value they display assimilation which is blocked among the segments of different class such as nasals, laterals and rhotics which are characterized by diverse sonority values. So from this interpretation some generalizations can be established:

Sonority plays a significant role in the patterning of segments in a syllable string.

Voicing assimilation between adjacent segments can be confined to obstruent cluster only, not other segmental class having different sonority values. The constraint AGREE is applicable while analyzing the instances of voicing assimilation in obstruent clusters. It can not capture the blocking effect of assimilation in obstruent liquid or nasal clusters. So in order to have an explanation for the non occurrence of regressive voicing assimilation in a cluster
comprising of a plosive followed by segments other than plosives, reference is made of
sonority values although a well established objection to sonority is that it lacks a consistent
phonetic correlate.

Voicing assimilation is not applicable in the case of obstruent and sonorant cluster. Further it
can be argued that only stops agree in terms of voicing and assimilate to the following onset
when the segment in the onset position is also plosive, not any other segment of different
class. Hence, a generalization can be established that less sonorous segments resist
assimilation to the more sonorous segments. For voicing assimilation to take place the
segments must share their sonority values. If there lies an asymmetry in terms of sonority
value regressive voicing assimilation is blocked. Hence, the reason behind the asymmetric
phonological behavior can be assigned to a particular patterning responsible for the
organization of the sounds in a string. In the Assamese data on regressive voicing
assimilation sonority can be cited as a reason. Voicing assimilation is functional among the
segments of same sonority value and this is blocked between the segments of asymmetric
sonority value. However the redundant [+voice] feature of a sonorant consonant never
triggers voice dissimilation.

From the above discussion a conclusion can be drawn in the following way using optimality
theoretic framework:

(4/23)

AGREE is stronger between similar constituents having same sonority value

[-son] [-son] > [-son] [+son]

4.5 Conclusion:

This chapter addresses the instance of regressive voicing assimilation as evident in Assamese
and Hindi, two major languages of Indo Aryan language family, in the light of assimilatory
asymmetry in terms of segment sequencing. An attempt is also made here to examine
whether strong or weak licensing capacity in a phonological domain is an inherent abstract
property assigned by UG irrespective of languages or conditioned by phonetic factors. It is
the normal case for languages to have homogeneous voice clusters, which are created by
spreading both values of the [+/-voice] feature over the entire cluster, usually in a regressive
fashion. Both Assamese and Hindi exhibit the instances of regressive voicing assimilation, in which it is seen that the segment occurring in the coda position tends to agree in terms of feature [voice] with the following voiced obstruent in the onset position thereby strengthening the claim that positional asymmetry is instrumental in the functioning of the segmental distribution. It further proves the hypothesis that onsets are stronger than codas because the onsets resist assimilation whereas the codas are prone to assimilation. In addition to onset coda asymmetry in relation to phonological licensing, what is interesting to observe in this chapter is that the regressive voicing assimilation is blocked by nasals and liquids. This asymmetry in assimilation behavior in terms of feature [voice] can be justified by taking into consideration the sonority value of the segments. Since obstruent clusters agree in terms of sonority value they display assimilation which is blocked among the segments of different class such as nasals, laterals and rhotics which are characterized by diverse sonority values. Thus sonority comes in to play an important role in the phenomenon of segmental speech sounds. Voicing assimilation is functional among the segments of same sonority value and this is blocked between the segments of asymmetric sonority value. However the redundant [+voice] feature of a sonorant consonant never triggers voice dissimilation. Hence, I propose a constraint using Optimality theoretic module that drives home the point that AGREE is stronger between similar constituents having similar sonority value. This chapter also bears ample testimony to the fact that the phenomenon of assimilation can be correlated with the notion of strength. In the data of Assamese under consideration it is found that stops act as the trigger of assimilation whereas the nasals undergo assimilation but not vice versa. So from this patterning a conclusion is drawn that segments with less sonority value resist assimilation to segments having high sonority value.